



**NTNU – Trondheim**  
Norwegian University of  
Science and Technology

# Purchasing Synergy

A Case Study in the Norwegian Petroleum  
Industry

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Submission date: June 2013

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### 3. Masteroppgave

Oppstartsdato <b>15. jan 2013</b>	Innleveringsfrist <b>11. jun 2013</b>
Oppgavens (foreløpige) tittel <b>Purchasing Synergy A Case Study in the Norwegian Oil Industry</b>	
Oppgavetekst/Problembeskrivelse <p>'Purchasing synergy' is still a relatively unexplored field in purchasing research, offering a great potential for new theoretical and empirical contributions. The context of today's globalized and fiercely competitive marketplace makes the importance of purchasing synergies seem more obvious than ever. This is the main motivation for this study.</p> <p>In an attempt to contribute to the field of 'purchasing synergy', this master thesis will contain the following elements:</p> <ol style="list-style-type: none"> <li>1. A thorough review of the existing literature, resulting in a theoretical framework</li> <li>2. A single case study of A/S Norske Shell in Kristiansund, describing today's purchasing organization in relation to 'purchasing synergy'.</li> <li>3. An analysis of the case study using the framework, providing the basis for recommendations for Norske Shell and implications for researchers.</li> </ol>	
Hovedveileder ved institutt <b>Professor Luitzen de Boer</b>	Medveileder(e) ved institutt <b>Godfrey Mugurusi</b>
Ekstern bedrift/institusjon <b>A/S Norske Shell</b>	Ekstern veileder ved bedrift/institusjon <b>Rolf Einar Sæter</b>
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Avtale mellom	Therese Krøgh	23.02.87
Student:	Bing Zhao	født: 27.06.88
	Kristin Merethe Berge	04.05.87
Veileder ved NTNU:	Luitzen de Boer	
Bedrift/ekstern virksomhet:	A/S Norske Shell	

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Studenten skal utføre

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(sett kryss)

i samarbeid med

A/S Norske Shell
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bedrift/ekstern virksomhet

15.01.2013 - 11.06.2013

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Purchasing Synergy

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Oppgaven skal være undergitt utsatt offentliggjøring i

ett år	
to år	
tre år	X

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

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<sup>1</sup> Lov av 17. april 1970 om retten til oppfinnelser som er gjort av arbeidstakere  
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<sup>2</sup> Veiledning til NTNUs standardavtale om masteroppgave/prosjektoppgave i samarbeid med bedrift  
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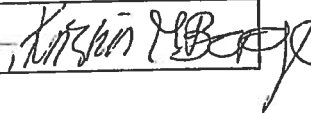
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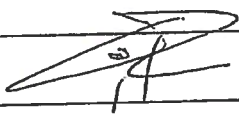
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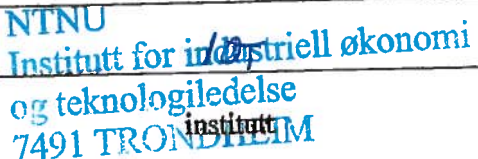
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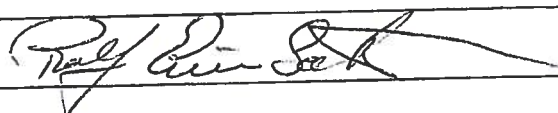
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sted, dato	instituttleder, NTNU	

15/1-2013	
sted, dato	for bedriften/institusjonen stempel og signatur





## **Preface**

This paper represents a master's thesis in the specialization discipline "Strategic Purchasing and Supply Management". It was written over the spring of 2013 at NTNU's Department of Industrial Economics and Technology Management, building upon pre-assignment project work conducted in the fall of 2012. The thesis consists of two main parts: (1) a literature review on the topic 'purchasing synergy'; and (2) an empirical test of the theoretical findings from the literature review. A single case study, of the upstream part of A/S Norske Shell, was conducted between October 2012 (including the project work) and June 2013.

We would like to thank our supervisors, prof. Luitzen de Boer and PhD candidate Godfrey Mugurusi. Your honest feedback, constructive discussions and graceful patience have been very much appreciated throughout this fall and spring. We also would like to thank our contact points and interviewees in A/S Norske Shell. We thank Rolf Einar Sæter, Jens Arne Megård, Terje Åshamar, Hilde Åkvik, Mette Rindahl, Marit Tomelthy, Unni Øye, Ian Wiik, Elisabeth Sivertsen, Lisbet Mork, Anne Irene Sollid, Sabina Loennechen, Jan Martin Haug, Leif Jan Sørli, Roger Nilsen, Roger Nerland, Ola Krogsrud, Eivind Grønseth, Kjetil Flemmen, Torbjørn Johansen, Therese Eikrem, and Silje Melbye for their effort and openness. This master's thesis could not have been possible without the valuable information, experiences and thoughts they have shared with us in interviews and their correspondence.

June, 2013, Trondheim

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## **Abstract**

This master thesis explores purchasing synergies, the creation of competitive advantage in purchasing. More specifically, it seeks to explain the existence of such synergies and their corresponding synergy potentials, through the answering of four research questions: (1) what purchasing synergy is and why it is important; (2) what framework may best be suited to identify and realize purchasing synergies; (3) which of and why purchasing synergies are realized or unrealized in the upstream businesses of A/S Norske Shell, and managerial implications; and (4) to what extent theory and practice correspond, and the implications for further research.

The objective of the thesis is to confront theory with the empirical world. This is done by way of a qualitative and deductive research strategy, along with an analytical-conceptual research design. The thesis starts off by building logical relationships through correlation of existing literature. An empirical study is then conducted using a single, holistic case study, in which the purpose is to explain how and why theoretical phenomena occur.

Based on prior research from literature on purchasing and strategic management, the thesis defines purchasing synergy as an increase in purchasing performance realized in one of three forms: economies of scale, economies of information and learning, and economies of process. It further argues that realization of a purchasing synergy occurs when two or more business units, or relationships within one business unit, join their forces and/or share functional resources, information and knowledge.

Purchasing synergies are realized through purchasing synergy management, meaning the use of approaches, processes and organizational changes to identify and realize potentials for the three forms of purchasing synergy in activities and relationships between and within business units. By reinventing the Strategic Supply Wheel by Cousins et al. (2008), a framework is developed, named the *Purchasing Synergy Management Wheel*. This new conceptual framework has been developed for the thesis by correlating the existing model against literature on purchasing synergy (management) and other related fields.

The framework is subsequently deployed on a case company, the upstream businesses of A/S Norske Shell, in order to diagnose the company's current purchasing situation. The resulting analysis reveals that all three forms of purchasing synergies, in both their realized and unrealized forms, may be explained using the individual perspectives of the different wheel elements. However, a complete understanding of the inherent complexities of why certain purchasing synergies exist or remain unrealized is possible only if the links between the elements are taken into account. Managerial recommendations are given to overcome the challenges identified in the analysis.

The thesis finds that theory and practice correspond to a considerable extent, and that central aspects of related literature and the framework of analysis are supported by the findings of the analysis. It concludes with a set of implications for further research. The thesis recommends a continued focus on and study of all three forms of purchasing synergy, and a further development of the Purchasing Synergy Management Wheel.



## Sammendrag

Denne masteroppgaven omhandler oppnåelse av konkurransefordeler i innkjøp gjennom realisering av innkjøpssynergier. Nærmere bestemt ønsker oppgaven å forklare hvordan og hvorfor disse synergiene forekommer, på grunnlag av fire forskningsspørsmål: (1) hva er innkjøpssynergi, og hvorfor er det viktig? (2) hvilket rammeverk vil være best egnet til å gjenkjenne og realisere innkjøpssynergier? (3) hvilke innkjøpssynergier er realisert eller urealiserte i Norske Shells oppstrømsvirksomhet, hvorfor er de det, og hva betyr dette for ledelsen? (4) i hvilken grad er det samsvar mellom teori og praksis, og fins det noen eventuelle implikasjoner for videre forskning?

Videre forsøker oppgaven å konfrontere teorien med den virkelige verden. Dette gjøres gjennom et analytisk-konseptuelt forskningsdesign, kombinert med en kvalitativ og deduktiv forskningsstrategi. Oppgaven bygger først opp logiske koblinger gjennom korrelasjon av eksisterende litteratur. Deretter foretas empiriske undersøkelser gjennom et omfattende case-studie, som søker å forklare hvordan og hvorfor de teoretiske fenomenene finner sted.

Oppgavens definisjon av innkjøpssynergi er basert på tidligere forskning på feltene innkjøp og strategisk ledelse. En innkjøpssynergi defineres i oppgaven som en forbedring av innkjøpsprosessen, realisert i én av følgende tre former: (1) stordriftsfordeler; (2) lærings- og informasjonsutveksling; og (3) Prosess-standardisering. Synergier av denne typen realiseres når én eller flere forretningsenheter, eller relasjoner innenfor en enkelt enhet, deler funksjonelle ressurser, informasjon og kunnskap.

Innkjøpssynergier blir realisert gjennom innkjøpssynergiledelse, der ulike prosesser, fremgangsmåter og organisasjonelle endringer blir brukt til å gjenkjenne urealiserte synergier i aktiviteter og relasjoner i og mellom forretningsenheter. Oppgaven utvikler et nytt rammeverk til å håndtere slike problemstillinger, basert på *the Strategic Supply Wheel* (Cousins mfl. 2008). Rammeverket har fått navnet *Purchasing Synergy Management Wheel*, og er blitt til gjennom korrelering av den opprinnelige modellen med litteratur på innkjøpssynergi og andre relaterte felter.

Rammeverket testes ved å se på den nåværende innkjøpssituasjonen A/S Norske Shells oppstrømsvirksomhet. Av analysen fremkommer det at alle tre former for innkjøpssynergi, både i realisert og urealisert form, kan forklares fra hjulelementenes individuelle perspektiver. Men skal det nås frem til en mer komplett forståelse av hvorfor noen innkjøpssynergier er realisert, og hvorfor andre ikke er det, er det nødvendig også å se på forbindelsene mellom de ulike elementene. Til ledelsen gis det et sett med anbefalinger om hvordan utfordringene som nevnes i analysen kan overvinnes.

Oppgaven finner betydelig samsvar mellom teori og praksis, og at sentrale aspekter i rammeverket og relatert litteratur i stor grad underbygges av analysen. Dette tas med videre i oppgavens implikasjoner for videre forskning. Her anbefales det nærmere studier av alle tre former for innkjøpssynergi, samt en videreutvikling av rammeverket som presenteres i oppgaven.

## Abbreviations

AWAP:	Awaiting Approval
BCDs:	Business Controlling Documents
BOM:	Bill Of Materials
C&P:	Contracting & Procurement
C&P Lead:	Manager Contracting & Procurement Upstream International Norway
CMCP:	Category Management and Contract Process
CMS:	Corporate Management System
CSR:	Corporate Social Responsibility
Delivery Team:	Maintenance Delivery Team
Delivery Team Lead:	Maintenance Delivery Team Lead
EFA:	Enterprise Framework Agreement
ERP:	Enterprise Resource Planning
Global Shell:	Royal Dutch Shell plc
KPI:	Key Performance Indicator
LAFD:	Latest Allowable Finish Date
MIS:	Management Information System
MRP:	Material Requirements Planner
Norske Shell:	A/S Norske Shell
OE:	Operational Excellence
P&T:	Project & Technology
RAM:	Risk Assessment Matrix
RASCI:	Roles And Responsibilities Matrix
ROS:	Required On Site
RtP:	Requisition-to-Pay
RtP Analyst:	RtP Continuous Improvement Analyst
SAP:	Systems Application and Products
UIO:	Upstream International Operated
UI:	Upstream International
Upstream Norske Shell:	The upstream businesses of A/S Norske Shell

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## **PART 1: INTRODUCTION AND RESEARCH METHODOLOGY**

*Part 1 first introduces the master's thesis by exploring the background of the research, problem statement and approach of the study, followed by a description of the structure of the remaining chapters.*

*Second, it provides a thorough description of the research methodology used in this master's thesis. It starts by outlining and arguing for the research objective as well as the strategy and design, followed by an elaboration of the problem statement and research questions. Then, the research process, including the collection of literature and empirical data is outlined, featuring important milestones and decisions made throughout the process. Finally, the limitations and quality of the research methodology are reflected upon. The chapter ends with a table summarizing the main choices of methodology.*

---

## **1. Introduction**

This thesis explores the creation of competitive advantage in purchasing through the management of intra-firm cooperation between two or more purchasing functions, or *purchasing synergy* for short. It discusses the definition of purchasing synergy, as well as the approaches by which it may be used to identify realized purchasing synergies and unrealized synergy potentials. In doing so, it concerns itself mainly with organizational issues such as how to align strategies, organize structure, foster maturity, measure performance, and manage various relations. Scientific inputs to this thesis have mainly been found in purchasing literature, but insights have also been drawn from selected parts of the strategic management and industrial marketing literature.

This first chapter explores the background of the research, problem statement and approach of the study, followed by a description of the organization of the remaining chapters.

### **1.1 Background of the Research**

Over the past few years, many authors have argued, purchasing has begun to play an ever more important role in business strategy compared to what has held true in the past (Carter and Narasimhan, 1996; Mol, 2003; Ellram and Carr, 1994; Hartmann et al., 2012). Purchasing synergy is now seen as a way of optimizing the company's purchasing function, thereby contributing to its competitive advantage (Rozemeijer, 2000a; 2000b; Faes et al., 2000). Following this line of reasoning, two questions have to be addressed: (1) why is purchasing important? And (2) how does one gain a competitive advantage through purchasing?

### **1.2 The Importance of Purchasing**

Over the last decades, political pressures have forced changes in industrial structure and the focus of supply. Economic pressures, such as the trend towards outsourcing and the recent economic crisis, have intensified price wars and stimulated demand for cost savings. Social pressures have arisen from the need of attracting competent purchasing professionals. Technological pressures, such as advances in information technology, have increased the number of communication platforms available to the purchasing function, and raised the visibility of the supply process in the organization. In sum, these pressures from the competitive environment all contribute towards raising the strategic importance of purchasing. (Cousins et al., 2008; Corey, 1978; Hartmann et al., 2012)

Alternatively, one can simply take a glance at the bottom line of any company and ask: what is the biggest single cost for most businesses? The answer, in the vast majority of cases, will be procurement. Purchased products and services account for roughly 60% of the average company's total costs. Bringing down purchasing costs can thus have a dramatic effect on the bottom line. (Watts et al., 1995; Degraeve and Roodhofs, 2001)

However, purchasing can also become a value-contributing function capable of affecting both the bottom *and* top line. In its role as strategic contributor, the purchasing function aligns supply strategy with corporate strategy, manages the supply base, collaborates with other functions, and may eventually even drive the company's competitive strategy. (Chen et al., 2004; Hartmann et al., 2012; Cousins et al., 2008)

Purchasing is indeed important. Both financial and operation benefits such as cost savings, improvements in quality of goods and services, and innovation in cooperation with suppliers may be achieved. This leads to the next question: how to improve and sustain competitive advantage through purchasing to truly gain these benefits?

### **1.3 Competitive Advantage Through Purchasing**

How does a company gain a competitive advantage through purchasing? There is no single solution. Some may suggest that it is done through appropriate sourcing strategies and supply chain configurations. Others may focus on strategic supplier selection and the importance of supply networks and buyer-supplier relationships. Still others have proposed *purchasing synergy* as an alternative. If achieved, they argue, purchasing synergies can contribute to the company's shareholder value as well as its competitive advantage.

The expression might sound unfamiliar to many readers, but belies the simplicity of its definition. Purchasing synergy is at its heart the result of a combination of familiar concepts like corporate cost reduction, bundling volumes, standardization of specifications, centralized procurement, coordination of (decentralized) purchasing, corporate framework agreements and supplier base reduction (Rozemeijer et al., 2003; Smart and Dudas, 2007; Trautmann et al., 2009a).

Essentially, purchasing synergy is the increase in purchasing performance as a result of cooperation and coordination between two or more business units (or purchasing functions) (Rozemeijer 2000a; 2000b). A corporate advantage in purchasing may accordingly be achieved when business units join forces, share information and knowledge and devote themselves to a common way of working. This, however, begs the question of how this is supposed to work in practice. And how can a company identify potentials for purchasing synergy? Both of these questions will be explored in the thesis.

### **1.4 Problem Formulation**

A cursory web search reveals purchasing synergy as a seemingly immature research field. Given the huge benefits associated with purchasing synergy, this finding is quite puzzling. A main motivating factor for the authors in choosing this topic has thus been a wish to contribute to this fledgling field of study. Moreover, a general interest in purchasing coordination and organization has led the authors to speculate how synergies may actually be identified and realized in organizations.

The authors are also inspired by the opportunity to study purchasing in a Norwegian oil company, due to the importance of petroleum activities to the economic growth and welfare in Norway (Ministry of Petroleum and Energy, 2013). Specifically, a great motivation lies in acquiring in-depth expertise of purchasing synergies in the case company, and hopefully, this study will contribute to create a more profitable purchasing organization.

Due to the paucity of literature and complexity of the topic, the authors do not wish to jump to guidelines and recommendations for purchasing synergy creation. Rather, the main focus is placed on *identifying* and *explaining* purchasing synergies that have already been realized, as opposed to readily realizable *synergy potentials*. This focus has been chosen out of a belief

that appropriate approaches for capturing unrealized opportunities can only be outlined after correctly mapping the status quo. In conclusion, this has led to the formulation of a final, overall problem statement and a set of four research questions:

**Problem Statement**            How can realized purchasing synergies and unrealized synergy potentials be explained?

**Research Question 1 (RQ1)** What is purchasing synergy and why is it important?

**Research Question 2 (RQ2)** What framework may be best suited to identify and realize purchasing synergies?

**Research Question 3 (RQ3)** Which types of purchasing synergies are realized in Upstream Norske Shell and what purchasing synergy potentials are currently unrealized? Why are certain purchasing synergies realized and others not, and what are the managerial implications for Upstream Norske Shell?

**Research Question 4 (RQ4)** To what extent do theory and actual practice correspond, and what are the implications for further theoretical and empirical research?

This master's thesis builds upon insights gained from a pre-assignment for the thesis, in which the authors conducted a thorough review of the existing literature, and a single case study of the upstream part of the Norwegian oil-and gas company A/S Norske Shell. To supplement the existing knowledge on relevant literature, selected topics that were previously not reviewed have been included deliberately. The authors also seek to expand the scope of the case study to incorporate a larger purchasing-related part of the case company. Overall, this thesis sets out to acquire a deeper understanding of both relevant literature as well as purchasing in the case company.

### **1.5 Structure of the Thesis**

Figure 1 illustrates the structure of the thesis. The figure shows how the problem statement and research questions are answered and where these answers are contained. Moreover, the thesis is divided into five main parts, in which each part is further divided into several chapters.

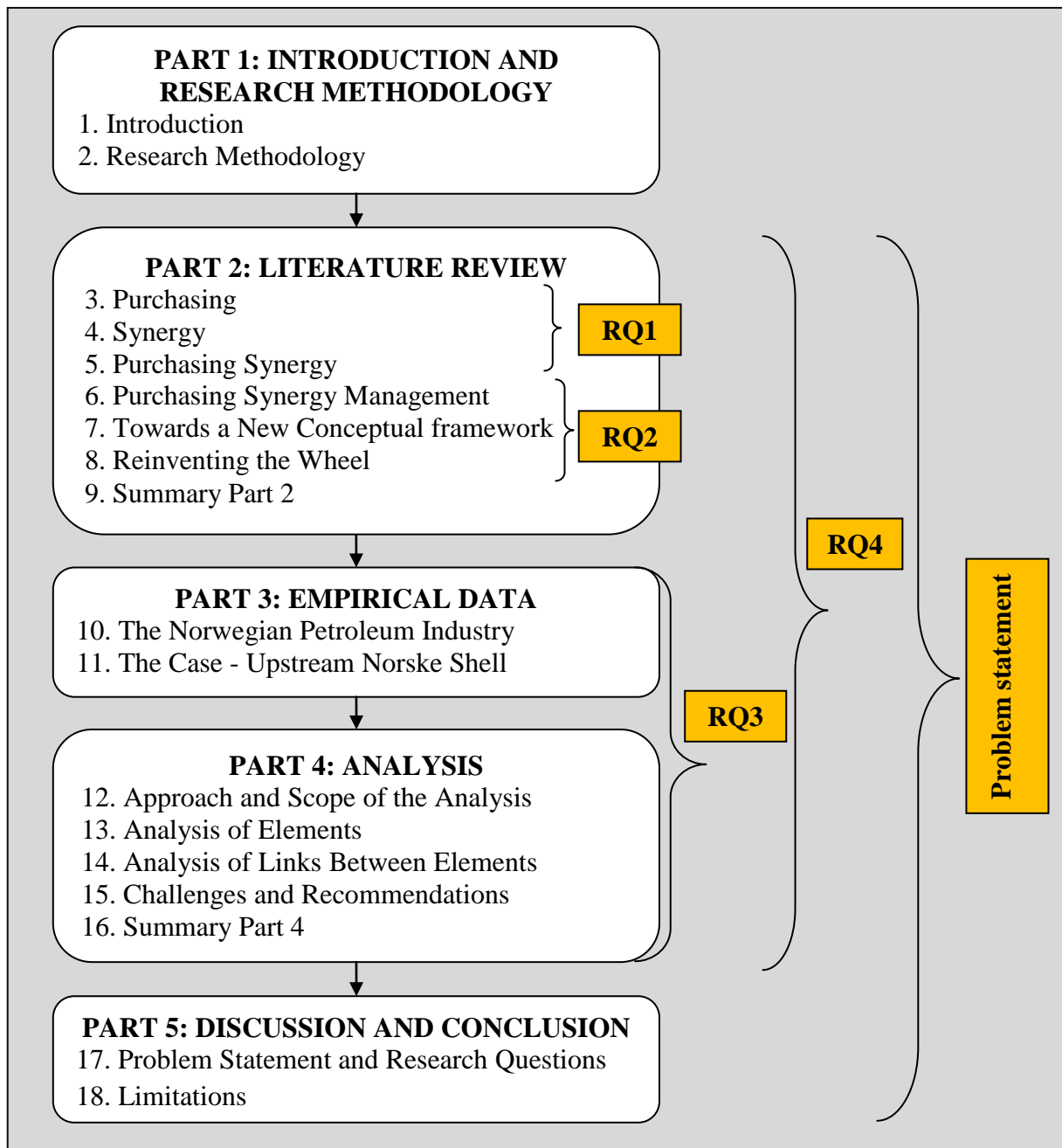


Figure 1: The Structure of the Thesis

Chapter Two in Part One gives a thorough description of the research methodology. This chapter presents the research objective, problem statement, research questions as well as the strategy and design. The research process and the limitations of the study are then explained in detail, before an evaluation of the research quality is presented. Each of the choices made are discussed and reflected on over the course of the chapter.

The literature review is presented in Part Three. Chapter Three and Four reviews the comprehensive concepts of ‘purchasing’ and ‘synergy’, respectively. This is included to better understand ‘purchasing synergy’, which is elaborated upon in Chapter Five. Thereafter, literature on ‘purchasing synergy management’ is presented in Chapter Six. In Chapter Seven, literature on ‘purchasing synergy management’ is correlated against other relevant literature presented in the previous chapters in Part Three. This correlation serves as the foundation for

the new conceptual framework for identifying and creating purchasing synergies. This framework is presented in the Final Chapter in Part Three.

Part Three presents the empirical data. First, in Chapter Ten, an introduction to the context in which the case company operates in, the Norwegian petroleum industry, is given. Thereafter, Chapter Eleven introduces Upstream Norske Shell, the case company of the thesis. Royal Dutch Shell plc, A/S Norske Shell and the Upstream part of A/S Norske Shell are all given brief presentations, followed by a detailed description of the purchasing function and purchasing processes of the case company. Part Three thus lays the empirical foundation for the analysis in Part Four.

In Part Four, the analysis of the case company is presented. Chapter Twelve defines the approach and scope of the analysis. Thereafter, in Chapter Thirteen and Fourteen, realized purchasing synergies and unrealized synergy potentials in the case company are identified through applying the conceptual framework suggested in Chapter Eight. The analysis also examines why certain synergies have been realized while others have not. These chapters in Part Four lay the foundation for Chapter Fifteen. In Chapter Fifteen, challenges identified in the case company that inhibit purchasing synergy creation are discussed. Thereafter, recommendations to how the company can improve its purchasing practice and realize its purchasing synergy potential are given.

In Part Five, the research questions are discussed and concluded in Chapter Seventeen, before limitations of this master's thesis is given in Chapter Eighteen

Part Two, Three, Four and Five answer the problem statement. Research Question 1 is answered throughout the chapters describing 'purchasing', 'synergy' and 'purchasing synergy'. Research Question 2 is answered in the description of 'purchasing synergy' and 'purchasing synergy management'. These descriptions are summarized in a new conceptual framework for synergy management, i.e. the identifying and realization of purchasing synergies.

Research Question 3 is answered by way of a case study. The case study consists of an introduction to the Norwegian petroleum industry, a case description in Part Three, and the analysis in Part Four. Last, but not least, the answer to Research Question 4 is given by comparing the literature presented in Part Two with the analysis in Part Four. In Part Five, all research questions are discussed along with a final conclusion.

## **2. Research Methodology**

Research is a methodical and goal-oriented process of searching for new knowledge in the shape of answers to previously stated questions (Verschuren, 1994; quoted in de Boer, 2012). Research methodology is a set of rules and principles about how to do research (Swanborn, 1987; quoted in de Boer, 2012). This chapter will give insight into the research methodology of this thesis.

### **2.1 Research Objective**

The main objective of any research is to confront theory with the empirical world (Dubois and Gadde, 2002). Every researcher seeks to create the best possible research result by using the right research method and design. According to Wacker (1998), there are two main objectives of research depending on the purpose: fact-finding and theory-building. By fact-finding research is meant the building of a lexicon of facts gathered under specified conditions, stressing descriptive differences in data. The results of fact-finding research may prove a good foundation for theory-building. Theory-building research concerns itself with the search for subtle systematic similarities between data. Its purpose is to build an integrated body of knowledge.

On a surface level, the two research objectives share many characteristics. They state domains, define concepts, and explain how and why relationships exist. Both objectives include data gathering and empirical estimation. The main difference is in the time when data gathering and theoretical predictions are performed. Theory-building research makes predictions *before* evidence is gathered through data gathering. Fact-finding research, conversely, does not give a priori explanations, and uses data evidence to make theoretical predictions.

This master's thesis first conducts a literature review to define concepts, state the domain and explain specific theoretical relationships and coherences. It then tests theory against the empirical world to gather evidence about specific theoretical phenomena. The purpose thus coincides with the main characteristics of both-theory building and fact-finding. However, as theoretical predictions are made before evidence is gathered, the thesis is more in line with theory building than fact-finding.

### **2.2 Research Strategy**

There are two distinctive research strategies: (1) quantitative research; and (2) qualitative research. The main difference between these two is that the quantitative strategy includes quantification in its collection and analysis of data. It typically consists of few variables and a large set. The qualitative strategy, on the other hand, emphasizes words over quantification. Typical qualitative research consists of many variables and a small set. Qualitative research is more concerned than quantitative with descriptive detail and explanation. (Bryman, 2008; Jensen, 2012)

Two main approaches to the relationship between theory and research are recognized: (1) deductive and (2) inductive. In the deductive approach, the researcher deduces one or more hypothesis from what is known on a theoretical domain, and subjects this to empirical study.

Employing the inductive approach, on the other hand, the researcher's empirical findings and observations build new theory into the certain theoretical domain. The inductive approach tends to be preferred in qualitative research, even though the deductive approach is also used (Bryman, 2008).

This thesis employs both a qualitative and deductive research strategy. As the authors have mainly a theoretical background and little research experience in general, the deductive approach is a natural choice. An inductive approach, conversely, is less approachable and convenient. A specific interest in research methods that contain more qualitative aspects has been another motivation for writing a qualitative paper.

### **2.3 Research Design**

Research design is a framework structure for collection and analysis of data. Five types of research designs are in frequent use in social research: (1) experimental design; (2) cross-sectional design; (3) longitudinal design(s); (4) case study design; and (5) comparative design (Bryman, 2008). Wacker (1998) gives the following division of design methods: (1) analytical research (analytical conceptual research, analytical mathematical research and analytical statistical research); and (2) empirical research (empirical experimental research, empirical statistical research and empirical case study). Wacker (1998) categorizes analytical research as deductive, and empirical research as inductive (see 2.2).

According to Yin (2009), case studies are typically used to understand complex social phenomena. Research questions are generally phrased with a "How" or "Why". Yin (2009), Dubois and Gadde (2002) and Wacker (1998) all state that the purpose of a case study is to develop or confront theory. By way of a large number of variables, case studies also discover new, meaningful empirical relationships across and within a limited set of companies. This characteristic of developing theory through empirical phenomena is unique of case studies (Yin, 2009; Dubois and Gadde, 2002; Wacker, 1998).

Types of case studies are: (1) single case, holistic or embedded; and (2) multiple case, holistic or embedded. Case studies are very practical since they are able to draw on many sources of data (Yin, 2009). Following Wacker (1998), case studies may be used to exemplify and illustrate conceptualizations made in analytical conceptual research (that is to say, confront theory). An empirical case study may also be conducted, developing insightful relationships within a limited set of companies, thus developing theory.

This master's thesis employs an analytical conceptual research design. This is in line with the choice of deductive strategy (2.2). The thesis is guided by specific theory-based research questions. It gives new insights into traditional problems. This is done through logical relationship building between carefully defined concepts in a literature review. A single, holistic case study is then used to confront the theoretical relationships and concepts with the empirical world. This gives insight into, and understanding of, the "how" and "why" aspects of the social phenomena selected.

Three reasons explain the choice of the analytical conceptual research design with a single, holistic case study. The first reason was the nature of the project work that this master's thesis



builds upon. The project work was chosen from a predetermined list of assignments given by the institute, and its purpose was directed towards a single case.

The second reason was the directions given in the specialization course towards the use of a case study design. The course, which builds upon the book "Case Study Research. Design and Methods" by Robert K. Yin (2009), gave a good foundation for this approach. The third and final reason was, although the opportunity for doing a single, embedded case study was present, a single, holistic case study enabled a more in-depth study through focusing all the available time and resources on one business part of the company.

## **2.4 Problem Statement and Research Questions**

One of the most important parts of research study is to define the research questions. Development of research questions demands patience and time. The research questions need to have both substance, i.e. what the study is about, and form, i.e. "who", "where", "why", or "how". (Yin, 2009) Together, the research questions provide an answer to the problem statement.

This study uses as its point of departure a theoretical problem statement with relevance for industry. The problem statement is explanatory, as it seeks to answer how the theoretical phenomenon of purchasing synergy can be *explained*. The final overall problem statement for this master's thesis is:

### **How can realized purchasing synergies and unrealized potentials be explained?**

Four research questions are made to answer the overall problem statement:

**Research Question 1 (RQ1)** What is purchasing synergy and why is it important?

**Research Question 2 (RQ2)** What framework may best be suited to identify and realize purchasing synergies?

**Research Question 3 (RQ3)** Which types of purchasing synergies are realized in Upstream Norske Shell and what purchasing synergy potentials are currently unrealized? Why are certain purchasing synergies realized and others not, and what are the managerial implications for Upstream Norske Shell?

**Research Question 4 (RQ4)** To what extent do theory and actual practice correspond, and what are the implications for further theoretical and empirical research?

RQ1 and RQ2 are related to the study of literature. RQ1 include both a 'what' and 'why' question, and thus contains both descriptive and explanatory features. RQ2 is a 'what' question, and of explanatory nature. RQ3 is directly related to the study of the case company, and seeks to describe 'what' and explain 'why'. It thus contains both descriptive and explanatory features. RQ4 is related to correspondence between theoretical and empirical

findings, as well as contribution and implications for further research. It is characterized as explanatory. All research questions in combine answer the problem statement.

RQ1 and RQ2 will be answered through the literature review in Part 2. RQ3 will be answered in the analysis in Part 4, and RQ4 will be answered in Part 5.

## **2.5 Literature Search, Elimination and Selection**

The aim of a literature review is to gain a theoretical foundation of the area studied and to develop an argument of the significance of the research (Bryman, 2008). This section presents the point of departure of the literature search process, followed by a discussion of the search, elimination and selection process.

### **2.5.1 Point of Departure**

The project work from fall 2012 was the point of departure of the literature search process in this master's thesis. The aim of the search process in the master's thesis was to build upon and expand the literature review from the project work.

In the literature review of the project work, four main topics were studied: (1) purchasing; (2) synergy; (3) purchasing synergy; and (4) purchasing synergy management. On the topic 'purchasing', four books and eleven articles were reviewed. These publications covered the historical development of purchasing, the definition of purchasing, organizational design of purchasing, global and strategic importance of purchasing, and purchasing maturity.

On the topic 'synergy', one book and twenty-two articles were studied. A general overview of the concept focused on synergy in the business management literature. On the topic 'purchasing synergy', one book and fourteen articles were reviewed, incorporating the topic 'purchasing synergy management'. Only four articles were found that explicitly discussed 'purchasing synergy management'. The literature base for the master's thesis, from the project work, is summarized in Appendix A.

Specifically, the starting point and focus for the literature search process in this master's thesis was on the limitation aspects of the literature in the project work. The aim of the master's thesis is thus to expand the general understanding of the topics 'purchasing', 'synergy' and 'purchasing synergy', and 'purchasing synergy management'. The process of finding new literature to supplement the previously found literature in the project work is described next.

### **2.5.2 Search, Elimination and Selection**

Bryman (2008) presents two different methods for conducting a literature review, namely a *narrative review* and a *systematic review*. A narrative review is characterized as a wide-ranging, uncertain process of discovery, not adopting explicit procedures and criteria for literature selection as obliged when conducting a systematic review. A systematic review comprises several steps. The content and order of the steps tend to be as presented in Table 1:

**Table 1: A Systematic Review (Bryman, 2008)**

Step #	Content
1	Define the purpose and scope of the review, so that decisions about key issues can be made in a consistent way. A panel should advise the researcher(s) on formulation of research issue(s) and key words for step 2.
2	Establish criteria to guide the selection of studies.
3	Seek out and incorporate all studies that meet the criteria defined in step 2. Search is carried out with the use of key words and terms relevant to the purpose defined in step 1.
4	Identify key features of each study. Develop a formal protocol that keeps track of: date when the research was conducted; sample size; data-collection methods; and main findings. Only include high-quality research, use quality criteria.
5	Analyze each study and synthesize the result. For quantitative data: a meta-analysis could be conducted. For qualitative research: the results could be presented in report that brings together the key findings.

This section describes the literature search process of this master's thesis, highlighting elements from both a narrative and a systematic review through examples.

In accordance with the first and second step of a systematic review, initial scope and purpose, and criteria to guide the selection of studies were established. The initial scope and purpose of the review were discussed with the authors' supervisors and decided upon before the search process began. Two initial criteria were developed to guide the selection of studies: (1) publication year should be from 1970 and later; and (2) the publications should be written by frequently cited authors and/or published in journals. Since these criteria were incomprehensive, the search for relevant studies was mostly narrative and the selection process mainly based on a subjective assessment.

To identify key features of the literature found, a protocol was held where year of publication, main findings, keyword, database, author, theme, and title were recorded. This is in compliance with step four of a systematic review. To seek out relevant publications, articles from the project work were reread and snowballed using Google Scholar. This resulted in *eleven* new publications. A search for new publications in the main topic 'purchasing synergy', and 'purchasing synergy management' was made through the search engines Science Direct, JStore, and Google Scholar. No new publications were found.

At the same time, a literature search on the topics 'buyer-supplier relationships', 'compliance', 'purchasing', and 'synergy' was conducted, some of the limitation aspects of the literature that laid the foundation for the project work. Search was carried out using Science Direct, BIBSYS, and Google Scholar. An additional *thirteen* publications were found, in total *twenty-four* articles (Appendix B). The search process for each of these topics differed.

The topic 'buyer-supplier relationships' is comprehensive. To narrow it down, publications were drawn from recommended reading lists in the courses: "TIØ4345 Management of Business Relationships and Networks", "TIØ4175 Purchasing and Logistics Management", and "TIØ4566 Strategic Purchasing and Supply Management, Specialization Course". On the topic 'compliance', the authors asked their supervisors for guidance on key words, authors and journals. A search was conducted through Science Direct, using the key words: "frame agreement + purchasing", "purchasing + contract compliance", and "compliance".

The majority of the publications on the topics 'purchasing' and 'synergy' were found through snowballing the literature found during the project work. A search process supplemented these publications. BIBSYS, Google Scholar and Science Direct were used as search engines. Key words used were: "business synergy", "professionalizing purchasing in organizations", "van weele", and "synergy".

In accordance with step five of a systematic review, the twenty-four publications (Appendix B) that were found were appraised. The publications were grouped in six different perspectives: buyer-supplier, wheel elements, synergy, compliance, purchasing, and research methods. The authors read all the articles. In addition, each of the authors had the responsibility to immerse oneself in one third of the publications; one or two of the main perspectives. The aim was to gain a good foundation to discuss the literature, and single out the ones that were relevant. Based on a deeper understanding of the content of the publications, the ones that had a different perspective than initial assumed were regrouped. The initial twenty-four articles were reduced to sixteen, divided into the four categories: buyer-supplier, wheel elements, synergy, and compliance (Appendix C).

Redirections in the author's view on relevant literature, based on the first empirical data gathering, reduced the number of articles to include from the final list and initiated a new literature search process. The articles on the topic 'buyer-supplier relationship' were dismissed because it was decided to not study this phenomenon in the case company. Articles on the wheel element 'cost benefit analysis' and the industrial marketing topic 'organizational buying behavior' were searched for through Google Scholar. The publications found, one on 'cost benefit' and six on 'organization buying behavior' (Appendix D), were read and evaluated based on the content relevance. The final list in Appendix E summarizes all the articles from the search processes above, that were found relevant to be included in the master's thesis. This supplements the previously found articles in the project work (Appendix A).

## **2.6 Collection of Empirical Data**

A research method (or source of evidence) is a technique for gathering data, e.g. documentation, archival records, interviews, observations or physical artifacts (Bryman, 2008; Yin, 2009). In this thesis, documentation, interviews (semi-structured), and observations were used. Data were gathered through formal and informal phone meetings, mail correspondence, and company visits. Use of the three types of information gathering medias will now be presented.

### **2.6.1 Phone Meetings and Mail Correspondence**

Phone meetings were used to establish a common understanding between the two parties on how the collaboration was to be conducted. It was further used to decide upon the necessary requirements for the thesis to be value-adding for both the case company and the authors. Mail correspondence, as well as phone meetings, were used to plan the company visits, and for follow-up questions.

### **2.6.2 Company Visits**

Three company visits á two days were conducted, with approximately one month between each visit (February 24 and 25, March 20 and 21, and April 17 and 18). Three sources of evidence were used: semi-structured interviews, observation and documents. The use of these three sources of evidence will now be described, before details about each company visit is given.

#### *2.6.2.1 Interviews*

At the company visits, semi-structured interviews were performed, both individual and group interviews. The relatively unstructured nature of this type of interview, and its capacity to prove insights into how the interviewees see the world, were two important factors for this choice.

In preparation for the interviews, the authors made a list of specific topics and questions to be asked, trying to make adjustments for each individual interview based on the perspective of each interviewee. The authors focused on questions directly related to the research questions, and tried to create a reasonable flow by ordering the questions and creating an appropriate number of questions for the available time. Furthermore, to contextualize the interviewees' answers, 'facesheet' questions like name, position in company, number of years employed, education, work experience, who they report to, and which people in the organization they interact with were asked, which is in line with Bryman's (2008) recommendations.

According to Bryman (2008), interviewees should be presented with the rationale of the research before the interview begins. At the beginning of every interview session with a new interviewee, the authors therefore shortly presented the purpose of the master's thesis and gave a theoretical conceptual clarification. The aim of this introduction was to create a common understanding about the thesis and clarify Shell's role as a case company. Each visit's purpose was different. Consequently, the presentation given during the first visit differed slightly from the one given during the second and third. The presentations in their entirety can be found in Appendix F, G and H.

Thereafter, the 'facesheet' questions were asked, followed by more in-depth questions related to purchasing synergy. The authors also emphasized to every interviewee that the authors have signed a declaration of confidentiality with Shell, and that the master's thesis is held confidential for five years. The authors further explained that none of the interviewee's answers would be referred to in the thesis. During the interviews, the authors were focused and conscious about creating an environment where the interviewee felt comfortable, curious and enthusiastic, making them share open and honest answers. The purpose was to understand

the interviewees and ask appropriate questions based on the continuous responses and reactions from the interviewees.

For each interview, the authors divided roles and responsibilities. One was responsible for asking the questions, the two others were responsible for taking notes. All interviews and presentations were recorded on tape.

As suggested by Bryman (2008), the authors discussed and noted the main characteristics of each interview, such as the most important information received, and observations of how the authors perceived the interviewees (talkative, cooperative and/or nervous, elusive). This debrief took place the day after each company visit, and was conducted to secure a common understanding between the authors of the information received.

The recordings from the first case visit were used when the notes were conflicting. The recordings from the second and third visit, on the other hand, were transcribed. The reason for these two different approaches is that the detail level of the interviews during the first visit was lower than the two following visits. Consequently, the notes from the first visit covered most of the information given, whereas from the second and third visit the notes were deficient. Bryman (2008) points out that it is important that the transcripts tell exactly what the interviewees said. To ensure the quality of the transcriptions, the audiotape was stopped between each sentence that was transcribed. Thus, the exact wording used by the interviewees was transcribed.

#### *2.6.2.2 Observation and Documents*

For the observations, the authors chose to use unstructured, non-participant observations. Characteristics of unstructured observations are that no rules for the observation are formulated and the aim is to record as much detail as possible. Moreover, in a non-participant observation the observer only observes the setting. (Bryman, 2008) The reason for this choice was that the aim of the observations was to observe as much details as possible of the employees' normal working habit. In addition to gathering empirical data through observations, the authors also collected company documents, such as SAP information and process descriptions,

An outline of each company visit will now be given. This includes information about the number of interviews conducted, the gender and position of each interviewee, the duration of each interview, as well as a short description of the content of the interviews. A more detailed description of the content of the three company visits is given in the section 2.7.3.

#### *2.6.2.3 Company visit #1*

The first company visit lasted for two days, and comprised 6 semi-structured interviews. The aim of this visit was to gain a thorough understanding of all the different roles and responsibilities in the company related to purchasing, and the purchasing processes executed on a daily basis. In addition, the aim was to get an overall understanding for how purchasing is supposed to be carried out in the company according to strategies and procedures. The interviewees were chosen based on the authors understanding and experiences from the

project work in fall 2012 (Appendix I). The visiting agenda and questions asked are found in Appendix J and K, respectively. Table 2 gives an informative overview of the interviews:

**Table 2: Interview Agenda Company Visit #1**

Interview #	Gender	Position	Duration (approx.)
1	Male	Manager Contracting & Procurement Upstream International Norway	120 minutes
2	Female	RtP Improvement Specialist and Buyer	35 minutes
	Female	Purchase Coordinator	
3	Female	Inventory Analyst Production	45 minutes
	Female	Inventory Analyst/Disposal Coordinator	
4	Male	Business Improvement Lead	60 minutes
5	Male	SAP expert	150 minutes
6	Male	Contract Manager	120 minutes

In interview 1, the Manager C&P UI Norway was questioned about the work processes in C&P, as well as the responsibilities of the employees in this department. He also explained the relation between the two main purchasing processes in Upstream Norske Shell. The RtP Improvement Specialist and Purchase Coordinator and the two Inventory Analysts, in interview 2 and 3 respectively, were asked general questions about their roles and responsibilities.

In interview 4, the Business Improvement Lead gave an overview of organizational changes in Royal Dutch Shell plc. and how Upstream Norske Shell is affected of these changes. The SAP expert in interview 5 was asked to give a thorough presentation of how Upstream Norske Shell uses the ERP system SAP, and of the company's performance measurement system related to purchasing. The Contract Manager in interview 6 was questioned about his role in the company, and how Contract Management is conducted.

#### *2.6.2.4 Company Visit #2*

The second company visit also lasted for two days, and 7 semi-structured interviews were conducted. The agenda for the visit can be found in Appendix L. The aim of this visit was to increase the author's knowledge of all the purchasing processes and procedures in the company. Questions were asked to uncover how purchasing actually is conducted in practice (Appendix M). The authors sought to gain a more detailed knowledge of the two main purchasing processes, the roles and responsibilities of the interviewees, and the status and role of the purchasing function. The interviewees were selected based on new insights from the first company visit. An informative overview of the interviews is listed in Table 3.

**Table 3: Interview Agenda Company Visit #2**

Interview #	Gender	Position	Duration (approx.)
1	Female	Inventory Analyst/Disposal Coordinator	120 minutes
2	Female	Senior Buyer Sourcing EU NL/UK/Nordics	90 minutes
3	Male	Business Improvement Lead	30 minutes
4	Male	E&M Delivery Engineer (Ormen Lange Land Plant)	90 minutes
	Male	E&M Delivery Engineer (Ormen Lange Land Plant)	
5	Male	SAP expert	90 minutes
6	Female	Contract Specialist CP 2 UI Operated Norway	90 minutes
	Male	Contract Specialist CP 3 UI Operated Norway	
7	Male	Enterprise Framework Agreement (EFA) Implementation UIO	60 minutes

In Interview 1, the Inventory Analyst/Disposal Coordinator was asked questions about: who has authorization to make work orders and purchase orders, which of the job tasks are related to purchasing, and whether technical competence is important in her work. The authors also asked questions related to the business culture, and the organization's view of the importance of the purchasing function. A question about where the biggest potential for purchasing synergies might lie was also asked. Questions to the Senior Buyer Sourcing in Interview 2 were related to operational contracts and contract management. The authors also asked questions regarding the importance of technical competence in her work, characteristics of the business culture, improvement potentials, and the importance of the purchasing function in the company.

In Interview 3, the Business Improvement Lead was asked questions related to whether there are people in the organization making purchases who are not authorized to do this, and how to detect the scope of this behavior. The main focus of the interview with the E&M Delivery Engineers in Interview 4, was: the characteristics of how to make work orders, how the work orders are related to the purchasing process, and the importance of technical competence in the purchasing function. The E&M Delivery Engineer's were also asked questioned about their view of where it would be most beneficial for the purchasers to be physically located in the organization, and where the biggest potential for improvement in their daily work lies.

Follow up questions from last visit about the SAP system were asked to the SAP expert, in Interview 5. The interview was also used to gather relevant documents about SAP, key performance indicators and the purchasing processes. In Interview 6, the Contract Specialist 2 and Contract Specialist 3 were asked questions related to contract management of strategic and tactical contracts, and the importance of technical competence in their work. They were also asked to give a detailed description of the CMCP process. In the last interview, Interview



7, the authors asked the EFA Implementation questions related to global frame agreements, and the costs and benefits of using global frame agreements versus local Norwegian vendors.

### 2.6.2.5 Company Visit #3

The third and final company visit lasted for two days, and included 300 minutes of observation and 9 semi-structured interviews. An agenda for the visit can be found in Appendix N. The aim of the third visit was to follow up the second company visit. The authors sought to further examine how today's purchasing processes are conducted in practice, and increase the author's knowledge on a detail level. The questions that were asked can be found in appendix O. Table 4 gives an overview of the content of observations and interviews for the visit.

**Table 4: Interview and Observation Agenda Company Visit #3**

Interview # / Observation	Gender	Position	Duration (approx.)
Observation		Observations - YTT meeting - Morning Meeting Draugen - Morning Meeting Ormen Lange Land Plant - Daily work in the Delivery Team	180 minutes
1	Female	RtP Continuous Improvement Analyst	60 minutes
2	Male	Inspection Team Leader Norway	30 minutes
3	Male	Manager Contracting & Procurement Upstream International Norway	60 minutes
4	Male	Business Improvement Lead	30 minutes
5	Female	Contract Specialist CP 2 UI Operated Norway	60 minutes
Observation		Observation of C&P Observation of General Assembly	60 minutes
6	Female	Contract Specialist CP 1 UI Operated Norway	60 minutes
7	Male	Delivery Team Lead	30 minutes
8	Male	E&M Delivery Engineer, Draugen	60 minutes
9	Male	Contract Manager	60 minutes
Observation		Observation of weekly meeting between: - Inventory Analyst/Disposal Coordinator - Inventory Analyst - E&M Delivery Engineer (Mechanical) - Maintenance Principal Engineer - Maintenance Engineer	60 minutes

As shown in Table 4, several observations were conducted during the third visit to the case company. The authors observed different meetings, as well as the work environment of the two divisions, the Maintenance Delivery Team and Contracting & Procurement. The purpose was to gain a more thorough understanding of the information the authors had been given regarding these meetings during the first and second company visit. Office spaces for Contracting & Procurement and the Maintenance Delivery Team were observed to gain knowledge about how the different employees in these two departments are physically situated. The authors also sought to gain insight into how the employees interact and collaborate with each other, as well as a brief insight of the culture in the departments.

In addition to the observations, nine interviews were conducted. First, the RtP Continuous Improvement Analyst was asked questions related to her job tasks of improving the purchasing process in the case company. She was also asked about her view on the organizational structure of purchasing in the company. Questions to the Inspection Team Leader in Interview 2, and the Manager C&P in Interview 3, were related to details about their role as a Contract Holder and Contracting & Procurement Lead, respectively. In Interview 4, the Business Improvement Lead was questioned about the amount of money the company uses on purchasing compared to total operational costs, the matrix organization, and documents about SAP and corporate management system.

In Interview 5, Contract Specialist 2 was questioned about the organization's view of the purchasing function, the culture in her department, and her interaction with suppliers. She also answered questions regarding professional advancement and the importance of a Total Cost of Ownership perspective in her work. In interview 6, Contract Specialist 1 was questioned about her job tasks, which employees she interacts with, the culture in her department, and professional advancement. In Interview 7, the authors asked the Delivery Team Lead questions about his job tasks, as well as the mission, vision and job tasks of the Maintenance Delivery Team. He was also asked about the company's performance measurement system for operation and maintenance.

In Interview 8, the E&M Delivery Engineer for Draugen was asked questions about whether there were any differences in planning the jobs for Ormen Lange Land Plant and Draugen. Other questions that were given were related to the importance of technical competence, how his job tasks affect the purchasing process, and his interaction with suppliers. In the last interview, Interview 9, the Contract Manager was asked follow-up questions of the purchasing process, how he priorities his many job tasks, which employees he interacts with, and his use of cost/benefit analyses.

## 2.7 Research Process

Several authors describe the process of case study research. Among them are Yin (2009), Wacker (1998), Bryman (2008) and Dubois and Gadde (2002). Both Yin (2009) and Dubois and Gadde (2002) present frameworks for the execution of the case study process, elaborating on distinctive and important process elements. The two frameworks differ in nature. Yin's (2009) process is linear and iterative, going from theory development to empirical data gathering. Dubois and Gadde's (2002) framework, on the other hand, is characterized by a continuous movement between the empirical and the theoretical world.

This section presents the two approaches for case study research, before the process of this thesis is described in detail. In the process description, features from both approaches will be highlighted.

### 2.7.1 Yin (2009)

Yin (2009) describes case study research as a linear but iterative process (Fig. 2).

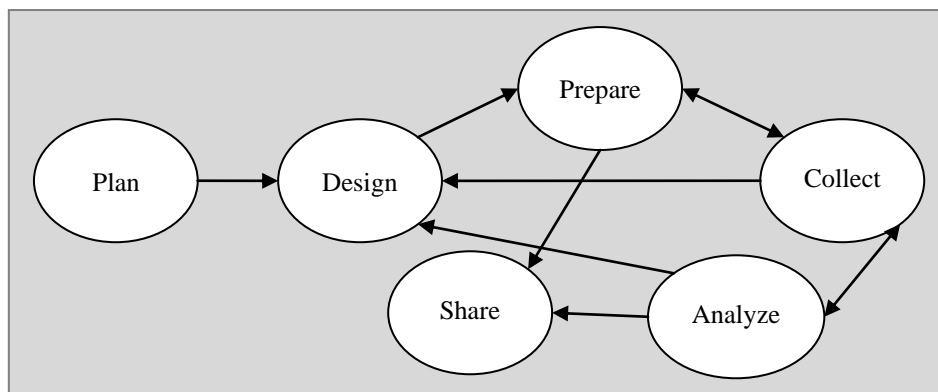


Figure 2: Doing a Case Study Research: A linear but iterative process (Adapted from Yin, 2009)

Yin (2009) states that the researcher should start in the 'Plan' phase by identifying research questions and deciding on using the case study method. The researcher should then move to the 'Design' phase where the unit of analysis and likely case(s) to be studied are defined, theory and propositions developed, and procedures to maintain case study quality decided on. Yin (2009) emphasizes the importance of theory development prior to the conduct of any data collection. His reasoning is that the fieldwork depends on an understanding of the theory of what is being studied. This is in line with Wacker's (1998) analytical conceptual approach.

For the next step the researcher should go into 'Prepare' phase to collect case study evidence before moving into the 'Collect' phase for data collection. Last but not least, the final steps of the case study are 'Analysis' and 'Sharing' the case study through a report. Yin (2009) points out the importance of executing these steps in this linear order. However, flexible research designs allow for modifications, such as taking in new information or discovery during data collection, if this is of critical importance for the study.

### 2.7.2 Dubois and Gadde (2002)

Dubois and Gadde (2002) propose the case study approach 'systematic combining' (Fig. 3).

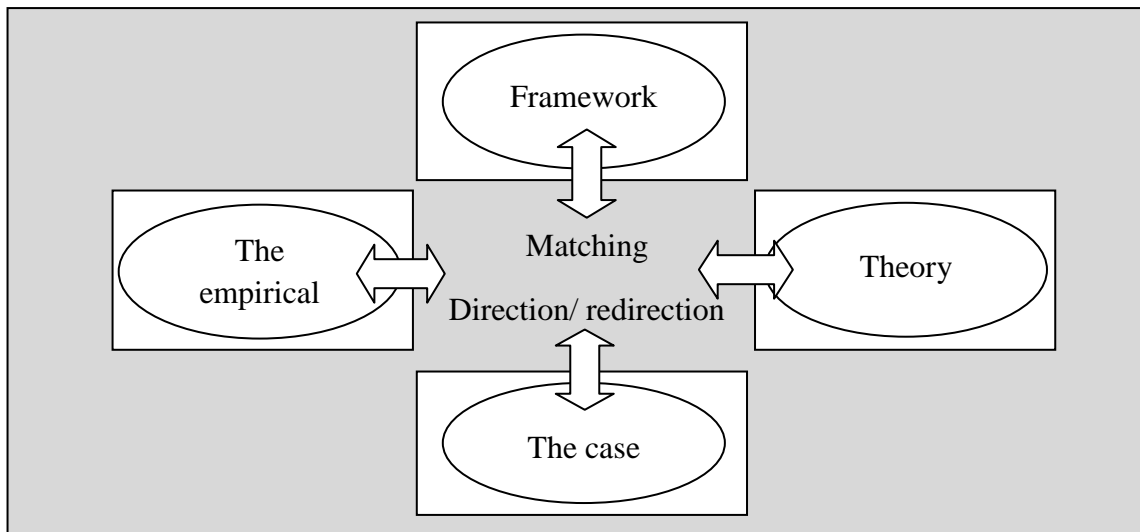


Figure 3: Systematic Combining (Adapted from Dubois and Gadde (2002))

According to Dubois and Gadde (2002), doing a case study is about executing a continuous movement between an empirical world and a model world. The activities in the research process are intertwined. By going back and forth between theory and empirical findings, the researcher's understanding of both is expanded. The theoretical framework, empirical fieldwork and case analysis evolve simultaneously, changing with changes in the other elements. This relationship, a systematic fusion of theory and research, may be characterized as something in between induction and deduction. A name for it is *abduction*.

Dubois and Gadde (2002, p.555) state: "Theory cannot be understood without empirical observation and vice versa". This conflicts with Yin (2009) and Wacker (1998), who both emphasize a thorough review and good understanding of theory before the researcher steps into the empirical world and gathers data. The research process of this thesis consists of elements from both Yin's (2009) and Dubois and Gadde's (2002) approach. This will be demonstrated through a review of the actual process.

### 2.7.3 The Thesis' Process

This section describes and reflects upon the entire research process of the master's thesis. The content is directly built upon the authors' research journal (Appendix P). The process contains elements from both Yin's (2009) and Dubois and Gadde's (2002) case study frameworks. This is illustrated in Fig. 4, in which the squares represent elements from Dubois and Gadde (2002), and the circles represent elements from Yin (2009). Dubois and Gadde's (2002) systematic combining framework is here divided into two main "worlds": (1) Theoretical World, comprising both theory and framework, and (2) Empirical World, comprising both the case and the empirical world. (Fig. 4)

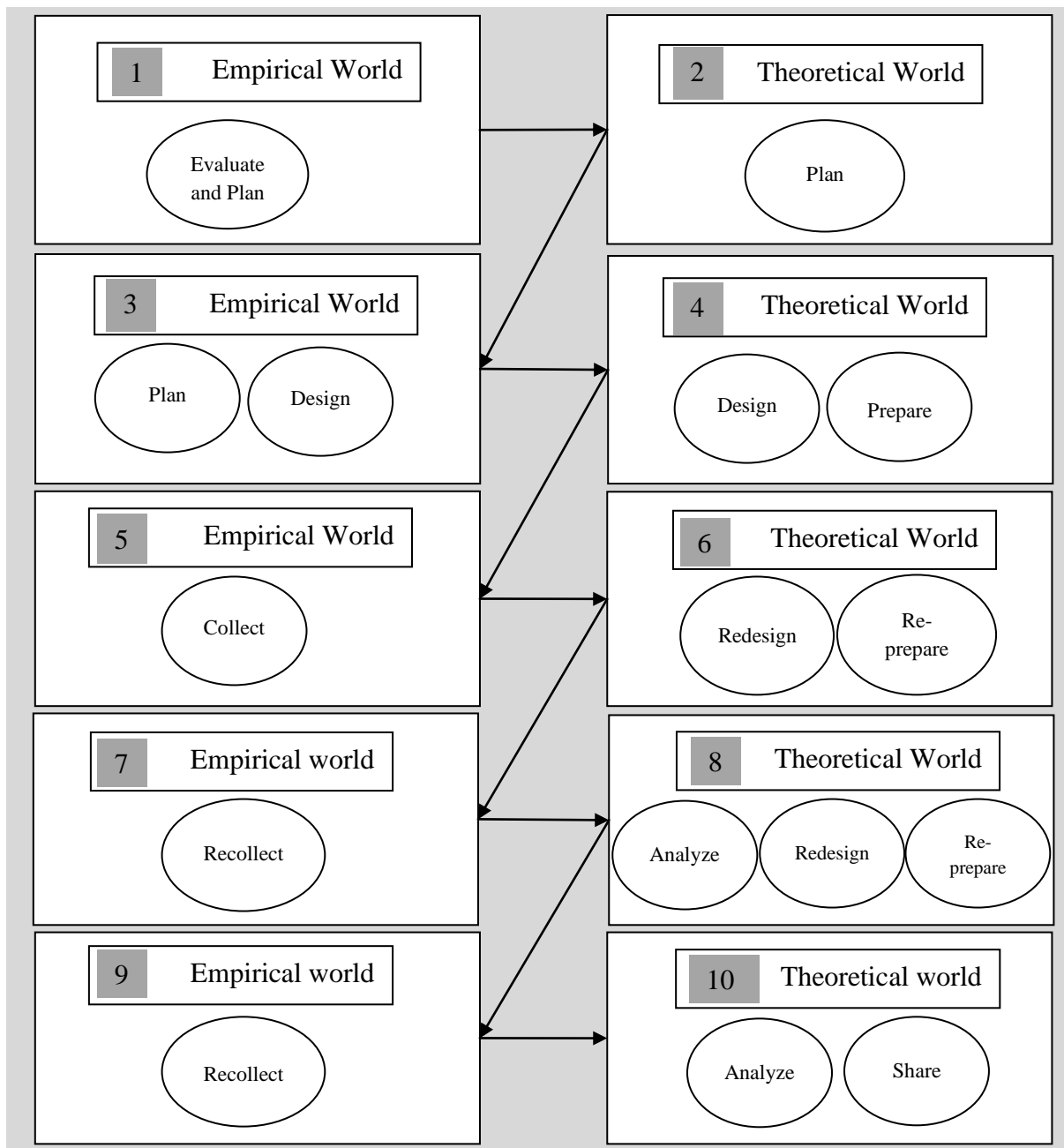


Figure 4: Research Process of the Thesis (Adapted from Dubois and Gadde (2002) and Yin (2009))

### 2.7.3.1 Step 1 - Empirical World

The master's thesis' process started in what is equal to Dubois and Gadde's (2002) Empirical World, and Yin's (2009) phase 'Plan'. The starting point for this master's thesis was an evaluation of the pre-project work for the master's thesis written fall 2012. In dialogue with the case company, the project work was evaluated and the first plans for the master's thesis were decided upon. A brainstorming of ideas for the case study made by the authors and e-mailed to the case company, served as basis for the initial discussion of the directions to follow (Appendix Q).

The authors and the case company jointly decided to do an enlarged case study of the same case from the project work. The main difference from the project work was that the master's thesis should take into account every aspect of the purchasing process in the case company, whereas the project work only partly covered the company's purchasing process.

The case company promised to grant access to every employee that directly and indirectly play a role in the purchasing process. The authors and case company therefore jointly decided that it would be best to use semi-structured interviews as the main method for the empirical data gathering. The benefits of having the opportunity to talk to the employees outweighed other methods like survey, observations or archival records.

The authors and the case company signed a contract specifying the purpose of the collaboration and the expectations from both parties. Additionally, the authors conducted an internal evaluation of the cooperation and working process during the project work. The reflections of the internal evaluation created a common understanding among the authors of what aspects of the project work process worked well, and what could be further improved in the master's thesis.

#### *2.7.3.2 Step 2 - Theoretical World*

The process proceeded in the Theoretical World of Dubois and Gadde's (2002) model and in the phase 'Plan' of Yin's (2009) model. The authors, in consultation with the supervisors, formulated a title, subtitle and problem description of the thesis. This was based on the evaluation and discussion with the case company in Step 1. As a requirement of the master's thesis, a contract containing the title, subtitle and problem description of the master's thesis was signed and approved by the authors, the institute, the supervisors and the case company.

In addition, an evaluation meeting of the cooperation with the supervisors during the project work was held. The mutual expectations between the supervisors and the authors were discussed, and the literature review, problem statement and research questions of the project work was evaluated to identify the main focus of the master's thesis. At this point, the authors, the case company and the supervisors had together built a common understanding of the main building blocks and overall structure and content of the master's thesis.

#### *2.7.3.3 Step 3 - Empirical World*

The process continued in the Empirical World (Dubois and Gadde, 2002). It started in Yin's (2009) phase 'Plan', before proceeding into Yin's (2009) phase 'Design'. The authors started on a detailed plan for the empirical data gathering. Based on the author's understanding of the case company from the project work, a document with a list of intended number of visits and possible interviewees was made (Appendix R). A preliminary description of the rationale for every visit and the interviews were included, as well as suggestions for visiting dates.

The author's plan was discussed on a phone meeting with the case company, and it was decided to plan one visit at a time for practical reasons. Subsequently, problem statement and research questions were constructed, as well as a rough draft of the thesis' disposition. This was based on the plans for the empirical data gathering, the problem description made in Step 2, and a detailed reread of the project work.

#### *2.7.3.4 Step 4 - Theoretical World*

At this point, the literature search process began in Dubois and Gadde's (2002) Theoretical World (2.5.2), at the same time continuing in Yin's (2009) phase 'Design'. The authors snowballed the literature from the project work, and searched for new articles and books. The literature found was stored virtually, and the authors came together to discuss and evaluate the findings. The most relevant literature was then divided amongst the authors for a more thorough read-through to uncover how it was to be incorporated into the thesis.

Based on a deeper understanding, the literature was again discussed. Some of the publications could be included right away. Others had to await the empirical findings. If topics of the articles were found relevant based on the as-is situation in the case company, they would be included in the literature. This illustrates how Dubois and Gadde's (2002) framework is applied in practice, matching theory and empirical data.

Preparation for first company visit was based on the theoretical foundation attained. In accordance with the focal contact point in the case company, a two-day interview plan was made (Appendix J). The interview agenda for the first visit was based on a list of potential interviewees suggested by the authors. The chosen interviewees were based on the authors understanding and experiences from the project work in fall 2012 (Appendix I).

The authors decided that the first visit would start off with a short presentation of the master's thesis (Appendix F) followed by open, semi-structured interviews. The authors emphasized the importance of asking very open questions in order to let the interviewees talk freely. A set of detailed-level questions, however, was prepared to serve as guideline and disposition.

#### *2.7.3.5 Step 5 - The Empirical World*

In Step 5, the first case company visit for empirical data gathering was conducted (February 25 and 26 2013). The authors found themselves in Yin's (2009) phase 'Collect', and Dubois and Gadde's (2002) Empirical World. The purpose of the first visit was to gain a thorough understanding of all the different roles and responsibilities related to purchasing, and the purchasing processes executed on a daily basis. In addition, the motivation was to get an overall understanding for how purchasing is supposed to be carried out according to company procedures.

In short, the authors conducted six interviews, three on day one and three on day two. Each interview started with a presentation of the thesis and an explanation of how and in what way the answers from the interviewees were going to be used in the thesis. The time spent in the beginning of each interview was valuable, as it seemed that the interviewees became comfortable with the situation of being interviewed, and gave very honest and reflected answers.

After visiting the case company and conducting the very first interviews, a debrief meeting amongst the authors were held to recall the impressions from the interviews and gain a common understanding of the information gathered.

#### *2.7.3.6 Step 6 - Theoretical World*

The increased knowledge after the first company visit called for additional theory. The authors went back to Dubois and Gadde's (2002) Theoretical World, and into the phase 'Design' and 'Redesign' (Yin, 2009). New boundaries for the case and for further theory development had to be set.

Two clear example of Dubois and Gadde's (2002) systematic combining in practice was evident. Being exposed to the empirical world of the study, adaptations had to be made in the theoretical world. First, during the data collection, the authors realized the key importance of technical knowledge and expertise in order to perform purchasing. This perspective had not been clear to the authors until this point. This insight changed the authors' overall view of purchasing in an operations office in a highly technical company. With this information, the authors searched for literature incorporating technical aspects as part of purchasing, and were introduced to organizational buying behavior.

Second, the different views the interviewees had on purchasing as a part of the organization called for addition theory. The two main viewpoints were that purchasing is a process, and that purchasing is a function. This observation called for development of theory on perspectives on purchasing in organizations.

In the 'Reprepare' phase, preparation for the second company visit was conducted based on the new theoretical foundation and the insights from the first visit. New interviewees were identified, based on both the authors' increased understanding of employees in the case company that affects purchasing, and suggestions from the interviewees of the first company visit. Once more, a two-day interview plan was made in accordance with the focal contact point (Appendix L). The authors decided that the second visit required a slightly modified presentation of the master's thesis to all new interviewees (Appendix G). Three days were used to prepare detail-level questions to guide the interviews (Appendix M).

#### *2.7.3.7 Step 7 - Empirical World*

Based on new insights from the Theoretical World, the second company visit for empirical data collection (March 20 and 21, 2013) took place. The authors sought to gain a more detailed knowledge of the two main purchasing processes, the roles and responsibilities of the interviewees, and the status and role of the purchasing function.

The visit lasted for two days and 7 semi-structured interviews were conducted. Questions were asked to uncover how purchasing actually is conducted in practice, not how it is supposed to work according to company procedures. Once more, the authors started each interview with a presentation of the thesis and an explanation of how the answers from the interviewees were going to be used. The experiences from interviews in company visit one made the authors certain of the importance of using enough time in the beginning of each interview. Every new interviewee seemed comfortable with the situation after the introduction, and everyone seemed to give honest answers. The authors continued to strive to make the interviews flow as conversations, and ask questions based on the continuous responses and reactions from the interviewees.



After visiting the case company the second time, a debrief meeting amongst the authors was held to synthesize the impressions from the interviews and get a common understanding of the information gathered.

#### *2.7.3.8 Step 8 - Theoretical World*

After visiting the case company a second time, the authors went back into the Theoretical World of Dubois and Gadde (2002). For the next two weeks, the authors focused on text production. This led the authors into all the three phases 'Analyze', 'Redesign' and 'Reprepare' of Yin (2009).

A first complete draft of the literature review and the case description were made simultaneously. In writing the case description, the authors found themselves both in the phase 'Analyze' and 'Reprepare'. To truly gain any understanding, the empirical data gathered so far was analyzed. This was the only way the authors were able to write a coherent presentation of the company. At the same time, the review of all data served as a thorough preparation for the third and last company visit.

In accordance with the focal contact point in the case company, a third and final two-day interview plan was made (Appendix N). The authors decided to include both semi-structured interviews and observations in the last visit. Based on the attained knowledge of the company through writing the draft of the case description, and together with an increased knowledge of the literature, the authors made the final set of detail-level interview questions (Appendix O). In addition, the presentation of the master's thesis to the remaining new interviewees was modified a third time (Appendix H).

#### *2.7.3.9 Step 9 - Empirical World*

Driven by the new directions in the theoretical world, the third and last company visit for empirical data collection (April 17 and 18 2013) was conducted. The purpose of the third visit was to find answers to all remaining questions. The aim of the observation of meetings and the daily working environment was to increase the understanding of the case company and set all gathered information from the interviews into perspective.

Nine semi-structured interviews and approximately 300 minutes of observation were conducted. The interviews were of the same nature as the two former visits. The observations included visits of every employee's office, observation of how they interact with each other in informal settings and in meetings. This increased the author's overall comprehension and contextualized the received content from the interviews.

After the third and last company visit, a last debrief meeting amongst the authors was held to recall the impressions from the interviews and to gain a common understanding of the information gathered. In addition, the authors sent extracts from the case description to a sample of the interviewees for verification.

#### *2.7.3.10 Step 10 - Theoretical World*

In the Theoretical World (Dubois and Gadde, 2002) of Step 10, the authors proceeded into the final steps of the entire research process: 'Analyze' and 'Share' (Yin, 2009). At this point, the

case study was to be synthesized into a report by bringing together the results and findings. For the next eight weeks, the authors analyzed and discussed the empirical data against theory, and finalized the master's thesis in its entirety.

#### **2.7.4 Evaluation of the Research Process**

Reflecting upon the nature of the research process of this master's thesis, features that resemble the case study approaches of both Yin (2009) and Dubois and Gadde (2002) can be found throughout the entire process. In Yin's (2009) iterative approach, one step lays the foundation for the next: 'Plan', 'Design', 'Prepare', 'Collect', 'Analyze' and 'Share'. This way of thinking established a structure for the process, and enabled the authors to make conscious choices regarding progression and development of the process.

However, the poignancy of Dubois and Gadde's (2002) statement that theory cannot be understood without empirical observation, and that, conversely, empirical observations cannot be understood without theory, were amply demonstrated at the same time. The systematic combining way of thinking allowed the authors to organically develop the research, and continuously keep an open mind for both empirical and theoretical changes throughout the process. Consequently, the thesis went from 'Plan' and 'Design', to 'Prepare' and 'Collect', back to 'Redesign', 'Reprepare' and 'Redesign' multiple times.

Together, the iterative mentality of Yin (2009) and systematic combining mentality of Dubois and Gadde (2002) formed the case study period into a process of continuous reflection and great learning. This was only possible by embracing and valuing both case study approaches. For this research process, the case study approaches of Yin (2009) and Dubois and Gadde (2002) can therefore be seen as somewhat complementary.

## **2.8 Limitations**

Reflecting upon the research process of this master's thesis, several possible sources of limitation for the research are identified. This section will first assess the limitations of the literature search process, followed by the elimination and selection process. Finally, limitations of the empirical data gathering are considered.

### **2.8.1 Literature Search**

In the search process, the authors might have conducted a more systematic approach in relation to three main aspects: amount of search engines applied, comprehension of search engines and journals, and the number of topics included.

The authors have used four search engines throughout the search process: Science Direct, JStore, BIBSYS and Google Scholar. BIBSYS, Science Direct and JStore was chosen based on recommendation given by the University Library at NTNU when presented with the topic purchasing synergy. The authors could, however, have made more conscious decisions of which search engines to use. With greater insight into the characteristics of the different engines, a broader range of search engines might have been used. As four search engines might be narrow, it is a possibility that it has limited the research process, in which relevant articles might have been excluded.

Approximately ten different journals have been used in this master's thesis. The authors have not had in-depth knowledge of the characteristics of these journals and the quality assurance of the included articles: how they differ when it comes to quality procedures, focus area or methodology requirements. More in-depth understanding and awareness from the authors of these aspects would enable more conscious choices of which articles to include in the master's thesis.

In the search process, a more systematic method for finding relevant literature might have identified more literature than what is included here. The search process encompassed a wide range of topics. This may prove valuable in which several aspects relevant for the topic of purchasing synergy are covered. On the other hand, however, this may lead to a lack of depth on each of the topics studied.

At last, another natural limitation is that the authors do not have access to research in other parts of the world written in languages other than English.

### **2.8.2 Elimination and Selection process**

The elimination and selection process was mainly based on a subjective assessment, in which only two initial criteria are used. The authors might have developed more comprehensive criteria, e.g. criteria related to choice of journals. Moreover, the criterion used related to publication year is broad. This, in addition to use of incomprehensive criteria, might have resulted in some of the publications used being outdated. On the other hand, a narrower criterion of publication year would have excluded publications widely recognized as classic in the field.

Moreover, the authors read all the publications before deciding upon which to include in the literature review. This increased the authors understanding of the publications and likelihood of not rejecting articles that actually were relevant. However, the reading process was time-consuming and at the expense of devoting more time to conduct a more thorough search for literature. However, the authors are confident that the majority of existing literature on the main topic purchasing synergy has been taken into account. The reviews of related topics, such as synergy, do not consider all the available literature, nor where they intended to

### **2.8.3 Empirical Data Gathering**

The empirical data has partly been collected based on advice from the main contact points in Upstream Norske Shell, which could be a source of limitation. The company contact points might have steered the authors' choices of interviewees and area of attention to a certain degree. However, the authors have also selected interviewees based on own comprehension of the case company. A more thorough selection of interviewees might have been conducted, had the authors spent time on getting to know the company, its purchasing processes and its purchasing personnel better before the data gathering started. Limited time frame available and a broad scope made this excessively difficult.

Another limitation of the data gathering is the interview preparation. The authors could have immersed into information about the interviewees before they were interviewed, e.g. job descriptions. In that way, the authors would have obtained a better understanding of each

employee's responsibilities before the interview. This would enable the authors to use less time on questions related to the employees' job tasks, and more time would be available for in-depth questions on purchasing synergy. Also, it would then be possible to see whether it was compliance between the employees' characterization of its responsibilities and the job description.

In addition, use of semi-structured interviews might be a source of limitation. Semi-structured interviews make it necessary to make changes to the types of questions asked as the interview evolves. This may have resulted in asking questions that were not as thoughtful as the prepared questions. Some of the questions might thus have been too open and vague or leading, in which the interviewees might reply with a vague answer. On the other hand, the improvisation and spontaneity might have been valuable as it enabled the authors to create a good dialogue with the interviewees, and might have lead the interviewees to give honest answers.

It proved to be difficult for the authors to obtain written information, such as job descriptions, process documents, and quantitative data. Upstream Norske Shell was not always able to find the employees that could give the authors the requested information. Consequently, the empirical data might lack important key information, and is mostly qualitative.

One of the authors had worked two months in Upstream Norske Shell prior to the writing of this master's thesis. She will start working for the company full-time on August 1 2013. This might have limited the study as she may already hold predetermined views and opinions of the company. However, the benefits of having one of the authors know the company beforehand have proved to be valuable. It has enabled the authors to communicate directly with the case company at all times, and to understand the complexities of the case company organization faster.

The time frame of the master's thesis has also not made it possible to conduct a longitudinal study. With a longitudinal study, more data could have been gathered over longer time in different points in time. This would have increased the authors' comprehension of realized and unrealized purchasing synergies in Upstream Norske Shell.

## **2.9 Quality Evaluation**

The most prominent criteria for quality evaluation of social research are: (1) reliability; and (2) validity, comprising construct validity and external validity. To ensure its quality, these criteria will now be applied to this thesis.

### **2.9.1 Reliability**

Reliability is described as "demonstrating that the operations of a study – such as data collection procedures – can be repeated, with the same results" (Yin, 2009, p. 40). When doing case studies, this criterion may be met using approaches like case study protocols and the development of a case study database during the collection phase of the study.

A case study protocol should be developed as a preparation to collect case study evidence and its purpose is to guide the investigator in carrying out the data collection from a single case.

The protocol contains information about the overview of the case study project, field procedures, protocol questions and a guide for the case study report. (Yin, 2009)

The authors have not developed a case study protocol in its entirety. However, a protocol covering parts of Yin's (2009) recommended content of a case study protocol was made prior to the empirical data gathering (Appendix S). Serving as an overview of the case study project, the authors made a title and subtitle, a problem description, research questions and a problem statement. Field procedures were also outlined to a certain extent, in which the authors decided to conduct semi-structured interviews and observations. The authors also made a preliminary schedule for the visits to the case company and a preliminary overview of which employees to interview. A guide for the case study report was also developed to a certain extent, in which the authors made a disposition of the case study report. Protocol questions, however, have not been created.

Lack of a comprehensive case study protocol may be seen in relation to the authors' research process, which contains elements from both an iterative approach and a systematic combining approach (2.7.3). Seeing as the authors have alternated between theoretical data and empirical data, it has been difficult to make a detailed case study protocol prior to the empirical data gathering process. This is reflected in the need for adjusting the content of the protocol several times. Also, this is the reason for why the authors chose not to make protocol questions, seeing as continuous new insight into theoretical and empirical data would lead to new insights into which questions that should be asked and likely sources of evidence, respectively.

When it comes to a case study database, this is a tool to organize and document the empirical data that other investigators can review directly (Yin, 2009). The authors have stored the data about the case company electronically. All reflections and discussions the authors have made, as well as audio recordings and notes from the case company visits have been accessible to the authors. However, this information, except for the case study questions (Appendices K, M and O), is not available for external parties since the authors have signed a confidentiality agreement. The confidentiality agreement entails that the information the authors have received from the case company is not to be shared with external parties. In addition, the master's thesis is held confidential for five years.

Moreover, a weekly research journal was written during the research process (Appendix P). The content in this journal made it possible to write the Research Methodology chapter, in particular chapter 2.6 on data collection. In a sense, showing the steps of the whole research process in this chapter is documentation unto itself, and to an extent makes it possible to replicate this study. At the same time, however, self-criticism is in order for not documenting everything that was done during the study.

In summary, the research journal, documentation of case study questions, and the partly created case study protocol enables other researches to repeat this case study to a certain extent. However, the reliability of this study is weakened since a case study protocol and a case study database is not available in its entirety.

### **2.9.2 Construct Validity**

Construct validity is defined as “identifying correct operational measures for the concepts being studied” (Yin, 2009, 40). Case study approaches to ensure validity in the data collection and composition phases are: (1) the use of multiple sources of evidence; (2) the establishment of a chain of evidence; and (3) having key informants review draft case study report.

Multiple sources of evidence were used as described in 2.6. The authors have gathered data by interviewing several people in the case company, through observations and written documents. During the interviews, the authors have focused on asking several interviewees the same questions (Appendices K, M and O), in order to ensure that the received information is accurate. These multiple sources of evidence have been analyzed together, in which the authors have focused on supporting the case study facts by more than one source. This serves the purpose of triangulation, as described by Yin (2009).

By maintaining a chain of evidence, an external observer should be able to follow the derivation of any evidence from initial research questions to final conclusions, and the other way around (Yin, 2009). The authors have, however, chosen to synthesize the empirical data, even though this entails that maintaining a chain of evidence is not possible and construct validity of this thesis is thus weakened. This choice is based on two aspects. First, an increased comprehension of the case company is created, which lays a good foundation for the case analysis. Second, since the interviews are not cited in the case study report, it is not possible to trace the information each interviewee has given. The authors have emphasized this at the beginning of each interview session, which might have lead the interviewees to be more open and honest.

Key informants have reviewed parts of the draft case study report. The most critical parts of the case study report, such as the description of the responsibility of each employee and of the purchasing processes, was sent to the ones concerned for confirmation and validation. Corrections and refinements were made based on this feedback. However, key informants in Upstream Norske Shell have not reviewed the case description in its entirety.

In summary, construct validity is obtained to a certain degree since multiple sources of evidence have been used and key informants have reviewed some parts of the draft case study report. However, construct validity of this thesis is weakened since a chain of evidence is not maintained, and key informants have not reviewed the case description in its entirety.

### **2.9.3 Internal Validity**

Internal validity is defined as “seeking to establish a causal relationship, whereby certain conditions are believed to lead to other conditions, as distinguished from spurious relationships” (Yin, 2009, p. 40). This can be assured through using the general analysis strategy examining conflicting explanations, as well as the data analysis techniques of pattern matching, explanation building and logic modeling.

The authors have examined conflicting explanations given by interviewees, both by asking several interviewees the same questions and analyzing written material received from the case company. When it comes to pattern matching, this technique focuses on comparing an

empirically based pattern with a predicted one (Yin, 2009). The authors have used this technique to a certain degree, in which causal relationships have been identified and examined in the analysis of the empirical data.

Explanation building is a special case of pattern matching and seeks to “analyze the case study data by building an explanation about the case” (Yin, 2009, p. 141). To use this technique, an initial theoretic statement or an initial proposition should be established (Yin, 2009). This master's thesis does not have an initial statement or proposition, and explanation building is thus not used.

The development of logic models requires that a complex chain of events are stipulated over an extended period of time (Yin, 2009). Due to the short time frame of this case study, the authors have chosen not to use this technique.

In summary, internal validity is achieved to a certain degree by examining conflicting explanations by interviewees and identifying causal relationships in the case study analysis. On the other hand, the choice of not using the techniques explanation building and logic models has reduced the internal validity of this case study.

#### **2.9.4 External Validity**

External validity is about “defining the domain to which a study’s findings can be generalized” (Yin, 2009, p. 40). One of the strongest critiques of using case study designs is the problem of whether the findings can be generalized beyond the immediate confines of the case (Yin, 2009). The critiques of case study designs will thus argue that the findings of this thesis’ case study findings cannot be generalized.

On, the other hand, the researchers favoring case study design will argue that the findings might indeed be generalized. Yin (2009), for example, argues that a case study’s findings can be generalized through replication; e.g. replicating a theory in several neighborhoods. Taking this point of view, this entails that in order to be able to conclude upon the generalizability of this case study’s findings, the case study ought to be replicated to other companies in the same industry, as well as to other industries. The former may enable a conclusion of whether the findings are valid for other companies operating in the same industry as the case company. The latter may enable a conclusion of whether the findings may be generalized to other industries.

In summary, both the opponents of case study design and those favoring this research method consider the findings of this case study design currently not generalized. However, those favoring case studies believe that the findings might be generalized if replications are conducted that lead to the same results.

## 2.10 Summary

Table 5 gives an overview of the aforementioned research methodology decisions made for the execution of this project work:

**Table 5: Summary Research Methodology Decisions**

Methodology considerations	Decisions
Objective	Combination of fact-finding and theory-building
Strategy	Qualitative, deductive approach
Design	Analytical conceptual and single Case study
Process	Systematic combining
Method	Semi-structured interviews/Documents/Observation
Reliability	Research journal, documentation of case study questions, case study protocol
Construct Validity	Multiple sources of evidence, key informants received parts of drafts
Internal Validity	Examination of conflicting explanations



## **PART 2: LITERATURE REVIEW**

*The aim of this section is to give a thorough review of existing literature on the topic 'purchasing synergy'. First, a general overview of the comprehensive concepts 'purchasing' and 'synergy' is presented. This serves as the theoretical and conceptual foundation for understanding the concept 'purchasing synergy'. Second, 'purchasing synergy' is defined and findings and correlations from the existing literature are discussed. This section answers Research Question 1, by defining purchasing synergy and its importance.*

*Third, the concept 'purchasing synergy management' is outlined. Theoretical findings from both 'purchasing', 'purchasing synergy' and 'purchasing synergy management' are then structurally analyzed and correlated into a conceptual framework for purchasing synergy management. This section addresses Research Question 2, by outlining a framework for identifying and interpreting purchasing synergies.*

*Figure 5 illustrates how the literature review is built up.*

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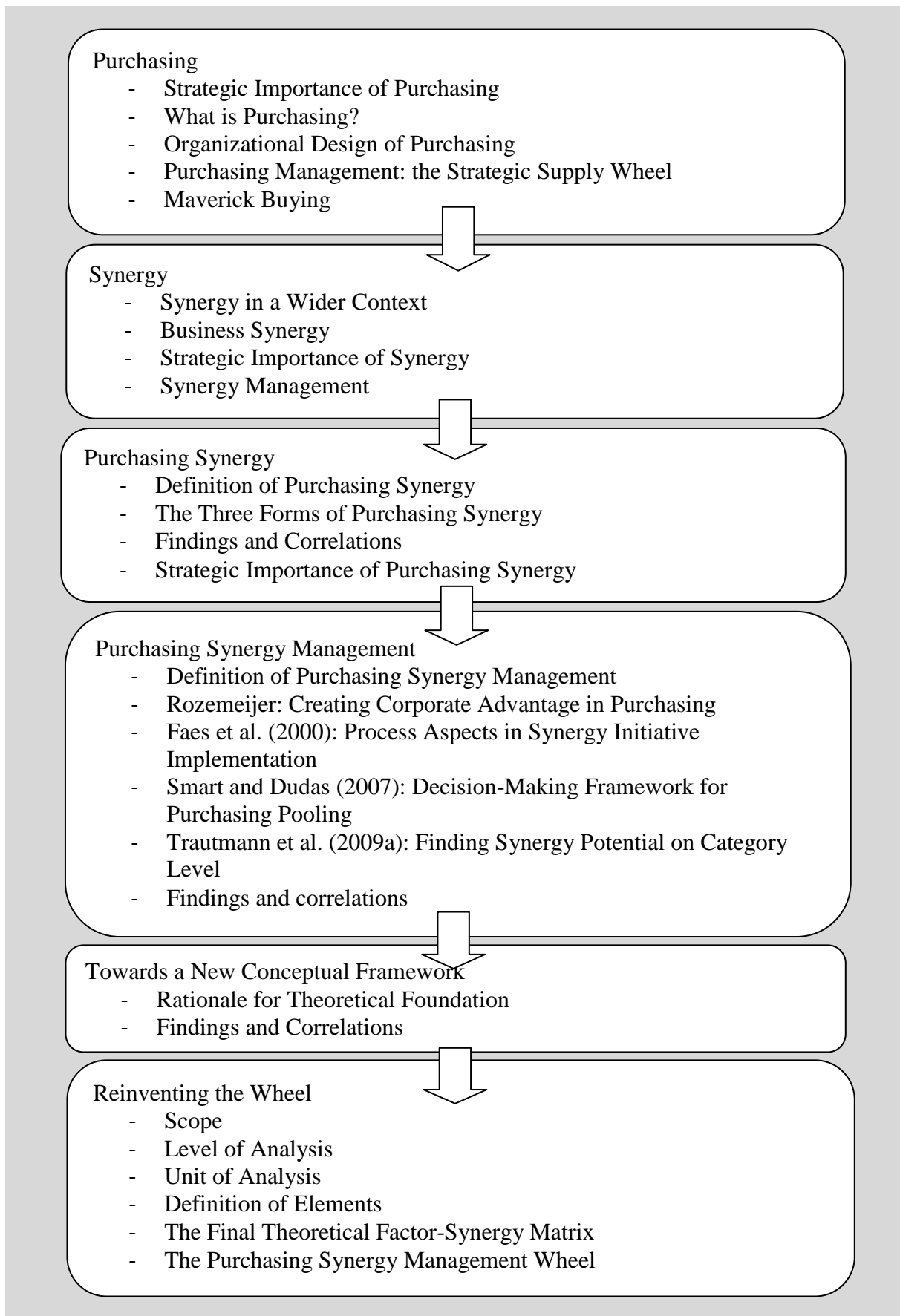


Figure 5: Structure of Part 2

### **3. Purchasing**

This section reviews five topics within 'purchasing', based on 5 books and 8 articles. The five different topics are included due to their significant relevance and importance for fully understanding the concept 'purchasing synergy'. The five parts are: (1) strategic importance of purchasing; (2) three perspectives on purchasing from purchasing and industrial marketing literature; (3) organizational design of purchasing; (4) the purchasing management tool Strategic Supply Wheel; and (5) the purchasing management challenge maverick buying.

#### **3.1 Strategic Importance of Purchasing**

Today's marketplace is characterized by an increasing globalization of industries, rapid changes in technology and increasing competitive pressure. Research has consequently focused more on the strategic importance of purchasing, while purchasing has gradually taken on a strategic role in corporations. Taking a glance at the last hundred and fifty years of historical evolution in purchasing, it is easy to gain an appreciation for the growth, development, and increased importance of the profession (Monczka et al., 2011).

Purchasing literature from the last decade illustrates that purchasing has developed from a mainly clerical activity to a fully-fledged function with an increasingly strategic role. Purchasing is increasingly seen as a contributor to companies' success and as a function with strategic impact on a firm's performance. Recognition of the important and powerful impact purchasing has on a company's bottom line, has given it widespread attention as an academic discipline. In a study of the strategic relevance of purchasing, Mol (2003) concludes that the field of purchasing management has increasingly included strategically relevant activities. This shows that purchasing matters for competitive advantage.

Aligning purchasing strategies and corporate strategies is an especially crucial element of company success, and a critical objective of purchasing. According to the studies of Carter and Narasimhan (1996), the purchasing function should be viewed as a key component of firm competitiveness, and involved in the highest level of corporate strategy formulation and decision-making. Watts et al. (1995) also stress that a strategically integrated purchasing function will improve an organization's performance. Pearson and Gritzmacher (1990) support the view of Carter and Narasimhan (1996) and Watts et al. (1995). They emphasize that a firm's ability to compete successfully in today's environment should be enhanced by a purchasing function that is integrated into the strategic management corporate level decision-making process.

Ellram and Carr's (1994) review of the literature on strategic purchasing indicates that the purchasing function should form part of the overall corporate strategy. This is due to the importance of suppliers, and the increased responsibility in today's marketplace of planning and implementing strategies to support corporate strategy. The review concludes: "The literature establishes the fact that when purchasing is proactive and operating at a strategic level, there are major opportunities to achieve a competitive advantage through strategic purchasing" (Ellram and Carr, 1994, p.17). However, for purchasing activities to be proactive and operate at a strategic level, purchasing must be recognized, accepted, and operationalized by top management.

Strategic purchasing is a topic of wide discussion and diversity, for which no unified set of definitions currently exists. Glock (2011, p.149) defines the concept of strategic purchasing based on Carr and Smeltzer (1997), Ellram and Carr (1994) and Zheng et al. (2007): "Strategic purchasing may be defined as the process of planning, implementing, evaluating, and controlling strategic and operative purchasing decisions for directing all activities of the purchasing function towards opportunities consistent with the firm's capabilities to achieve its long-term goals".

After explaining the importance of purchasing in general, the following section will elaborate what purchasing actually is from three different perspectives.

### **3.2 What is Purchasing?**

Over the years, the perception of purchasing has changed gradually. Consequently, a variety of terms and concepts are used to describe and discuss purchasing. Purchasing may be approached as a function, a process, a link in the supply or value chain, a relationship, a discipline or a profession (Lysons and Farrington, 2012).

This section starts by describing three perspectives of purchasing: *function*, *process* and *organizational buying*. The first two perspectives, function and process, defines the concept from the point of view of purchasing literature. The third perspective, organizational buying, defines the concept from the point of view of industrial marketing literature. Subsequently, a definition of purchasing is given, followed by a summarizing discussion.

#### **3.2.1 Function**

The primary task of the purchasing function is often seen as providing a continuous flow of products and services at the right place, from the right source, meeting the right specifications, in the right quantity, and at the right time to support the internal customers in the company (van Weele, 2005; Monczka et al., 2011). Further, core tasks of the purchasing function are considered to be: secure timely and undisturbed availability of purchased goods and services, and control and reduction of all purchasing-related spend. In addition, reduction of the company's risk exposure to its supply markets, and contribution to product and process innovation are also important tasks. (van Weele, 2010)

As a function, purchasing has four dimensions. The technical dimension concerns the functionality, specifications and quality of the purchased products. The commercial dimension is related to managing the relationships with the suppliers and the contractual conditions that must be negotiated and arranged. The logistics dimension concerns all activities related to optimizing the incoming material flow from the supplier up to the point where the materials are needed and actually consumed. Finally, the administrative dimension relates to efficient order handling, expediting and follow-up and handling invoices. (van Weele, 2005)

#### **3.2.2 Process**

As a process, purchasing is understood as a set of stages directed at achieving an output. The purchasing process includes all the steps that must be completed when an organization requires a product, material or service. (Monczka et al., 2011) Several variables affect a

company's purchasing process. Examples include product characteristics, the strategic importance of the purchase, sums of money involved in the purchase, characteristics of the purchasing market, degree of risk related to the purchase, role of the purchasing department in the organization, and the degree to which the purchase product affects existing routines in the organization. (van Weele, 2005)

Lysons and Farrington (2012), Monczka et al. (2011) and van Weele (2005) present three different purchasing process models (Fig. 6, 7 and 8):



**Figure 6: Purchasing Process Model (Adapted from Lysons and Farrington (2012))**



**Figure 7: Purchasing Process Model (Adapted from Monczka et al. (2011))**



**Figure 8: Purchasing Process Model (Adapted from van Weele (2005))**

The main features of the three purchasing process models appear to be similar. Accordingly, the models can be summarized into the following suggested process model (Fig. 9):



**Figure 9: Correlated Purchasing Process Model**

**3.2.2.1 Specification of Needs**

The three previously mentioned authors use different names for the first step, *Specification of Needs*. Lysons and Farrington (2012) call this step "Receive requisition", Monczka et al. (2011) name it "Forecast and Plan requirement"/"Need Clarification and requisition", and van Weele (2005) "Define specification". In determining the specifications of needs, four groups of specifications must be considered. Quality specifications describe how the product should be delivered and what technical norms and standards the product should meet. Logistics specifications indicate the quantities needed and the expected delivery time. Maintenance specifications describe how the product will be maintained and serviced by the supplier, and whether or not spare parts need to be supplied in the future. Legal and environmental

requirements determine that both product and production process should be in compliance with health, safety and environmental legislation. Furthermore, a target budget should be created, outlining the financial constraints of the solution provided by the prospective supplier. (van Weele, 2005).

#### *3.2.2.2 Supplier Selection and Contracting*

Step two, *Supplier Selection and Contracting*, is by Lysons and Farrington (2012) divided into five steps: "Pre-qualify suppliers", "Issue tenders", "Evaluate tenders", "Negotiate with suppliers" and "Award contracts". Monczka et al. (2011) divide it into two: "Supplier identification/selection" and "Approval/contract/PO generation". Van Weele (2005) refers to it as "Select supplier" and "Contract agreement". Supplier selection and Contracting comprises all the activities necessary to establish supplier contracts, e.g. market research, supplier location, supplier selection, negotiation, and contract agreements.

This process starts by determining the method of subcontracting, then conducting a preliminary qualification of suppliers and drawing up the 'bidders list'. It continues with a preparation of the request for quotation and an analysis of the bids received, and ends with the selection of suppliers. Prices and terms of delivery, terms of payment, penalty clauses, and warranty conditions must all be decided upon. Other arrangements like insurance and safety regulations, transfer of rights and obligations, and terms of delivery must also be determined. (van Weele, 2005) At this stage, involving people from other functions, like internal customers, purchasing, sales, and the supplier's internal functions, can improve the transfer of information and knowledge between the buying and selling firm in the contracting process (Monczka et al., 2011).

Further, contract management is a very important part of step two and for the execution of every step in the whole purchasing process. "Contract management is a process associated with defining the contract, defining roles and responsibilities of both parties, and advising when to modify and ensure appropriate escalation." (Monczka et al., 2011, p. 47) It is meant to ensure accuracy of contracting terms and conditions (Monczka et al., 2011). This requires specifying who holds the responsibility for contract management actions, prompt supply of management information, the involvement of purchasing when disputes arise, acceptance procedures for goods and services, payment processes, contract close-out procedure, and feedback on the supplier's performance. (van Weele, 2005)

#### *3.2.2.3 Purchase Order, Reception and Payment*

Step three, *Purchase Order, Reception and Payment*, is called "Receive supplies" and "Make payments" by Lysons and Farrington (2012), "Receive material and documents" by Monczka et al. (2011) and "Ordering" and "Expediting" by van Weele (2005). After the terms and conditions of the contract have been agreed upon and recorded, the actual purchasing order can be placed (van Weele, 2005). A purchase order is initiated through a purchase order requisition or a material requisition, usually through a MRP system based on inventory levels. The purchase order usually includes an order number, a concise description of the product, unit price, number of units required, expected delivery time or date, delivery address and

invoicing address. (van Weele, 2005) Material reception and payment can be handled when the purchase order is released.

#### *3.2.2.4 Performance Evaluation*

Step four, *Performance Evaluation*, is not included in Lysons and Farringtons (2012) process model. Monczka et al. (2011) call it "Settle, pay and measure performance" and van Weele (2005) names it "Evaluation". Purchasing performance evaluation may be defined as "the quantitative or qualitative assessment over a given time towards the achievement of corporate or operational goals and objectives to purchasing economies, efficiency and effectiveness" (Lysons and Farrington, 2012, p.611). This includes the performance of both the purchasing process and the people involved.

There are hundreds of purchasing measures to choose from. Most purchasing measures fall into one of the following categories: price performance, cost-effectiveness, revenue, quality, time/delivery/responsiveness, technology or innovation, physical environment and safety, asset and integrated supply chain management, administration and efficiency, government and social, internal customer satisfaction, supplier performance or strategic performance. (Monczka et al., 2011) Examples of measures within these categories are number of orders placed, lead time, price savings, contract compliance, reduced administrative costs, cost/price reductions, added value contributions, partnership sourcing, amount of purchase volume covered by corporate-wide contracts, and meetings held by commodity teams each quarter (Lysons and Farrington, 2012; Monczka et al., 2011).

A purchasing performance measurement system is regarded as a tool for creating and achieving high levels of purchasing competence and strategic alignment (Pohl and Förstl (2011). The authors state that a performance measurement system should fulfill five roles. The first role is to create alignment of corporate and supply strategy. This is achieved by deriving performance measures from purchasing strategy that reflect the objectives of corporate strategy. The second role is to measure performance of a company's key activities. To obtain adequate information of performance, the measures should be drawn from the practice and purchasing category level. The measures should also enable traceability of individual performance.

The third role of a performance measurement system is that the system should influence behavior. The measures create extrinsic motivation of managerial employees, and partially at the employee level. Fourth, a performance measurement system should aim to develop the purchasing function, as well as the supply base. The system should be able to detect the areas that require the strongest improvement. Lastly, it is important that the measures are communicated, e.g. establish a central reporting line to executive management. (Pohl and Förstl (2011)

Furthermore, there are many reasons for measuring and evaluating purchasing performance. One, by making performance and results visible, it may support better management decision-making. Two, it may result in better communication within the purchasing department, as well as between departments and with suppliers. Three, evaluating purchasing performance provides the opportunity for performance feedback on problems identified during the

measurement process. Finally, as the measures used indicate the activities the organization considers critical, it motivates and directs behavior toward desired end goals. (Monczka et al., 2011)

Practically every company that measures purchasing performance, however, has some type of problem with its measurement system, e.g. too much data and wrong data, measures focused too much on the short term, lack of detail, performance and behavioral measures driving performance not intended or needed, and the difficulty of measuring behavior without a guarantee of it leading to desired results. (Monczka et al., 2011)

### **3.2.3 Organizational Buying Behavior**

The third perspective of purchasing, organizational buying, originates from industrial marketing literature. It has been included in this literature review to supplement the purchasing literature with an alternative view on the purchasing process. The main focus of organizational buying behavior is that in a buying situation, all the employees that have an impact on the buying decision, also known as the buying center, must be recognized. In this way, the buying center approaches extends beyond the purchasing function, and broadens the unit of analysis in one way or another, by including more people in the purchasing process.

The works of Robinson et al. (1967), Webster and Wind (1972), and Sheth (1973) lay the conceptual foundation for the study of organizational buying behavior (Johnston and Lewin, 1996, Sheth et al.2009). Today, hundreds of conceptual and empirical publications have either tested or extended these original models and confirmed their validity (Johnston and Lewin, 1996). This section will thus present the original works of Robinson et al. (1967), Webster and Wind (1972) and Sheth (1973) seeing as these theories are still tenable. First, the meaning of organizational buying process is explained, followed by a description of the individuals that constitute the buying center and other characteristics of the buying center. Finally, variables that influence a buying-decision are presented.

#### ***3.2.3.1 Organizational Buying Process***

Organizational buying is a problem-solving process that takes place in a formal organization. The buying process is constrained by profit considerations and usually involves several individuals in the decision-making process. (Webster and Wind, 1972) The activities in a buying situation can be represented by eight *buyphases*. These buyphases are: (1) recognition of need and a general solution; (2) determination of characteristics and quantity; (3) description of characteristics and quantity; (4) search for potential sources; (5) acquire and analyze proposals; (6) evaluate proposals and select suppliers; (7) select an order routine; and (8) performance feedback and evaluation. (Robinson et al., 1967)

In addition, three buying situations are distinguished: (1) new task, situations that have not occurred before; (2) straight rebuy, recurring requirements; and (3) modified rebuy, known buying situations that are modified. (Robinson et al., 1967)

#### ***3.2.3.2 The Buying Center***

The people that participate in the organizational buying process constitute the organization's buying center. This power of influence is either due to an individual's organizational position,



or if an individual holds information critical to the decision-making process. Webster and Wind, 1972)

A buying center incorporates five different roles. These roles are: (1) *users*, those in the organization that use the purchased product or service; (2) *buyers*, the people with formal responsibility and authority for contracting with suppliers; (3) *influencers*, those who directly or indirectly influence the decision making process; (4) *deciders*, the people with authority to choose among alternative buying actions; and (5) *gatekeepers*, the members of the organization that controls the flow of information and materials into the buying center. An organizational position may hold one or several of these roles. (Webster and Wind, 1972)

The organizational positions that are detected as influential to a buying situation, and thus a part of the buying center, are: (1) marketing; (2) development or design engineering group; (3) manufacturing; (4) research and development; (5) supporting staff groups; (6) general management; (7) purchasing agents. These roles' degree of influence depends on whether the buying situation is 'new task', 'straight rebuy' or 'modified rebuy'. (Robinson et al., 1967) The most common participants in a buying situation, however, are personnel from purchasing, quality control, and manufacturing departments (Sheth, 1973).

In relation to the buying center, Sheth (1973) emphasizes that those who participate in a buying decision have different expectations that can give rise to conflicts. A reason for these dissimilar expectations is that an organization usually awards the participants for performance in their area of expertise. For example, purchasing agents are awarded for economy, engineers for quality control, and production personnel for efficient scheduling. Other reasons are that the individuals have various backgrounds, and are exposed to different sources of information that are interpreted differently.

Not all organizational buying decisions are jointly. Three product-specific factors and three company-specific factors influence whether a decision is made jointly or by one party. Product-specific factors are related the characteristics of the product or service. There are three such factors. *Perceived risk* refers to the degree of uncertainty in a buying situation. A high degree of uncertainty entails a high degree of perceived risk and makes it more likely that the buying decision will be made jointly. *Type of purchase* relate to whether the purchase is repetitive and routine, or a first-time purchase. One party usually conducts the former type, whereas the latter is usually made jointly. The last product-specific factor is *time pressure*. If the time pressure is low, the buying decision might be made jointly, while a great deal of time pressure entails that one party most likely makes the decision. (Sheth, 1973)

Company-specific factors refer to the characteristics of the buying company. These three factors are *company orientation*, *company size*, and *degree of centralization*. Company orientation is decisive for which people dominate the buying situation. For example, in a technology-oriented organization, the engineering people will dominate. Company size and degree of centralization influence whether a buying decision is made jointly or by one party. A large corporation will most likely be dominated by joint decision-making, whereas a high degree of centralization reduces the likelihood for joint decisions. (Sheth, 1973)

### 3.2.3.3 External and Internal Influences

There are several variables that affect a buying center and thus a decision-making process. Robinson et al. (1967) recognize that the internal and external environment of the buyers impact the buying decisions. The internal environment affects the situation due to personal characteristics, as well as organizational characteristics such as goals, policies, and organizational structure. External influential variables are supplying industries of the buying firm, the socioeconomic and political environment, and significant events such as a technological breakthrough.

In line with Robinson et al. (1967), Webster and Wind (1972) stress that the buying center is influenced and constrained by two main influences. *Environmental influences*, such as technological, political, legal, and cultural factors, define the availability of supply, the general business conditions, and buyer-supplier relationships, and affect the information flow into the buying organization. *Organizational influences* affect the actions of the decision makers through variables such as tasks, structure, technology, and people in an organization.

### 3.2.4 Definition of Purchasing

From the purchasing literature, purchasing is seen as a function and a process. From the industrial marketing literature, however, purchasing is seen as company-wide, organizational buying. Comparing these three perspectives, it can be seen that organizational buying recognizes purchasing as a problem-solving *process*, including more participants than the purchasing *function*. Purchasing as organizational buying thus incorporate both the view of purchasing as a function and as a process. However, the perspective expands the range of organizational roles that affect the purchasing process decisions.

Owing to the situational diversities of purchasing in the different perspectives, there is currently no commonly accepted definition of the term. Some purchasing researchers offer definitions that are in line with purchasing as a function, as a process, or as both. Lysons and Farrington (2012, p.9) give the following definition:

"the process undertaken by the organizational unit that, either as a function or as part of an integrated supply chain, is responsible for procuring or assisting users to procure, in the most efficient manner, required supplies at the right time, quality, quantity and price and the management of suppliers, thereby contributing to the competitive advantage of the enterprise and the achievement of its corporate strategy".

Others, like van Weele (2005, p.12), define purchasing as "the management of the company's external resources in such a way that the supply of all goods, services, capabilities and knowledge which are necessary for running, maintaining and managing the company's primary and support activities is secured under the most favorable conditions". Monczka et al. (2011) state that purchasing is a functional group as well as a functional activity, and that the group ensures that the activities deliver maximum value to the organization. They further state that purchasing has been referred to as: "getting the right quality, in the right quantity, at the right time, for the right price, from the right source" (p. 10).

All of these definitions are valid and acceptable. They contain many of the same elements. Lysons and Farrington's (2012) definition is the most comprehensive and mostly covers the two others. Lysons and Farrington (2012) call purchasing a process with efficiency as its main target, with an overarching motive of contributing to a company's competitive advantage. The perspective of purchasing as being strategically important to the company at large is also found in van Weele's (2005) definition, which says that purchasing is about managing supply to secure the most favorable conditions for the overall company.

Both Lysons and Farrington (2012) and Monczka et al. (2011) emphasize that purchasing focus on getting supplies at the right time, with the right quality, quantity and price, and from the right source. Due to its comprehensiveness, the broad definition by Lysons and Farrington (2012), which emphasize purchasing from a *process* perspective, is used as the basis for this thesis. However, this thesis also takes the perspective of organizational buying: the scope of the involved roles in the purchasing process includes the whole buying center, not only the purchasing function.

With purchasing defined, the following sections seek to explain the importance of an appropriate organizational structure of purchasing, and how to manage purchasing in corporations. The phenomenon of maverick buying is explained thereafter, seen as an important issue in purchasing management.

### **3.3 Organizational Design of Purchasing**

Organizational design is the process of arranging the resources of an organization through systems of communication, coordination, control, division of labor, authority and responsibility, in such a way that the organization can engage with the market effectively (Cousins et al., 2008; Robbins, 1990 and Trent, 1994, quoted in Glock 2011). According to Glock (2011), "the structure of an organization defines responsibilities and authorities and determines how tasks are allocated to the members of an institution and which resources are available for achieving organizational goals" (pp.154-155).

The purchasing organization may have a significant impact on the competitiveness and profitability of the company, and the choices made are thus of great importance to the overall success of the company (Cousins et al., 2008; Robbins, 1990 and Trent, 1994, quoted in Glock 2011). The role and structure of purchasing are very much dependent on business characteristics and situational factors (van Weele and Rozemeijer, 1996), like organization characteristics, product characteristics, purchase situation, and environmental company-external factors (Glock, 2011).

The organizational structure of purchasing affects the location of the formal power for purchasing decisions, division of purchasing tasks and activities, scope of the activities in the purchasing function, workflow and communication patterns, relative job satisfaction of employees, and overall effectiveness of the purchasing function in meeting its goals and objectives (Monczka et al., 2011).

Purchasing research has discussed many aspects related to the design selection of the purchasing organization's shape, form and position within the overall company organizational

structure. Important characteristics and structural variables of purchasing organizations have been identified and defined by researchers in past decades. These may be interpreted as the basic building blocks that, taken together, describe purchasing organizations in detail. In prior research, *standardization*, *specialization*, *configuration*, *involvement*, *formalization* and *(de-)centralization* have all been used to describe the organization of purchasing. (Glock, 2011) The structural variables *specialization* and *(de-)centralization* will now be elaborated on.

### 3.3.1 Specialization

"Specialization refers to the division of labor in an organization" (Glock, 2011, p.155). One may differentiate between two forms of specialization: (1) tasks grouped by functions; and (2) tasks grouped by objects. *Functional specialization* refers to jobs being broken down into simple, repetitive tasks for efficient performance. *Object-oriented specialization* divides, with logical interconnections, responsibility for different tasks between organization members, reducing interface problems. (Glock, 2011)

This is in accordance with van Weele and Rozemeijer (1996), who state that in order to deliver performance, purchasing needs to seek an appropriate balance between vertical and horizontal organizational features. *Vertical purchasing organizations* are characterized by hierarchical structures and functional orientation. *Horizontal purchasing organizations* are process oriented, focusing on a complete process that cuts across organizational boundaries. They are flatter, in the sense that cross-functional, end-to-end work flows link internal processes with the needs and capabilities of both suppliers and customers. (van Weele and Rozemeijer, 1996) The vertical purchasing organization corresponds to Glock's (2011) functional specialization, whereas the horizontal purchasing organization corresponds to Glock's (2011) object-oriented specialization.

Glock (2011) emphasizes that a functional specialization is beneficial when there are few interdependencies between different tasks, and high efficiency improvements are expected by specializing on a small set of activities. However, van Weele and Rozemeijer (1996) argue that, in today's business world of customers competition and change, task-oriented jobs are obsolete. It is more beneficial for the purchasing organization to be built up by processes and cross-functional teams, rather than the traditional functions or silos that often obstruct customer service (van Weele and Rozemeijer 1996). This effectively states the object-oriented specialization as being the most beneficial today.

The main role of purchasing in process structures is to ensure that horizontal processes provide maximum leverage across the enterprise, and act as a facilitator and process agent. Changing the company culture will often prove the most challenging part for companies making the transition from vertical and task-oriented to horizontal and process-oriented. (van Weele and Rozemeijer, 1996)

### 3.3.2 (De-)Centralization

According to Glock (2011), the structural variable that has most often been used to describe the organization of purchasing is the degree of centralization and decentralization of the purchasing organization. For this reason, this variable is considered one of the most critical aspects of organizational design (Monczka et al., 2011).

Corey (1978, p.107) states that "the basis for centralizing purchasing exists when two or more locations have common requirements", and "when the user requirements are unique (...) the user-location procurement group (...) tends to do the purchasing", which is decentralization. While centralization focuses on central control through performing important functions and decisions centrally, decentralization gives divisions the autonomy to execute important functions and decisions (Cousins et al., 2008).

In centralized purchasing, a powerful central purchasing department on the corporate level makes decisions stating the general and specific purchasing conditions for the whole company (van Weele, 2005; Cousins et al., 2008). In a decentralized purchasing structure each division, business unit or site level is responsible for the majority of its purchasing expenditures and activities (van Weele, 2005; Monczka et al., 2011).

Choosing the degree of (de-)centralization may prove a challenging and difficult task. According to van Weele (2005), factors to consider when deciding on the organization of the purchasing department are commonality of purchase requirements, geographic location, supply market structure, savings potential, expertise required, price fluctuations and customer demand.

Moreover, Monczka et al. (2011) highlight the importance of considering the firm's overall business strategy, similarity of purchases, total purchase expenditure and the overall philosophy of management. Furthermore, there are two forces pushing in the opposite direction in global markets: (1) standardization and efficiency push toward centralization; (2) customization and responsiveness push toward decentralization (Brandes, 1994; quoted in Faes et al., 2000). Corey (1978) uses the following exhibit (Table 6) to display the factors that favor either centralization or decentralization of purchasing:

**Table 6: Factor Favoring Centralization and Decentralization (Corey, 1978)**

Centralization
High commonality of use; ability to standardize
Concern for long-term supply availability; high corporate commitment
High need for bargaining power to secure supplies and negotiating prices
Political sensitivity
High procurement staffing requirements; high need for specialized purchasing skills and knowledge
Decentralization
High engineering involvement in procurement decision making
High need to mesh purchased parts inflows with production schedules
High need for local service for small quantities with unpredictable usage patterns
Unique use requirements

### 3.3.3 Other Structures

Research indicates that centralization is favored over decentralization in several industries. However, *hybrid purchasing organizations*, which seek to reduce the disadvantages of both

designs, are increasingly being employed (Cousins et al., 2008; Glock, 2011). According to Cousins et al. (2008), the most common expression of the hybrid structure is the purchase of commodities centrally and other items locally. The main advantages are economies of scale through major deals made centrally for commodities, combined with the advantage of smaller deals and special orders in the local community. This is supported by Corey (1978) who emphasizes that it is quite common for different elements of procurement to be centralized, while others remain at division and plant levels.

Cousins et al. (2008) present two organizational structures in addition to centralization, decentralization and hybrid structures. These are called *atomization* and *federal structure*. Atomization is characterized by a small central purchasing office that makes policies, while responsibility for sourcing and supply management are delegated to budget holders. This confers benefits like simple controls, quick response, and departmental autonomy and responsibility. The disadvantages are supplier confusion and division, overload on support staff, and systems update dislocation.

The federal structure is characterized by divisions awarding power to the central office to develop policy and provide necessary services to divisions with specific mandates. It is a complex arrangement, featuring central bureaucrats with unclear hierarchies. This carries the risk of instability, but provides advantages like agreed rules, dual citizenship, subsidiarity, minimal central control and cross-fertilization. (Cousins et al., 2008)

### **3.4 Purchasing Management: the Strategic Supply Wheel**

The Strategic Supply Wheel (Fig. 10) is a purchasing management tool that may be used for three purposes: (1) to make a strategic and systematic analysis of a company's current purchasing situation; (2) to make a strategic and systematic analysis of a company's future directions; and (3) to identify which elements that need to be changed in order to maintain a balance between them. It may be used for studying companies with one central purchasing department as well as companies with several business units conducting purchasing.

The importance of the Strategic Supply Wheel lies in its comprehensiveness, as numerous elements of purchasing underlie the six elements of the supply wheel. These elements are: (1) organizational structure; (2) portfolio of relationships; (3) total cost/benefit analysis; (4) skills and competencies; (5) performance measures; and (6) corporate and Supply Strategy (Fig. 10). Gaps identified in the model may serve as guides for how the elements may be aligned and form part of a new purchasing strategy. (Cousins et al., 2008)

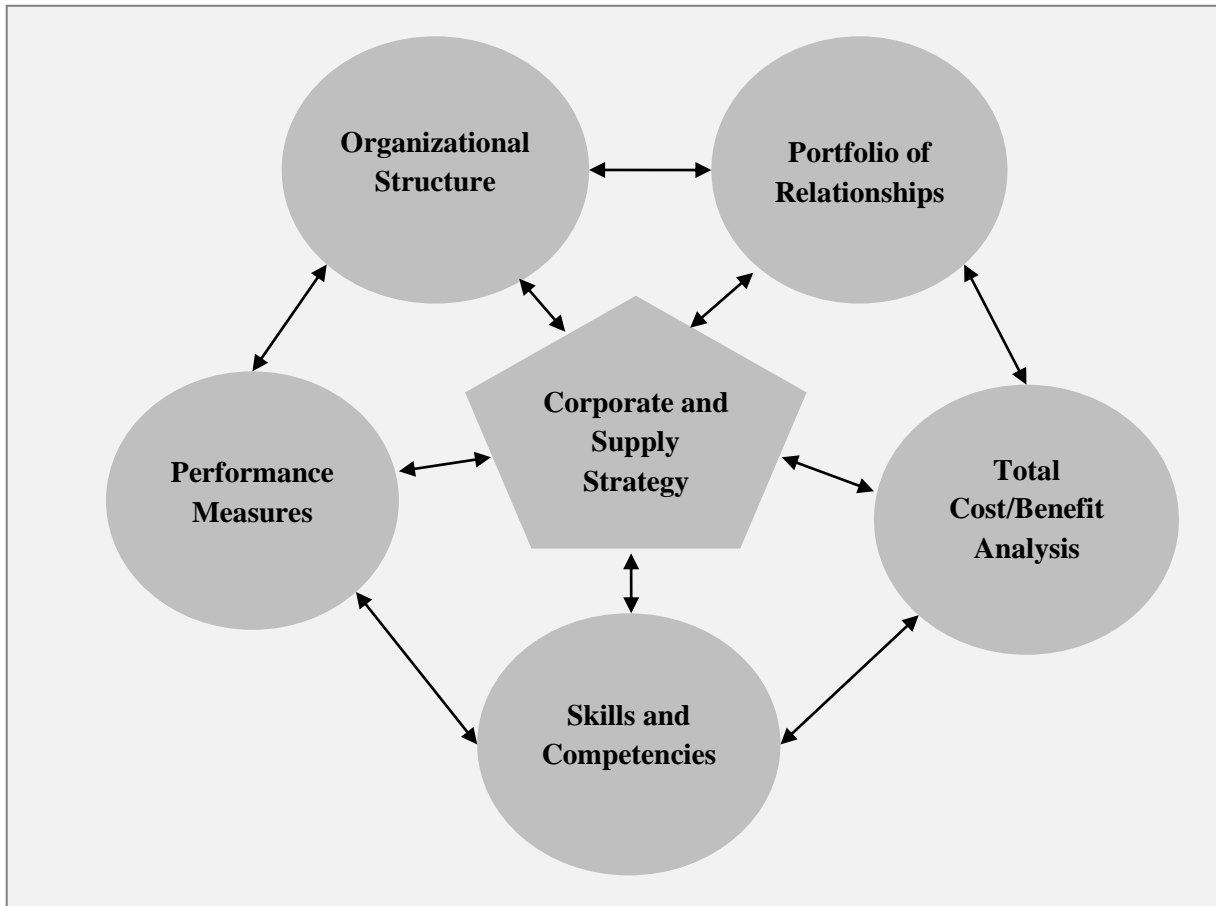


Figure 10: The Strategic Supply Wheel (Adapted from Cousins et al. (2008))

### 3.4.1 Corporate and Supply Strategy

Alignment between corporate strategy and supply strategy is the hub and driver of the different elements in the supply wheel. Strategic alignment asks whether the functional strategy, in this case supply strategy, supports business- or corporate-level strategies. A misalignment between corporate and supply strategy will lead to underperformance.

Moreover, the importance of involving the supply function in the decision-making process at corporate- and business-level is emphasized, as this will lead to improved performance. In order to align corporate and supply strategy, a company's competitive priorities (i.e. cost, quality, delivery, flexibility, and innovation) should be determined and ranked in relation to the corporate and business strategy. Based on this ranking, the supply function objectives are developed and supply chain practices determined. This approach ensures that the implementation is driven by the strategy of the company, and not what is considered as best practice. This is a critical part of achieving successful strategic change. (Cousins et al., 2008)

### 3.4.2 Skills and Competencies

An organization will not be able to fulfill its strategic objectives if skills and competencies are not at the required level. To make supply a strategic part of the organization, people conducting purchasing activities must possess the requisite skills and competencies, skills and competencies which are usually situation-specific. Desirable competencies will thus vary between companies. There are, however, five key competencies that a supply strategist should

possess: (1) strategic planning (planning, goal-setting, completing and finishing); (2) communication (presenting, public speaking, listening, writing); (3) financial (cost accounting, making a business case, understanding economics); (4) technical (computer literacy, mathematics, process development); and (5) team building (leadership, decision-making, influencing). (Cousins et al., 2008)

### **3.4.3 Organizational Structure**

Technology advancement and globalization require organizations to evaluate continuously whether their organizational design is suitable for today's fast-moving marketplace. As markets change, so should organizations. The process of assessing and selecting the structure should be reviewed. The design of purchasing ought to be adapted to a clear purchasing strategy aligned with market demand, corporate strategies, and effective use of human and ICT resources. (Cousins et al. 2008) The basic choices for organizing purchasing are: (1) centralization; (2) decentralization; (3) atomization; (4) federal structure; and (5) hybrid systems (Cousins et al., 2008), and a description and the advantages and disadvantages of all the five structures are given in 3.3.

### **3.4.4 Performance Measures**

A good performance measurement system is critical to successfully manage a firm's supply chain (Cousins et al., 2008). The aim of such a system is to “create an alignment between the corporate strategy, supply strategy, goals and objectives, performance measures, and ultimately, the actions of individuals responsible for carrying out the work” (Cousins et al., 2008, p. 146). Promoting and rewarding performance in the areas critical to a company's success is very important. Equally important goals are the creation of effective performance measurement systems, and avoiding business units optimizing their own performance at the expense of the company's performance. (Cousins et al., 2008)

The entire length of the firm's supply chain should be assessed. The evaluation should look at performance in six categories: cost, quality, time, supplier performance, and customer satisfaction. The benefits of measurement are: improved decision making, improved communication throughout the organization, improved visibility of activities and increased employee motivation. Developing a performance measurement system involves various stages: (1) Determine goals to measure; (2) establish performance measures; (3) establish standards for comparison; (4) monitor progress; (5) evaluate progress; and (6) implement improvement actions. (Cousins et al., 2008)

### **3.4.5 Total Cost/benefit Analysis**

A cost/benefit analysis emphasizes the need to balance costs, benefits and relationship strategies within the supply chain. In particular, it is crucial to understand that there is a fundamental difference between the transaction price and the real cost of a purchasing process. It is essential for a company to recognize the costs associated with performing various procurement activities, and how to improve cost performance. Addressing this issue serves to introduce a focus on the total cost of ownership. Developing a Total Cost of Ownership (TCO) philosophy may help managers to clearly specify and understand purchasing decisions when outsourcing components, evaluating supply contracts and



assessing third party logistics. Principally, the TCO concept requires the company to perform an analysis of all activities that incur costs. (Cousins et al., 2008)

#### **3.4.6 Portfolio of Relationships**

Managing inter-firm relationships is important to achieve business success (Cousins et al., 2008). It may, among other things, lead to lower costs, reduced risk and greater product innovation. The choice of relationship strategy should focus on the level of the product or service being purchased. Ideally speaking, it aligns an appropriate relationship type to the kinds of outcomes required from the business transaction.

Cousins et al. (2008) present a model for the management of inter-firm relationships called the Strategic Relationship Positioning Model. The four generic strategies are: opportunistic behavior, adversarial, tactical collaboration and strategic collaboration. Opportunistic behavior occurs when buyer or seller is dependent on the other party, and the dominant party takes advantage of the situation. Adversarial strategies are characterized by arm's length contractual relationships. Tactical collaboration is when a significant level of collaborative activity occurs. Finally, strategic collaboration occurs when there are high levels of dependency and certainty in the buyer-supplier relationship. (Cousins et al., 2008)

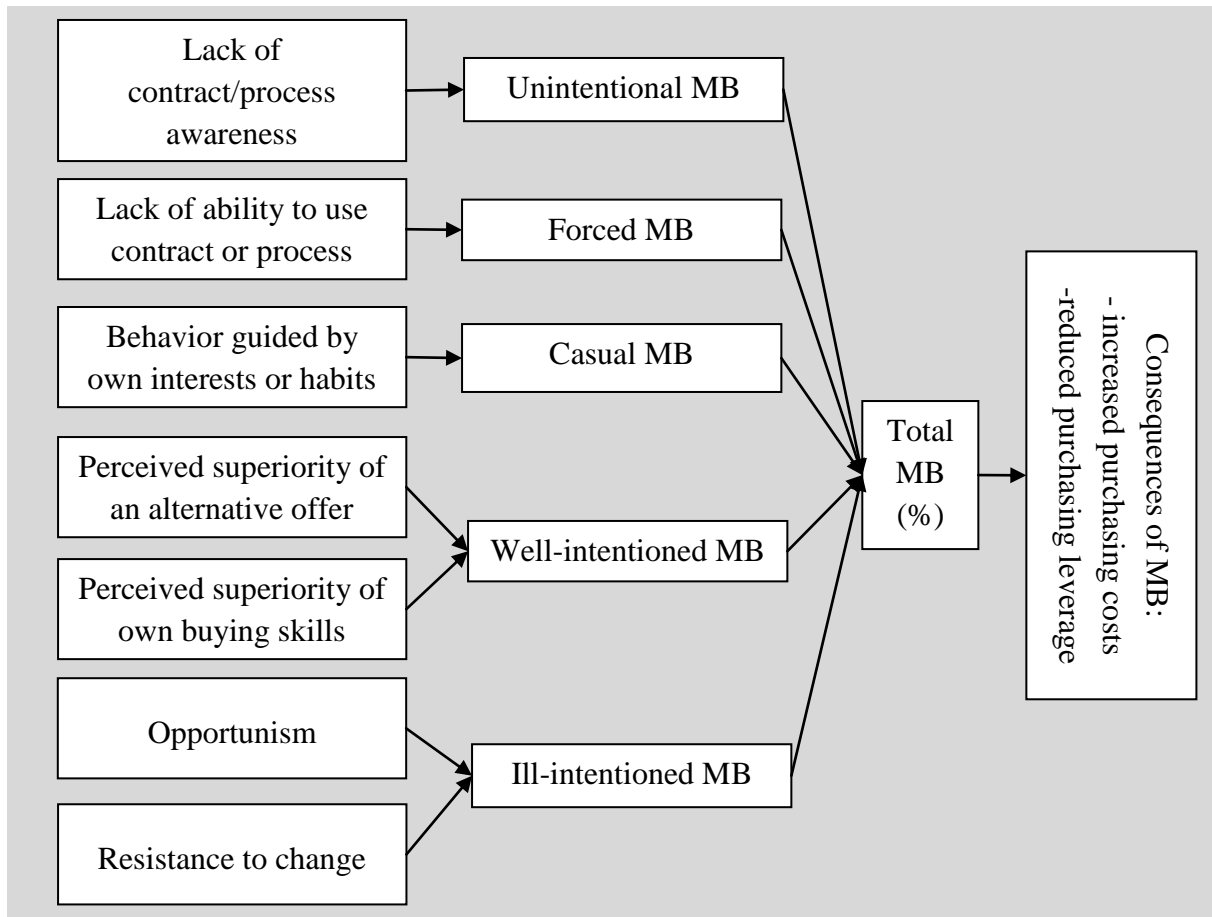
#### **3.5 Maverick buying**

The compliance to formally defined processes and authorized vendors in contracting and purchasing is an overlooked topic. Non-compliant purchasing behavior, often called *maverick buying* (MB), however, is a common phenomenon in organizations using central, organization-wide frame agreements. Maverick buying can be considered a purchasing management challenge. Nevertheless, the benefits created through centralized contracting using established contracting procedures is widely recognized as maximizing purchasing efficiency in organizations. It is therefore important to understand the phenomenon of maverick buying as a key factor in achieving the potential benefits of standardized and formalized contracting and purchasing procedures.

Maverick buying is the purchase of goods or services without using the company's formally defined processes and authorized vendors (Angeles and Nath, 2007; Karjalainen et al., 2009). A literature review by Karjalainen et al. (2009) identifies five different forms of maverick buying: (1) *unintentional MB* (non-compliant but not deviant), when employees do not know the preferred process and therefore engage in maverick buying without realizing it; (2) *forced MB* (practical reasons preventing compliance), when employees are aware of the preferred process, but encounter barriers to comply with that preferred process; (3) *casual MB* (driven by self-interest), when employees are aware of the preferred process, but continue to do as they please; (4) *well-intentioned MB* (positive deviance), when employees are aware of the preferred process, the item is available from a contracted supplier, but they still think it is in the best interest of the company to ignore the preferred process; and (5) *ill-intentioned MB* (negative deviance), when employees are aware of preferred process and able to use it, but actively oppose this new process.

Underlying reasons for the different forms of maverick buying are illustrated in Karjalainen et al.'s (2009) conceptual framework (Fig. 11). The consequences of maverick buying are all

considered to be negative. The consequences may be grouped into two forms: (1) *increased purchasing costs*, as MB affects the purchasing prices and the purchasing process costs; and (2) *reduced purchasing leverage*, as MB undermines an organization's ability to negotiate and capitalize on true market position and potential buying power. (Karjalainen et al., 2009)



**Figure 11: Different Forms of Maverick Buying and Their Underlying Reasons (Adapted from Karjalainen et al. (2009))**

In order to reduce maverick buying in organizations, five managerial approaches are suggested: (1) reduce autonomy in purchasing tasks and make buying via specified contracts highly programmed; (2) provide clear and unambiguous guidelines on purchasing procedures via channels available to all end users, in order to clearly specify how much individual decision-making authority is allowed; (3) provide training on purchasing in general and in purchasing procedures, systems and contracts in place; (4) provide incentives and sanctions; and (5) training of new workforce in correct purchasing practices by central purchasing unit, as opposed to just predecessors (Karjalainen and van Raaij, 2011).

### 3.6 Summary

Purchasing has developed from mainly a clerical activity to a fully-fledged function with an increasingly strategic role. It is more and more seen as a contributor to companies' success and with strategic impact on a firm's performance. In today's competitive and global market place, a firm's ability to compete successfully is enhanced by a purchasing function that is integrated into the corporate level decision making process.

As the perception of purchasing has changed gradually over the last decades, a variety of terms and concepts are used to describe and discuss purchasing. Purchasing is defined as "the process undertaken by the organizational unit that, either as a function or as part of an integrated supply chain, is responsible for procuring or assisting users to procure, in the most efficient manner, required supplies at the right time, quality, quantity and price and the management of suppliers, thereby contributing to the competitive advantage of the enterprise and the achievement of its corporate strategy". However, this thesis also takes the perspective of organizational buying, in which the scope of the involved roles in the purchasing process includes the whole buying center, not only the purchasing function.

The organizational design of purchasing may have a significant impact on the competitiveness and profitability of a company, and the choices made are thus of great importance to its overall success. The structural variables specialization and (de-)centralization are two important features of the organization of purchasing. The appropriate structure is dependent on business characteristics and situational factors.

In managing purchasing in organizations, the Strategic Supply Wheel is a comprehensive management tool for purchasing to use in making strategic and systematic analyses and decisions. Six elements to consider in analyzing and understanding purchasing management are: (1) organizational structure; (2) portfolio of relationships; (3) total cost/benefit analysis; (4) skills and competencies; (5) performance measures; and (6) corporate and supply strategy.

Companies should focus on managing compliance to formally defined processes and authorized vendors in contracting and procurement. Non-compliant purchasing behavior, often called maverick buying, is a common phenomenon in organizations using central, organization-wide frame agreements.

## **4. Synergy**

This section examines the concept of 'synergy'. First, synergy in a wider context is described, before business synergy is discussed and defined. Then, the strategic importance of business synergy and synergy management are presented.

### **4.1 Synergy in a Wider Context**

Synergy is a widely used and somewhat ubiquitous expression, regardless of field. In physics, synergetic phenomena are combinations of quarks that produce protons and neutrons. Biologists use the term to describe division of labor in bacterial colonies (Corning, 2003). In computer science, synergy may describe a system constituting a set of interrelated components working together with a common objective, fulfilling some designated need (Blanchard, 2004). This thesis, however, concerns itself with synergy in organizations, or what is often called business synergy. This type of synergy is created when a cohesive group is more than sum of its parts (Benecke et al., 2007).

Being a multidisciplinary field addressing a wide range of ideas (Ketchen and Guinipero, 2004), strategic management literature has discussed the concept of 'synergy' for decades. A review of a wide selection of articles on 'synergy' reveals different articles that examine the concept from a range of perspectives, including mergers and acquisitions, new product development and networks and relationships.

Articles examining synergy from the M&A-perspective are primarily focused on how to create financial synergy and thereby achieve cost reduction (Devos et al., 2009). Literature on product development addresses how creation of synergies may contribute to the success of a new product (Cooper, 1985). The main aspect of synergy discussed in articles on networks is relationships and how synergy is created through combining perspectives, resources and skills (Lasker et al., 2001).

However, there is another subset of strategic management literature, one that does not concern itself with a specific perspective, but rather view synergy in relation to corporate-level benefits. In these articles, the authors address how business units in a divisionalized corporation can create additional value through cooperation. And it is this, rather than mergers and acquisitions, product development or networks, that is the focus of this thesis: The study of business synergy in the more general part of the strategic management literature (Fig. 12).

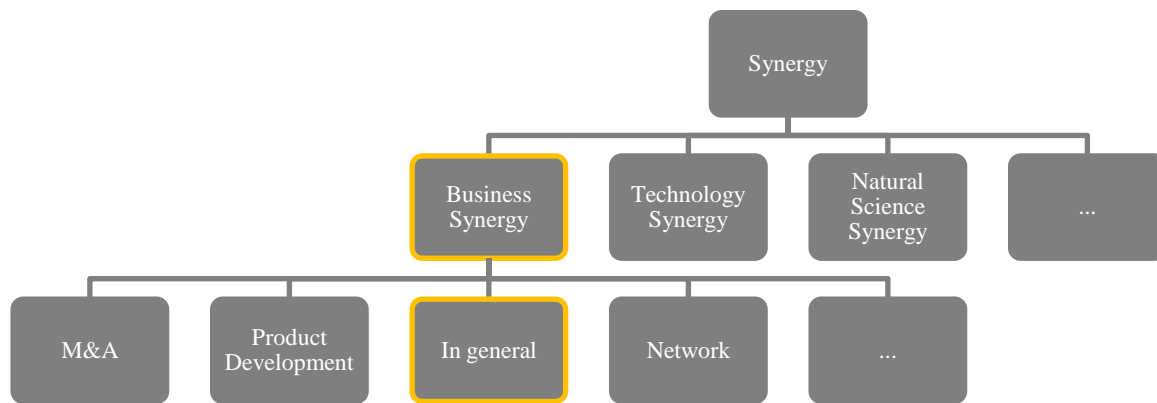


Figure 12: Synergy in a Wider Context

## 4.2 Business Synergy

Business synergy first came into vogue as a research topic in the 1960s and 1970s. As competition intensified, firms were exploring new ways to achieve growth, spurring research into previously unorthodox topics. Synergy has since become a topic of frequent study, with a wide range of articles across research fields. This section is not intended as a comprehensive review of all related literature. Rather, one book and thirteen representative articles are selected to give a brief understanding on the topic (Appendix T). Based on the main findings, and a comparison of similar and dissenting views, the following section presents: (1) a definition of synergy; (2) the strategic importance of synergy and (3) synergy management.

### 4.2.1 Definition of Business Synergy

According to Goold and Campbell (1998), the word synergy derives from the Greek word *synergos*, meaning *to work together*. Synergy is often represented by the formula  $2 + 2 = 5$ , which illustrates that by working together, the value created will be greater than what may be achieved through working individually (Gruca et al., 1997; Ensign, 1998; Benecke et al., 2007).

Igor Ansoff is the first to present the concept of synergy in management literature (Juga, 1996; Ensign, 1998). He delineates the economic basis of synergy - how different business units can create more value together than individually (Ansoff, 1965). The author also describes four types of synergy frequently adopted by later research: (1) Sales synergy, i.e. when products use common sales administration, distribution channels, advertising, sales promotion, or reputation; (2) Operating synergy, meaning higher utilization of facilities and personnel, spreading of overhead, or advantages of common learning curves; (3) Investment synergy, joint use of plant, machinery, tooling, or raw materials, or carryover in research and development; and (4) Management synergy, carryover of managerial ability in strategic, organizational, and operating problems (Ansoff, 1965).

Goold and Campbell (1998, p. 133) define synergy as "the ability of two or more units or companies to generate greater value working together than they could working apart." The authors distinguish between six different forms of business synergies that may be obtained between business units: (1) shared know-how; (2) coordinated strategies; (3) shared tangible resources; (4) vertical integration; (5) pooled negotiation power; and (6) combined business

creation (Goold and Campbell, 1998; Goold and Campbell, 2000; Campbell and Goold, 1998).

Based on an extensive literature review of the topic 'synergy', Benecke et al. (2007, p.9) define synergy as: "a concept that describes the systemic process whereby business units of diverse, complex organizations will generate greater value through working together as one system than working as separate entities". In the definition, systematic process is characterized as a change process initiated by a global and diversified organization to realize synergies.

Although authors generally agree upon shared resources as the source of synergy (Gruca et al., 1997), they differ in their view on unit of analysis: whether sharing is between entire business units or between particular business activities. Most of the authors view synergy as basically a fit between units, dependent on the relatedness between these. Gruca et al. (1997) and Ensign (1998) challenge this understanding and argue that synergy is developed and achieved due to interrelationships, sharing of resources or skills in activities that have relatedness. In other words, synergy may arise in sharing relationships both between and within business units (Gruca et al., 1997).

It is important to recognize that there is no one agreed-upon definition of synergy (Benecke et al., 2007). This thesis therefore emphasizes several authors' definition. Goold and Campbell's (1998) definition of synergy is recognized because of its simplicity and relevance to the topic of purchasing synergy in mentioning pooled negotiation power. Benecke et al.'s (2007) focus on the change aspect of synergy should also be taken into account.

The differencing view on unit of analysis also constitutes an important debate, in which Gruca et al. (1997) and Ensign (1998) argue that synergy also arises in relationships within business units, not only between business units. Instead of taking part in the discussion, the thesis acknowledges the views of both sides, which broadens the definition of business synergy in general. Altogether, a definition of business synergy is formulated based on the views from Goold and Campbell (1988), Benecke et al. (2007), Gruca et al. (1997) and Ensign (1998).

Synergy is an increase in business performance realized when two or more business units, or relationships within one business unit, join their forces and/or share functional resources, information and knowledge.

### **4.3 Strategic Importance of Synergy**

Research on business synergy emerged in the 1960s and 1970s (4.2), when firms diversified into other business areas to maintain competitive advantage. Many firms viewed diversification as the way to survive when sales and profitability were declining. As a result, early research on synergy, such as Ansoff's ideas, was used as justification by firms as they diversified. (Clarke and Brennan, 1990; Ensign, 1998; Benecke et al., 2007) In this way, synergy became strategically important, serving as the guiding premise in the diversification strategy of many corporations (Mahajan and Wind, 1988).

Throughout the 1980s, many authors provided evidence that diversification and portfolio strategies were failing (Clarke and Brennan, 1990). As a result, companies preferred to trade off synergy in order to give their business units greater independence (Vizjak, 1994). As the resource-based view gained in popularity, companies again became aware of their resources, and of the benefits of managerial attention towards synergy (Krumm et al., 1998). Capturing cross-business synergies is thus still at the heart of corporate strategy. According to Eisenhardt and Galunic (2000), the promise of synergy is a prime rationale for the existence of the multi-business corporation.

In general, synergy is strategically important because it is associated with huge benefits, but also dangerous pitfalls (Campbell and Goold, 1998). Synergy is often related to cost savings through economies of scale (Chang, 1990; quoted in Benecke et al., 2007). Other benefits come in the form of reduced duplication, more customer loyalty, higher prices, new products and services, and new business opportunities. However, synergy initiatives can also lead to problems such as inappropriate compromises, higher operating costs, customer confusion, organizational complexity, reduced motivation and managers distracted from more important tasks. (Campbell and Goold, 1998) As a consequence, managing synergy efforts becomes crucial to business leaders.

The concept of synergy influences an organization's strategic formulation (Ensign, 1998) and its choice of organizational structure (Krumm et al., 1998; Vizjak, 1994). Herein lies its strategic importance. Ensign (1998) and Vizjak (1994) emphasize horizontal strategy and vertical strategy as opposites. The authors suggest that in order to achieve competitive advantage, corporate strategy must exploit interrelationships by developing horizontal strategies. Many authors also argue that creating synergy in centralized organizations is easier than in decentralized organizations (Vizjak, 1994). However, synergy may be created in decentralized organizations as well, through cooperation (Krumm et al., 1998). As it can be seen, the concept of business synergy is then directly built upon the classical debate about the degree of (de-)centralization (3.3.2).

#### **4.4 Synergy Management**

According to Vizjak (1994), synergy management is the process of realizing existing synergy potentials. He proposes a five-step systematic approach to synergy management: (1) defining affinity groups; (2) determining inter-relationships; (3) evaluating synergy potential; (4) developing horizontal strategy; and (5) implementing horizontal strategy. The author further emphasizes the importance of long-term thinking and developing a strong set of firm-wide values in supporting the implementation process.

Goold and Campbell (2000) also use the term 'synergy management' in relation to companies' synergy creation process. The authors focus on synergy management as a means to identify synergy opportunities and the mechanisms and processes by which a company deals with synergy. They emphasize that a company should assess the effectiveness of its current synergy approach by identifying unrealized synergy opportunities, and examining whether changes in strategy, underlying philosophies, and/or coordination processes may contribute to a more effective synergy approach.

Eisenhardt and Galunic (2000) propose that in order to make synergies work, managers should implement a corporate strategic process called *coevolving*. Coevolving in this setting refers to managers routinely changing the web of collaborative links among businesses, meaning everything from information exchange to shared assets to multi-business strategies. This results in a shifting web of relationships that exploits fresh opportunities for synergies and drops deteriorating ones. Coevolving is thus a dynamic process where links among businesses are temporary. Managers should uncover the high-leverage links and balance the tension between fewer links for agility and more links for efficiency.

To summarize: the authors mentioned above identify synergy management as being related to: (1) identification of synergy opportunities or potentials; (2) approaches to create and deal with synergy and (3) organizational change. Despite discussing the topic, none of the authors in this literature review precisely define what synergy management is. This calls for an explicit definition of the topic, based on correlating the converging views of these authors. Synergy management can accordingly be defined as:

Synergy management is the use of approaches, processes and organizational changes to identify and realize potentials for synergy.

Based on this line of reasoning, synergy management is a twofold process that incorporates both the identifying of synergy potentials as well as an approach to realizing value-adding synergies through a systematic implementation process. In order to create synergies, a synergy initiative including organizational change must be initiated in one way or another. This is in line with Benecke et al.'s (2007) definition of synergy (4.2.1), which focuses on how a process of change may realize synergies. As a consequence, synergy management requires a careful change management approach, reinforcing its strategic importance.

#### **4.5 Summary**

The topic of business synergy has been discussed in strategic management literature for decades. A general definition of business synergy is "an increase in business performance realized when two or more business units, or relationships within one business unit, join their forces and/or share functional resources, information and knowledge."

Synergy was originally used as a justification for the diversification strategy, but regained its popularity due to the emergence of resource-based-view. It is associated with huge benefits, but often companies fail to capture them. Its strategic importance also stem from synergy's relevance to the debate of (de)-centralization.

Synergy management deals with the process of realizing existing synergy potentials. Merging different viewpoints from the literature, it can be defined as "the use of approaches, processes and organizational changes to identify and realize potentials for synergy".



## **5. Purchasing Synergy**

In today's global and competitive business environment, companies are increasingly recognizing the importance of coordinating their purchasing activities. Corporate strategies and organizational structures have been adapted to capture the synergies within purchasing. This is in the belief that doing so will yield significant benefits. To further understand the topic of 'purchasing synergy', this section reviews works that study the concept. In the absence of clearly defined boundaries for the topic, however, the literature review contained herein does not present material from a unified set of fields, but rather explores a multitude of them in search for related information. An overview of the 18 articles and one book included in the review of purchasing synergy is presented in Table 7. They are referred to as purchasing synergy literature.

This section is structured as follows: First, an acknowledged three-part description of synergy within purchasing is given, as well as newer contributions. Second, the underlying rationale for pursuing purchasing synergies and its strategic importance will be presented. Third, each of the elements of the three-part purchasing synergy description is analyzed separately, highlighting the contributions of the different articles presented in Table 7. The section concludes in Table 10 and 11, which categorizes the main findings and correlations from the literature reviewed.

Table 7: Overview of Articles Reviewed on Purchasing Synergy

Author	Year	Title	Journal/Publisher	Main findings
Davis et al.	1974	Critical factors in worldwide purchasing	Harvard Business Review	Trade-off between global and local sourcing
Corey	1978	Should companies centralize procurement	Harvard Business Review	The trend is towards procurement centralization
Kraljic	1983	Purchasing must become supply management.	Harvard Business Review	Development of a purchasing portfolio matrix, pragmatic advice to top management
Arnold	1997	Purchasing consortia as a strategic weapon for highly decentralized multi-divisional companies	IPSERA Conference	Structural aspects of global sourcing, the degree of centralization
Arnold	1999	Organization of global sourcing: ways towards an optimal degree of centralization	European Journal of Purchasing & Supply Management	Intra-company purchasing consortia to combine advantages of decentralized company with centralized purchasing to gain economies of scale, information and process.
Rozemeijer	2000b	How to manage corporate purchasing synergy in a decentralised company? Towards design rules for managing and organising purchasing synergy in decentralised companies	European Journal of Purchasing & Supply Management	Deals with the concept of purchasing synergy, on the initiatives taken to capture potential synergies in the area of purchasing.
Rozemeijer	2000a	Creating corporate advantage in purchasing	Technische Universiteit Eindhoven	Deals with creating corporate advantage in purchasing through managing intra-company cooperation between two or more business units in the area of purchasing and supply management, or, as we refer to it, purchasing synergy.
Rozemeijer et al.	2003	Creating corporate advantage through purchasing: Toward a contingency model	Journal of Supply Chain Management	Explains how large corporations may effectively manage purchasing synergies among individual business units.

Rozemeijer	2007	Creating Corporate Advantage Through Purchasing	92nd Annual International Supply Management Conference	Explains how CPO's may effectively capture purchasing synergies among individual business units.
Rozemeijer	PhD	Creating Corporate Advantage in Purchasing	Unpublished PhD-results, personally from Rozemeijer	Deals with the management of value-adding linkages in the area of purchasing between different business units in a multi-business company.
Faes et al.	2000	The pursuit of global purchasing synergy	Industrial Marketing Management	Aims to bridge the gap between the literature stressing the need for achieving purchasing synergy on the one hand and specific implementation guidelines for managers on the other hand. Managerial implications to successfully tap global purchasing synergy are formulated.
Matthyssens et al.	2003	The process of global purchasing: Critical success factors and supplier impact	19th Annual IMP Conference	Provides a holistic description of the underlying processes of global purchasing/sourcing.
Smart and Dudas	2007	Developing a decision-making framework for implementing purchasing synergy: a case study	International Journal of Physical Distribution & Logistics Management	Presents a case study on developing purchasing synergy in a European-based firm operating as a service and support business to the international airline industry. Develops a decision-making framework for how firms can achieve purchasing synergies across its BU's.
Hartmann et al.	2008	Organisational design implications of global sourcing: A multiple case study analysis on the application of control mechanisms	Journal of Purchasing and Supply Management	Derive explanations for the application of different control mechanisms in the global sourcing context, by elaborating on the information processing perspective of contingency theory.
Trautmann et al.	2009a	Global sourcing in integrated network structures: The case of hybrid purchasing organizations	Journal of International Management	Presents a portfolio tool for managers to decide which items should be sourced locally and which should be globally sourced, based on an analysis of the strategic importance of the item and the overall synergy potential.

Trautmann et al.	2009b	INTEGRATION IN THE GLOBAL SOURCING ORGANIZATION — AN INFORMATION PROCESSING PERSPECTIVE	Journal of Supply Chain Management	Complement prior research on global sourcing organizations, seeking to propel a theoretical discussion on integration in the global sourcing organization, focusing on how and why to integrate in different circumstances.
Karjalainen et al.	2009	Non-Compliant Work Behaviour in Purchasing: An Exploration of Reasons Behind Maverick Buying	Journal of Business Ethics	A systematic literature review is used to identify different forms of maverick buying, ranging from unintentional maverick buying to straightforward sabotage.
Karjalainen	2011	Estimating the cost effects of purchasing centralization - Empirical evidence from framework agreements in the public sector	Journal of Purchasing and Supply Management	There appears consensus among academics that purchasing centralization provides several synergy benefits. Empirical evidence of the specific cost effects, however, is scarce in literature. This paper presents empirical evidence of these cost effects from a purchasing centralization project using centralized framework agreements in the Finnish government.
Karjalainen and van Raaij	2011	An empirical test of contributing factors to different forms of maverick buying	Journal of Purchasing & Supply Management	Focuses on three types of maverick buying drawn from previous literature. Survey data from Finnish governmental procurement is used to test whether characteristics of users and their work contexts affect the reasons for engaging in maverick buying.

## 5.1 Definition of Purchasing Synergy

In general, purchasing professionals do not explicitly speak of synergy in purchasing. They instead talk about things like corporate cost reduction programs, leverage initiatives, standardization of specifications, centralized procurement, coordination of (decentralized) purchasing, negotiating corporate agreements or reduction of suppliers (Rozemeijer et al., 2003). They very much strive to achieve purchasing synergy without directly using the term.

To study the topic, however, it is vital to clearly define what purchasing synergy is and from what sources it can be derived. Ulli Arnold was one of the first purchasing scholars in Europe to point out the potential strategic benefits of intra-company purchasing cooperation (Rozemeijer, 2000a). In 1997, Arnold distinguished between three potential benefits of intra-firm cooperation in purchasing (Table 8): (1) economies of scale; (2) economies of information; and (3) economies of process:

**Table 8: Strategic Benefits of Intra-Company Purchasing Cooperation (Arnold, 1997, pp.1-2)**

Economies of scale	Economies of scale refer to an external and an internal effect. Externally, suppliers are able to reduce costs per unit produced because of fixed cost depression. Internally, the order costs decline with larger batch sizes. Without bundling similar demands of the individual business units the whole company decreases its purchasing power and it economies of scale.
Economies of information	In a complex and dynamic environment, information is a main productive factor. Purchasing and marketing as 'border crossing functions' of the company are responsible for collecting and analyzing information. Information about the supply markets of the whole company is widespread within the organization of a decentralized group. Economies of information refer to the existency of purchasing information in only one 'intelligence center' to avoid redundancy and to reduce transaction costs. Of course, this information has to be available for all units.
Economies of process	As companies tend to decentralize, this paradigm includes necessarily an atomization of the purchasing function. Thus, an atomized purchasing structure leads towards parallelizing buying processes. The several steps of this process from supplier evaluation to negotiation are done in a suboptimal way. Small purchasing departments in the business units are not able to reengineer processes efficiently. Economies of process refer to the existence of real purchasing process know how in all steps.

Rozemeijer (2000a, p.43; 2000b, p.7) builds upon the three-part classification by Arnold, as well as the works of strategic management or business synergy academics like Ansoff, Goold and Campbell, and Vizjak (4.2), and defines purchasing synergy as: “the increase in purchasing performance that is realized when two or more business units (or purchasing departments) join their forces and/or share functional resources, information and knowledge“.

Other papers in Table 7 addressing purchasing synergy explicitly, like Trautmann et al. (2009a), Faes et al. (2000), and Smart and Dudas (2007), base their studies on Arnold's (1997) three-part description of intra-company purchasing cooperation and Rozemeijer's (2000a; 2000b) definition of purchasing synergy. Even though none of the subsequent studies have attempted to question Arnold (1997) and Rozemeijer (2000a; 2000b), they contribute by extending the descriptions of the three forms of intra-company purchasing cooperation benefits (Table 9):

**Table 9: Purchasing Synergy in the Three Forms**

Economies of scale	Attaining lower unit costs through enforcing purchasing power in the pooling of volumes and standardization of categories (Trautmann et al., 2009a), reducing the number of global suppliers and synchronizing requirements (Faes et al., 2000). To gain economies of scale and avoid duplicated effort, units can also share tangible resources (Karjalainen, 2011), for example by pooling sourcing specialists. Less human resources are used as a result.
Economies of information and learning	Sharing knowledge and information across different sites and locations. This includes knowledge about suppliers, new technologies, markets, internal users, applications and specification requirements, but also about best practices and experiences. (Faes et al., 2000; Trautmann et al., 2009a) This shared know-how may be documented formally, in manuals or policy-and-procedure statements, but often exists in a tacit way.
Economies of process	State-of-the-art purchasing process knowledge may be established throughout every step of the purchasing process and every part of the organization through shared working styles which exchange benchmarking purchasing procedures. Work is made more efficient and standardized by performing joint training and development across the company. Suppliers are exposed to a cohesive and unified set of practices (Faes et al., 2000; Trautmann et al., 2009).

Comparing the definition of 'purchasing synergy' given by Rozemeijer with the definitions of 'synergy' (Goold and Campbell (1998) and Benecke et al. (2007)), both define it as a concept that develops between two or more *business units*. This is a natural consequence of the purchasing synergy definition being adapted from business synergy research.

Gruca et al. (1997) and Ensign (1998), however, point out that business synergy researchers differ in their opinion whether synergy arise in relationships between business units, or business activities within business units. By taking this important perspective into account, the generalizability of both 'synergy' and 'purchasing synergy' is increased. This is in line with Wacker (1998), who states that an extension of existing literature will make the theory more virtuous, since it can be more widely applied. Using this line of reasoning, a new definition of purchasing synergy is defined as:

Purchasing synergy is an increase in purchasing performance realized in one of three forms: economies of scale, economies of information and learning and economies of process. A purchasing synergy is realized when two or more business units, or relationships within one business unit, join their forces and/or share functional resources, information and knowledge.

## **5.2 The Three Forms of Purchasing Synergy**

In the next sections, the contributions of each author in Table 7 on the three forms of purchasing synergy described in Table 9: (1) economies of scale; (2) economies of information and learning, and (3) economies of process, will be presented. This gives a detailed overview of how the different papers discuss purchasing synergy.

### **5.2.1 Economies of Scale**

Corey (1978) examines relevant factors that drive companies towards centralization of their purchasing functions. His finding suggests that in order to cope with supply shortage, companies pool purchasing power in a single location to increase their negotiation strength. Standardizing a limited amount of specifications and negotiating with only few suppliers also present opportunities for savings. The author addresses the issue of effective use of personnel to avoid duplicated effort. The pooling of purchasing specialists is achieved through the establishment of corporate purchasing groups used throughout the companies' operations in a certain geographic area.

In his definition of purchasing synergies, Rozemeijer (2000a) finds underlying motivations for business unit cooperation (5.1) in cost economies (i.e. price reduction through corporate contracts). These may manifest in unit costs, transaction costs and administration costs, or simply by virtue of the company needing fewer ICT systems or purchasing employees. Rozemeijer et al. (2003) also recognize that firms are announcing corporate cost reduction programs to reap the potential benefits of pooling (common) materials requirements. He proposes that companies should choose between five distinctive governance structures when organizing for leveraged sourcing strategies. Like Corey (1978), Rozemeijer (PhD, 2003) also argues that for a centralized sourcing structure, the main focus is on bundling volumes of similar inputs and mandatory corporate agreements. This is to avoid different business units dealing with similar suppliers for similar products ending up with different prices and conditions (Rozemeijer, 2007).

Many authors also discuss economies of scale in a global sourcing context. As competition intensifies on a global scale, companies seek synergies in their overall global purchasing efforts across business units (Faes et al., 2000; Arnold, 1999; Matthyssens et al., 2003). Shared purchasing activities on a corporate level are found in supplier relations, negotiating and contracting (Faes et al., 2000). In general, opportunities for the bundling of negotiating power have convinced top management of some of the value-adding potential of the supply function (Faes et al., 2000). In order to reap the perceived benefits of economies of scale through demand bundling, Arnold (1999) identifies three ideal types of global purchasing organizations.

Matthyssens et al. (2003) further state that supplier base reduction and possibilities for component standardization are key objectives in measuring the effectiveness of international

purchasing projects and programs. Reduction in number of suppliers has become desired to avoid dealing with too many suppliers followed by a company's rapid expansion. Due to technological advancement and shortened product life cycles, the number of components and elements has tended to become ever-larger, making component standardization favorable.

Several authors also emphasize the importance of product type for pooling strategy. Researchers have classified products into different groups according to their function in the production process and presume that the properties of the products influence the structure of purchasing and the sourcing strategy applied (Davis et al., 1974; Kraljic, 1983; Smart and Dudas, 2007; Trautmann et al., 2009a; 2009b).

Davis et al. (1974) classify all purchased items into four categories: raw materials, machinery and other capital goods used as productive equipment, components and subassemblies and supplies – nondurable goods not going into products. The authors argue that raw materials are more appropriate for bundling initiatives, as the products are generally purchased in an organized market or from a small group of possible suppliers.

Kraljic (1983) identifies four key purchasing approaches, divided by their level of supply exposure, technical risk and the strategic nature of the product or service. For items with high value for the business yet low supply risk, he suggests a leverage strategy. This involves pulling together a range of similar products to increase contract size and obtain the best possible deal. Volume is perceived as the main determinant of a company's overall bargaining power. It plays a critical role because economies of scale in purchasing often yield decisive competitive cost advantages.

Moreover, with focus on item selection for pooling initiatives, Smart and Dudas (2007) present a case study on purchasing synergy implementation in a European-based airline service company. The case company had to address the issue of large number of suppliers providing duplicate or similar items to different business units and therefore needed to standardize many of its item specifications. A decision-making framework was proposed to facilitate purchasing pooling.

In more recent literature, Trautmann et al. (2009a; 2009b) seek to apply category-level perspective to the integration of global sourcing activities. The authors point out that for categories such as liquid crystals, gas, steel, and IT hardware, the primary motive of global sourcing is economies of scale, namely the bundling of volumes across sites. These categories have in common a relatively low uncertainty with stable demand patterns and (in most cases) high global supply availability with a competitive supplier base and transparent markets. Furthermore, standardized categories with similar specifications across sites, low delivery risk and subject to few design changes are particularly suitable and preferred candidates for pooling purchasing power (Trautmann et al., 2009a, 2009b; Kraljic, 1983).

Karjalainen et al. (2009) emphasize the importance of compliance to corporate-wide framework agreements to benefit from purchasing synergies. Instead of each organizational unit deciding upon their own specifications, suppliers and contractual agreements, corporate agreements are made with a selection of preferred suppliers. These strategies are intended to



gain economies of scale, namely reducing the number of suppliers, increasing purchasing leverage with the remaining suppliers, and/or reducing total purchasing costs and risks (Karjalainen and van Raaij, 2011). Non-compliant buying behavior thus undermines an organization's ability to negotiate favorable price and service levels with suppliers, and it reduces the ability to capitalize on true market position and potential buying power (Karjalainen et al., 2009).

Karjalainen (2011) studies the marginal benefits of economies of scale, as more subunits become committed to the framework agreements negotiated by central purchasing department. A framework agreement with bigger volumes behind it appears more lucrative to suppliers, they might be willing to give greater discounts to win the contracts. Therefore, the marginal benefit grows as more subunits joins to use the contracts. After a certain critical mass of the subunits has become committed, the marginal utility is, however, likely to start reducing. At this point, suppliers will no longer be willing to give bigger volume discounts.

In summary: Within the scope of economies of scale, key issues purchasing researchers focus on are: (1) bundling/pooled purchasing power; (2) standardization of specifications and/or components; (3) supplier base reduction and; (4) shared tangible resources (e.g. human resources). It is evident that the type of purchasing synergy classified as economies of scale has been widely researched, with particular focus on bundling purchasing power. This is in line with business synergy researchers' view on purchasing synergy: Through combining their purchases, different units may achieve greater leverage vis-a-vis suppliers, reducing the cost or even improving the quality of the goods they buy (4.2.1).

### **5.2.2 Economies of Information and Learning**

Corey's 1978 article discusses the possibilities for information sharing in the context of centralization of purchasing and the benefits thereof. The author recognizes the growing relevance of computer-based management information systems as one of the strongest drivers towards centralization of purchasing. Software can store information like prices and purchase descriptions. It can receive orders; issue delivery instructions and record receipt of goods and generate payments. This makes it possible to manage this system from one place located centrally in the organization. The end result is the facilitation of information sharing across units and significant benefits derived from this.

In his well-known 1983 paper, Peter Kraljic considers the issue of information sharing within corporations. Purchasing departments that lack complete and proper information on the company's business objectives, plans and operation may find themselves in a vulnerable market position. This is especially the case with departments serving several plants and products. Sharing this data is crucial for the purchasing department to be able to, among other things, negotiate prices, schedule supply and balance inventory.

Moreover, sharing of information effectively makes it easier to forecast demand, keep production efficiency high and integrate purchasing systems with other corporate systems. Additionally, benefits like price and inventory reduction and better delivery and service can be achieved. Essentially, Kraljic (1983) emphasizes the importance of consistent and cross-

functional information flows, and corporate commitment to the purchasing information system.

Faes et al. (2000) measure, by way of focus group interviews and a case study, the perceived satisfaction of persons involved in implementation processes of purchasing coordination efforts. The staffs of companies with successful coordination implementation processes express high levels of satisfaction with the achieved economies of learning and information. This includes improved insight in market and learning, improved exchange of information and increases in market power, showing the importance of achieving this type of synergy.

Karjalainen (2011) supports Faes et al.'s (2000) finding. The author further argues that economies of learning can be achieved with even low commitment levels from subunits. Central purchasing unit can already with every little commitment from the subunits start to take advantage of new technologies and applications, gather knowledge on suppliers and establish consistent negotiation strategies.

Through an in-depth case research, Rozemeijer (2000b) finds that information and communication infrastructure is one of the three areas that companies look at for realizing purchasing synergy. ICT implementations like Internet technology, conferencing systems, electronic bulletin boards and electronic communication and information sharing systems facilitate cooperation and hence the attaining of synergies. Rozemeijer (2007) further points out that managing information, implementing effective international procurement information systems and building complex global procurement data warehouses can, among other things, create transparency in spending and facilitate the exchange of knowledge and experience. Furthermore, Rozemeijer et al. (2003) stress that decentralized purchasing also has opportunities for realizing purchasing synergies through information exchange on supply market, suppliers, and prices.

Trautmann et al. (2009a) discuss the criteria for exploiting economies of information and learning from the perspective of global purchasing. The key idea is to specify purchase situations where leveraging information and learning across sites is beneficial. The need for leveraging knowledge is positively correlated with the degree of purchase difficulty and supply risk.

In a more recent contribution, Trautmann et al. (2009b) emphasize the importance of understanding the requirements for information processing capacity and suitable vertical and lateral mechanisms. As organizations differ in their information processing requirements, so does the use of mechanisms to integrate. From a multiple case study, economies of information and learning, exchange of category and market knowledge across sites are seen as some of the primary underlying motives for implementing global sourcing and global integration of purchasing activities.

Matthyssens et al. (2003) also study the concept of global purchasing and articulates that a criterion for success is open internal communication across business units. Economies of information and learning may be achieved through e-procurement, clearly explained strategies and performance monitoring to facilitate problem identification.

Lack of information sharing and communicating company policies is characterized by Karjalainen et al. (2009) as one of the main reasons for the presence of maverick buying. Often, the maverick buyer does not have access to the requisite supply market information and will not possess the necessary competence in contracting and negotiating. This may be due to the difficulty of getting information through to the buyers in large, decentralized organizations, or sometimes related to people's reluctance to receive the information. The remedies for this type of maverick buying are creating awareness of contracts among potential users. A tool like e-contract management can also help by making contracts digitally available to users.

In summary, the articles on purchasing synergy seem to agree that information and knowledge sharing can yield significant benefits, such as improved insight in market and learning. This is achieved through the use of ICT systems and open internal communication. Lack of information sharing can cause non-compliant work behavior in purchasing, and can be countered by raising awareness of contracts among potential users, e.g. through implementing a e-contract management tool.

### **5.2.3 Economies of Process**

Corey (1978) focuses on the centralization of the purchasing process in three global companies. For centralized procurement, it is essential to establish a standardized purchasing process with order and inventory codes, which at the same time takes into account requirements, preferences and usage levels in the different purchasing units.

Karjalainen (2011), on the other hand, studies the effects of centralization and commitment to corporate framework agreements on economies of process. Economies of process refer to reducing overlapping work within the organization and releasing resources for other tasks. The author suggests that this type of synergy can to a large extent only be attained when units relinquish from negotiating their own contracts and arranging their own tendering processes. Each subunit joining the centralized operating model will mean one less purchasing process run in parallel. This means that each additional committed unit brings about an equal process cost saving.

Matthyssens et al.'s (2003) case study of eight mid-size multinational companies showed that implementation of formalized structures across the companies was a key success factor to participate in global sourcing. Additionally, the authors found that applying the same e-procurement system in all business units was a useful tool for identifying maverick buying. The system may send a signal when a subsidiary tries to order from a non-preferred supplier and thus makes compliant purchases easier for the users and lures them away from old purchasing habits (Matthyssens et al., 2003; Karjalainen et al., 2009). Nevertheless, intensive training and educational programs to demonstrate how the systems will help the users, is necessary to fully capture the benefits of e-procurement (Karjalainen et al., 2009).

Hartmann et al. (2008) corroborate Matthyssens et al.'s (2003) findings. The authors conducted a case study of eight German MNCs from different industries. They found that key requirements for global sourcing were formalization within three process areas: (1) governance and policies, including defined roles and responsibilities, general rules, and codes

of conduct; (2) a global sourcing process; and (3) common performance measurement methods. All eight case companies had established a standardized information system accessible for purchasers at all sites. This had proved indispensable for global sourcing. The case companies all used key performance indicators to monitor their strategic objectives, and socialization mechanisms to facilitate global purchasing activities.

According to Trautmann et al. (2009a), a prerequisite for integrating product categories globally is the possibility of exploiting site interrelationships. Using transaction economics (Williamson, 1975, 1979; quoted in Trautmann et al. 2009a) as a point of departure, the authors argue that in situations where the number of purchasing transactions for a specific category is high, transaction costs may be reduced by implementing standardized best-practice sourcing processes across the corporation. Here, uncertainty is usually low with regards to both the purchase itself and the supply market, thus a standardized cost-effective purchasing process can be developed (Trautmann et al., 2009b).

Global databases can serve as a platform for creating documents, templates, manuals and best-practice descriptions available across sites. Moreover, when the amount of information that must be processed in the purchase situation is high, transaction costs can be reduced by improving the underlying purchasing process, e.g. through electronic collaboration with internal and external suppliers. (Trautmann et al., 2009a)

Compared to the amount of literature on the other two categories of purchasing synergy, research on economies of process is rather limited and first and foremost related to global sourcing. The types of economies of process are: (1) standardization of purchasing process and electronic procurement solutions; (2) formalization; (3) common working procedures; and (4) joint training and development across the corporation. Coordination and the exploiting of interrelationships between plants are prerequisites for succeeding with an internationalization process.

### **5.3 Findings and Correlations**

The correlations and findings from the review of 'purchasing synergy' above are summarized in Table 10 and 11. The tables classify and categorize the research papers by their research focus, level and unit of analysis and type of purchasing synergy discussed. Several authors have contributed to more than one article, including Rozemeijer, Faes, Matthyssens, Trautmann and Karjalainen. In particular, Rozemeijer's four articles and one book are complementary as they describe the same PhD-study. These publications are gathered under one column for this reason.

The remainder of this section is organized as follows: First, the research focus of the various articles will be presented, followed by differences in unit of analysis. This section concludes with a more in-depth discussion on the three types of purchasing synergy.

**Table 10: Findings and Correlations: Research Focus, Level of Analysis and Unit of Analysis**

Author	Research Focus			Level of Analysis		Unit of Analysis	
	Strategic management	Global sourcing	Maverick buying	Corporate level	Category level	Within one business unit	Between two or more business units
Davis et al (1974)	X	X		X	X		X
Corey (1978)	X			X			X
Kraljic (1983)	X			X	X		X
Arnold (1999)	X	X		X			X
Rozemeijer (2000a, 2000b, PhD, 2003, 2007)	X			X			X
Faes et al (2000)	X	X		X			X
Matthyssens et al. (2003)	X	X					X
Smart and Dudas (2007)	X	X			X		X
Hartmann et al. (2008)	X	X					X
Trautmann et al. (2009a)	X	X			X		X
Trautmann et al. (2009b)	X	X			X		X
Karjalainen et al (2009)	X		X	X			X
Karjalainen (2011)	X			X			X
Karjalainen and van Raaij (2011)	X		X	X			X

**Table 11: Findings and Correlations: the Three Types of Purchasing Synergies**

Author	Economies of scale				Economies of information and learning		Economies of process			
	Bundling/ Pooling volumes	Standardi- zation	Supplier base reduction	Shared human resources	ICT Systems	Knowledge ad information sharing	Standardization of purchasing process	Formaliza- tion	Common working procedures	Joint training and development
Davis et al (1974)	X				X	X				
Corey (1978)	X	X	X	X		X	X			
Kraljic (1983)	X	X				X				
Arnold (1999)	X									
Rozemeijer (2000a, 2000b, PhD, 2003, 2007)	X	X	X	X	X	X				
Faes et al (2000)	X					X				
Matthyssens et al. (2003)		X	X		X	X		X	X	
Smart and Dudas (2007)	X	X	X							
Hartmann et al. (2008)								X	X	
Trautmann et al. (2009a)	X	X	X	X		X	X		X	
Trautmann et al. (2009b)	X	X				X	X			
Karjalainen et al (2009)	X	X	X		X	X			X	X
Karjalainen (2011)	x	X				X	X			
Karjalainen and van Raaij (2011)	X	X	X							

Even though the topic of synergy is quite old and has a very large amount of associated literature, the amount of literature about purchasing synergy is comparatively miniscule. The two oldest articles are from the 1970s, the newest from 2011. The majority of articles are from the beginning of the 2000s. This indicates that while the topic is neither old nor new, it has not received much in the way of research attention during any period.

### **5.3.1 Research focus**

The research focus within purchasing synergy literature shows some variation. Some researchers study global sourcing, others focus on maverick buying. Most of the authors, however, share strategic management literature as a common point of departure. Altogether, the articles' research focus may be seen in relation to the strategic importance of creating purchasing synergy. That is, to create corporate advantage in purchasing through purchasing synergy initiatives, in an increasingly globalized and complicated business environment.

Findings from the literature review on purchasing synergy show a close link between purchasing synergy and synergy in general in strategic management literature. The definition of purchasing synergy proposed by Rozemeijer is adapted from strategic management scholars (5.1), with the key difference being that the focus is solely on the purchasing function rather than the business as a whole.

Arnold's (1997) classification of the three types of purchasing synergy also coincides with Goold and Campbell's (1998) description of synergies and Benecke et al.'s (1997) definition of synergy (4.2.1). Of Goold and Campbell's (1998; 2000) six types, shared know-how and pooled negotiating power are related to Arnold's (1997) description of economies of learning and information, and economies of scale, respectively. Benecke et al.'s (2007) focus on synergy as processes, where the business can work as one system rather than as separate entities, is linked to Arnold's (1997) description of economies of process through establishing a common working method.

Works such as Faes et al. (2000), Matthyssens et al. (2003) and Trautmann et al. (2009a; 2009b) are specifically concerned with purchasing synergy within a global sourcing context. This can be understood by that a broad global perspective is often required, if researchers wish to study the overall potentials of purchasing synergy and where the largest benefits lies in a multinational corporation.

Karjalainen et al. (2009) and Karjalainen and van Raaij (2011) study the phenomenon of 'maverick buying' as a result of non-compliant work behavior related to use of enterprise frame agreements, which are designed to gain purchasing synergy and mainly economies of scale. Their research show the importance of understanding the issue in order to capture the full benefits of synergy initiatives.

### **5.3.2 Level of Analysis**

The examined articles also differ somehow in their level of analysis (Table 10). Several authors have centered their research on MNCs, such as Arnold, Rozemeijer, Faes, Matthyssens and Karjalainen, who focus on achieving synergy between the central purchasing function and the purchasing staff located in business units. In general, their level of analysis

seems to be on the corporate level, where they seek to develop coordination strategies and guidelines mostly for the central purchasing coordinators. However, some authors, such as Smart and Dudas (2007) and Trautmann and his colleagues (2009a; 2009b), operate with an item- or category-level perspective, and seek to identify product groups suitable for synergy initiatives. These authors tend to deploy portfolio models as their tools of analysis.

### **5.3.3 Unit of Analysis**

All the authors discuss purchasing synergies as a phenomenon that exists between two or more business units. No authors emphasize the purchasing synergies that lie in interrelationships, both between and within business units, but they do not actively oppose the view either. It is likely that the debate on difference in unit of analysis in the field of business synergy has not yet reached the field of purchasing synergy.

### **5.3.4 The Three Types of Purchasing Synergies**

In general, some articles in the study, in particular those written before 2000, do not use the term purchasing synergy explicitly, and none of them clearly separate between the three types of purchasing synergies in the same way that Trautmann and his colleagues do (2009a; 2009b). They instead talk about the bundling of negotiating power and standardization of component requirements instead of economies of scale, while the other two types of synergy are often replaced by the use of ICT systems, sharing best practices and standardization.

Comparing literature on the three types of purchasing synergies, economies of scale is the most frequently discussed (Table 11). The term has also been further divided into sub-themes such as bundling, supplier base reduction and component standardization. The reason economies of scale is dominant, may be seen in relation to the early and established focus on cost reduction prevailing in strategic management literature (e.g. Ansoff). This also supports Trautmann et al.'s (2009a) finding that the literature has a somewhat one-sided focus on economies of scale.

The other two forms of synergy seem more difficult to describe in a systematic way. The importance of open communication and use of ICT systems in purchasing, and the resulting achievement of economies of information and learning, seem to be acknowledged. While collaboration by establishing a common working method is emphasized by several authors, economies of process seem more diffuse and remain the least discussed synergy type.

Overall, very few authors consider the three types of synergy all at once and in relation to each other. According to Trautmann et al. (2009a), companies can only take full advantage of global sourcing when realizing all three types of synergy potentials. This point by Trautmann et al. (2009a) is directly transferable to work with purchasing synergy initiatives in companies in general. The lack of a comprehensive understanding of purchasing synergy is thus identified as a gap in the literature.

## **5.4 Strategic Importance of Purchasing Synergy**

As stated in 3.1, purchasing is becoming more strategic important. Companies introduce a wide range of initiatives in order to manage their huge purchasing expenditures. Synergy, on the other hand, is associated with major benefits such as corporate cost reduction and new



business opportunities (4.3). Accordingly, combining the two aforementioned topics, the realization of synergy in purchasing also seems to be strategically important.

The strategic importance of purchasing synergy lies essentially in creating corporate advantage and competitive advantage within purchasing; bundling, supplier base reduction, standardization, common ways of working, intra-firm information sharing and collaboration, negotiation power, sharing of best practices, formalization, and joint training and development. This is seen as a strong driver in favor of synergy initiatives, believing that purchasing coordination may contribute to the company's competitive advantage and shareholder value (Faes et al., 2000; Rozemeijer, PhD, 2007).

Specifically, Rozemeijer et al. (2003) emphasize corporate advantage in purchasing as the result of synergetic cooperation between two or more business units. If done properly, effective synergetic cooperation may result in benefits like cost savings, sustainable competitive supply market position, productivity gains, better supplier relationships and a better use of the supplier's expertise (e.g. contribution to product innovation). Purchasing synergy may be regarded as the net effect of these benefits. As organizations outpace their rivals in the realization of purchasing synergies, a resulting corporate advantage in purchasing is created.

Today's marketplace is characterized by increased globalization of industries and global purchasing has gained research attention. Authors such as Faes et al. (2000), Matthysens et al. (2003) and Trautmann et al. (2009a; 2009b) explicitly emphasize the strategic importance of achieving purchasing synergy within a global sourcing context or in an internationalization process. This can be explained by the motivation that underlies their research; that is, creating a competitive advantage in an increasingly globalized and complicated environment. A broad global perspective is often required in order to examine the overall potentials of purchasing synergy and where the largest benefits lies in a multinational corporation.

As the concept of synergy influences the choice of organizational structure (4.3), the topic of purchasing synergy also plays an important role on the design of the purchasing organization (Karjalainen, 2011). As discussed in 3.3.2, one of the most critical variables when deciding on organizational design of purchasing is the degree of (de-)centralization. Where companies used to consider it beneficial to trade off corporate synergy for business unit independence, coordinated purchasing strategies are now receiving more attention. The question of how a company should organize to create corporate-level purchasing synergies, without losing the benefits of decentralized purchasing, remains highly relevant (Rozemeijer et al., 2000; 2003).

## 5.5 Summary

As companies recognize the importance of coordinating their purchasing activities to gain a competitive corporate advantage, synergies in purchasing are increasingly being sought after. Purchasing synergy is defined as "the increase in purchasing performance realized when two or more business units, or relationships within one business unit, join their forces and/or share functional resources, information and knowledge".

The benefits of joining forces and cooperating have been separated and categorized into three different forms of purchasing synergy: economies of scale, economies of information and learning, and economies of process. All literature on the topic of purchasing synergy addresses these three forms of purchasing synergy to a different extent. However, they differ in their unit of analysis, which is generally at either a corporate or category level. Some take a specific research focus, e.g. global sourcing and maverick buying. The literature seem unified in their level of analysis, emphasizing purchasing synergies between business units.

With 'purchasing synergy' defined, the following section seeks to identify how the three forms – economies of scale, economies of information and learning, and economies of process – may be managed.

## 6. Purchasing Synergy Management

This section examines the concept of 'purchasing synergy management'. First, a definition is given, before four purchasing synergy management works are presented.

### 6.1 Definition of Purchasing Synergy Management

The concept of synergy management is prominent in the strategic management literature (3.2.4). Authors like Vizjak (1994), Goold and Campbell (2000), and Eisenhardt and Galunic (2000) are among those who discuss the topic. In 4.4, synergy management is defined as: "synergy management is the use of approaches, processes and organizational changes to identify and realize potentials for synergy".

Regarding the concept of 'purchasing synergy management', no explicit definition has been found. However, since the topic of purchasing synergy is adapted from the concept of synergy in the strategic management literature (5.1), the definition of purchasing synergy management can rightfully be adapted from the topic of synergy in the strategic management literature. The definition of synergy management can thus be applied in purchasing. Using this line of reasoning, purchasing synergy management will be defined like this:

Purchasing synergy management is the use of approaches, processes and organizational changes to identify and realize potentials for three forms of purchasing synergy: economies of scale, economies of information and learning and economies of process. Such synergies are identified and realized in activities and relationships between and within business units.

Accordingly, purchasing synergy management is identified as being related to: (1) identification of purchasing synergy opportunities or unrealized synergy potentials; (2) approaches to create and deal with synergy; (3) organizational change; and (4) direct link to the three forms of purchasing synergy. It also adapts the unit of analysis in the definition of purchasing synergy, stating that purchasing synergies are found both between and within business units.

Purchasing synergy management is a twofold process that incorporates both the identification of purchasing synergy potentials as well as an approach to realize value adding purchasing synergies. In order to create synergies in purchasing, a synergy initiative incorporating organizational change must be initiated in one way or another. This is in line with Rozemeijer (2007, p. 2), who states: "Starting up corporate initiatives implies in many cases significant changes in the way tasks, responsibilities and authorities are divided within the corporation. Implementing such initiatives, therefore, requires a careful change management approach (...)"

In order to answer RQ2 and identify a framework to identify and create purchasing synergies, four purchasing synergy management tools are introduced in the following sections. These four tools are drawn from Rozemeijer, Smart and Dudas (2007), Faes et al. (2000) and Trautmann et al. (2009a). They are presented in Table 12.

**Table 12: Overview of Articles Reviewed on Purchasing Synergy Management**

Author	Year	Title	Journal/Publisher/ University	Main findings
Rozemeijer	2000a, 2000b, 2003, 2007, PhD	Creating corporate advantage in purchasing	Journal of Supply Chain Management, European Journal of Purchasing & Supply Chain Management, Technische Universiteit Eindhoven, Supply Management Conference, unpublished	Deals with creating corporate advantage in purchasing through managing intra-company cooperation between two or more business units in the area of purchasing and supply management.
Smart and Dudas	2007	Developing a decision-making framework for implementing purchasing synergy: a case study	International Journal of Physical Distribution & Logistics Management	Develops a decision-making framework for how firms can achieve purchasing synergies across its BU's.
Faes et al.	2000	The pursuit of global purchasing synergy	Industrial Marketing Management	Aims to bridge the gap between the literature stressing the need for achieving purchasing synergy on the one hand and specific implementation guidelines for managers on the other hand.
Trautmann et al.	2009a	Global sourcing in integrated network structures: The case of hybrid purchasing organizations	Journal of International Management	Presents a portfolio tool for managers to decide which items should be sourced locally and which should be globally sourced.

## 6.2 Rozemeijer: Creating Corporate Advantage in Purchasing

This section presents a general overview of Rozemeijer's work based on the four articles (Rozemeijer, 2000b; Rozemeijer et al., 2003; Rozemeijer, 2007; and Rozemeijer, PhD) and one book (Rozemeijer, 2000a) presented in Table 12. The five different works by Rozemeijer present, entirely or partially, his PhD study on the topic 'Creating Corporate Advantage in Purchasing'. For this reason, the descriptions in this chapter and forward, both refer to Rozemeijer with and without reference to a specific article by year. This is because some of the sentences and contents are found in all the works, whereas some of the content is only found in one of the works.

Rozemeijer addresses the challenge of organizing on a corporate level to capture potential purchasing synergies or corporate purchasing advantage between business units. He states that creating corporate advantage through purchasing is not about finding the best way, but about achieving a fit between selected models/working methods and the culture and context of the individual company. However, he proposes three important associated models. These indicate, based on different aspects of general business management, the best approach to find the appropriate fit and achieve purchasing synergy. The three models are: (1) a contingency variable model (Fig. 13); (2) a governance structure model (Fig. 14); and (3) a relationship assessment diagram (Fig. 15). These interrelated aspects are based on theoretical and empirical research conducted by Rozemeijer in his PhD-thesis. They must be considered together for multi-business companies to create corporate advantage.

### 6.2.1 Contingency Variable Model

To effectively manage purchasing synergies, Rozemeijer (2000a) proposes a contingency model that explains the nature and effectiveness of purchasing synergy initiatives within a large corporation (Fig. 13).

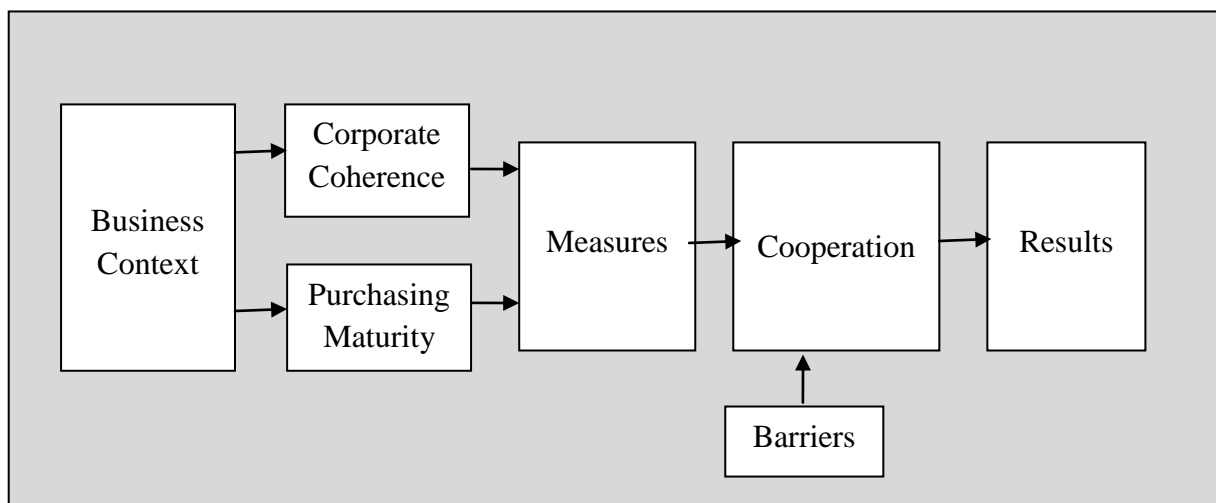


Figure 13: Contingency Model for Creating Corporate Advantage in Purchasing (Adapted from Rozemeijer (2000a))

The role of the purchasing strategy and which types of synergies that can be created results from the pressure and nature of the different variables, which influence each other as shown by the arrows. The variables can be explained as follows (Table 13):

**Table 13: Explanation of Contingency Model Variables**

Business Context	The business context comprises external factors such as competitive pressure, reduced product life cycles, and pressure for delivering shareholder value (Rozemeijer, 2000a).
Corporate Coherence	Corporate Coherence describes “the ability of a multi-product, divisionalized corporation to generate and explore synergies of various types” (Rozemeijer et al., 2003, p.7) and refers “to the extent to which the different parts of the corporation operate and are managed as one entity” (Rozemeijer, 2000a, p. 200). Corporate coherence has a structural side, which among other things includes implementing a good information and communication system, as well as a corporate structure that encourages communication, corporate advertising and planning. It also has a behavioral side known as corporate culture. This consists of factors such as shared values, management style, learning organization, and so on. (Rozemeijer, 2000a) Thus, corporations with the same management type, vision, strategy, culture and structure across all business units have a high degree of corporate coherence.
Purchasing Maturity	<p>Purchasing Maturity relates to the level of professionalism in the purchasing function and comprises the “status of the function, role and position of the purchasing departments, availability of purchasing information systems, quality of the people involved in purchasing, and the level of collaboration with suppliers” (Rozemeijer, 2000a, p. 200)</p> <p>Rozemeijer discusses the development of the purchasing function in stages, and based on van Weele (2000) and van Weele et al. (1998), define six characteristic stages:</p> <ol style="list-style-type: none"> <li>1. No explicit purchasing strategy, main focus on supply availability.</li> <li>2. Located at plant level with own department, main focus on purchasing contribution to bottom-line savings.</li> <li>3. Existence of purchasing department strategy, uniform buying policies and systems implemented, cross-unit coordination and compliance with nationally negotiated contracts main focus areas.</li> <li>4. More process-oriented, emphasizes cross-unit problem-solving the strategic importance of purchasing, recognized through strategic decision-making involvement. Main focus on reducing systems total cost.</li> <li>5. Outsourcing strategy and cooperation with strategic suppliers on new product development.</li> <li>6. Recognition that delivering value to end customer is the most important factor. Main focus on designing an effective and efficient value chain. Represents the highest degree of maturity in the purchasing function.</li> </ol> <p>(Rozemeijer, 2000a)</p>
Measures	Measures aimed at stimulating cooperation are positively correlated with synergetic cooperation in purchasing across business units. (Rozemeijer, 2000a)

Cooperation	Cooperation refers to synergetic cooperation between business units, e.g. joining contract negotiation forces, sharing functional resources, exchanging information and sharing knowledge. Synergetic cooperation is connected with the stage of development of the purchasing function, positively correlated with purchasing synergy results and negatively correlated with barriers to cooperation. (Rozemeijer, 2000a)
Barriers	Barriers may be a lack of information, poor information systems and/or poor exchange of information across the different parts of the corporation. Other barriers are cultural barriers between departments and business units, functional focus, and quality of the purchasing people. As the number of barriers increases, the level of (synergetic) cooperation between business units decreases (Rozemeijer, 2000a).
Results	Possible results from synergetic cooperation between business units are: (1) Cost-related: Price reduction through corporate contracts, cost savings, fewer purchasing employees, reduction in the number of suppliers, fewer ICT systems needed. (2) Value-related: Value creation, better partnering with suppliers, improved position in supply markets, increased level of professionalism of purchasing function. (Rozemeijer, 2000a)

Rozemeijer's (2000a) empirical findings show that changes in the business context lead to changes in corporate coherence and purchasing maturity. These changes thus play an indirect role in corporate purchasing strategy. The degree of purchasing maturity is also related to the degree of effectiveness and efficiency in corporate coordination, and thus by association related to the types of purchasing synergies that may be created. For example, purchasing synergies at the corporate level are not feasible if purchasing maturity is too low. If corporate coherence differs significantly between business units, it becomes difficult to integrate and realize purchasing synergy.

### 6.2.2 Governance Structure Model

In order for companies to realize the aforementioned purchasing synergies, deliberate leadership and management are crucial. Synergetic cooperation across business units is not enough in itself. A fit between the sourcing initiatives and the company's overall governance structure is also necessary. Figure 14 indicates the preferred organizational approach according to the level of purchasing maturity and corporate coherence. Different synergies may be achieved depending on the suitable governance structure. Table 14 presents a detailed description of the five different governance structures.

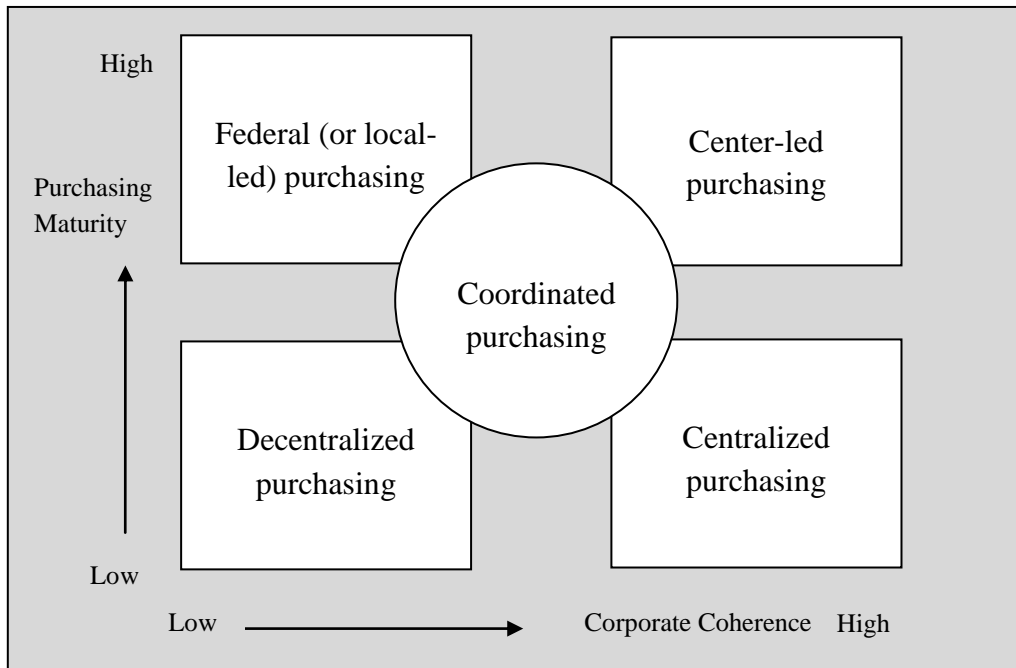


Figure 14: Governance Structure Model (Adapted from Rozemeijer)



Table 14: Explanation of the Governance Structures (Rozemeijer)

Corporate Coherence	Purchasing Maturity	Governance Structure Appropriate	Purchasing Synergy Potential
Low	Low	<i>Decentralized purchasing</i> with moderate voluntary cooperation.	Central coordination efforts hardly sustainable, little homogeneity in specifications across business units, not many best practices to share. Purchasing synergy potential in the exchange of information.
High	Low	<i>Central purchasing</i> department with purchasing experts that conducts all the purchases.	Purchasing synergies that may be realized in this situation are mainly economies of scale through bundling and economies of process via mandatory corporate agreements.
Low	High	<i>Federal (or local-led) purchasing</i> where the purchasing department supports and coordinates a number of autonomous purchasing units interrelated through shared facilities or services. Purchasing power is equally distributed between these units. Units report to the business unit managers. The relationship between the federal purchasing unit and the central core is only professional.	Hard for purchasing directors or coordinators to have an impact. Motivating voluntary adoption of best practices (i.e. economies of process) is recommended, and likely the only potential purchasing synergy.
High	High	<i>Centre-led purchasing</i> approach consisting of a network of decentralized purchasing units across business teams which makes the purchases, while purchasing accountability and functional excellence is led from the corporate centre by the Chief Purchasing Officer.	The high degree of corporate coherence makes it possible to achieve purchasing synergies like harmonization of specifications and platform sourcing.
Moderate	Moderate	<i>Coordinated purchasing</i> , where a corporate coordinator makes central policies that ensures coordination and professionalism of purchasing. This may lead to a matrix structure in which joint purchasing teams report to a corporate purchasing coordinator, as well as to their business managers.	Synergy potential in the possibilities this structure provides, e.g. establishing joint purchasing teams with members from different business units, nominating selected business units to act as lead buyers for different items, centralizing certain aspects of negotiation on terms and conditions but allowing each business unit to make its own buying decisions.

### 6.2.3 Relationship Assessment Diagram

For the company to be able to manage the corporate synergy initiatives, Rozemeijer (2000a, PhD) states that one of the most important issues is the defining of roles and responsibilities. He argues the importance of communication and cooperation between the four stakeholders: (1) CEO (or top management); (2) CPO (or corporate purchasing coordination group or individual); (3) business unit managers; and (4) business unit purchasing managers (or purchasers) (Fig. 15).

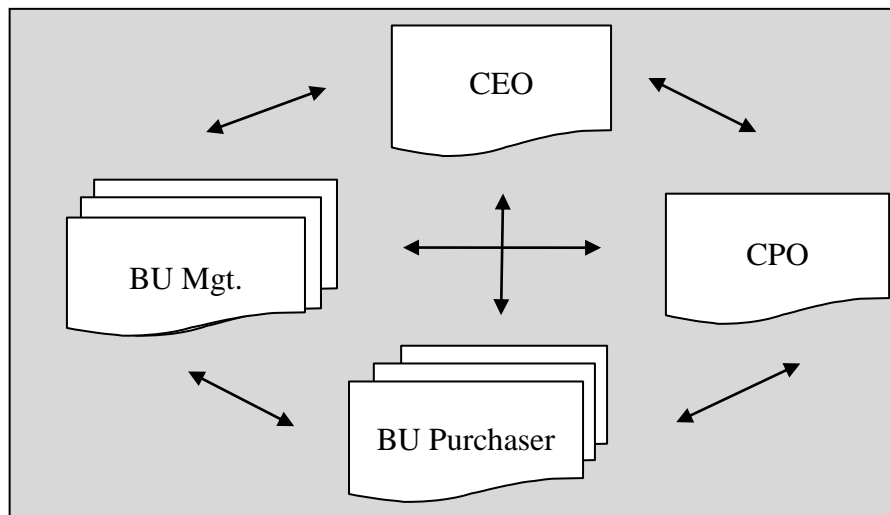


Figure 15: Stakeholder Cooperation (Adapted from Rozemeijer)

The CEO has the responsibility for the purchasing synergy initiative taken by the corporation. The CEO should determine a corporate strategy, emphasizing business issues. (Rozemeijer et al., 2003) The CPO needs a mandate from the CEO in order to change the behavior of the business unit managers (Rozemeijer, 2000a). The center of attention should be corporate initiatives to align purchasing synergy initiatives with corporate and business strategies (Rozemeijer et al., 2003). Rozemeijer et al. (2003) argue that soft issues are decisive in the process of creating purchasing synergies. Changes in corporate behavior are necessary for implementing a corporate purchasing strategy. Based on this they suggest that the CPO at an early point involves business management and local purchasing management in the purchasing synergy creation process. For the CPO to be credible, a formal reported procedure should be implemented where obtained benefits and savings are monitored. (Rozemeijer et al., 2003) Business unit managers should support the synergy initiative and ensure that necessary resources are available. Purchasing managers are responsible for the actual implementation of the change initiatives in their respective business units. The success of the purchasing synergy initiative depends on how well the relationships between the four stakeholders are structured formally and informally. (Rozemeijer, 2000a)

Rozemeijer (2000a) suggests four ways to structure the relationships between the four stakeholders. First, executive management commitment and control should be implemented to prioritize resource allocation, monitor collaboration projects, and control whether the initiatives have successfully realized purchasing synergy. Second, information system and communication technology should be implemented to facilitate cooperation and exchange of

information across business units. Third, formal organizational mechanisms like cross-functional teams, periodic review meetings, and full-time integrators can further facilitate communication and collaboration. Finally, in addition to formal mechanisms, informal networking mechanisms like job rotation and company events may make the people in the organization know each other better, and thus foster voluntary cooperation. In summary, Rozemeijer presents the following criteria for success in synergy management (Table 15):

**Table 15: Success Criteria Synergy Management**

General recommendations
The view of corporate advantage is purchasing as a business issue, not only a purchasing issue.
Corporate purchasing initiatives focusing not only on negotiating corporate contracts for commodities and non-production goods and services. The most significant gains are made in consolidation of purchasing in expense categories of great importance for the business unit.
Recognition that corporate advantage requires more than just consolidating spending information and a few group meetings.
Recognition of soft issues as playing a major role in realizing purchasing synergy.
Awareness among corporate managers of the (hidden) side effects of corporate purchasing initiatives, and interaction between four main stakeholders within the company (i.e. CEO, CPO, BU managers, BU purchasers). This is crucial to reap the benefits of initiatives aimed at fostering corporate purchasing synergy.

### **6.3 Faes et al. (2000): Process Aspects in Synergy Initiative Implementation**

In their article, Faes et al. (2000) focus on the process aspects of implementing horizontal strategies (i.e. synergy initiatives) that are key to realizing or achieving the potential of purchasing synergies. Horizontal strategies are defined as: "a coordinated set of goals and policies across distinct but interrelated business units." (Porter, 1985; quoted in Faes et al., 2000) The authors do not intend to measure the performance improvements in terms of achieved synergies. Rather, they are interested in measuring the overall quality and performance of the process of implementing horizontal strategies and extract specific managerial guidelines from the study.

Results from a case study conducted among 20 global and European companies that initiated purchasing synergy programs revealed the following process issues: incremental approach, internal confidence building, the stimulating of trustworthiness, coordination of requirements planning, and clear communication lines. Satisfied staff at local level often pointed to economies of information and learning, such as improved insight in market and learning, and the improved exchange of information rather than tangible cost savings. In general, effective and successful coordination seems to be based on formalized open communication between the purchasing coordination staff, local purchasing and plant management. A bottom-up approach was shown to be beneficial as it enhanced the staff's feeling of being actively involved and listened to.

Based on these insights, Faes et al. (2000) provide a set of simple process issues that guide successful implementation. First, implementing a coordination strategy is a gradual process. If

one plant shows positive interest in cooperation, a second is more likely to follow up in doing so, then a third, and so on. More time is required to get the first plant to cooperate fully than for the second, which in turn requires more time for the third. Consequently, the choice of the first coordination project is one of taking the right first step and ensuring continuity in the whole coordination effort. These efforts clearly have to be planned and executed over a longer period of time. Patience is required.

Second, the coordinators must actively utilize internal marketing tools to prove real advantages to the affiliates involved and motivate them. This can be done by involving them in negotiations, keeping them regularly informed, rewarding extra effort, holding regular meetings, helping them to set up purchasing systems and apply best practices. Clear and open communication is seen as the underlying key to success.

Finally, but just as important, is the establishment of a firm commitment across involved affiliates to show a homogenous set of practices to the suppliers. Temptation to break one's word in this respect is often present. For the supplier, non-compliance creates doubts about the group commitment of the purchasing company. Creating a strong corporate identity is stressed as an important factor of solving this matter. This includes stimulating strong management support at headquarter and affiliate level, discussing openly negative consequences when somebody deviates from practices and codes of conduct and reacting immediately if this happens.

#### **6.4 Smart and Dudas (2007): Decision-Making Framework For Purchasing Pooling**

Smart and Dudas (2007) provide a decision-making framework for purchasing pooling. This framework may be used to select and implement strategy, and thereby gain synergy benefits. The focus is mainly on achieving economies of scale (and eventually cost savings) through volume bundling, supplier base reduction and the standardization of component specifications. The framework is a mixed method approach based on a literature review and research undertaken within a European-based airline services firm.

The framework is designed as a logical sequence of six steps, which allow the structured analysis of the items suitable for bundling. This leads to the selection of one of four identified buying strategies, and finally to supplier selection. Step one involves pre-qualifying items for selection. Material groups with high spend volume items are preferred since they have the potential to set off costs associated with pooling initiatives like logistics or currency fluctuations. The second step is to select the business units relevant to the qualifying material group. The feasible number of participating business units is determined by specific customer requirements like customer-nominated suppliers and factors influencing purchase location, such as local import restrictions.

Step three requires qualification of items and selection of an appropriate pooling strategy. Items are classified in a product portfolio matrix adapted from Vizjak (1994). In the matrix, items are placed along the axes of product affinity and affinity of purchase locations. "Product affinity" refers to the degree of common requirements such as number of SKUs, customer

needs and level of outsourcing. "Affinity of purchase locations" refers to the limitation of sourcing locations. This is influenced by five factors: (1) shelf life; (2) nationalism; (3) the ability to switch suppliers (4) branding philosophy and (5) storage capacity. If several business units are able to source the items from any country the affinity of purchase locations is high. The classification depicts three different categories of possible pooling strategies: (1) Global (in this case limited to pan-European) volume bundling: items with both a high product affinity and affinity of purchase locations; (2) National volume bundling: items with high product affinity but low level of affinity of purchase locations; and (3) Multi-product bundling: items with a low level of product affinity but a high level of purchase location affinity.

In step four, the stakeholders', in particular customers', reactions to proposed changes in supply must be assessed through consulting them. Ideally, the outcome should be the buy-in of stakeholders, and potentially the opportunity to create more standardization over the longer term. Step five involves the short-listing and selection of potential suppliers. This is a complex process that requires assessment of both existing and new potential sources of supply. The sixth and final step is a necessary evaluation of the results of the bundling process, for example by performing a cost/benefit analysis.

This six-step framework was originally designed with the case firm in mind and tailored to its particularities. However, Smart and Dudas (2007) suggest that the principles stay valid in other organizations, and that it offers the option of customization to the context. The approach is perceived as particularly valuable in widely dispersed organizations where decentralized purchasing is common, as a means towards structured, coherent decision-making for achieving synergy benefits.

**6.5 Trautmann et al. (2009a): Finding Synergy Potential on Category Level**

Trautmann et al. (2009a) present a portfolio model tool for hybrid purchasing organizations to decide whether or not an item should be subject to global sourcing and integrated across sites or remain under the authority of local purchasing managers (Fig. 16).

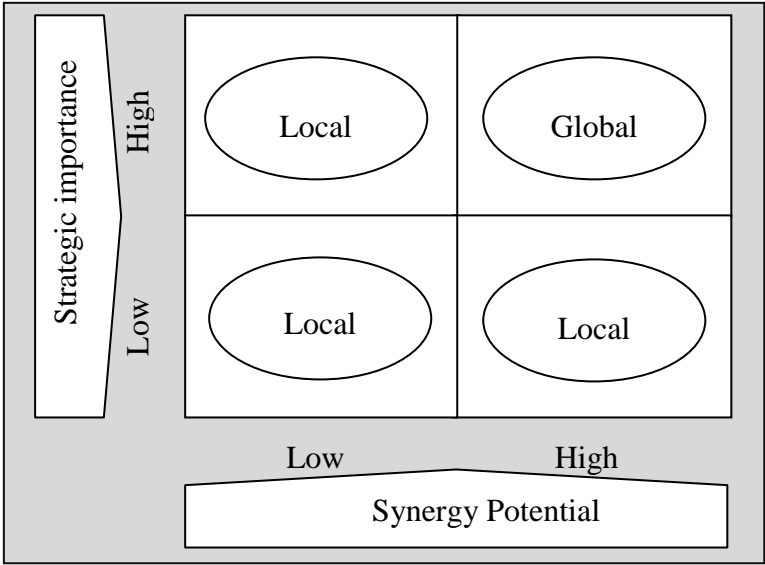


Figure 16: Portfolio Model for Global Sourcing (Adapted from Trautmann et al. (2009a))

Trautmann et al.'s (2009a) discussion is based on information processing theory, organizational buying behavior, and transaction cost economics. Their model is based on Kraljic's (1983) portfolio model and the work of Olsen and Ellram (1997). In the model, the choice of global versus local sourcing is controlled by the y-axis, representing the item's strategic importance, and the x-axis, the synergy potential of the item. The authors then present a two-step approach to assess where the different purchase categories should be located in the portfolio model.

The first step is an analysis of the strategic importance of the purchase. Categories are classified according to how critical they are deemed to be for the business. The two key factors of criticality are: (1) competence factor; degree of impact the purchase has on the core competencies of a company, and (2) economic factor; the purchase's impact on the company's profit.

In the second step, the synergy potential is evaluated in three sub-steps. The sub-steps are divided according to the categories of purchasing synergies: (1) economies of scale; (2) economies of information and learning; and (3) economies of process. A distinct portfolio model is developed in each of the three sub-steps, and every product category should be analyzed accordingly.

Based on the results of the three different sub-portfolio analyses, an overall estimate of the synergy potential is assessed for the different product categories. Categories are then classified and positioned in the main portfolio model presented in Fig. 16. Other than helping managers to evaluate which products are suitable for global integration, Trautmann et al.'s (2009a) purchasing portfolio model has the potential to facilitate cross-locational and cross-functional coordination.

## **6.6 Findings and Correlations**

This review of purchasing synergy management literature has only identified four relevant articles (Table 12). The paucity of literature lends weight to Rozemeijer's (PhD, p.12) statement that: "although it is generally recognized as one of the key issues today, the debate about the organization and management of corporate purchasing synergy is somewhat neglected in current purchasing literature". In the decade after that statement was made, purchasing synergy management has continued to receive little in the way of research attention.

Nevertheless, the articles still cover a wide range of aspects. They will be studied in detail here, correlated and measured against a set of elements that together constitute the definition of purchasing synergy management (Table 16). These elements, in which purchasing synergy management is identified as being related to, are: (1) identification of purchasing synergy opportunities or unrealized synergy potentials; (2) approaches to create and deal with purchasing synergy; (3) organizational change; and (4) direct link to the three forms of purchasing synergy.

Purchasing synergy materializes in three forms: economies of scale, economies of information and learning, and economies of process (5.1). A valid framework for purchasing synergy management should thus systematically show how to identify and realize each form of purchasing synergy. This constitutes an important fourth criterion that will be tested on the four relevant articles. These elements are referred to as the first, second, third and fourth element respectively.

Since the unit of analysis of the definition encompasses synergy realized both between and within business units, it is also of an interest that the existing purchasing synergy management literature applies the same unit of analysis. Altogether, the purpose is to uncover how well these works cover the different aspects of purchasing synergy management. Ultimately, an answer to RQ2 requires identifying a comprehensive framework for purchasing synergy management.

**Table 16: Comparison of the Works on Purchasing Synergy Management to the Definition**

Elements in the definition of purchasing synergy management	Rozemeijer	Faes et al. (2000)	Smart and Dudas (2007)	Trautmann et al. (2009a)
Identification of purchasing synergy opportunities or unrealized synergy potentials			X	X
Approaches to create and deal with purchasing synergy	X	X	X	
Organizational change	X	X		
Link to each form of purchasing synergy	X			X
Unit of analysis	Only between business units	Only between business units	Only between business units	Only between business units

To gain a deeper understanding, the presented works will now be discussed in relation to each element that together constitute the definition of purchasing synergy management.

### 6.6.1 Rozemeijer

Since Rozemeijer's work essentially deals with obtaining a fit between selected models and the context and culture of the individual company, he is concerned with both the second and the third element of the definition of purchasing synergy management. That is, approaches to create purchasing synergy and organizational change. Rozemeijer does not, however, point out how an appropriate synergy initiative or any unrealized synergy potentials can be identified in the first place.

All three proposed models, the Contingency Model (Fig. 13), the Governance Structure Model (Fig. 14) and the Relationship Assessment Diagram (Fig. 15), represent different approaches to create purchasing synergy that complement each other. The Governance Structure Model and the Relationship Assessment Diagram focus more specifically on structure of the purchasing function and Intra-firm Relationships respectively. The Contingency Model also takes into account the Business Context, Corporate Coherence, Purchasing Maturity, Performance Measures and the interplay between them, which leads to the results of a synergy initiative.

The Contingency Model also considers purchasing synergy management as a change process not only within the purchasing function, but also in the organization as a whole. Altogether, the contingency variables (Fig. 13) illustrates that starting up a synergy initiative implies in many cases significant changes in the way "things are done" in the organization. The relatedness between the variables suggests that consequences of the changes often are interrelated and complicated to manage. Implementing a synergy initiative thus requires a careful change management approach.

Rozemeijer relates his approaches for realizing and managing purchasing synergy to its three specific forms through his Governance Structure Model. Each governance structure yields some particular purchasing synergy potentials. Nevertheless, he is not very consistent in the use of the expressions economies of scale, economies of information and learning, and economies of process. Moreover, he only employs a unit of analysis that study purchasing synergies between business units.

#### **6.6.2 Faes et al. (2000)**

Similar to Rozemeijer's work, Faes et al. (2000) do not focus on the first element of the definition of purchasing synergy management, namely identification of purchasing synergy opportunities or unrealized synergy potentials. Their work rather emphasizes the process of implementing a synergy initiative that has already been analyzed.

The authors explicitly state that the implementation process is best handled with an incremental, gradual approach, bearing a long-term perspective. Accordingly, Faes et al. (2000) is concerned with both the second and the third element of the definition of purchasing synergy management. The article, however, does not link the implementation process to the creation of any of the three specific forms of purchasing synergy. Nor do the article emphasize purchasing synergy realization within business units.

#### **6.6.3 Smart and Dudas (2007)**

Smart and Dudas' (2007) stepwise-approach for item bundling incorporate steps for (pre)-qualifying items suited for bundling, which can be considered a procedure to identify purchasing synergy potentials. This corresponds to the first element of the definition of purchasing synergy management. The continuing steps in the decision-making framework outline an approach to decide upon an appropriate pooling strategy. Smart and Dudas (2007) is thus also concerned with the second element of the definition of managing purchasing synergy. Since the article's focus is solely on economies of scale (5.1), it does not provide information on how to link the decision-making framework to any of the other two forms of



purchasing synergy. In addition, the article only concerns purchasing synergy creation between business units.

#### **6.6.4 Trautmann et al. (2009a)**

Trautmann et al. (2009a) present a portfolio model for identification of items suited for global sourcing and integrated across sites. The model specifically evaluates the synergy potential of each category in three sub-parts, which is divided according to the three forms of purchasing synergy. In other words, the authors provide a framework for identifying synergy potentials for global sourcing that is closely aligned with each of the three forms of purchasing synergy. This means that Trautmann et al. (2009a) specifically relate their purchasing synergy management framework to the three forms of purchasing synergy.

However, the framework cannot be regarded as a concrete action plan for implementing global sourcing, it is at best a means to aid in the development of such a plan. It thus does not give sufficient attention to the second element of the definition of purchasing synergy management. Moreover, Trautmann et al. (2009a) does not focus on creation of purchasing synergies within business units.

#### **6.6.5 Conclusion**

The general findings from Table 16 suggest that different works focus on different elements of the definition of purchasing synergy management. Both Rozemeijer and Faes et al. (2000) incorporate the second and the third element, only from different point of departure. Smart and Dudas (2007) outline an approach to create purchasing synergy as pooled purchasing power. In this sense, they also discuss the identification of items suited for pooling. Trautmann et al. (2009a) primarily provide a systematic way of identifying items appropriate for global sourcing, without emphasizing on the implementation process that should follow.

Both Smart and Dudas (2007) and Trautmann et al. (2009a) operate on category level, which automatically exclude corporate-wide issues and organizational changes that affect the potentials for purchasing synergy creation. None of the frameworks fully take into account the three forms of purchasing synergies described in 5.1 as outcomes of their proposed framework. Smart and Dudas (2007), in particular, are mainly concerned with economies of scale. The scope of these works is therefore considered too narrow to serve the purpose as comprehensive frameworks for purchasing synergy management.

Rozemeijer and Faes et al. (2000) take a corporate-level perspective, and emphasize implementation of a synergy initiative as a crucial organizational change process. None of the works, however, seek to explain how realized purchasing synergies and unrealized synergy potentials can be identified. This importance first element of the definition of purchasing synergy management, which often marks the starting point of any purchasing synergy management initiative, is thus missing.

Rozemeijer and Trautmann et al. (2009a) are the two works out of four in total that explicitly link their purchasing synergy management framework to the three types of purchasing synergy. However, both works do so from a relatively narrow perspective, which makes the linkages incomplete. Rozemeijer only addresses the distinct purchasing synergy potentials

created by different organizational structures and Trautmann et al. (2009a) are merely concerned with global sourcing.

None of the works emphasize purchasing synergy realization within, but only between, business units. In other words, the unit of analysis applied in the definition of purchasing synergy management is not fully covered.

In conclusion: none of the works discussed above are completely aligned with the definition of purchasing synergy management. Each of them covers some of the features of the definition, but not all at once. Explicit linkages to the three types of purchasing synergy have only been made from a global sourcing and organizational structure point of view. Unit of analysis of the works only emphasize purchasing synergy realization between, but not within, business units.

The lack of complete alignment with the definition of purchasing synergy management and lack of comprehensiveness in relating the frameworks to the three forms of purchasing synergy are identified as a significant gap in the literature. Consequently, there is a need for developing a new conceptual framework to identify opportunities for and create purchasing synergy and thereby answer RQ2: a framework that should be in line with the definition of purchasing synergy management and with clear links to the three types of purchasing synergy.

## **6.7 Summary**

Adopted from the strategic management literature, purchasing synergy management is identified as being related to several characteristics: (1) identification of purchasing synergy opportunities or unrealized synergy potentials; (2) approaches to create and deal with synergy; (3) organizational change; and (4) direct link to the three forms of purchasing synergy. It also adapts the unit of analysis in the definition of purchasing synergy, stating that purchasing synergies are found both between and within business units.

Literature review on the topic identified four management tools for identifying and creating purchasing synergies: Rozemeijer and colleagues, Faes et al. (2000), Smart and Dudas (2007) and Trautmann et al. (2009a). None of them, however, are completely aligned with the definition of purchasing synergy management. The models are not explicitly and systematically linked to the three forms of purchasing synergy. As a consequence, there is a need for developing a new conceptual framework that is closely aligned with the definition of purchasing synergy and the three types of purchasing synergy.

## 7. Towards a New Conceptual Framework

This section describes the development of a new conceptual framework for purchasing synergy management that incorporates all the important elements of the definition of the topic (6.1). This means identifying opportunities for and creating purchasing synergy in the three forms: economies of scale, economies of information and learning, and economies of process, and thereby respond to RQ2.

This chapter is organized as follows: First, Cousins' acknowledged Strategic Supply Wheel, presented in 3.4, is used as point of departure for developing the framework. The rationale for applying this model will be carefully explained. This section subsequently presents the motivation for including other previously presented literature in the field of purchasing and purchasing synergy (management). These relevant works will be correlated against the Strategic Supply Wheel and discussed with respect to each supply wheel element.

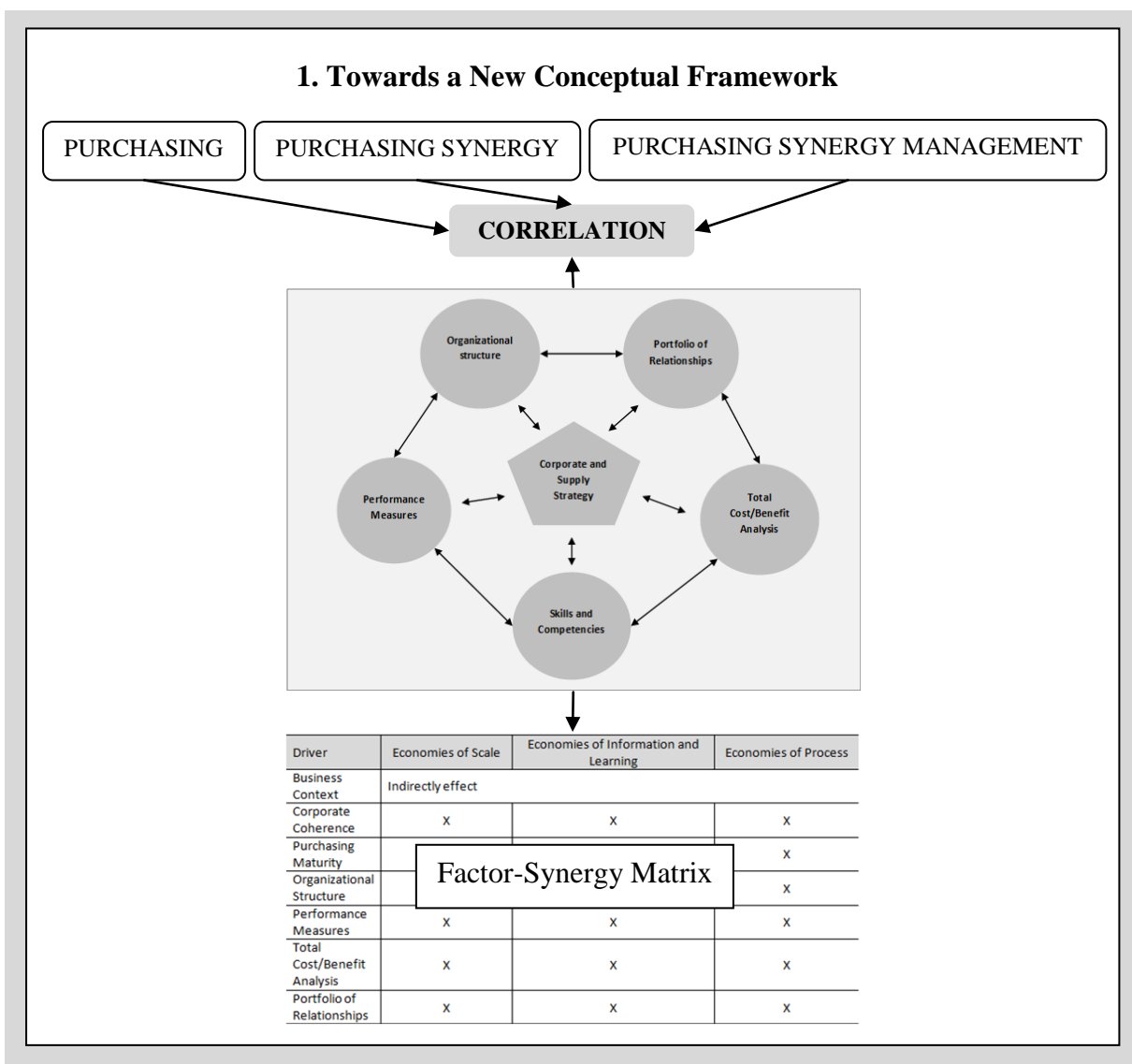


Figure 17: Towards a New Conceptual Framework

Thereafter, issues that the Strategic Supply Wheel does not explicitly cover but are perceived crucial to purchasing synergy management will be outlined. Along the correlation process, Factor-Synergy Matrices are drawn to verify and demonstrate the relevance of the literature incorporated, in relation to purchasing synergy realization. The structure of this chapter is illustrated in Fig. 17.

## **7.1 Rationale for Theoretical Foundation**

This section discusses the rationale for theoretical foundation of the conceptual framework. First, the rationale for the Strategic Supply Wheel is given, before other literature's relevance is outlined.

### **7.1.1 The Strategic Supply Wheel**

The Strategic Supply Wheel (3.4) is used as a starting point for the development of a new conceptual framework for purchasing synergy management (Fig. 17). It is used for the following reasons: (1) the model's applicability; (2) its integration of organizational change; (3) its comprehensiveness; and (4) its unit of analysis.

What is meant by applicability is that the model can be used both as a *diagnosis* and *implementation* tool. It allows a company to make strategic and systematic analysis of both the current state and future directions of a company's purchasing situation (3.4). This means that the Strategic Supply Wheel can be regarded as a general purchasing management tool to identify the present situation of purchasing and at the same time realize any new initiatives.

Another important feature of the Strategic Supply Wheel is that it emphasizes the *need for changing* the wheel elements in order to maintain a balance between them. The model is dynamic in which gaps identified between the wheel elements can serve as basis for forming new purchasing strategy (3.4). Similarly, implementing purchasing synergy initiatives also deals with organizational change (6.1). The Strategic Supply Wheel can accordingly serve the same purpose as a purchasing synergy management framework, only with a more general focus.

The Strategic Supply Wheel is also recognized for its comprehensiveness. It incorporates six interrelated elements: (1) corporate and supply strategy; (2) organizational structure; (3) skills and competencies; (4) portfolio of relationships; (5) performance measures; and (6) total cost/benefit analysis (3.4). These elements cover numerous important aspects of purchasing management and should be considered no matter what specific field of interest within purchasing.

Lastly, the Strategic Supply Wheel is a management tool that may be used for analyzing purchasing both between business units and between the relationships within a single purchasing division (3.4). Its unit of analysis corresponds to the definition of purchasing synergy management. Accordingly, the logic of the model can directly be used in the extended unit of analysis.

Using the aforementioned line of reasoning, the Strategic Supply Wheel, as a general purchasing management tool, will form the basis for developing a conceptual framework for purchasing synergy management.

### **7.1.2 Literature to be Correlated Against the Strategic Supply Wheel**

This section identifies other relevant literature that is to be included in developing the new conceptual framework. Specifically, the relevant literature will be analyzed by correlating it against the Strategic Supply Wheel that serves as a foundation (Fig. 17). In order to be included, the literature must satisfy at least one of the following criteria: (1) emphasize the topic of purchasing synergy and/or purchasing synergy management; and (2) supplement and adding to the Strategic Supply Wheel with new insights.

To begin with, it is obvious that the four previously identified purchasing synergy management works, Rozemeijer and colleagues, Faes et al. (2000), Smart and Dudas (2007) and Trautmann et al. (2009a), should be taken into account. These articles, however, cannot serve the purpose as a fully comprehensive purchasing synergy management framework in accordance with the definition of the topic (6.6.5). It is therefore natural to search for other relevant literature to incorporate, starting with remaining literature on purchasing synergy.

Findings from the literature review on purchasing synergy (5.3) suggest that some articles share more or less similar research focus. Some also focus on purchasing synergy to larger or lesser extents. Selected articles are therefore chosen to represent the topic of purchasing synergy in developing the new conceptual framework. These articles are Corey (1978), van Weele and Rozemeijer (1996), Karjalainen (2011), Karjalainen et al. (2009) and Karjalainen and van Raaij (2011). Rationale for including these articles is presented in the following sections.

Corey (1978) participates in the (de)-centralization debate, which is not only an important issue in organizing purchasing, but also concerns the topic of purchasing synergy (3.3.2; 5.4) Van Weele and Rozemeijer (1996) discuss specialization, the division of labor in an organization (3.3.1), which affects purchasing synergies. These two can, furthermore, supplement and strengthen the supply wheel element Organizational Structure in the Strategic Supply Wheel.

Karjalainen (2011) also discusses centralization, but from the aspects of cost effects on purchasing centralization and corporate framework agreements. The author specifically discusses the effects of centralization on all the three types of purchasing synergy. This article therefore both highlights purchasing synergy and supplements the supply wheel element Total Cost/Benefit Analysis.

The topic of maverick buying, represented in this thesis by the two articles Karjalainen et al. (2009) and Karjalainen and van Raaij (2011), is previously recognized as related to all the three forms of purchasing synergy (5.2). Since maverick buying is a problem that frequently occurs in many organizations, it is considered also highly relevant in the setting regarding purchasing synergy management.

Apart from literature on purchasing synergy (management), it can also be beneficial to include other literature reviewed in Chapter Three on purchasing. This is because the topic of purchasing synergy lacks clearly defined boundaries (5). Moreover, the number of articles on purchasing synergy and especially purchasing synergy management is considered rather small (5.3; 6.6). Selected literature that is previously presented in the literature review on purchasing will accordingly be incorporated in outlining the new conceptual framework. The chosen articles are: Pearson and Gritzmacher (1990), Watts et al. (1995), and Pohl and Förstl (2011). In addition, literature on organizational buying behavior will be taken into account. Rationale for including these articles will now be given.

Alignment between corporate strategy and supply strategy is considered the hub and driver of the Strategic Supply Wheel. It is thus interesting to supplement this wheel element with literature on the same topic. Two articles are chosen for this purpose, Pearson and Gritzmacher (1990) from a strategic management point of view, and Watts et al. (1995) representing the field of purchasing.

Performance measurement is identified as an important step in a purchasing process (3.2.2.4) and is also part of the Strategic Supply Wheel. This highlights the importance of the topic and one previously discussed article, Pohl and Förstl (2011), will be added to the list of other literature included to develop a new conceptual framework.

Last but not least, the literature review on organizational buying behavior has shown an alternative perspective on the decision-making process of purchasing. Buying center theory suggests that many other people outside the purchasing function are in reality involved in the purchasing process (3.2.3). This likely means that the buying center is also involved in activities related to purchasing synergies. However, none of the previously discussed literature on purchasing synergy (management) gives attention to this subject. Recognizing the existence of a buying center, this theory ought to be incorporated as part of the development of a new conceptual framework.

In conclusion, the incorporated literature is taken either from literature review on purchasing, purchasing synergy and/or purchasing synergy management. Since the new conceptual framework concerns purchasing synergy (management), rationale for including articles focusing on these topics seems clear. Literature in purchasing is, seemingly, included to supplement the Strategic Supply Wheel, and is thus not directly related to the topic of purchasing synergy (management). However, in the next sections, the thesis seeks to verify and demonstrate the relationship between all literature incorporated and the three forms of purchasing synergy through Factor-Synergy Matrices.

## **7.2 Findings and Correlations**

To gain a deeper understanding, this section uses the Strategic Supply Wheel as a foundation and correlates all the relevant literature identified in 7.1.2 against the model, in line with Fig. 17. The focus area of the articles will specifically be sorted into the six wheel elements of the model. Other issues not covered by the Strategic Supply Wheel but perceived crucial for purchasing synergy management will subsequently be discussed. As shown in Table 17, the relevant literature is listed in the vertical columns. The supply wheel elements are listed in

horizontal rows, along with a row on key issues not covered by the Strategic Supply Wheel. Results from the correlation along with literature gaps identified are used as basis to form a new conceptual framework for purchasing synergy management.

The general findings from Table 17 show how different researchers focus on different supply wheel elements. Apart from their main focuses shown by the uppercase X'es, the articles reviewed also cover to a certain degree several other supply wheel elements as illustrated by the lowercase x'es. Some articles that were included mainly to supplement one particular supply wheel element thus seem to cover more supply wheel elements than previously assumed. This suggests that the Strategic Supply Wheel acts like a good aid in sorting the literature reviewed.

### **7.2.1 Factor-Synergy Matrix**

To show the linkage between this literature reviewed and purchasing synergy creation, a *Factor-Synergy Matrix* will be displayed in the end of the discussion of each supply wheel element. This is illustrated in Fig. 17.

The matrix will summarize the factors underlying each supply wheel element that contribute to purchasing synergy realization. The matrix is constructed with horizontal rows that categorize the factors under each supply wheel element. In the vertical columns, the three types of purchasing synergy are presented. The X'es mark the link between the particular factors and type of purchasing synergy. Under the X'es, a more detailed description of each type of purchasing synergy is given in parentheses. In example: economies of scale may refer to negotiation power or supplier base reduction. The fields incorporating the X'es also include references to every article that discuss the specific link.

In sum, the Factor-Synergy Matrices show that all literature incorporated deals with the creation of purchasing synergy. The literature in which also includes articles that were previously not discussed in the review on 'purchasing synergy' (5) and 'purchasing synergy management' (6). In this way, literature listed in the matrix can rightfully be taken into account when outlining a new conceptual framework for purchasing synergy management. The Factor-Synergy Matrices thus contributes in validating the expanded literature base forming a new conceptual framework.

**Table 17: Findings and Correlations: Strategic Supply Wheel Correlated with Other Literature**

Strategic Supply Wheel	Rozemeijer	Faes et al. (2000)	Smart and Dudas (2007)	Trautmann et al. (2009a)	Corey (1978)	Van Weele and Rozemeijer (1996)	Pohl and Förstl (2011)	Pearson and Gritzmacher (1990)	Watts et al. (1995)	Karjalainen (2011)	Karjalainen et al. (2009)	Karjalainen and van Raaij (2011)	Webster and Wind (1972)	Sheth (1973)	Johnston and Lewin (1996)
Corporate and Supply Strategy	X	x					X	X	X						
Skills and Competencies	X			x	x				x			x			
Organizational Structure	X			x	X									x	
Performance Measures	x				x		X		x			x			
Total Cost/Benefit Analysis			X				X			X					
Portfolio of Relationships			x		x			X	X		X				
Key Issues Not Explicitly Covered by the Strategic Supply Wheel	Business context Corporate Coherence Intra-firm relationships	Coordination built step by step Intra-firm relationships	Category level Intra-firm relationships	Category level	Business environment	Specialization		Purchasing sophistication Supply environment	Market environment Purchasing boundary spanning		Maverick buying	Maverick buying	Org. buying beh. Buying center Environmental variable	Org. buying beh. Buying center	Org. buying behavior Environmental characteristics



### 7.2.2 Corporate and Supply Strategy

As Table 17 illustrates, Rozemeijer and his colleagues, Pohl and Förstl (2011), Watts et al. (1995) and Pearson and Gritzmacher (1990) are the only researchers that talk explicitly about the importance of aligning corporate strategy and supply strategy. This is somewhat surprising, seeing as Cousins et al. (2008) emphasize how misalignment leads to underperformance.

Rozemeijer (2000a) addresses the importance of aligning corporate and business strategies to foster synergies in purchasing. While Cousins et al.'s (2008) focus is on aligning competitive priorities, Rozemeijer (2000a) identifies the importance of interaction between the four stakeholders in his Relationship Assessment Diagram (Fig. 15). To secure an alignment between purchasing synergy initiatives and corporate and business line strategies, it is important for the CEO to communicate the corporate strategy and objectives to the three other stakeholders. This is done to ensure that they align their effort and contribution to serve this strategy.

To summarize, Rozemeijer and his colleagues state that the primary goal of purchasing synergy is to achieve a fit between company context/culture and selected purchasing models and working methods. An underlying theme in his models is the importance of aligning corporate and supply strategies.

Pohl and Förstl's (2011) main focus is that performance measurement systems are central in the process of aligning corporate and supply strategy. The key measures to use, however, is not elaborated upon. In line with Cousins et al. (2008), the authors emphasize that strategic integration and alignment of the purchasing function will have a positive impact on overall corporate success. A key determinant to achieve this impact is creating a high level of 'purchasing competence', which they describe as: "Purchasing's ability to act in alignment with corporate strategy and execute its capabilities and practices accordingly" (Pohl and Förstl, 2011, p. 232). In this way, creation of purchasing synergies may also be dependent on a high level of purchasing competence.

Pearson and Gritzmacher (1990) support Cousins et al.'s (2008) view of involving the supply function in a company's decision-making process. The authors highlight that integrating a sophisticated purchasing function into the strategic management decision-making process may create a competitive advantage. A sophisticated purchasing function facilitates for purchasing synergies. For example, purchasing function can share its knowledge of supplier networks and supply trends may enable the development of a more competitive strategy.

The main focus of Watts et al. (1995) is to develop a framework for aligning corporate and supply strategy. They stress that a strategically integrated purchasing function will improve an organization's performance. An alignment of corporate and supply strategies, as well as operating policies, will create consistent decision-making that accommodates for purchasing synergies and enhances performance. For example, the purchasing function should choose suppliers based on criteria that are consistent with corporate and manufacturing priorities.

Faes et al. (2000) have included the supply wheel element Corporate and Supply Strategy indirectly by focusing on the importance of implementing a coordination strategy. They do not talk explicitly about the importance of aligning coordination strategy and corporate strategy. However, they emphasize the importance of including corporate level in the process of creating purchasing synergies with focus on establishing firm commitment among the affiliates and create a strong corporate identity.

In summary, aligning corporate and supply strategy is important for an organization's success and may be seen as a driver to purchasing synergy creation in general. This is shown in a Factor-Synergy Matrix in Table 18. Four methods for achieving this alignment is identified in the literature: (1) involving the purchasing function in the strategic decision-making process; (2) creating interaction between Rozemeijer's (2000a) four stakeholders; (3) implementing a performance measurement system; and (4) implementing a coordination strategy.

**Table 18: Factor-Synergy Matrix Corporate and Supply Strategy**

Factor	Economies of Scale	Economies of Information and Learning	Economies of Process
Alignment between corporate and supply strategy	X <i>Rozemeijer Pohl and Förstl (2011)</i> <i>Pearson and Gritzmacher (1990)</i> <i>Watts et al. (1995)</i> <i>Faes et al. (2000)</i>	X <i>Rozemeijer Pohl and Förstl (2011)</i> <i>Pearson and Gritzmacher (1990)</i> <i>Watts et al. (1995)</i> <i>Faes et al. (2000)</i>	X <i>Rozemeijer Pohl and Förstl (2011)</i> <i>Pearson and Gritzmacher (1990)</i> <i>Watts et al. (1995)</i> <i>Faes et al. (2000)</i>

### 7.2.3 Skills and Competencies

Cousins et al. (2008) argue that an organization is dependent on skills and competencies to fulfill its strategic objectives. In line with his view, Rozemeijer, Watts et al. (1995), and Karjalainen and van Raaij (2011) recognize and discuss the importance of a supply function's skills and competencies.

Rozemeijer emphasizes that the degree of purchasing maturity is decisive for what types of purchasing synergies may be created. Purchasing maturity is related to the level of professionalism in the purchasing function. The degree of maturity is determined, among other things, by the skills and competencies of the people constituting the purchasing function. Varied degree of purchasing maturity facilitates different type of purchasing synergies.

While Rozemeijer's focus is on the importance of skills and competencies, Watts et al. (1995) and Karjalainen and van Raaij (2011) address means to increase the level of skills and competencies. Watts et al. (1995) stress the importance of formal training and development programs of purchasing. These programs should be part of an organization's corporate educational plan. The content of these programs are not discussed. Karjalainen and van Raaij (2011) highlight that general purchasing training and training on purchasing practices in use is important factors to reduce maverick buying in an organization. This includes increasing the

employees' knowledge about the concept of TCO, purchasing procedures and systems, and contracts. In other words, depending on the content, training and development program can lead to creation of all types of purchasing synergies.

To summarize, a certain level of skills and competencies is decisive to realize purchasing synergies. To attain a high degree of skills and competencies, an organization should implement formal training and development programs, as well as general purchasing training and training on purchasing practices. Two drivers may be identified as important to creation of all three types of purchasing synergies: skills and competencies and training and development program (Table 19).

**Table 19: Factor-Synergy Matrix Skills and Competencies**

Factor	Economies of Scale	Economies of Information and Learning	Economies of Process
Skills and competencies	X <i>Rozemeijer</i>	X <i>Rozemeijer</i>	X <i>Rozemeijer</i>
Training and development program	X (Importance of negotiation power) <i>Watts et al. (1995)</i> <i>Karjalainen and van Raaij (2011)</i>	X (Sharing know-how) <i>Watts et al. (1995)</i> <i>Karjalainen and van Raaij (2011)</i>	X (Standardization and increased work efficiency) <i>Watts et al. (1995)</i> <i>Karjalainen and van Raaij (2011)</i>

#### 7.2.4 Organizational Structure

Cousins et al. (2008) present five different organizational structures, and emphasize that organizations should review their structure when environment changes. The authors from the literature examined here that also discuss organizational structure are Corey (1978), Rozemeijer and his colleagues, Sheth (1973), and Trautmann et al. (2009)

One of the five organizational structures that Cousins et al. (2008) discuss is centralization of the purchasing function, which is also the focus of Corey (1978). Corey (1978) argues that centralizing is beneficial when two or more locations share the same user requirements that entail standardization. Centralization facilitates realization of purchasing synergies in terms of increases bargaining power, utilization of scarce purchasing resources, and sharing of inventory across department lines. Cousins et al. (2008) share these views of centralization. In addition, Cousins et al. (2008) detect other benefits like economies of scale, policy deployment, and financial control, which are not discussed by Corey (1978).

Moreover, Corey (1978) points out that having the centralized purchasing unit close to production makes it easier to make daily decisions regarding the trade-off between costs related to inventory levels and production flow, and costs of purchasing volumes and delivery quantities.

Rozemeijer and his colleagues suggest a fit between a company's sourcing initiatives, approaches to capture purchasing synergies, and the overall governance structure. The level of corporate coherence and purchasing maturity in a company is in turn decisive for the types of governance structures chosen. This supports Cousins et al.'s (2008) finding that the design of purchasing should align with corporate strategies and effective use of human and ICT resources. There is an apparent match between Rozemeijer's 'central, decentralized and federal' purchasing (Fig. 14; Table 14) and Cousins et al.'s (2008) centralization of purchasing, decentralization of purchasing and federal structure (3.3). However, Cousins et al.'s (2008) two other models (3.3.3), hybrid systems and the atomization of purchasing, have no clear correlation with Rozemeijer's two other structures, centre-led purchasing and coordinated purchasing (Fig. 14; Table 14).

Sheth (1973) and Trautmann et al. (2009a) briefly touch the subject of organizational structure. Sheth (1973) argues that company orientation is decisive for which people in a company that dominate the buying situations. For example, in a technology-oriented organization, the engineering people will be dominating. Trautmann et al. (2009a) recognize that a company's internal structure should be differentiated to fit the relevant context, but do not elaborate on this topic further.

In summary, the authors from the examined literature focus on three of the five organizational structures that Cousins et al. (2008) discuss. These structures are centralization, decentralization, and federal. In addition, Rozemeijer focuses on two other structures namely centre-led and coordinated purchasing. The different structures can be regarded as drivers that facilitate creation of different purchasing synergies. This is illustrated in a Factor-Synergy Matrix in Table 20.

**Table 20: Factor-Synergy Matrix Organizational Structure**

Factor	Economies of Scale	Economies of Information and Learning	Economies of Process
Centralized purchasing	X (Bundling, bargaining power, facilitates utilization of scarce resources and sharing of inventory across units, reduces amount of joint decisions)  <i>Corey (1978)</i> <i>Rozemeijer</i>	X <i>Corey (1978)</i> <i>Rozemeijer</i>	X (Mandatory corporate agreements)  <i>Corey (1978)</i> <i>Rozemeijer</i>
Decentralized purchasing		X (Need for cooperation)  <i>Rozemeijer</i>	

Federal purchasing			X (Voluntary adaption of best practices)  <i>Rozemeijer</i>
Center-led purchasing	X (Harmonization of specifications)  <i>Rozemeijer</i>		
Coordinated purchasing	X (centralizing negotiation on terms and conditions)  <i>Rozemeijer</i>	X (need for cooperation between business units which make their own purchase decisions)  <i>Rozemeijer</i>	

### 7.2.5 Performance Measures

In the Strategic Supply Wheel, performance measures are referred to as a critical tool to manage a firm's supply chain. Performance measures are the main focus of Pohl and Förstl (2011). The other authors focusing on this topic briefly touch the subject.

Pohl and Förstl (2011) define performance measures as a mean for creating and achieving high levels of purchasing competence and strategic alignment. A performance measurement system should fulfill five roles (3.2.2.4). The first role is to create alignment of corporate and supply strategy. This role supports Cousins et al.'s (2008) statement that the aim of such a system is to create alignment between corporate and supply strategy, goals and objectives, and the actions of individuals (3.4.4). Congruence is created if the purchasing performance measurement system is derived from purchasing strategy and reflects the objects inherent in corporate strategy. A cohesive and unified set of practices thus facilitates economies of process.

The second role is to measure performance close to the activities that lead to performance (3.2.2.4). This is related to purchasing practices, which are all observable internal and external management activities performed by the purchasing function to achieve purchasing competence. If the executed purchasing practices are made visible via performance measures, performance can be effectively planned, managed and traced. (Pohl and Förstl, 2011) Measuring performance in a correct manner, state-of-the-art purchasing process knowledge may be established, which represents realized economies of process.

The third role of a performance measurement system is to influence behavior (3.2.2.4). Cousins et al. (2008) take this discussion one step further by emphasizing the importance of implementing a system that encourage performance in areas critical to a firm's success. Fourth, a performance measurement system should aim to develop the purchasing function, as well as the supply base. Depending on the particular development effort, all types of purchasing synergy can be created.

Lastly, it is important that the measures are communicated, e.g. establish a central reporting line to executive management. Cousins et al. (2008) describe these two last roles in more detail, by stressing the importance of evaluating progress with feedback mechanisms, and implementing improvement actions (3.4.4). Sharing knowledge and information on the results and impacts of the purchasing practices facilitates economies of information and learning.

In addition, to ensure that the system fulfills these five roles, Pohl and Förstl (2011) add to Cousins et al.'s (2008) discussion by detecting that centrally designed systems are not always suitable to a local unit level. This entails that a centrally designed system needs to be adapted to the local unit level in order to function optimally.

The other authors in Table 17 that mention performance measures only briefly discuss the topic. Watts et al. (1995) are the only authors, in addition to Pohl and Förstl (2011) that focus on external measures. In line with Cousins et al. (2008), they state that an organization should measure the suppliers in terms of cost, technology/quality, delivery dependability, and flexibility. If the measures are not satisfactory, the organization should either replace the suppliers that underperform or improve their capabilities. Economies of information and learning may be created in the interaction, together with establishment of a common way of working, which realizes economies of process.

Cousins et al. (2008) emphasize that performance measures improve decision-making and communication. Rozemeijer and his colleagues add to this view. They point out that measures aimed at stimulating collaboration across business units indeed influence the degree of cooperation present, which in turn affects the results of a purchasing synergy initiative. However, the theme is not elaborated beyond this. No guidelines for which measures to use, or how to use them, are presented.

Corey (1978) points out that performance measures at the division and plant level differ from performance measures at the corporate level. At the division and plant level, the measures tend to be based on annual cost savings, whereas measures at the corporate level incorporate a long-term perspective, are based on corporate priorities, and are less specific and detailed. Thus, the corporate level will prioritize long-term supply-availability, while the division and plant level will emphasize short-term purchasing costs. Due to these differences, decision making for key supply items should be centralized at the corporate level. Corey's (1978) focus supports Cousins et al.'s (2008) statement that performance measures must be derived from corporate strategy.

Karjalainen and van Raaij (2011) are the only authors who have studied the effect of reward and sanction systems to influence behavior and thereby reduce maverick buying. The authors point out that reward and sanction systems do not have an effect on maverick buying in organizations. This finding is, however, based on a case study of the Finish government. Reward and sanction systems might have a different effect in the private sector.

In summary, performance measures should be derived from purchasing strategy and aligned with corporate objectives. It is, however, important that the measures are adapted to the local unit level. The performance measures should aim to measure performance related to key

purchasing practices accurately. It should influence behavior and develop the purchasing function as well as the supply base. The measures should also be communicated. Performance measures can create purchasing synergies by stimulating collaboration between business units. Reward and sanction systems seem to not have an effect in the public sector. The situation might, however, be different in the private sector.

Based on the preceding discussion, four drivers to purchasing synergy can be identified: align measures with corporate and supply strategy, measure performance accurately, influence behavior and develop purchasing, and communicate measures. Influence behavior and develop purchasing are merged into one factor since they are closely related. All factors are shown in Table 21.

**Table 21: Factor-Synergy Matrix Performance Measures**

Factor	Economies of Scale	Economies of Information and Learning	Economies of Process
Align measures with corporate and supply strategy			X (Cohesive set of practices) <i>Pohl and Förstl (2011)</i> <i>Corey (1978)</i>
Measure performance accurately			X (Purchasing process knowledge) <i>Pohl and Förstl (2011)</i> <i>Watts et al. (1995)</i>
Influence behavior and develop Purchasing	X <i>Pohl and Förstl (2011)</i> <i>Watts et al. (1995)</i> <i>Rozemeijer Karjalainen and van Raaij (2011)</i>	X <i>Pohl and Förstl (2011)</i> <i>Watts et al. (1995)</i> <i>Rozemeijer Karjalainen and van Raaij (2011)</i>	X <i>Pohl and Förstl (2011)</i> <i>Watts et al. (1995)</i> <i>Rozemeijer Karjalainen and van Raaij (2011)</i>
Communicate measures		X (Knowledge transfer) <i>Pohl and Förstl (2011)</i>	

### 7.2.6 Total Cost/Benefit Analysis

The Strategic Supply Wheel emphasizes that an organization should have a total cost of ownership perspective, which entails that total cost/benefit analysis is important. Only Karjalainen (2011) focuses on this aspect. However, several of the articles briefly touch the subject.

Smart and Dudas (2007) emphasize that gross savings in a bundling initiative should offset project costs. They point out that the results of a purchasing pooling implementation should be evaluated, for example with a cost/benefit analysis. Rozemeijer et al. (2003) touch briefly

on the subject by suggesting that benefits and savings that have been obtained in a purchasing synergy initiative should be monitored in order for the CPO to maintain his/her credibility. Accordingly, use of cost-benefit analysis can demonstrate and verify the true benefits of any purchasing synergy initiatives, and facilitate creation of all types of purchasing synergy.

Pohl and Förstl (2011) mention that a characteristic of a purchasing performance measurement system is total cost of ownership of purchasing projects. Karjalainen et al. (2009) and Karjalainen and van Raaij (2011) also focus on total cost of ownership, but from a maverick buying perspective. The authors discuss that one of the reasons for maverick buying is that employees lack a total cost of ownership perspective. Employees may be driven by self-interest or think they act in the best interest of the company, without realizing that total cost of ownership increases when standard procedures and processes are not followed. A TCO perspective is therefore crucial to purchasing synergy creation in many settings, e.g. with respect to performance measures and maverick buying.

Karjalainen (2011) emphasizes the importance of estimating the cost effects of purchasing centralization and commitment to corporate framework agreements. Initially, lack of TCO insight often lead to individual units evaluating mainly based on price, not realizing the other synergy benefits.

To achieve the centralized operating model, the main problem, however, is that subunits are typically reluctant to commit to using the frame agreements *before* they observe the benefits, especially in terms of lower prices. There is thus a need for an organization to be able to verify and demonstrate how much can be saved by centralized purchasing, in order to motivate the necessary changes, and eventually gain those savings. In other words, Karjalainen (2011) is both concerned with the importance of cost/benefit analysis and a TCO perspective.

In summary, companies should perform analyses of all activities that incur costs (Cousins et al., 2008). The importance of using cost/benefit analysis becomes even more apparent when taking into account the importance of cost savings as a driver for purchasing synergy. A TCO perspective is also crucial in every way. The two drivers, use of cost/benefit analysis and TCO perspective are thus identified as being related to purchasing synergy (Table 22). It is somewhat surprising, however, that none of the articles, apart from Karjalainen (2011), present a more in-depth discussion on the topic of cost/benefit analysis.



**Table 22: Factor-Synergy Matrix Total Cost/Benefit Analysis**

Factor	Economies of Scale	Economies of Information and Learning	Economies of Process
Use of cost/benefit analysis	X <i>Smart and Dudas (2007)</i> <i>Rozemeijer et al. (2003)</i> <i>Karjalainen (2011)</i>	X <i>Smart and Dudas (2007)</i> <i>Rozemeijer et al. (2003)</i> <i>Karjalainen (2011)</i>	X <i>Smart and Dudas (2007)</i> <i>Rozemeijer et al. (2003)</i> <i>Karjalainen (2011)</i>
TCO perspective	X <i>Pohl and Förstl (2011)</i> <i>Karjalainen et al. (2009)</i> <i>Karjalainen and van Raaij (2011)</i> <i>Karjalainen (2011)</i>	X <i>Pohl and Förstl (2011)</i> <i>Karjalainen et al. (2009)</i> <i>Karjalainen and van Raaij (2011)</i> <i>Karjalainen (2011)</i>	X <i>Pohl and Förstl (2011)</i> <i>Karjalainen et al. (2009)</i> <i>Karjalainen and van Raaij (2011)</i> <i>Karjalainen (2011)</i>

### 7.2.7 Portfolio of Relationships

In the Strategic Supply Wheel, the wheel element Portfolio of Relationships refers to how the management of inter-firm relationships contributes to a company's success. Several of the authors from Table 17 discuss the importance of buyer-supplier relationships.

Watts et al. (1995) argue that developing a network of competent suppliers may contribute to an organization's competitive advantage. They discuss that in the supplier selection and development process, the capabilities of the suppliers should be emphasized since they are the key ingredients to purchasing success. More specifically, it is important that the purchasing function collaborates with the suppliers to ensure that they are able to deliver according to product requirements. This facilitates all three types of purchasing synergies: economies of scale through cost reduction, economies of information and learning through collaboration and information sharing, and economies of process through common way of working. Watts et al.'s (1995) view is reminiscent with Cousins et al.'s (2008) focus of the importance of aligning relationship strategy and type of product or service purchased.

In addition to establishing a supplier network, Watts et al. (1995) emphasize the importance of defining the different types of relationships an organization has with its suppliers, in order to incorporate purchasing and suppliers into the strategic level planning process. The authors highlight two of the four relationship types discussed by Cousins et al. (2008), namely *adversial* and *cooperative relationships*. An adversial relationship is characterized by focus on the current purchase price and product quality, as well as short-term decisions and multiple sourcing. A cooperative relationship, on the other hand, focuses on long-term total costs, quality capability, and single sourcing. The authors stress that an adversial relationship is not consistent with a long-term corporate level strategic planning process.

Pearson and Gritzmacher (1990) also mention supplier networks, and the distinction between adversial and cooperative buyer-supplier relationships. The authors describe supplier

networks as the purchasing function’s relationships with the suppliers, and the effectiveness of supplier policies. In line with Watts et al. (1995), an adversarial relationship is described as an arm’s length relationship where the buyer has an aggressive price strategy, and if something goes wrong it is always the suppliers fault. A cooperative relationship is described as a ‘family’. This type of relationship is interactive and benefits both parts. The buyer selects fewer suppliers, thereby realizing economies of scale. A reciprocal need for the relationship is created, fostering economies of information and learning.

In line with Cousins et al. (2008), Corey (1978) argues that managing inter-firm relationships may lead to reduced risk. He highlights that an organization should develop a close relationship with suppliers of critical materials to secure availability of supply and achieve economies of scale. He further focuses on two other aspects of a buyer-supplier relationship, which supplements Cousins et al.’s (2008) view. The first is the involvement of other departments in an organization. For example, the engineers can collaborate with the suppliers on production problems, creating economies of information and learning and economies of process through sharing best practices. The other aspect is that the type of product ordered influence whether an organization chooses a supplier with close or distant geographic proximity.

Smart and Dudas (2007) and Karjalainen et al. (2009) have a minor focus on inter-firm relationships. Smart and Dudas (2007) examine the importance of examining the supplier base and selecting suppliers in a bundling initiative, and ultimately realizing economies of scale. Karjalainen et al. (2009) point out that without compliance to corporate-wide frame agreements, supplier purchasing leverage and buyer negotiation power on price and service with suppliers are reduced, resulting in unrealized economies of scale.

In summary, a buyer-supplier relationship can either be characterized as adversarial or cooperative. Establishing a network of competent suppliers and strategic collaboration is important for achieving business success. A cooperative buyer-supplier relationship can foster all three types of purchasing synergies (Table 23). It can also be beneficial for an organization that other functions than purchasing collaborate with the suppliers. The suppliers’ capabilities should be emphasized and aligned with product requirements.

**Table 23: Factor-Synergy Matrix Portfolio of Relationships**

Factor	Economies of Scale	Economies of Information and Learning	Economies of Process
Inter-firm collaboration	<p>X (Cost reduction, supplier base reduction, negotiation power)</p> <p><i>Watts et al. (1995)</i> <i>Pearson and Gritzmacher (1990)</i> <i>Corey (1978)</i> <i>Smart and Dudas (2007)</i> <i>Karjalainen et al. (2009)</i></p>	<p>X (Knowledge and information sharing)</p> <p><i>Watts et al. (1995)</i> <i>Pearson and Gritzmacher (1990)</i> <i>Corey (1978)</i></p>	<p>X (Common way of working, sharing best practices)</p> <p><i>Watts et al., 1995</i> <i>Corey (1978)</i></p>

### **7.2.8 Key Issues Not Explicitly Covered by the Strategic Supply Wheel**

It is evident that the articles featured in this literature review discuss aspects that are not explicitly covered by the Strategic Supply Wheel, but are yet crucial to purchasing synergy management. This is shown in the last row in Table 17. After all, the Strategic Supply Wheel is merely used as a basis to structure relevant literature into predefined wheel elements, which naturally cannot directly cover all key issues central for purchasing synergy management. In this section, each key issue and their importance for purchasing synergy management will therefore be identified. In the end, a Factor-Synergy Matrix will summarize the key issues as drivers to purchasing synergy creation (Table 24).

#### *7.2.8.1 Business Context*

First, the Strategic Supply Wheel does not emphasize explicitly the way its environment affects a firm, except from buyer-supplier interactions. This is identified as a literature gap as several articles clearly point out changing business environment as a crucial driver for purchasing initiatives. Pearson and Gritzmacher (1990) talk about 'supply environment'; Watts et al. (1995) name it 'market environment'; and Rozemeijer uses the expression 'business context'.

Both Webster and Wind (1972) and later Johnston and Lewin (1996) precisely define what is meant by environmental influences, which influence the purchasing process by both constraining it and providing it opportunities. The environmental influences include physical, technological, economic, political, legal and cultural aspects and impacts in four distinct ways: (1) defines the availability of supply; (2) defines the general business conditions; (3) determines the values and norms guiding interorganizational and interpersonal relationships; and (4) influences the information flow.

It is reasonable to assume, as Rozemeijer (2000a) recognizes, that business context *indirectly* affects purchasing synergy management. One way in which this might take place is shown in how changes in the business cycle typically affect a company's focus on cost reduction, and thereby its realization of economies of scale. Another example is taken from Corey (1978), who is concerned with how changing business environment in terms of availability of supply and governmental influences tends to foster strong centralized procurement functions, emphasizing on pooling negotiation power.

#### *7.2.8.2 Corporate Coherence*

Second, the importance of corporate coherence as it relates to how the different parts of the corporation operate and are managed as one entity, is somewhat neglected in the Strategic Supply Wheel. Although it emphasizes alignment between corporate and supply strategy, the Strategic Supply Wheel does not take into account coherence of management type, vision, strategy, culture and structure across *all* business units. Corporate coherence nevertheless plays an important role in purchasing synergy management. It may facilitate creation of all three types of purchasing synergy. On the other hand, the lack of a clear corporate strategy, an integrated corporate structure or simply a weak corporate culture, all present significant challenges to the creation of purchasing synergy (Rozemeijer, 2007).

### *7.2.8.3 Purchasing Maturity*

Third, the level of professionalism or sophistication in the purchasing function is by the Strategic Supply Wheel related only to the skills and competencies of the people constituting the purchasing function. Rozemeijer, however, emphasizes that the level of professionalism, namely 'purchasing maturity', is also related to the status, role and position of the purchasing function, availability of purchasing information systems and quality of the purchasing activities. The author also emphasizes development of the purchasing function. To begin with, no explicit purchasing strategy exists and the main focus is on bottom-line savings. Going through different stages, the purchasing function matures in terms of process standardization, cross-unit coordination, strategic decision-making and value chain focus, thereby achieving all three types of purchasing synergy.

Pearson and Gritzmacher (1990), who instead use the term 'sophistication in purchasing', support Rozemeijer's view. They add to it that a highly sophisticated purchasing function is classified by: (1) direct reporting to top management; (2) active, effective strategic supply managers; (3) access to critical information; (4) computer integrated information system; (5) decision-making not only on price; (6) cooperative relationships with suppliers; and (7) highly involved in strategic management.

### *7.2.8.4 Specialization*

Fourth, specialization, the division of labor in a purchasing organization, is not covered in the Strategic Supply Wheel. Van Weele and Rozemeijer (1996) state that, in order to deliver performance, purchasing needs to seek the appropriate balance between vertical and horizontal organizational features. Organizational structure affects creation of purchasing synergies (7.2.3). Since specialization is considered one of the structural variables describing organizational structure of purchasing, it is considered relevant for purchasing synergy management.

### *7.2.8.5 Maverick Buying*

Fifth, maverick buying, non-compliant work behavior in purchasing, is not considered in the Strategic Supply Wheel, even though the phenomenon has been identified as being related to several wheel elements. Maverick buying is among others associated with deviation from standard procedures and lack of skills and competencies, including the understanding of TCO (Karjalainen et al., 2009; Karjalainen and van Raaij, 2011). Since the phenomenon is associated with all three types of purchasing synergy (5.2), it is considered relevant to purchasing synergy management. As a driver to purchasing synergy creation, maverick buying mainly leads to unrealized economies of scale through lost negotiation power and increased process costs, along with unrealized economies of process through lost efficiency and possibility to standardize (5.2).

### *7.2.8.6 Intra-firm Relationships*

Sixth, the Strategic Supply Wheel only focuses on inter-firm relationships, where Watts et al. (1995), Rozemeijer, Faes et al. (2000) and Smart and Dudas (2007) all discuss and recognize the importance of managing *intra-firm* relationships. Rozemeijer argues that interaction between the four main stakeholders within a company (i.e. CEO, CPO, BU managers, BU

purchasers) is crucial for reaping the benefits of initiatives aimed at fostering corporate purchasing synergy, in which each stakeholder has its own distinct responsibilities. Furthermore, he identifies possible barriers to cooperation that negatively affect purchasing synergy results.

Faes et al. (2000) also focus on interaction between different stakeholders. According to the authors, formalized but open communication between the purchasing coordination staff, local purchasing and plant management is a key factor in achieving an effective and successful coordination of a purchasing synergy initiative.

Watts et al. (1995) put it in another way and emphasize purchasing as a boundary-spanning unit in the organization. This means that purchasing has the primary responsibility of linking suppliers' capabilities with the internal requirements specified by corporate and manufacturing strategies. This facilitates economies of scale through process costs reduction, economies of information and learning through knowledge transfer and economies of process through sharing working styles and best practices. Smart and Dudas (2007) support this view and point out that purchasing strategies necessitate collaboration between business units.

#### *7.2.8.7 Organizational Buying Behavior and the Buying Center*

Seventh, review of literature on organizational buying behavior proves its relevance to purchasing synergy management in two ways. Primarily, it addresses a larger scope than what the Strategic Supply Wheel does. The latter model is limited to the purchasing function. However, as suggested by organizational buying behavior literature, many persons in an organization, also outside the purchasing function, are in reality involved in the purchasing process (Webster and Wind, 1972; Sheth, 1973; Johnston and Lewin, 1996).

These people can be classified into five roles: users, influencers, deciders, buyers, and gatekeepers. Together they form the *buying center*. Purchasing synergy management is concerned with activities spanning the whole purchasing process, which is not necessarily conducted solely by the purchasing function. The limited scope of the Strategic Supply Wheel, and indeed other literature in purchasing, is therefore considered a gap in literature.

Moreover, the buying center itself essentially concerns intra-firm relationships. In order to understand the purchasing decision-making process, interaction between the different roles in the buying center ought to be studied. Organizational buying behavior literature accordingly also deals with intra-firm relationships.

#### *7.2.8.8 Level of Analysis*

Eight, there is a difference between the two articles, Smart and Dudas (2007) and Trautmann et al. (2009a), and the Strategic Supply Wheel in level of analysis. The two articles operate at item/category level. These articles give little attention to the elements of the supply wheel. Another way to put this is that the supply wheel does not cover all the important findings from these articles. One reason for this "gap", so to speak, may be that the Strategic Supply Wheel focuses on elements that should be considered in a change process within the whole purchasing function, whereas the two articles focus on synergy initiatives related to items and

product categories. The difference between the levels of analysis makes it difficult to compare the two articles with the Strategic Supply Wheel.

### 7.2.8.9 Gradual Change

Last but not least, the Strategic Supply Wheel does not emphasize the gradual nature of an organizational change process. As being point out by Faes et al. (2000), a strategy coordination process that leads to the realization of purchasing synergies, need to be planned and executed over a longer period of time for it to be successful (6.3). This makes it a criterion of success that should not be overlooked in the implementation phase of creating purchasing synergies.

In conclusion, this section identifies key issues that are not covered by the Strategic Supply Wheel but considered relevant for purchasing synergy management. The key issues are: (1) business context; (2) corporate coherence; (3) purchasing maturity; (4) specialization; (5) maverick buying; (6) intra-firm relationships; (7) organizational buying behavior and the buying center; (8) difference in unit of analysis; and (9) gradual change process.

### 7.2.8.10 Overview of Key Issues

Based on the preceding discussion, Table 24 preliminary introduces the relationship between some of the key issues highlighted and the creation of purchasing synergy. Nevertheless, all the key issues will be taken into account when developing the new conceptual framework for purchasing synergy management. A more precise outline of how all key issues are related to purchasing synergy will then be given. The key issues not shown in Table 24 but will be discussed in the subsequent chapter include: organizational buying behavior that concerns scope of analysis, difference in unit of analysis, and gradual change in an implementation process.

**Table 24: Factor-Synergy Matrix Key Issues Not Explicitly Covered by the Strategic Supply Wheel**

Factor	Economies of Scale	Economies of Information and Learning	Economies of Process
Business Context	X (Indirect effect) <i>Pearson and Gritzmacher (1990)</i> <i>Watts et al. (1995)</i> <i>Rozemeijer</i> <i>Webster and Wind (1972)</i> <i>Johnston and Lewin (1996)</i> <i>Corey (1978)</i>	X (Indirect effect) <i>Pearson and Gritzmacher (1990)</i> <i>Watts et al. (1995)</i> <i>Rozemeijer</i> <i>Webster and Wind (1972)</i> <i>Johnston and Lewin (1996)</i> <i>Corey (1978)</i>	X (Indirect effect) <i>Pearson and Gritzmacher (1990)</i> <i>Watts et al. (1995)</i> <i>Rozemeijer</i> <i>Webster and Wind (1972)</i> <i>Johnston and Lewin (1996)</i> <i>Corey (1978)</i>
Corporate Coherence	X <i>Watts et al. (1995)</i> <i>Rozemeijer (2007)</i>	X <i>Watts et al. (1995)</i> <i>Rozemeijer (2007)</i>	X <i>Watts et al. (1995)</i> <i>Rozemeijer (2007)</i>
Purchasing Maturity	X <i>Rozemeijer</i> <i>Pearson and Gritzmacher (1990)</i>	X <i>Rozemeijer</i> <i>Pearson and Gritzmacher (1990)</i>	X <i>Rozemeijer</i> <i>Pearson and Gritzmacher (1990)</i>

Maverick Buying	X <i>Karjalainen et al. (2009)</i> <i>Karjalainen et al. (2011)</i>		X <i>Karjalainen et al. (2009)</i> <i>Karjalainen et al. (2011)</i>
Intra-firm Collaboration	X <i>Rozemeijer</i> <i>Faes et al. (2000)</i> <i>Watts et al. (1995)</i> <i>Smart and Dudas (2007)</i> <i>Webster and Wind (1972)</i> <i>Sheth (1973)</i> <i>Johnston and Lewin (1996)</i>	X <i>Rozemeijer</i> <i>Faes et al. (2000)</i> <i>Watts et al. (1995)</i> <i>Smart and Dudas (2007)</i> <i>Webster and Wind (1972)</i> <i>Sheth (1973)</i> <i>Johnston and Lewin (1996)</i>	X <i>Rozemeijer</i> <i>Faes et al. (2000)</i> <i>Watts et al. (1995)</i> <i>Smart and Dudas (2007)</i> <i>Webster and Wind (1972)</i> <i>Sheth (1973)</i> <i>Johnston and Lewin (1996)</i>
Purchasing as a Boundary Spanning Unit		X <i>Watts et al. (1995)</i>	X <i>Watts et al. (1995)</i>

### 7.3 Summary

This chapter lays the foundation for developing a new conceptual purchasing synergy management framework. It starts out with explaining the rationale for applying Cousins et al.'s (2008) Strategic Supply Wheel as a basis to correlate and analyze relevant literature. The relevant literature is all chosen from previous reviews on the topic of 'purchasing synergy (management)' in addition to 'purchasing'. Key issues not covered by the Strategic Supply Wheel but perceived important for purchasing synergy management are subsequently identified. Factor-Synergy Matrices is presented along the way to validate the relevance of all literature incorporated. The matrices show references tracing back to every article that discusses the different causes of purchasing synergy creation.

Together, this literature forms the basis for the next chapter, where the wheel will be "reinvented".

## 8. Reinventing The Wheel

This section suggests a new conceptual framework for purchasing synergy management that takes into account the *links* and *gaps* identified between the Strategic Supply Wheel and the other literature in 'purchasing' and 'purchasing synergy management'. All literature incorporated are relevant to purchasing synergy creation. This is proved by the Factor-Synergy Matrices shown in the preceding chapter.

The purpose of the conceptual framework is to enable purchasing synergy management, as defined in (6.1). It incorporates all the important elements emphasized in the definition of purchasing synergy management. This means identifying opportunities for and creating purchasing synergy in three forms: economies of scale, economies of information and learning and economies of process (5.1). Moreover, the framework should take into account organizational change, and the unit of analysis of the definition of purchasing synergy. The conceptual framework is named *the Purchasing Synergy Management Wheel*.

Specifically, the key issues not covered explicitly by the Strategic Supply Wheel, but perceived crucial to purchasing synergy management are to be integrated. Table 25 shows how the key issues are to be integrated into the new conceptual framework.

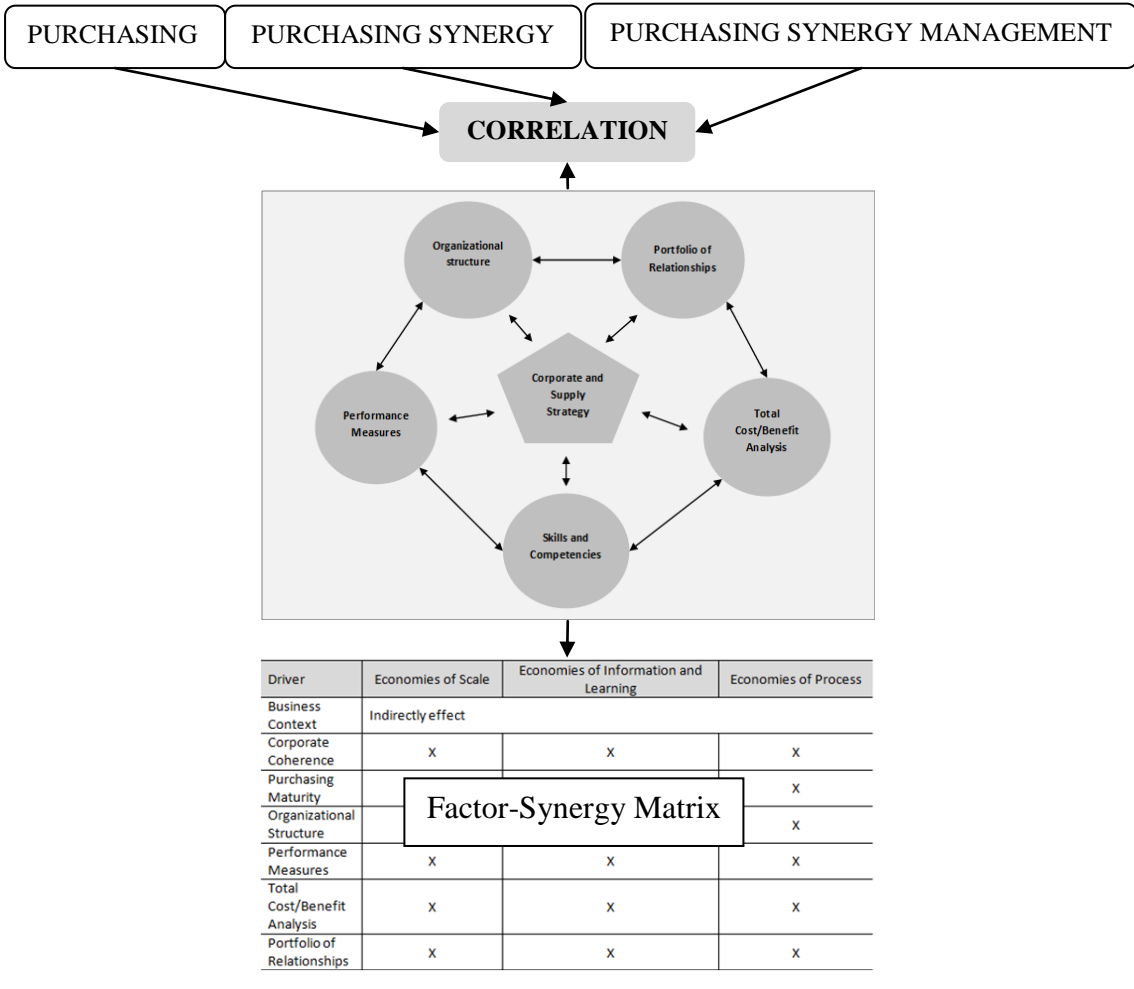
**Table 25: Key Issues Integrated into the New Conceptual Framework**

Key Issue	How to be Integrated
Business Context	As a separated element
Corporate Coherence	As a separated wheel element
Purchasing Maturity	As a separated wheel element
Specialization	Incorporated in the wheel element Organizational Structure
Maverick Buying	Incorporated in the wheel element Corporate Coherence
Intra-firm Relationships	Incorporated in the wheel element Portfolio of Relationships
Organizational Buying Behavior and the Buying Center	Scope of the framework Incorporated in the wheel element Portfolio of Relationships
Difference in Level of Analysis	The framework takes a corporate level perspective
Gradual Change Process	Practical application of the framework

This chapter is structured as followed: First, the scope and unit of analysis of the Purchasing Synergy Management Wheel is defined. Explicit definitions of each wheel elements in the framework are then given. The links between the wheel elements and the three forms of purchasing synergy are subsequently drawn. This is illustrated in Factor-Synergy Matrices, first in each wheel element, and then summarized into a final matrix. Lastly, the practical application of the framework is outlined. Figure 18 illustrates the structure of this chapter.



# 1. Towards a New Conceptual Framework



# 2. Reinventing the Wheel

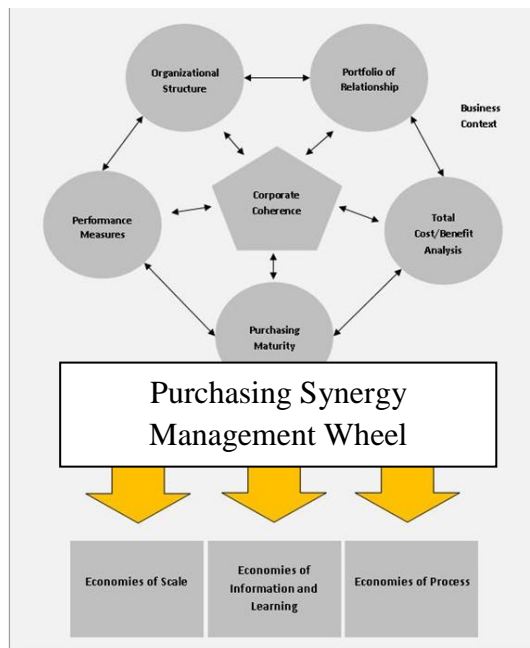


Figure 18: Reinventing the Wheel

## 8.1 Scope

Scope implies the broadness of the analysis, i.e. whether it is limited to the purchasing function, or whether it encompasses the rest of the organization and its role in purchasing. Apart from the organizational buying behavior literature (3.2.), none of the articles listed in Table 17 address this issue. It is clear, however, that many people outside the purchasing function are also involved in purchasing activities in one way or another (3.2). These are by the organizational buying behavior literature presented as the *buying center*. To fully understand all activities that can affect the creation of purchasing synergies, the scope of this framework should thus be expanded to include the whole buying center instead of solely the purchasing function. This entails that it is important to detect the individuals in the organization being analyzed that holds one or several of the roles the buying center constitutes.

Table 26 serves as a foundation to ensure that all the roles in the buying center is included in the scope of analysis, namely users, buyers, influencers, deciders, and gatekeepers. To detect these roles, one should take a broad viewpoint of the organization under consideration since a variety of organizational positions may hold one or several of the buying center roles. In accordance with organizational buying behavior literature, the seven organizational positions that might be part of the buying center are: marketing, development or design engineering, manufacturing, research and development, supporting staff, general management and purchasing agents.

**Table 26: Buying Center Roles in Scope**

Buying Center Role	Explanation of Buying Center Role	Organizational Positions
Users	Those in the organization that use the purchased product or service	(1) Marketing
Buyers	The people with formal responsibility and authority for contracting with suppliers	(2) Development or Design Engineering
Influencers	Those who directly or indirectly influence the decision making process	(3) Manufacturing
Deciders	The people with authority to choose among alternative buying actions	(4) Research and Development
Gatekeepers	The members of the organization that controls the flow of information and materials into the buying center	(5) Support Staff (6) General Management (7) Purchasing Agents

## 8.2 Level of Analysis

Two levels of unit of analysis are previously discussed: the item level and the corporate level. The item-level focus (represented through the work of Smart and Dudas (2007) and Trautmann et al. (2009a)) will not be further elaborated on. The framework rather takes a corporate-level perspective similar to the one found in the Strategic Supply Wheel model by

Cousins et al. (2008) and the works of Rozemeijer and Faes et al. (2000). That is, it seeks to detect how corporate-wide issues and organizational changes affect the potentials for purchasing synergy.

### **8.3 Unit of Analysis**

The authors examined in Chapter Five only hold reasoning of purchasing synergy creation between two or more business units (or purchasing departments). The broadened definition of purchasing synergy and purchasing synergy management, however, states that purchasing synergy is created between two or more business units (or purchasing departments), or between relationships within one business unit (5.1).

The suggested conceptual framework therefore seeks to cover how purchasing synergy may be created both through: (1) cooperation between two or more business units or purchasing departments; and (2) cooperation between two or more purchasing roles within the same business unit or purchasing department. This increases the generalizability of the literature that forms the basis for the conceptual framework.

### **8.4 Definition of Elements**

Definitions of the wheel elements in the Purchasing Synergy Management Wheel are based on Cousins et al.'s (2008) original definitions of the Strategic Supply Wheel. More importantly, the definitions also incorporate findings from correlation in Table 17 between the literature presented in 7.1 and the supply wheel elements to accommodate the context of purchasing synergy management.

In the following sections, each wheel element will be elaborated and explicitly defined. The factor underlying each wheel element that give rise to purchasing synergies will also be outlined in a Factor-Synergy Matrix for every wheel element.

#### **8.4.1 Business Context**

The analysis of key issues not covered in the Strategic Supply Wheel revealed the model's lack of direct focus on external aspects that affect purchasing synergy. To explicitly show how external environment impacts on a company, a new element is added to the Purchasing Synergy Management Wheel. It is named *Business Context*. However, to make a clear distinction between the internal and external environment of the company, the element itself is not recognized as part of the wheel. Rather, as shown in Fig. 19, it influences, but lies outside the intra-firm environment.

The external variables constituting the business context are best described in organizational buying behavior literature. They include: physical, technological, economic, political, legal and cultural variables (Webster and Wind, 1972). Johnston and Lewin (1996) also add supplier, competitors and global characteristics. These can materialize in typical expressions such as competitive pressure, reduced product life cycles, and pressure for delivering stakeholder value (Rozemeijer, 2000a).

Business context impacts the organization in four distinct ways: (1) it defines the availability of supply; (2) it defines the general business conditions; (3) it determines the values and

norms guiding interorganizational and interpersonal relationships; and (4) it influences the information flow (Webster and Wind, 1972). Altogether, it affects the organization's purchasing strategy and thus indirectly influences the creation of purchasing synergy (Rozemeijer, 2000a).

Business context is defined as the following:

**Business Context** takes into consideration external variables, such as physical, technological, economical, political/legal and social variables, which affect a company's purchasing strategy and thus indirectly influence the creation of purchasing synergy (adapted from Webster and Wind, 1972; Rozemeijer, 2000a).

Figure 19 illustrates the external variables in a company's business context that must be taken into account when analyzing the realization of purchasing synergy. *Physical* variables include geographic, climate, environmental, and ecological aspects. *Technological* variables are concerned with shortened product innovation cycles, reductions in imperative time to market, opportunities in e-supply, and increased globalization. *Economical* variables focus on recession, depression, global competition, industry alliances, and corporate mergers. *Political/legal* variables address constraints of regulation and regional development policies. The last variable, *Social*, includes national labor rates, quality of working life, protection of national structural industries, and ethical issues. (Webster and Wind, 1972)

What is important is that each individual company's business context varies. The external variables thus affect each company in different ways, and some may be more important than others depending on the context.

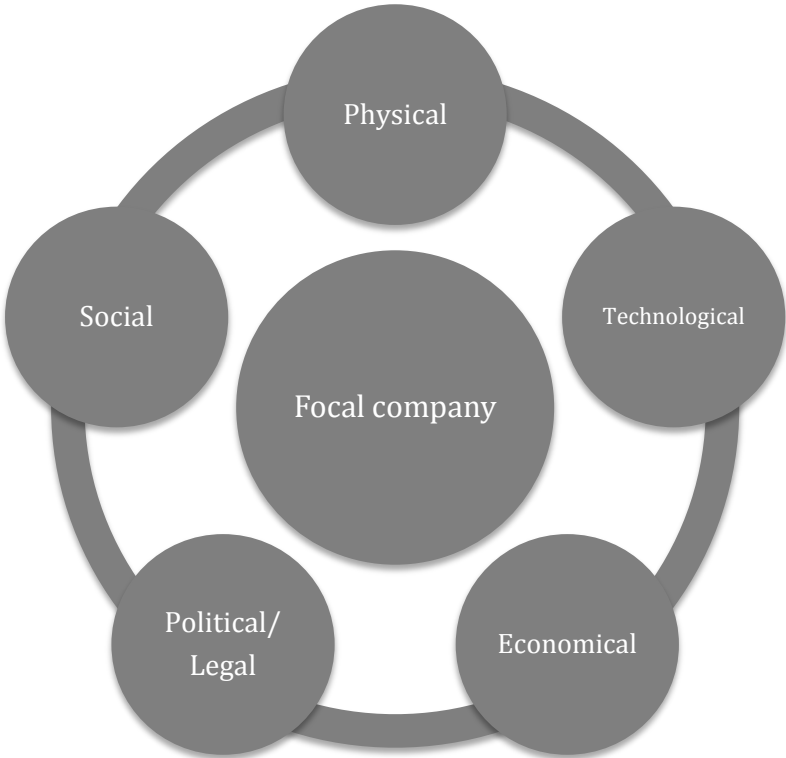


Figure 19: Business Context Variables

### 8.4.2 Corporate Coherence

Corporate Coherence resembles the center wheel element in the Strategic Supply Wheel named Corporate and Supply Strategy. It acts as the hub and driver element of the framework. It also emphasizes the importance of alignment between corporate and purchasing strategy, as discussed by works such as Pearson and Gritzmacher (1990), Faes et al. (2000) and Pohl and Förstl (2011), in addition to The Strategic Supply Wheel. Alignment between corporate and supply strategy can lead to all three types of purchasing synergy (Table 24).

However, as suggested by Rozemeijer and Watts et al. (1995), alignment of strategy is not only between corporate and purchasing, but also between these and all other business units. Purchasing strategy must, in other words, be aligned with both corporate and other business strategies (Watts et al. (1995). This facilitates creation of all three forms of purchasing synergy.

Any misalignment and deviations from standard procedures and corporate guidelines will lead to unrealized potentials for purchasing synergy. This is referred to as maverick buying, which exists in five different forms: unintentional, forced, casual, well-intentioned, and ill-intentioned (3.5). Maverick buying can cause unrealized economies of scale and economies of process (7.2.8.5).

Moreover, corporate coherence not only includes alignment on strategy, but also on management style, vision, culture, and information platform across all business units, as these aspects also affect the creation of purchasing synergies (Rozemeijer, 2007). Both information platform and culture essentially deal with interaction and information sharing and a common way of working. These factors facilitate creation of economies of information and learning and economies of process. Management style may facilitate all three types of purchasing synergy depending on the particular situation. Corporate coherence thus essentially relates to how the different parts of the corporation operate and are managed as one entity.

Corporate coherence is characterized as:

**Corporate Coherence** addresses alignment of management style, vision, strategy, culture and information platform across the entire corporation to foster purchasing synergy (adapted from Rozemeijer, 2000a)

An analysis of alignment in different contexts across the company should lead to a classification of the overall degree of Corporate Coherence. The classification is not meant to be perfectly accurate. Rather, it should show the degree of Corporate Coherence, roughly divided into low, moderate and high, in a simplified, but acceptable manner. Table 27 shows the drivers underlying this wheel element that contribute to purchasing synergy creation.

**Table 27: Factor-Synergy Matrix Corporate Coherence**

Factor	Economies of Scale	Economies of Information and Learning	Economies of Process
Alignment between corporate and supply strategy	X	X	X
Alignment between business-level strategies	X	X	X
Maverick buying	X (Pooling negotiation power)		X (Standardization, one line of conduct)
Information platform		X (Integrated data)	X (Standardization)
Organizational culture		X	X (Common way of working)
Management style	X	X	X

### 8.4.3 Purchasing Maturity

The wheel element Skills and Competencies in The Supply Wheel are replaced by Purchasing Maturity in this conceptual framework for purchasing synergy management. This is because purchasing professionals not only need to possess the requisite skills and competencies. The level of sophistication and the maturity of the purchasing function as a whole are equally important for the creation of purchasing synergy.

Purchasing Maturity relates to the level of professionalism of the purchasing professionals and comprises the status, role and position of the purchasing function, information access, availability of purchasing information technology, quality of the purchasing activities, level of strategic decision-making, and level of collaboration with suppliers (Pearson and Gritzmacher, 1990; Rozemeijer, 2000a).

Specifically, Purchasing Maturity also deals with status, role and position relate to the visibility and organizational perception of the purchasing function, and the reporting line to top-management (Pearson and Gritzmacher, 1990). Maturity of the purchasing function, however, is not a static condition. Focus on development is needed in order for the function to become strategically important and highly sophisticated.

In the Purchasing Synergy Management Wheel model, purchasing maturity is defined as the following:

**Purchasing Maturity** is the professionalism and sophistication of the purchasing function and the entire buying center that enables purchasing activities and processes to obtain purchasing synergy (Adapted from Pearson and Gritzmacher, 1990; Rozemeijer, 2000a).

Table 28 illustrates the degree of purchasing maturity, from an operational approach in the lower end to a strategic approach in the higher end. In order to assess the current level of purchasing maturity, all aspects incorporated in the definition must be considered. This gives a simple picture of the degree of Purchasing Maturity, ranging from low, to high. This classification also corresponds well with Rozemeijer's six stages of Purchasing Maturity.

Different types of purchasing synergy may be realized depending on the degree of Purchasing Maturity. This is illustrated in the last column of Table 28. Some factors, such as reporting line, skills and competencies, training and development program, and strategic decision-making, are concerned with the influences purchasing can exert and its competencies and strategic importance. In general, they can therefore lead to all three types of purchasing synergy (7.2.8.3).

Other factors may in particular deal with information sharing, such as information access and information technology, thereby emphasizing economies of information and learning. Professionalism towards suppliers can lead to benefits such as economies of scale through negotiation power and economies of process through one line of conduct.

**Table 28: Factor-Synergy Matrix Purchasing Maturity**

Degree of Purchasing Maturity	Low	High	Purchasing Synergy Affected
Reporting line	Lengthy reporting chain to top management	Direct reporting line to top management	All three types
Visibility and organizational perception	Low visibility, isolated ineffective paper pushers	High visibility, active, effective, strategic supply managers	Economies of information and learning and economies of process
Information access	Limited exposure to critical reports and information	Access to a library of internally and externally generated information	Economies of information and learning
Information technology	Inundated by non-computerized data	Computer integrated information system	Economies of information and learning and economies of process
Skills and competencies	Limited skills and competencies	Extensive knowledge and qualification	All three types
Training and development program	Minor focus on development of human resources	Training and development prioritized	All three types

Strategic decision-making	Clerical function, non-existent input to strategic management	Provides expert analysis, provides critical information to strategic management	All three types
Professionalism towards supplier	Unprofessional supplier contact	Uniform buying policies, demanding but encouraging	Economies of scale and economies of process

#### 8.4.4 Organizational Structure

Both Cousins et al. (2008) and Rozemeijer and colleagues present different structures for organizing purchasing. Rozemeijer and colleagues' Governance Structure model (Fig. 20), gives a clear indication of the achievable purchasing synergies related to the different structures for organizing purchasing. It is therefore considered more appropriate than the five structures of Cousins et al. (2008), for the purpose of defining this element as part of the Purchasing Synergy Management Wheel.

This wheel element is thus built upon Rozemeijer's governance structures. They are divided into: (1) decentralized purchasing; (2) centralized purchasing; (3) federal (or local-led) purchasing; (4) center-led purchasing; and (5) coordinated purchasing. The essence of the Governance Structure model is that the design of purchasing should align with both Corporate Coherence and Purchasing Maturity. The appropriate governance structure is a function of the level of these two wheel elements.

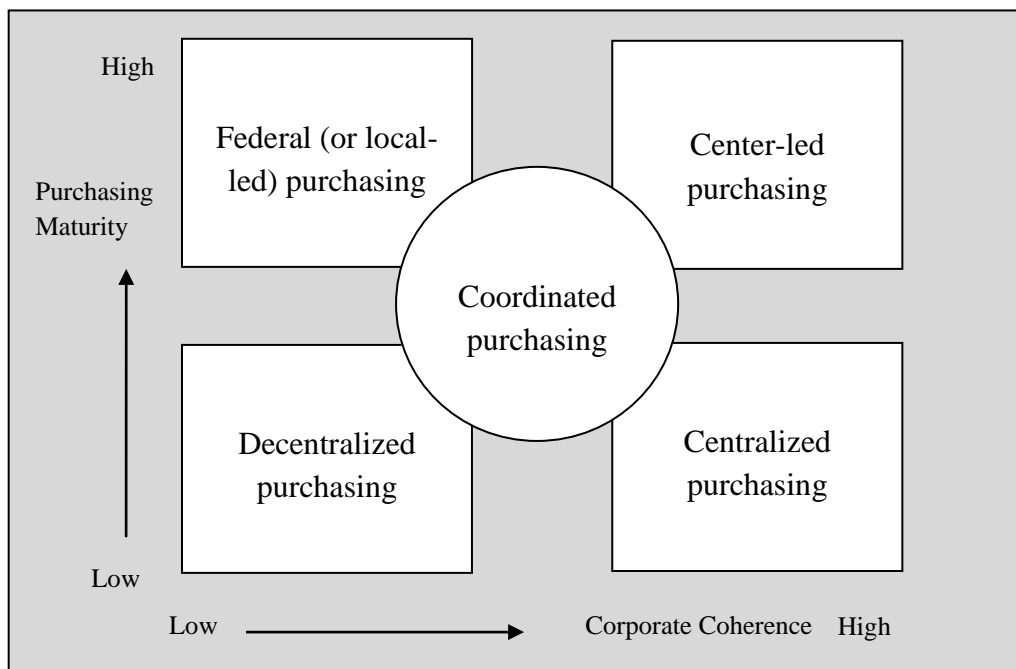


Figure 20: Governance Structure Model (Adapted from Rozemeijer)

The other literature reviewed largely focus on the (de)-centralization debate, which is covered by the aforementioned governance structures. However, van Weele and Rozemeijer (1996) discuss the structural variable specialization, which refers to the division of labor and the



balance between vertical and horizontal purchasing organizations. Vertical purchasing organizations are characterized by hierarchical structures and functional orientation, and horizontal purchasing organizations are process oriented, focusing on a complete process that cuts across business boundaries.

This wheel element is characterized as:

**Organizational Structure** is the design of purchasing characterized by: (1) type of governance structure suggested by the level of Corporate Coherence and Purchasing Maturity (decentralized purchasing, centralized purchasing, federal (or local-led) purchasing, center-led purchasing and coordinated purchasing); and (2) balance between vertical and horizontal organizational features. Together, this delineates the appropriate purchasing synergies to pursue (adapted from Rozemeijer, 2000a; van Weele and Rozemeijer, 1996; Webster and Wind, 1972, Sheth, 1973, and Johnston and Lewin, 1996).

In order to analyze this element, the current organizational structure should first be described by looking at the characteristics of the five governance structures and the two types of specialization. A suggested, or otherwise appropriate governance structure should be pointed out depending on an analysis of the actual level of Corporate Coherence and Purchasing Maturity. A correct fit is present if the current structure is the same as the one suggested by the level of Purchasing Maturity and Corporate Coherence.

Different organizational structures create different types of purchasing synergies (7.2.4). Together with specialization, they are identified as drivers to purchasing synergy realization. This is shown in Table 29.

**Table 29: Factor-Synergy Matrix Organizational Structure**

Factor	Economies of Scale	Economies of Information and Learning	Economies of Process
Centralized purchasing	X (Bundling, bargaining power, facilitates utilization of scarce resources and sharing of inventory across units, reduces amount of joint decisions)	X	X (Mandatory corporate agreements)
Decentralized purchasing		X (Need for cooperation)	
Federal purchasing			X (Voluntary adaption of best practices)
Center-led purchasing	X (Harmonization of specifications)		

Coordinated purchasing	X (centralizing negotiation on terms and conditions)	X (need for cooperation between the separated business units which make their own purchase decisions)	
Horizontal Specialization	X	X	X
Vertical Specialization	X	X	X

#### 8.4.5 Performance Measures

Largely in line with Cousins et al. (2008), Pohl and Förstl (2011) suggest that Performance Measures are designed to fulfill five purposes: (1) derive measures from purchasing strategy that reflects the objectives of corporate strategy; (2) measure performance of key activities that enables traceability; (3) influence behavior and motivation; (4) develop the purchasing function and supply base; and (5) communicate measures.

Often, performance measures are divided into external (supplier) and internal measures. Typical supplier performance measures include: cost, quality, delivery and flexibility (Watts et al., 1995). Internal measures are for example: internal customer satisfaction, maverick-buying ratio, total cost of ownership, contract management, and costs of the purchasing function/savings (Pohl and Förstl, 2011). Soft measures, such as flexibility and innovativeness, can prove to be difficult to establish.

By performance measures, it is meant:

**Performance Measures** aim to align measures with strategic priorities, measure performance accurately, influence behavior, foster learning and improvement and communicate the measures for carrying out the work of obtaining purchasing synergies (adapted from Pohl and Förstl, 2011).

To analyze this wheel element, the five equally important roles of performance measures should be considered altogether. The roles can also be considered a process comprised of five steps from designing a measure that fits corporate and supply strategy, through measuring the actual performance, influencing behavior and fostering development to communicating the measures. Figure 21 illustrates this five-step process. This process should be subject to continuous improvement based on experiences and feedback from users. Objectives of certain measures can also change according to e.g. changing business environments and/or competitive goals.



**Figure 21: Five-step Performance Measures Process**

As stated in 7.2.5, the different roles of purchasing measures can lead to purchasing synergy creation, e.g. if measures are aligned with corporate and supply strategy and performance is measured accurately. Influencing behavior, developing purchasing, and communicating the measures can also foster purchasing synergy realization. This is presented in Table 30.

**Table 30: Factor-Synergy Matrix Performance Measures**

Factor	Economies of Scale	Economies of Information and Learning	Economies of Process
Align measures with corporate and supply strategy			X (Cohesive set of practices)
Measure performance accurately			X (Purchasing process knowledge)
Influence behavior and develop Purchasing	X	X	X
Communicate measures		X (Knowledge transfer)	

#### 8.4.6 Total Cost/Benefit Analysis

Literature on purchasing synergy has introduced several benefits associated with the three forms of purchasing synergies, one of the most important being various forms of cost savings, attained e.g. through volume discounts and reduced overlapping work activities (5). There is, accordingly, a need for emphasizing the wheel element of total cost/benefit analysis to verify, demonstrate and measure the cost effects of different synergy initiatives. Surprisingly, Karjalainen (2011) is the only article reviewed in 7.2 that present an in-depth discussion on the topic of total cost/benefit analysis, focusing on how to quantify the cost effects of purchasing centralization and enterprise framework agreements.

Several articles, including Pohl and Förstl (2011), Karjalainen et al. (2009) and Karjalainen and van Raaij (2011), nevertheless point out the importance of a total cost of ownership (TCO) perspective on purchasing activities related to the achievement of purchasing synergy. This is in line with Cousins et al. (2008), which highlights the importance of measuring all activities that incur costs, not solely focus on the transaction price paid. To aid in this matter, relevant cost/benefit tools such as a TCO-matrix can be applied.

In sum, this wheel element can be defined as:

A **Total Cost/Benefit Analysis** emphasizes the need to verify, demonstrate and measure the cost effects of a purchasing synergy initiative and to employ a total cost of ownership perspective (adapted from Karjalainen (2011) and Cousins et al. 2008).

Emphasize of a TCO perspective and use of cost/benefit analyses can both facilitate creation of purchasing synergy (7.2.6). Table 31 summarizes these findings.

**Table 31: Factor-Synergy Matrix Total Cost/Benefit Analysis**

Factor	Economies of Scale	Economies of Information and Learning	Economies of Process
Use of cost/benefit analysis	X	X	X
TCO perspective	X	X	X

#### 8.4.7 Portfolio of Relationships

This wheel element incorporates both inter-firm and intra-firm relationships, thereby extending the original element Portfolio of Relationships, introduced by Cousins et al. (2008). Managing inter-firm relationships focus chiefly on buyer-supplier relationships. Cooperative relationships emphasizing collaboration, knowledge sharing, quality capability, and long-term total costs are often preferred over adversarial relationships (Corey, 1978; Watts et al., 1995; Pearson and Gritzmacher, 1990). Cooperative buyer-supplier relationship fosters creation of economies of information and learning and economies of process (7.2.7).

Intra-firm relationships, on the other hand, consider the interaction between different stakeholders within a company. Typically, the stakeholders are: (1) CEO (or top-management); (2) CPO (or corporate purchasing coordination group or individual); (3) business unit managers; and (4) business unit purchasing managers (or purchasers) (Rozemeijer, 2000a; Faes et al., 2000).

The buying center also concerns intra-firm relationships between the roles users, influencers, deciders, buyers and gatekeepers (7.2.8.8). In order to understand the purchasing decision-making process, interaction between the different roles in the buying center ought to be studied (Webster and Wind, 1972, Sheth, 1973, and Johnston and Lewin, 1996).

Overall, the purchasing function can be regarded as a boundary-spanning unit, which links suppliers' capabilities with the internal requirements specified by corporate and business strategies (Watts et al., 1995). In this way, collaboration and communication with both internal and external stakeholders becomes important for purchasing to fulfill its role. All three types of purchasing synergies may be realized. Only inter-firm relationships, however, can realize economies of scale through supplier base reduction and purchasing negotiation power.

Based on this line of reasoning, this wheel element is defined as:

**Portfolio of Relationships** concerns the boundary spanning intra-firm (buying center) and inter-firm relationships, i.e. interaction between suppliers, external customers, top management, central purchasing unit, business unit managers, business unit purchasers, internal customers and other influencers, to achieve purchasing synergy (adapted from Rozemeijer, 2000a; Faes et al., 2000; Webster and Wind, 1972, Sheth, 1973, and Johnston and Lewin, 1996; Watts et al., 1995).

To analyze this element, all relevant relationships, both intra-firm (buying center) and inter-firm should be assessed. Figure 22 illustrates how purchasing acts as a boundary spanning unit, and which type of intra-and inter-firm relationships are considered relevant. The important factors that affect the creation of purchasing synergy are summarized in Table 32.

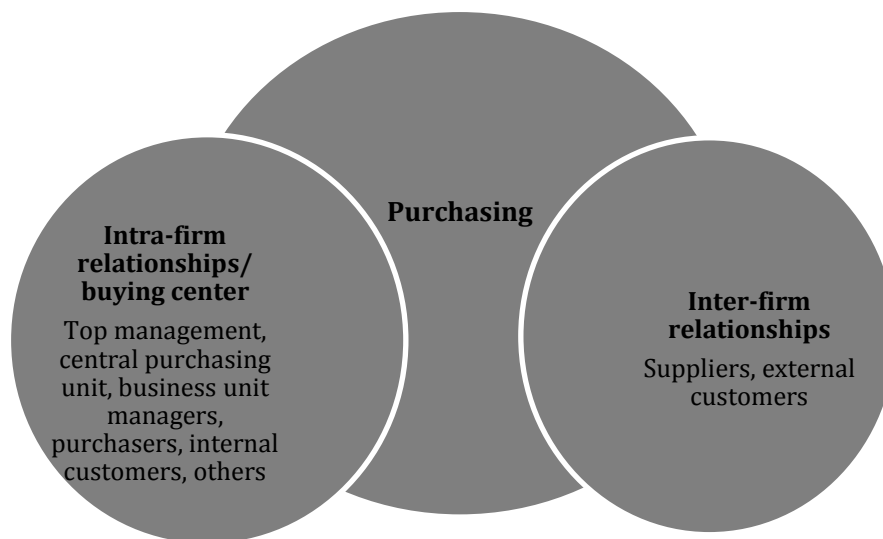


Figure 22: Purchasing as a Boundary Spanning Unit

Table 32: Factor-Synergy Matrix Portfolio of Relationships

Factor	Economies of Scale	Economies of Information and Learning	Economies of Process
Collaboration (intra-firm relationships)	X (Process cost reduction)	X (Knowledge and information sharing)	X (Aligned communication processes/procedures)
Collaboration (inter-firm relationships)	X (Process cost reduction, supplier base reduction, negotiation power)	X (Knowledge and information sharing)	X (Unified set of practices)

## **8.5 The Final Theoretical Factor-Synergy Matrix**

Section 6.6.5 identifies a need for further developing the new conceptual framework to show how a particular purchasing activity or process leads to the three forms of purchasing synergy in a comprehensive and systematic way. None of the previously discussed purchasing synergy management frameworks satisfy this criterion (6.6.5). This in turn makes it difficult to fully understand why certain purchasing synergies are achieved while others remain unrealized.

To bridge this gap in the literature, Factor-Synergy Matrices are developed to explicitly show the linkages between the Purchasing Synergy Management Wheel and the three forms of purchasing synergy: economies of scale, economies of information and learning and economies of process. Matrices are previously presented in subsections defining each wheel elements. To summarize the findings, a final Factor-Synergy Matrix is presented in Table 33.

Overall, the matrix illustrates underlying factor within each wheel element, and which of the three purchasing synergy types each factor may create. For example, implementing standard procedures creates a common way of working and thus realized economies of process. To gain an overview, the last row sum up total factors that lead to each type of purchasing synergy. These numbers will, however, not be further elaborated, since the factors are not weighed against other.

The general findings from Table 33 show a complex picture of linkages between factors grouped into each wheel element and the three forms of purchasing synergy. Different factors can lead to different forms of purchasing synergy. More importantly, all elements except from Business Context can lead to every type of purchasing synergy.

**Table 33: Final Theoretical Factor-Synergy Matrix**

Factor	Economies of Scale	Economies of Information and Learning	Economies of Process
<b>Business Context</b>			
Indirect effect			
<b>Corporate Coherence</b>			
Alignment between corporate and supply strategy	X	X	X
Alignment between business-level strategies	X	X	X
Maverick buying	X		X
Information platform		X	X
Organizational culture		X	X
Management style	X	X	X
<b>Purchasing Maturity</b>			
Reporting line	X	X	X
Visibility and organizational perception		X	X
Information access		X	
Information technology		X	X
Skills and competencies	X	X	X
Training and development program	X	X	X
Strategic decision making	X	X	X
Professionalism towards supplier	X		X

Organizational Structure			
Centralized purchasing	X	X	X
Decentralized purchasing		X	
Federal purchasing			X
Center-led purchasing	X		
Coordinated purchasing	X	X	
Horizontal Specialization	X	X	X
Vertical Specialization	X	X	X
Performance Measures			
Align measures with corporate and supply strategy			X
Measure performance accurately			X
Influence behavior and develop Purchasing	X	X	X
Communicate measures		X	
Cost/Benefit Analysis			
TCO perspective	X	X	X
Use of cost/benefit tools	X	X	X
Portfolio of Relationships			
Collaboration (intra-firm relationships)	X	X	X
Collaboration (inter-firm relationships)	X	X	X
<b>TOTAL</b>	<b>19</b>	<b>23</b>	<b>24</b>



## 8.6 The Purchasing Synergy Management Wheel

Figure 23 presents the final Purchasing Synergy Management Wheel. The conceptual framework essentially comprises two parts, the wheel elements along with Business Context, and the three forms of purchasing synergy. Arrows link the various wheel elements to each other. This highlights the core philosophy of the conceptual framework, as adapted from the Strategic Supply Wheel, in which the wheel element are closely interrelated.

The arrows pointing down at the purchasing synergies from the wheel illustrate that the wheel can be used to identify realized purchasing synergies and unrealized synergy potentials. These relationships are demonstrated along the way in Factor-Synergy Matrices, which result in the final matrix presented in 8.5. The practical application of the framework is outlined below.

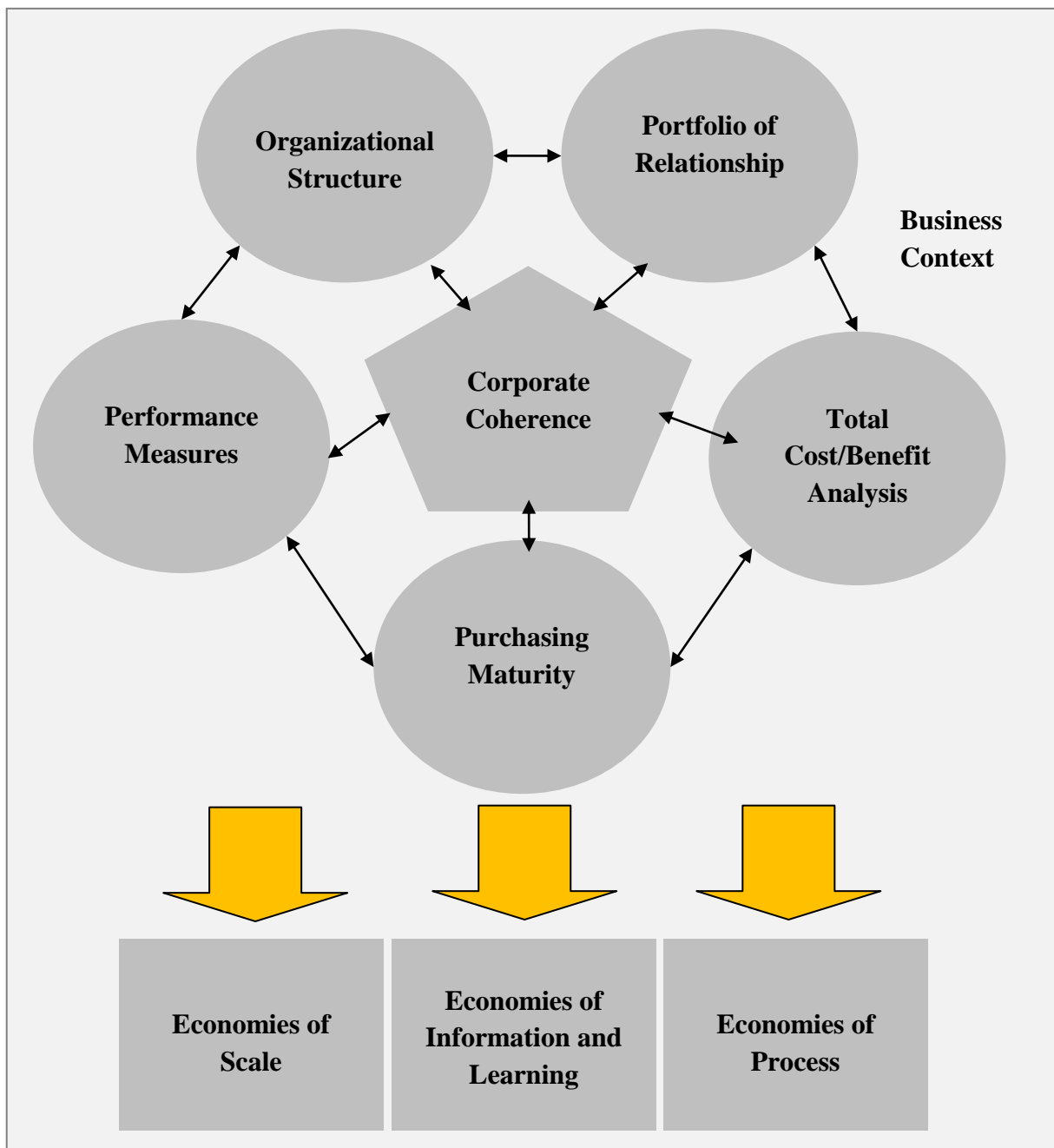


Figure 23: The Purchasing Synergy Management Wheel

### **8.6.1 Practical Application of the Purchasing Synergy Management Wheel**

The previous sections define each element in the Purchasing Synergy Management Wheel and explain its linkages to the three forms of purchasing synergy through the Factor-Synergy Matrix. Based on this line of reasoning, this section seeks to synthesize the discussion into a guideline to practical application of the framework. First, the two main functions of the framework are presented. A stepwise approach for identification of realized purchasing synergies and unrealized synergy potentials is subsequently outlined.

In practice, the Purchasing Synergy Management Wheel has two main functions:

1. It may be used as a diagnostic tool to examine the current situation regarding purchasing synergy creation in a company. This is done by analyzing element by element to identify realized synergies and unrealized synergy potentials. Factors should be identified to better understand how the company has ended up in its current situation.
2. It may be applied when implementing change process initiatives for creating purchasing synergies. In this capacity it serves to increase the chance of success by guiding efforts in the right direction and ensuring balance between the different elements of the wheel. It is important that this implementation process is seen as a process of gradual change, where coordination is built, step-by-step, as demonstrated by Faes et al. (2000).

Overall, it should be noted that the model is dynamic in which unrealized potentials diagnosed can serve as basis for forming new purchasing synergy.

In this thesis, only the diagnostic function of the Purchasing Synergy Management Wheel will be addressed further. A stepwise approach is devised to clarify how the model may be applied as a tool to diagnose the current situation in a company with regards to the attainment of purchasing synergies:

1. Each element of the wheel model should be analyzed separately. This identifies the strengths and weaknesses of the purchasing function, and directly uncovers which purchasing synergies are present today and what potentials remain unrealized.
2. Key findings from step 1 identify the factor underlying each wheel element that lead to the creation of the specific purchasing synergies. The result should be presented in a Factor-Synergy Matrix for each wheel element, similar to the ones presented in Chapter Seven and Eight.
3. A final Factor-Synergy Matrix should summarize the previous matrices and reveal all underlying factors for purchasing synergies and latent synergy potentials.
4. The most relevant links between the various wheel elements should be identified. No elements should be studied in isolation, as they influence each other. This is done by first identifying relevant links between the factors underlying each wheel element. As the factors are linked to each other, so are the wheel elements.

5. Based on the aforementioned analysis of the wheel elements and the links, main challenges to purchasing synergy creation should be outlined. Recommendations should designate areas of improvement to overcome the challenges and capture the unrealized synergy potentials.

This stepwise approach should result in an overview of what purchasing synergies are realized and which synergy potentials remain unrealized. In addition, the lesson should be that factors for realized purchasing synergies or unrealized synergy potentials indeed cannot be handled separately, but rather understood in relation to other factors. More importantly, changes that are made to one wheel element also affect the other wheel elements,

In conclusion: the practical application of the framework demonstrates that the Purchasing Synergy Management Wheel can be used both to identify currently realized purchasing synergies and latent synergy potentials and to actually implement the synergy initiatives. Being a dynamic model, it also emphasizes organization change. Using the Factor-Synergy Matrices, the Purchasing Synergy Management explains why certain purchasing synergies are realized and others not. The framework is consequently aligned with the definition of purchasing synergy management.

### **8.7 Summary**

In line with the definition of purchasing synergy management, a new conceptual framework, named Purchasing Synergy Management Wheel, is outlined. The framework draws conclusions from previous literature review, especially the correlation between selected literature and the Strategic Supply Wheel. First, the scope, level- and unit of analysis of the Purchasing Synergy Management Wheel are elaborated. Definitions of all wheel elements incorporated and a description of their underlying drivers are subsequently given. A final Factor-Synergy Matrix then describes how the framework is related to all the three types of purchasing synergy. This chapter concludes with devising a guideline for practical application of the Purchasing Synergy Management Wheel.

## 9. Summary Part 2

A "summary map", in which a running theme for the chapter is presented (Fig. 24), marks the end of the literature review.

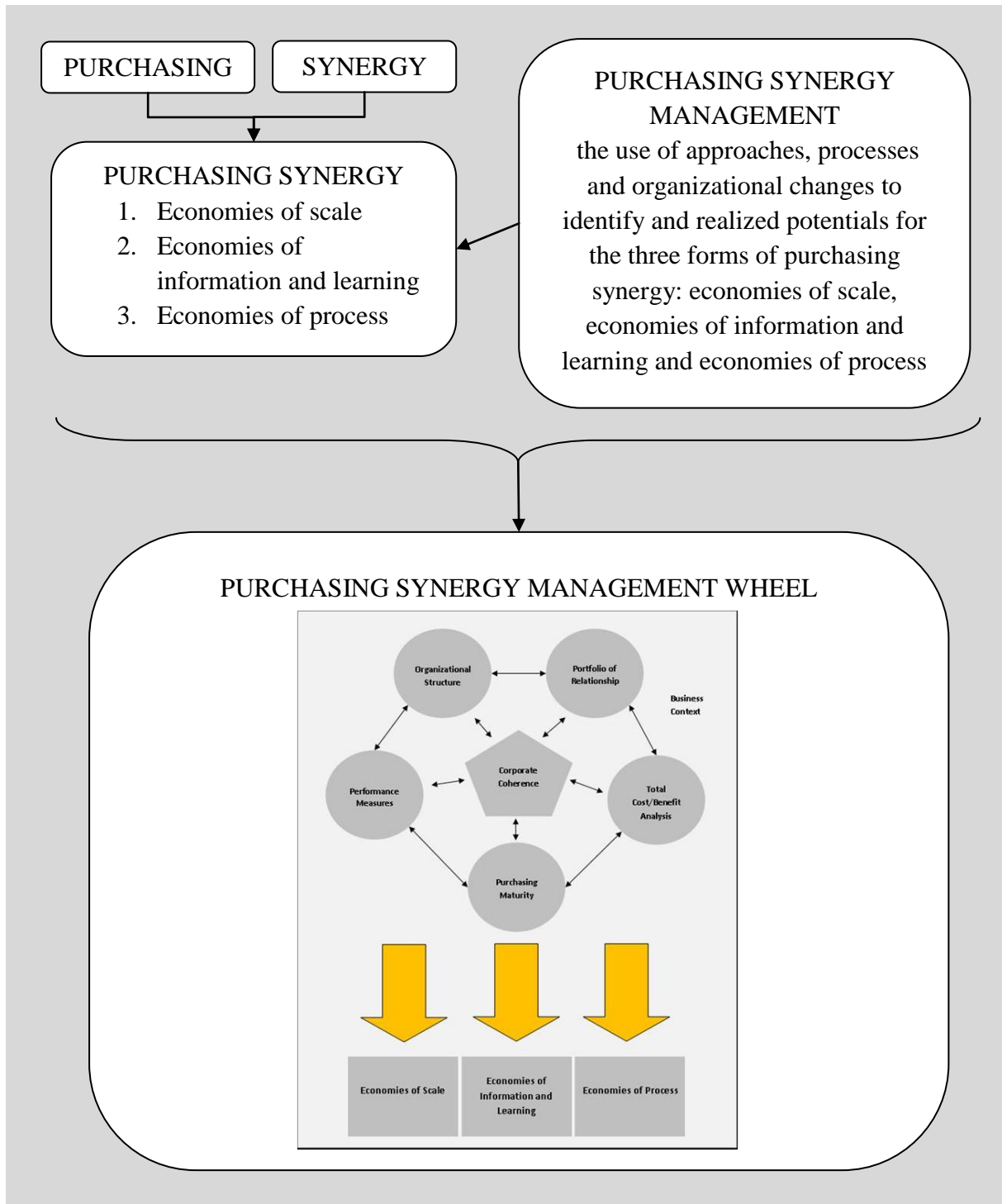


Figure 24: Summary Part 2

In order to better understand purchasing synergy, two chapters are presented initially, on purchasing and synergy respectively. The purchasing chapter lays the foundation for the reader's understanding of purchasing as a function, process, as well as its manifestation as organizational buying. It then subsequently introduces the debate on organizational design of purchasing, giving particular attention to specialization and (de-)centralization.

Cousins et al.'s (2008) Strategic Supply Wheel is then described. It is presented as a comprehensive purchasing management tool, which encompasses numerous elements from the purchasing literature. The purchasing chapter concludes by defining maverick buying, a key challenge in purchasing management. Combating maverick buying is crucial if one is to reap the benefits of any established contracting and procurement procedures.

The synergy chapter starts off by defining business synergy, distinguishing it from the many other applications of synergy. It is further defined as the process whereby business units will generate greater value through working together as one system rather than separate entities. Synergy management is described as the "use of approaches, processes and organizational changes to identify and realize potentials for synergy".

The purchasing synergy chapter combines insights from the two preceding chapters. It concerns itself with purchasing management and the organizational design of purchasing. The term largely begets its definition from the definition of the related term synergy. In terms of strategic importance, purchasing synergy originates from both purchasing and synergy. This chapter accordingly responds to RQ1.

Purchasing synergy is divided into three forms: economies of scale, economies of information and learning. This classification is then subsequently applied and emphasized throughout the literature review. The next chapter discusses purchasing synergy management, and the means by which purchasing synergies may be obtained. Similar to purchasing synergy, the definition of this term is adapted from the related definition of synergy management.

To identify an appropriate framework for purchasing synergy management, existing literature on the topic is first studied. However, none of the reviewed articles are completely aligned with the definition of purchasing synergy management. Nor are they systematically linked to the three forms of purchasing synergy. A process to develop a new conceptual framework is initiated for this reason.

The Strategic Supply Wheel is used as a starting point to correlate relevant literature from the preceding chapters on purchasing, purchasing synergy, and purchasing synergy management. Findings from the correlation, along with key issues perceived crucial to purchasing synergy management but not explicitly covered by the Strategic Supply Wheel, form the basis of a new conceptual framework.

The conceptual framework is named the Purchasing Synergy Management Wheel. It comprises six wheel elements: Corporate Coherence, Purchasing Maturity, Organizational Structure, Performance Measures, Portfolio of Relationships, and Total Cost/Benefit Analysis. It also encompasses an organization's external environment, named Business Context.

The scope of this "reinvented" wheel incorporates the buying center, i.e. every person within the organization that has a role in purchasing. Purchasing synergy is perceived to exist not only between business units, but also within business units, in interrelationships and business activities.

In order to explicitly link the framework to the three types of purchasing synergy, Factor-Synergy Matrices are applied both in correlation of literature and in the development of the framework. In line with the definition of purchasing synergy management, the framework can be used both as a tool of diagnosis to identify existing purchasing synergies and potentials, and as a tool for implementation in order to realize purchasing synergies.

Overall, the literature review answers RQ1, defining purchasing synergy and highlighting its importance. It also outlines a framework for purchasing synergy management in order to identify potentials for, and foster the creation of, purchasing synergies. The literature review thereby provides an answer to RQ2.

## **PART 3: EMPIRICAL DATA**

*In this part, the empirical data that serves as a foundation for the analysis is presented.*

*Since the case company operates in the Norwegian petroleum industry, the industry as part of the context of the case company should be understood. Accordingly, characteristics of the petroleum industry in Norway are first given. The following topics will specifically be described: (1) history of the Norwegian petroleum industry; (2) state organization of the petroleum sector; (3) the state's direct financial interest agreement; (4) the Norwegian licensing system; (5) taxes and fees; (6) technological innovation; (7) corporate social responsibility; and (8) purchasing in the petroleum industry. This chapter serves as a background for better understanding the case company.*

*Next, the case company, the upstream part of A/S Norske Shell, is presented. The case company is part of A/S Norske Shell, which again constitute an operating company under Royal Dutch Shell plc.. The larger Shell organization will therefore be given certain attention. The main focus is nevertheless on purchasing in the upstream part of A/S Norske Shell. It is described from two different viewpoints: the function with its people, and the process with its steps and procedures. The performance measures of purchasing in the case company are lastly described.*

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## **10. The Norwegian Petroleum Industry**

Norway is the world's fifth largest oil exporter and gas producer, and the fourteenth largest oil producer (Facts, 2013). Petroleum activities are important for the economic growth and welfare in Norway. Through more than forty years of operation, value in excess of NOK 800 billion has been created. (Ministry of Petroleum and Energy, 2013) In 2012, the petroleum sector accounted for more than 23 percent of value creation in the country (Facts, 2013). The petroleum sector is thus the largest industry in Norway, and production is expected to remain at a high level for a long time (Facts, 2013).

The following sections present the Norwegian petroleum industry since the case company of this thesis operates in this industry. The following topics will be described: (1) history of the Norwegian petroleum industry; (2) state organization of the petroleum sector; (3) the state's direct financial interest agreement; (4) the Norwegian licensing system; (5) taxes and fees; (6) technological innovation; (7) corporate social responsibility; and (8) purchasing in the petroleum industry.

### **10.1 History of the Norwegian Petroleum Industry**

The Norwegian petroleum adventure began in 1969 with the Ekofisk discovery (Ministry of Petroleum and Energy, 2013). In the 1970's, foreign companies operated the petroleum activities. The foreign companies dominated the exploration activities and developed the first oil and gas fields. After a while, Norsk Hydro chose to enter the petroleum industry as well, which increased the Norwegian involvement. (Facts, 2013) It was strategic important for the Norwegian authorities to ensure Norwegian sovereignty over the petroleum resources in the North Sea. Thus, a state petroleum company named Statoil was established in 1972. The Norwegian Petroleum Directorate was also established this year and, together with Statoil, located in Stavanger. These establishments made Stavanger the center of petroleum production in Norway. (Statoil, 2012)

A new governmental company with stewardship was established, namely Petoro (Petoro, 2013a) The same year, Gassco was established by the Ministry of Petroleum and Energy, which holds the operatorship of all gas transport from the Norwegian continental shelf. (Gassco, 2013) Later, in 2007, Norsk Hydro's oil and gas division merged with Statoil. Today, approximately fifty Norwegian and foreign companies are active on the Norwegian Continental Shelf. (Facts, 2013)

### **10.2 State Organization of the Petroleum Sector**

All activities on the Norwegian continental shelf take place under national management and control. The Petroleum Act regulates the petroleum activities on this shelf, and states that the Norwegian government has an exclusive right to manage the petroleum resources. The resources shall be managed so that they benefit the Norwegian society. (Ministry of Petroleum and Energy, 2007) As part of the Norwegian system, the petroleum companies carry out the technical work to recover the resources. The authorities, however, must approve all stages of their petroleum activities (Facts, 2013).



Fig. 25 illustrates the state organization of the petroleum sector. At the top is the Norwegian Parliament who establishes the framework for petroleum activities and supervises the Government and public administration. Beneath the Norwegian Parliament is the Government that holds executive power over the Petroleum Act, and is supported by the ministries and subordinate directorates and agencies. Table 34 summarizes the responsibilities of the ministries in executing the different roles in the Petroleum Act.

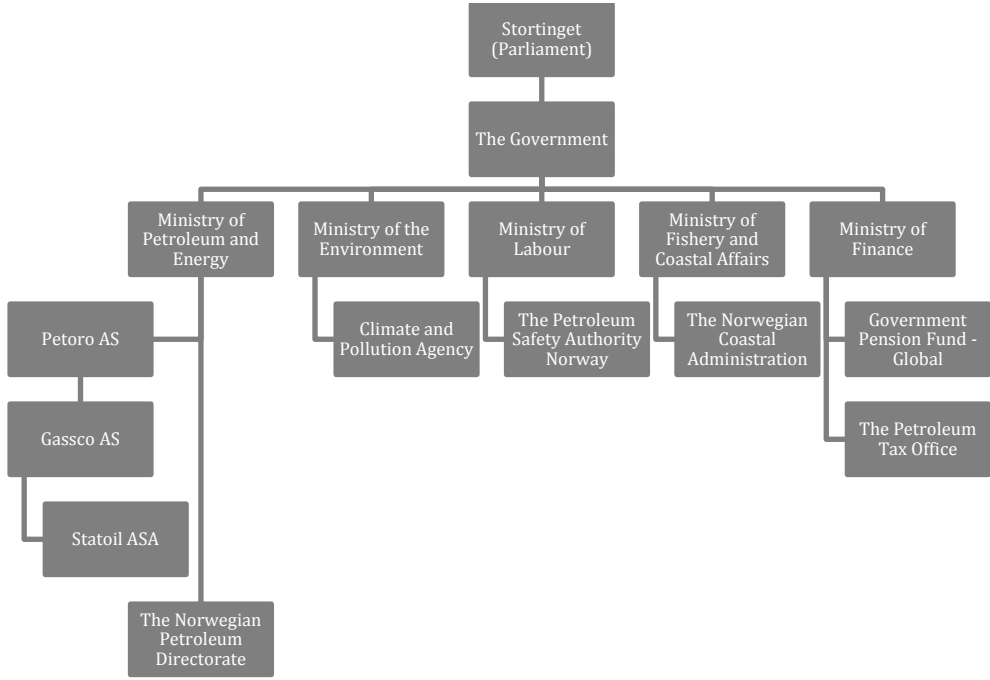


Figure 25: Organization of the Petroleum Sector (Adapted from Ministry of Petroleum and Energy (2007))

Table 34: Responsibilities of Ministries in the Petroleum Act (Adapted from Ministry of Petroleum and Energy (2007))

Ministry	Responsibility
The Ministry of Petroleum and Energy	Responsible for resource management and for the sector as a whole
The Ministry of Labour	Responsible for health, the working environment, and safety
The Ministry of Finance	Responsible for state revenues
The Ministry of Fisheries and Coastal Affairs	Responsible for oil spill contingency measures
The Ministry of the Environment	Responsible for the external environment

### **10.3 The State's Direct Financial Interest Arrangement**

The State's direct financial interest (SDFI) arrangement, established in 1985, entails that the state participates in the Norwegian petroleum sector as an investor. In accordance with the SDFI portfolio share, the state pays a share of all investment and operating costs in projects on the Norwegian continental shelf, and receives its share of revenues in line with the other investors. (Ministry of Petroleum and Energy, 2012) The company Petoro AS manages the licenses that the Norwegian government holds through SDFI (Petoro, 2013b).

### **10.4 The Norwegian Licensing System**

The Norwegian continental shelf is divided into blocks, in which one block represents a geographical area. A production license comprises part of a block, an entire block, or several blocks. (Norwegian Petroleum Directorate, 2008) The production license is an exclusive right to explore for, and produce, petroleum within the license area. The licensee owns a share of the petroleum produced in accordance with his license share (Hognestad, 2007). A precondition for petroleum activities on the Norwegian Continental Shelf is that the petroleum companies and other users of the sea and land areas, e.g. fishery industry and shipping industry, can coexist. The interests of the different industries are balanced by the Government's guidelines for management of Norwegian waters. (Facts, 2013)

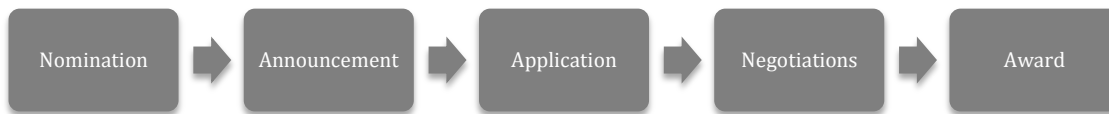
Before licenses can be awarded in accordance with the Petroleum Act, the Parliament must open the area in question for exploration. (Statoil, 2010) This entails that a process has taken place where the commercial and environmental impacts of petroleum activities have been considered, and interest organizations given the opportunity to express their views (Ministry of Petroleum and Energy, 2007).

The production licenses are mainly awarded through licensing rounds (Ministry of Petroleum and Energy, 2007). Norway has two different systems for awarding licenses, namely ordinary concession rounds, and Awards in Predefined Areas (APA). Ordinary concession rounds are normally held every second year. The focus in these rounds is frontier areas on the Norwegian continental shelf where few infrastructures are built and that are less explored. APA, on the other hand, is held yearly and focuses on mature parts of the shelf. (Norwegian Petroleum Directorate, 2012 )

A licensing round consists of five steps (Fig. 26). The process takes approximately eighteen months. (Hognestad, 2007) First, the petroleum companies are invited by the Ministry of Petroleum and Energy (MPE) to nominate blocks they want to be included in the announcement. MPE reviews the suggestions, and consults and negotiates with parties like the fishery and environmental authorities. Thereafter, the blocks, which the petroleum companies can apply for production licenses, are announced.

The petroleum companies can either send in an individual application, or apply together as a group. The Government awards licenses based on these applications. When evaluating the applications, the authorities consider the applicant's experience on the Norwegian continental shelf or similar experience from other areas, technical expertise, financial capacity, and geological understanding. Companies that apply individually may be awarded ownership

interest in the same license or an individual company may be added to a group. Production licenses are always awarded to license groups. (Norwegian Petroleum Directorate, 2008)



**Figure 26: Five-step Licensing Round (Adapted from Hognestad (2007))**

The Ministry of Petroleum and Energy appoints an operator of the field and establishes a license group. The operator is responsible for the day-to-day management of the field. Each of the other licensees is responsible for monitoring his activities, and thus holds a control function. The licensees share cost and revenues related to the license, as well as exchange ideas and knowledge. The companies must thus cooperate on maximizing value, while they at the same time are competitors. (Statoil, 2010)

In addition, a management committee is formed. This committee serves as the governing body of the license group and each member of the group is entitled to a seat. Tasks the committee executes are establishing guidelines for the field operator, controlling the operator's activities, and deciding on the activities of the joint venture. For example are licensees required to make a plan for development and operation, which the Ministry of Petroleum and Energy has to approve. (Statoil, 2010)

The number of votes from the committee required to make a decision varies from license to license. SDFI may veto the decisions. This veto power has however never been executed. In matters that have significant social or socio-economic consequences, Petoro AS has, with some exceptions, the power to make unilateral decisions. (Statoil, 2010)

The validation of a production license in the exploration period is between four and six years. When the license is expired, the licensee can apply for extension. A license may be extended up to ten years. The licensee has to complete a specific work commitment during this period. When the exploration period is over, and the licensee has completed the work commitment, the production license may be extended again. (Norwegian Petroleum Directorate, 2008)

## **10.5 Taxes and Fees**

The state receives a portion of the revenues from petroleum activities through the petroleum taxation system. This income is transferred to the Government Pension Fund – Global to ensure a long-term perspective of the management of the funds. In 2011, the petroleum sector accounted for 30 percent of total government revenue.

Petroleum production is a source of extraordinary profits, and thus has to pay an extraordinary tax of 50 percent in addition to the ordinary tax on land of 28 percent. In addition, the petroleum activities are subject to a quota obligation, which entails that the petroleum companies have to purchase emission quotas for each tonne of CO<sub>2</sub> they release. In addition, the companies have to pay a CO<sub>2</sub> tax and a NO<sub>x</sub> tax. These are policy instruments that aim to reduce the emissions of these toxic gasses. (Facts, 2013)

The licensees also have to pay an annual area fee. The purpose of this fee is that the state wants to ensure a high activity level in awarded areas. In the exploration period, when the licensees has work obligation, the fee is not paid. After the exploration period, however, a fee of NOK 30 000 per square kilometer is paid the first year, the second year this rate is NOK 60 000, and the third year and onwards the rate is NOK 120 000 per square kilometer. However, the companies can be exempted for this fee if they submit a Plan for Development and Operation to the Ministry of Petroleum and Energy. (Facts, 2013)

All costs related to exploration can be expensed directly. It is possible to receive a direct payment from the state of the tax value if the exploration expenditures exceed ordinary taxable income. The basis for this payment is the greatest of the company's loss carry-forward for ordinary income and its exploration costs. This arrangement makes it easier for companies to establish themselves on the Norwegian Continental Shelf. (KPMG, 2013)

### **10.6 Technological Innovation**

The production on the Norwegian Continental Shelf is more demanding than before, and fewer large discoveries are made. This situation entails that technological innovation is crucial for the petroleum sector. To maximize the values from the reservoirs, the petroleum companies must apply the latest technology at all times and engage in research and development. The authorities have favorable framework agreements to ensure that the companies focus on technological innovation. A precondition for this development is that the petroleum companies, suppliers and research institutions collaborate on technological innovation projects. Due to the innovation efforts, the Norwegian supplier industry has a competitive advantage internationally. (Facts, 2013)

The authorities main incentive programs for technological innovation are Petromaks and Demo 2000. Petromaks was introduced in 2003. The purpose of this program is to promote long-term research and expertise development. Petromaks has allocated approximately NOK 2 billion to 341 projects and 84 pre-projects. In addition, 430 doctorates and post-doctorates have been financed. (Facts, 2013)

Demo 2000 aims to reduce risks and costs related to testing of new technology solutions. The program supports pilot projects and demonstrations, and functions as a collaborative arena between the petroleum and supplier companies. Demo 2000 was established in 1999 and has supported 260 pilot projects with almost NOK 800 million altogether. (Facts, 2013)

### **10.7 Corporate Social Responsibility**

The core of corporate social responsibility (CSR) is that companies hold responsibility for the people, society and environment that is affected by their activities. In relation to CSR, the Norwegian Government emphasizes the importance of respecting human rights; upholding core labor standards and ensuring decent working conditions; taking environmental concerns into account; combating corrupting; and maximizing transparency. The work on CSR should not be seen in isolation, but be a related element to business strategy and business development. The Government expects all companies, both public and privately held, to be at

the forefront of practicing CSR. The companies' guiding principle should be to pursue best practices within their field or branch. (Norwegian Ministry of Foreign Affairs, 2009)

Many developing countries are rich in oil and gas resources. However, in spite of these valuable resources, the countries lag behind other developing countries on humanitarian and social issues. Some civil society organizations accuse the petroleum companies to contribute to these differences. It is challenging to utilize the petroleum resources in such a manner that they benefit the society since the countries are vulnerable to corruption.

*The Extractive Industries Transparency Initiative* (EITI) seeks to increase the transparency and accountability of the flow of money from extractive industries. This is an international initiative that aims to make transparency of revenues from natural resources a global norm, and that a greater proportion of these revenues should be used to develop the countries. (Norwegian Ministry of Foreign Affairs, 2009) Norway is the only OECD nation that has implemented EITI (Facts, 2013).

### **10.8 Purchasing in the Norwegian Petroleum Industry**

Purchasing in the Norwegian petroleum industry is considered as a part of public procurement, even though the petroleum companies are privately held (except for Statoil that is partly governmental). The reason for this is that the companies' offshore operations take place within the scope of licenses issued by the state. (Chaffey, 2012) In 2011, purchases in the petroleum industry accounted for NOK 74,5 billion, an increase of 13,9 percent from the previous year. This constitutes 18,7 percent of total public procurement expenditures (SSB, 2012).

Until April 30 2013, the petroleum companies had to follow the rules of procurement in accordance with EU legislation. However, the European Free Trade Association's Surveillance Authority (ESA) decided on April 30 2013 that purchasing conducted in relation to exploration for, and production of, oil and gas no longer need to follow the Law of Public Procurement. The exception does not, however, include transportation of gas through the upstream pipeline network from the Norwegian Continental Shelf to the market. Entities engaged in this activity still have to follow Law of Public Procurement. (Olje- og energidepartementet, 2013)

## 11.The Case - Upstream Norske Shell

This chapter introduces Upstream Norske Shell, the case company of this master's thesis. First, a general overview is given of the structure and operations of Royal Dutch Shell plc. and A/S Norske Shell. The main scope of the study – the Upstream division of A/S Norske Shell and its purchasing activities – is described in detail thereafter. The following represents the authors' overall comprehension of empirical material required through semi-structured interviews, observations and received documents. Thus, no references will be cited unless the material is publicly available on the Internet.

### 11.1 Royal Dutch Shell plc.

Royal Dutch Shell plc. (henceforth Global Shell) is an independent global oil and gas company. It is the owner and parent company of a diverse group of energy and petrochemicals companies around the world (Shell, 2013e; Forbes, 2013). Shell has conducted research and produced oil and gas for more than a century (Shell, 2013b). It aims to fulfill the energy needs of society in ways that are economically, socially and environmentally viable, now and in the future (Shell, 2013a).

The objectives of the Shell group are to engage efficiently, responsibly and profitably in oil, oil products, gas, chemicals, and other selected businesses. The company also seeks to participate in the search for, and development of, other sources of energy to meet evolving customer needs and the world's growing demand for energy (Shell, 2013d). Quick facts about Global Shell are given in Table 35. This section further describes the organizational structure of Global Shell, the Corporate Management System and the ERP system that have an impact Upstream Norske Shell.

Table 35: Quick Facts Global Shell (Shell, 2013b)

Shell Throughout the World
- <b>Geographical reach:</b> More than 90 countries and territories
- <b>Employees:</b> Approximately 100.000
- <b>Values:</b> Honesty, Integrity, Respect
- <b>Natural gas production:</b> 48 % of total production
- <b>Revenue:</b> \$ 470,2 billion (2011)
- <b>Daily production:</b> 3,2 million tons (oil and gas)
- <b>Service stations:</b> 43.000 globally
- <b>Refineries and chemical installations:</b> >30

#### 11.1.1 Organizational Structure Global Shell

Global Shell is organized as a matrix organization (Fig. 27). The main processes of the global corporation are divided into three *Businesses*: Upstream, Projects & Technology, and Downstream (vertical rows). The three Businesses share nine different *support Functions*: Finance, HR & Corporate, Legal, Safety, Environment and Social Performance, CO2, Contracting & Procurement, Global Technical Functions, Government Relations, and Information Technology (horizontal rows).

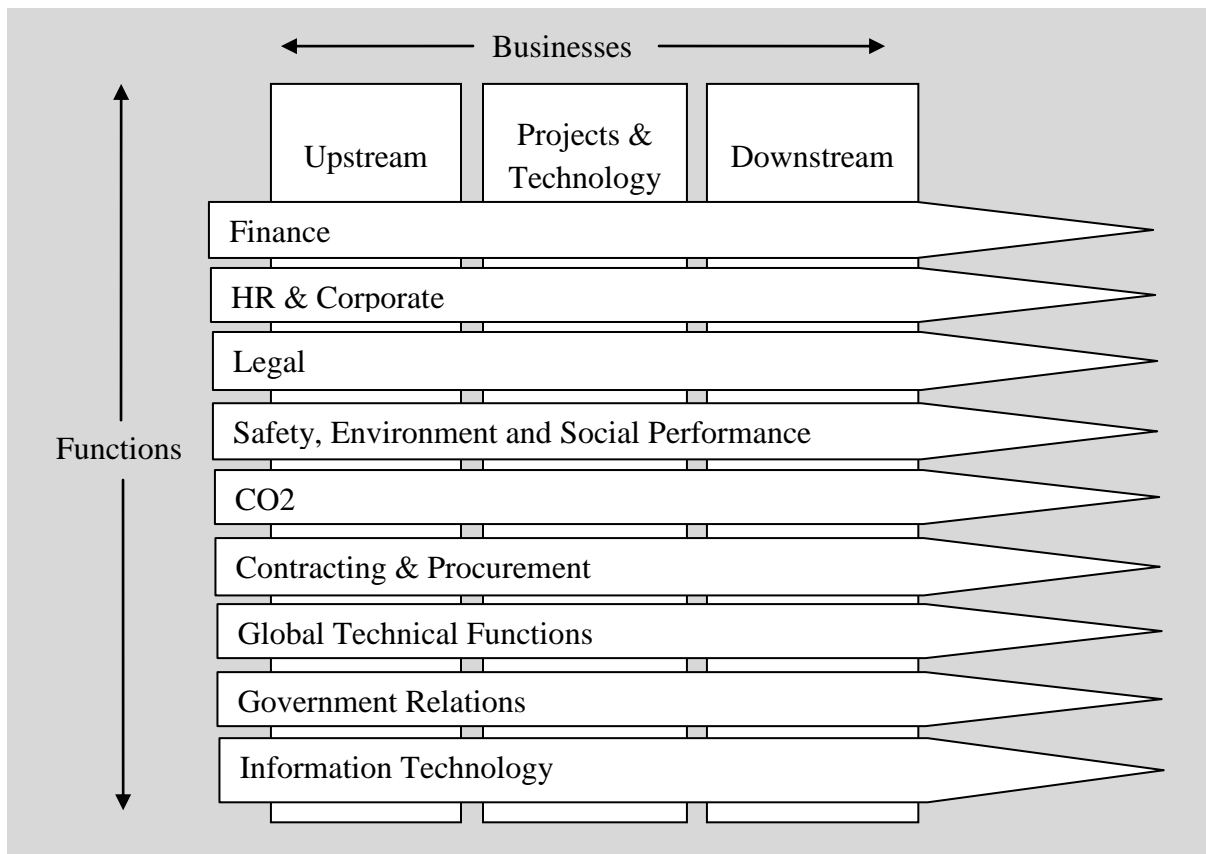


Figure 27: Matrix Structure of Global Shell

*Upstream* extracts and explores for crude oil and natural gas, often in joint ventures with national and international oil companies. Other activities of the upstream segment are wind energy production, the liquefaction and transport of gas, and the extraction of bitumen from oil sand for conversion into synthetic crude oil. The segment is grouped into two organizational units: (1) Upstream Americas and (2) Upstream International, which covers Europe, Africa, Australia/Oceania and Asia/Middle East/Russia. (Shell, 2013c; Shell, 2013e; Forbes, 2013)

*Projects & Technology* provides technical services and technological capability to the upstream and downstream activities. It manages the delivery of Shell's major projects, drives the research and innovation to create technology solutions and helps improve performance across the company. (Shell, 2013c; Shell, 2013e; Forbes, 2013)

*Downstream* consists of a number of units turning crude oil into a portfolio of refined products. These units manufacture and market a range of petroleum products, provide petrochemicals for industrial customers, and refine, supply, trade, and ship crude oil worldwide. The overall goal of the downstream businesses is to secure sustainable cash generation from existing activities, in addition to selective investments in growth markets. (Shell, 2013c; Shell, 2013e; Forbes, 2013)

The focus of this master's thesis is the Function called Contracting & Procurement, which is elaborated upon in section 11.4.1.1. For this reason, the other Functions will not be described in greater detail here.

### 11.1.2 Corporate Management System

Global Shell's *Corporate Management System (CMS)* is a structured framework of controls ensuring that processes are performed meeting certain requirements. Each Operating Company (e.g. A/S Norske Shell) is legally obligated to establish a system of internal controls that describes the processes, people and assets that make up the organization. Processes are analyzed and broken down into critical activities. These, along with boundary conditions and performance requirements, are typically described in *Business Controlling Documents (BCDs)*, such as Procedures and Work Instructions. The core of the CMS is formed by access to and management of BCDs. Together, the BCDs serve to demonstrate that the Operating Company complies with laws and regulations. Beginning from January 1 2013, Global Shell has started directing its Operating Companies towards stronger emphasis on local management of the value chain. This has in turn led to a greater degree of self-government, manifesting in aspects such as increased use of local vendors and organizational structures.

### 11.1.3 ERP system

Global Shell uses the ERP system Systems Application and Products (SAP) throughout its entire worldwide organization. In Manilla, Philippines, Global Shell has a global service center supporting Shell worldwide. The system is made up of modules linked to a central database. An organization may use any number of these modules. The main benefits of SAP are: flexibility and standardization, common interfaces and real-time, integrated data throughout the whole corporation. Figure 28 shows an overview of the different modules in SAP. Table 36 gives a more detailed description of each module.

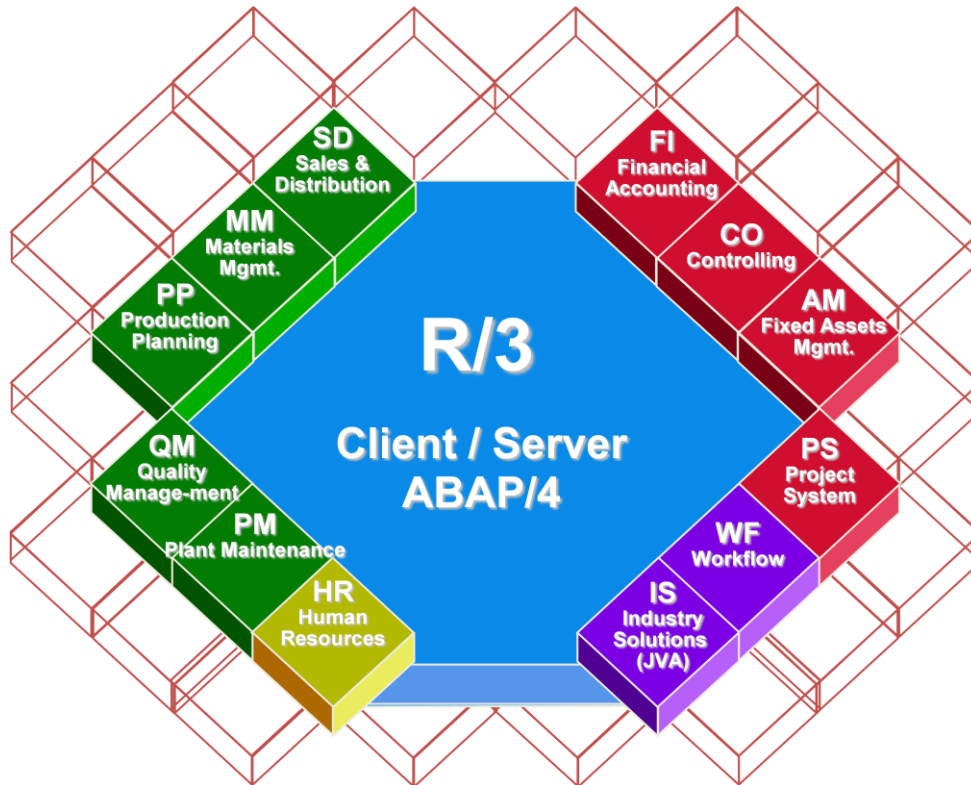


Figure 28: SAP



**Table 36: SAP Module Descriptions**

SAP Module	Description of Content
Financial Accounting (FI)	Financial Accounting module. Designed for management and reporting of Legal Entity and Statutory Accounts.
Controlling (CO)	Management Accounting module. Represents the company's flow of cost and revenue. Holds budgeted and realized costs, and facilitates management reporting.
Fixed Assets Management (AM)	Contains fixed asset register and depreciation.
Projects System (PS)	Projects Systems module. Used to monitor the planning and execution of detailed activities of projects.
Industry Solutions (IS): JVA	Contains cash calls, service fees, cutback and JV & Group Reporting
Human Resources (HR)	Contains employee related master data and transactions
Plant Maintenance (PM)	Plant Maintenance module. Used for detailed planning and execution of maintenance activities. Contains: <ul style="list-style-type: none"> <li>- Notifications and orders</li> <li>- Functional location hierarchy</li> <li>- Equipment record register (including moveable assets)</li> <li>- Equipment lifecycle costs</li> <li>- Maintenance planning: <ul style="list-style-type: none"> <li>o preventative &amp; corrective maintenance scheduling</li> <li>o Analysis of the effectiveness of maintenance strategies</li> </ul> </li> </ul>
Materials Management (MM)	Materials Management module. Supports the procurement and inventory functions occurring in day-to-day business operations. Contains: <ul style="list-style-type: none"> <li>- Plant</li> <li>- Material and Service Masters</li> <li>- Outline Agreements (Contracts)</li> <li>- Requisitions</li> <li>- Purchase orders</li> <li>- Goods &amp; Service receipts</li> <li>- Invoice matching</li> <li>- Stock management</li> </ul>

## 11.2 A/S Norske Shell

A/S Norske Shell (henceforth Norske Shell) is a Norwegian-registered company and subsidiary of Global Shell. Norske Shell has participated in the search for oil and gas on the Norwegian continental shelf since the first seismic explorations were conducted in the 1960s. Quick facts of Norske Shell are presented in Table 37.

Table 37: Quick Facts Norske Shell (Shell, 2013b)

Norske Shell	
-	<b>Founded:</b> 1912
-	<b>Employees:</b> 1500, approximately 1 % of Global Shell population
-	<b>Values:</b> Honesty, Integrity, Respect
-	<b>Service stations:</b> 500
-	<b>Geographic distribution:</b>
o	<i>Kristiansund:</i> Upstream (fields: Draugen and Ormen Lange)
o	<i>Oslo:</i> Downstream
o	<i>Stavanger:</i> Head Office/Projects & Technology

### 11.2.1 Organizational Structure of Norske Shell

Norske Shell's operations are divided into the same three Businesses as its parent company: Upstream, Projects & Technology and Downstream (Fig. 29). The Businesses are distributed across regional offices: Upstream, the focus of this thesis, is located in the Mid-Norwegian coastal town of Kristiansund. Projects & Technology and the Head Office of Norske Shell are situated in Stavanger, the centre of petroleum production in Norway. Downstream is located in Norway's capital city, Oslo.

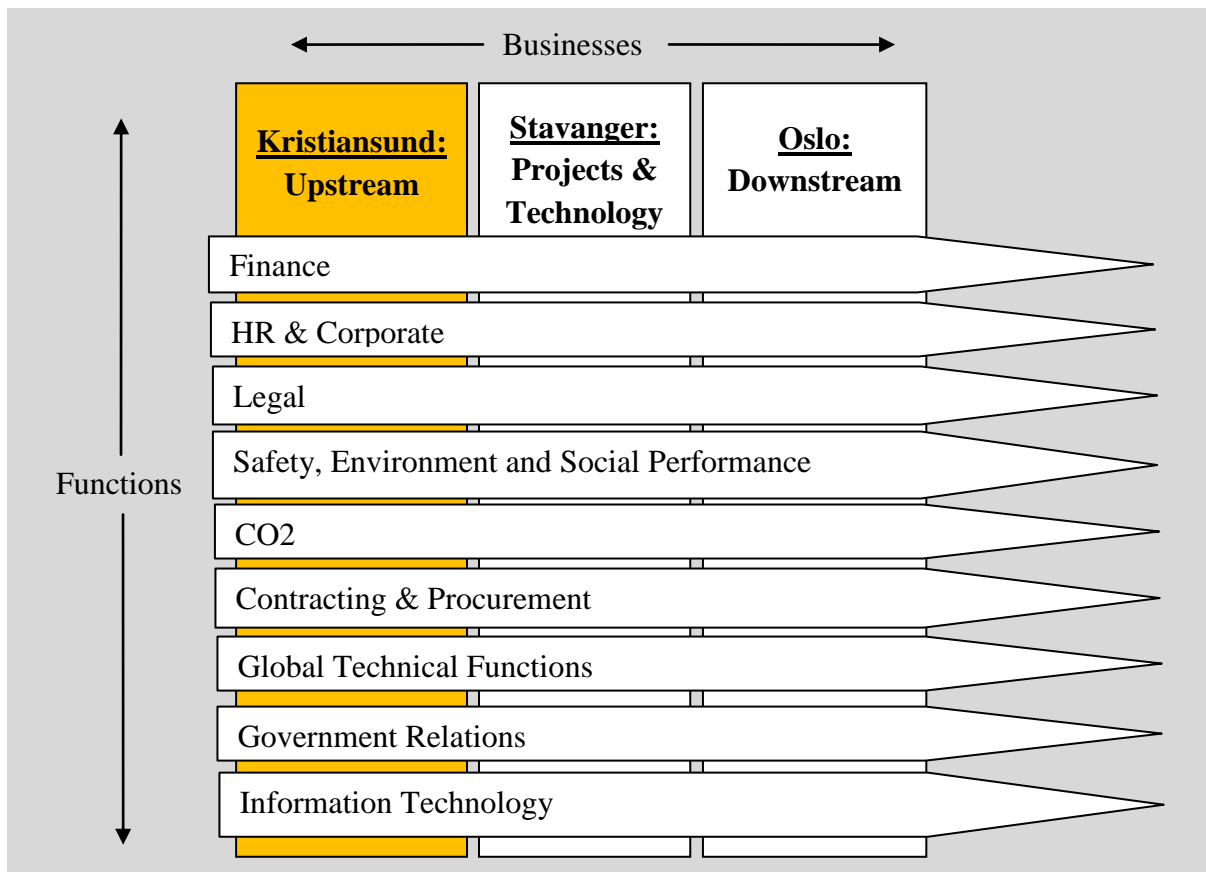


Figure 29: Matrix Structure of Norske Shell

Through the Corporate Management System and Business Controlling Documents (11.1.2), Global Shell encourages its subsidiaries around the world to employ globally standardized processes and business procedures. As a part of Global Shell, Norske Shell is obligated to

follow a set of standardized strategies, procedures and instructions created centrally by Global Shell. Examples include the use of ERP-system SAP (11.1.3), following the Category Management and Contract Process (11.4.2.2), the Requisition-to-Pay process (11.4.2.1), and the use of Enterprise Framework Agreements (EFAs). The latter will now be described in detail.

Global Shell encourages Norske Shell to use established Enterprise Framework Agreements (EFAs). By using EFAs, the supplier base and range of distribution of standardized resources are reduced. There is, however, a tradeoff between standardizing globally or locally. Before Norske Shell can use an EFA from Global Shell, the EFA must be adapted to local conditions through a laborious process.

When a project executed by P&T is fully implemented and handed over to Operations and Maintenance, the plant infrastructure may or may not include EFAs. If it does, Upstream Norske Shell will automatically start using these EFAs. However, if P&T in Stavanger has not included them in the project phase, it is difficult for the upstream part of Norske Shell to implement EFAs on their own. Implementing EFAs on existing plant infrastructure is very difficult and not always expedient, as the EFAs may not cover the exact materials that reside in the infrastructure. Today, due to the small number of EFAs implemented by P&T in the existing infrastructure on Draugen and Ormen Lange Land Plant, Upstream Norske Shell only make use of a small number of EFAs.

### **11.3 Upstream Norske Shell**

The Upstream businesses of Norske Shell (henceforth Upstream Norske Shell) are located in Mid-Norway. Upstream Norske Shell comprises three assets: (1) an Operations office in Kristiansund called Råket; (2) an oil rig in the Norwegian Sea called Draugen; and (3) a field of subsea gas wells called Ormen Lange and an associated onshore processing plant at Aukra called Ormen Lange Land Plant or Nyhamna.. The three parts of Upstream Norske Shell will now be presented in more detail, before the organizational structure of Upstream Norske Shell is outlined.

#### **11.3.1 The Operations Office**

The Upstream Operations office in Kristiansund (Fig. 30) was built in 1993 and functions as a cornerstone company in Kristiansund. Norske Shell is the only oil company in Norway with an Operations center in the county Møre and Romsdal, and all Upstream administrative functions and resources are situated here in Kristiansund. The Operations office is responsible for the day-to-day Operation and Maintenance of both Draugen and Ormen Lange Land Plant, even though the two assets have different ownership structures with external partners and separate cost accounts. In addition to the core processes operations and maintenance, the office creates local strategies and production plans to support the needs of both the offshore and onshore operations. The office employs approximately 130 people, and about 80 % have a technical background.



**Figure 30: Kristiansund**

### 11.3.2 The Oil Rig Draugen

Draugen (Fig. 31) is an oil field located at 250 meters water depth in the Norwegian Sea, 150 kilometers north of Kristiansund. The oil field was discovered in 1984 and started production in 1993. It was the first oilfield north of the 62nd latitude to be operational. The opening in 1993 is considered a milestone in the history of the Norwegian petroleum industry. Norske Shell is the current operator and owns 44,56 %. Petoro and Chevron Norge are partners with shares at 47,88 % and 7,56 %, respectively. Draugen has a high recovery rate target. For this reason, Norske Shell has applied for an extension of the production license until 2035. The platform employs approximately 120 people, and all employees have technical backgrounds. The culture may be described as old, conservative and somewhat reluctant to change, with a tradition of following custom-made procedures in running the daily operations.



Figure 31: Draugen

### 11.3.3 The Gas Field Ormen Lange

Ormen Lange is a gas field 120 kilometers offshore that started production in 2007. It is connected to an onshore processing plant on Aukra called Ormen Lange Land Plant (Fig. 32). The



Figure 32: Ormen Lange Land Plant

The gas field has the deepest production wells in Europe, and the world's biggest gas wells. From Ormen Lange Land Plant, Langeled, one of the world's longest subsea pipelines, transports gas to Easington in England. It delivers up to twenty percent of the UK's yearly gas needs. Norske Shell is the operator and owns 17,03 %, whereas Statoil, Petoro, DONG, and ExxonMobile are partners and own 28,91 %, 36,47 %, 10,34 % and 7,22 %, respectively. The gas plant employs approximately 210 people, and about 98 % have technical backgrounds. The culture may be described as comparatively young, vibrant and open to change.

### 11.3.4 Organizational Structure of Upstream Norske Shell

The organizational structure of Upstream Norske Shell (yellow box in Fig. 29 and Fig. 33) is, in isolation, illustrated in Fig. 34. This structure does not show the horizontal support Functions as illustrated in Fig. 29 and Fig. 33, it thus shows the core of the vertical Business row Upstream. The Upstream organization is structured after how close the different capacities need be situated to the most upstream activities, i.e. where hydrocarbons are extracted from the Norwegian Sea at Draugen or Ormen Lange Land Plant. Table 38 describes the different responsibilities of the positions.

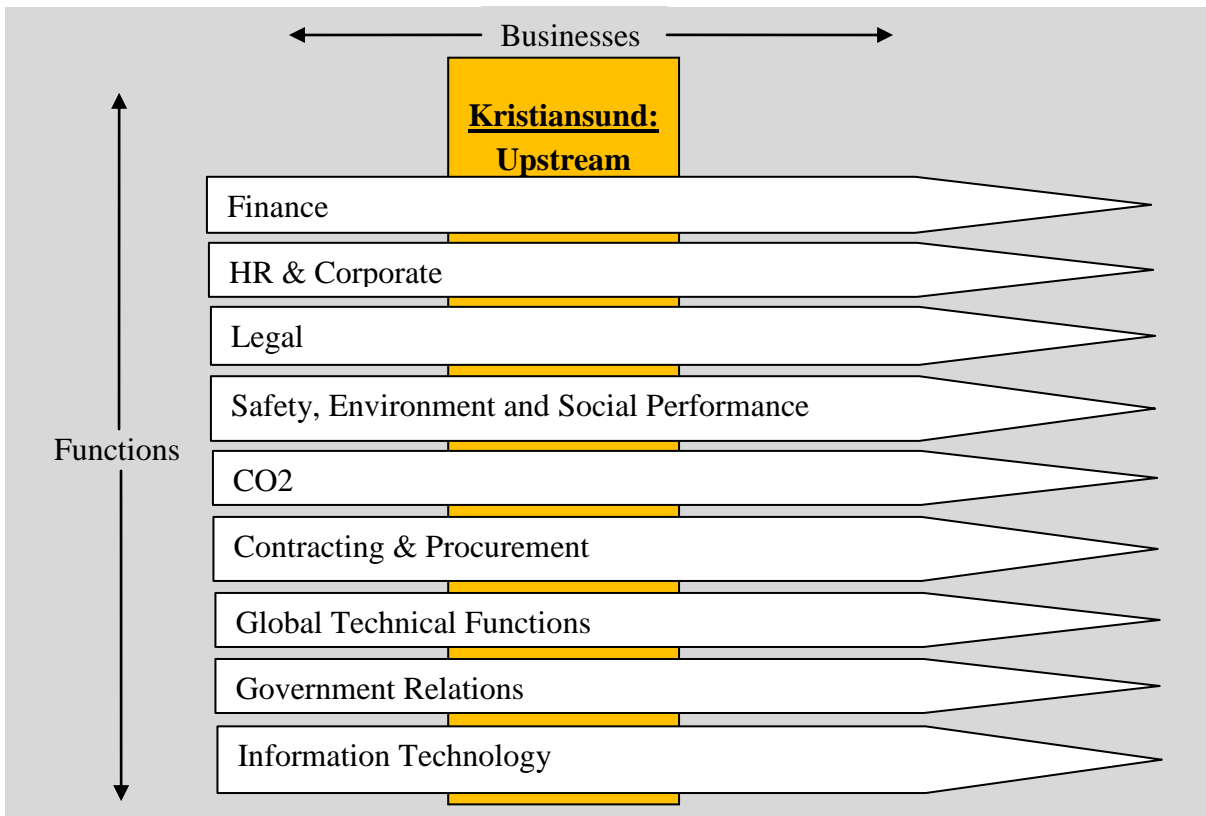


Figure 33: Matrix Structure of Upstream Norske Shell

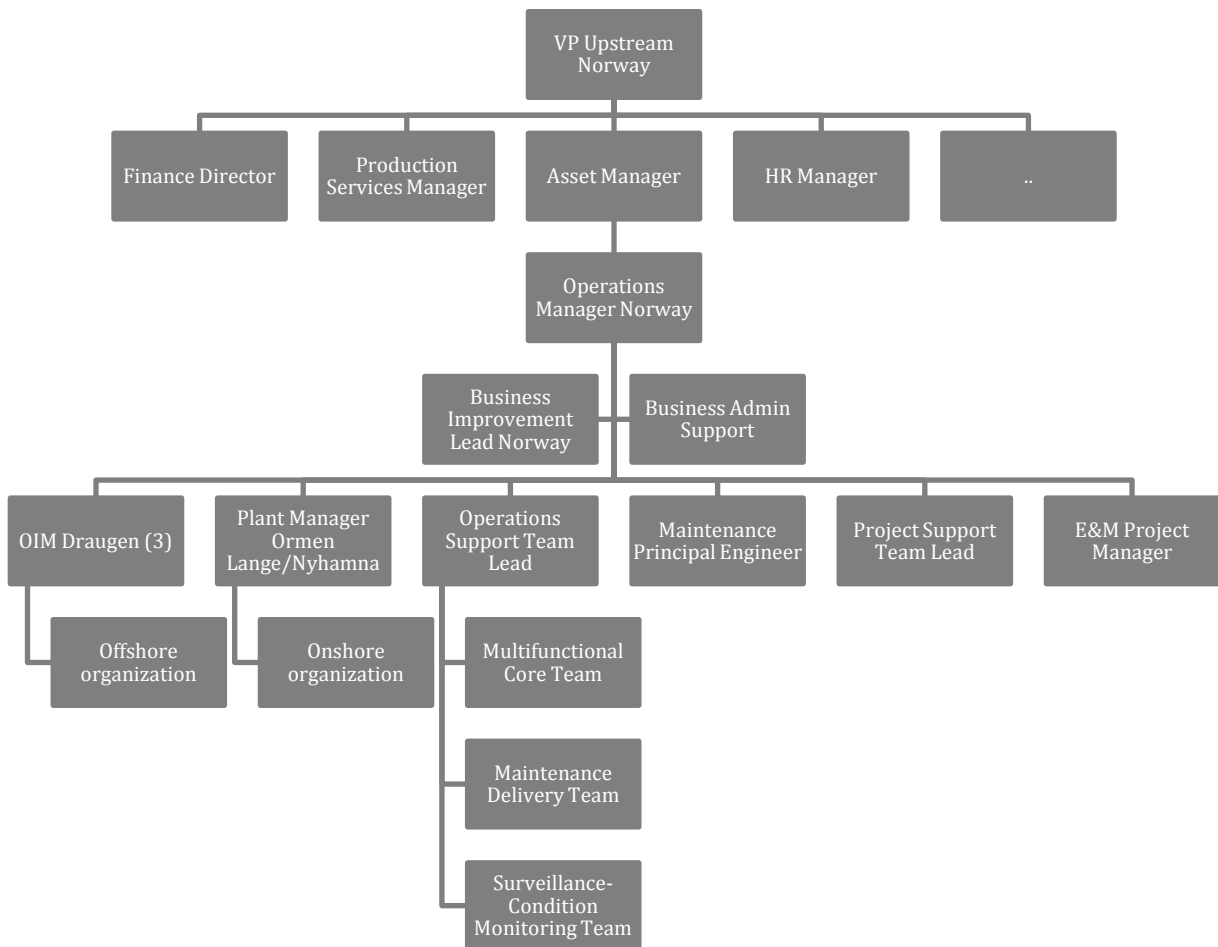


Figure 34: Organizational Structure of Upstream Norske Shell

**Table 38: Responsibilities in the Organizational Structure of Upstream Norske Shell**

Position	Responsibilities
Operations Manager Norway	Senior responsibility for the day-to-day operation of Draugen and Ormen Lange Land Plant. Has eight direct subordinates.
OIM Draugen	Plant manager Draugen, responsible for the daily and seven to fourteen days-operation of Draugen. All the operations that are executed seven to fourteen days ahead in time is planned and executed by the employees at Draugen.
Plant Manager Ormen Lange/Nyhamna	Plant manager Ormen Lange Land Plant, responsible for the daily and seven to fourteen days-operation of Ormen Lange Land Plant. All the operations that are executed seven to fourteen days ahead in time is planned and executed by the employees at Ormen Lange Land Plant.
Discipline Responsibles	The plant managers in turn direct an onsite/offshore organization of Discipline Responsibles. Discipline Responsible is the company's internal term for the head of a technical subdivision within a department. These subdivisions (Disciplines) are, i.e. Mechanical, Instrument, Rotating, Scaffold, Civil and Electro. Subordinated the Discipline Responsibles are the operators within each field of expertise.
The Operations Support Team Lead, Maintenance Principal Engineer, Project Support Team Lead and E&M Project Manager and respective subordinates	Located at the Operations office in Kristiansund. These capacities have the responsibility for real time seven to fourteen support, and ninety day operations planning and support, to both Ormen Lange Land Plant and Draugen.  The Operations Support Team Lead has a large group of subordinates that are grouped into a Multifunctional Core team, a Maintenance Delivery Team, and a Surveillance-Condition Monitoring and Reliability Team.
The Maintenance Delivery Team	Plan the jobs to be executed at Ormen Lange Land Plant as well as all shutdowns.

## **11.4 Upstream Norske Shell and Purchasing**

Contracting & Procurement is considered a critical support function in Upstream Norske Shell, as well as in the overall matrix organization of Global Shell (Fig. 27 and 35).

Approximately 60-70 % of total operational expenditures (Opex) within specific budget areas (the budgets are divided into different budget areas) relate to purchasing. The book value of the inventory in Upstream Norske Shell is approximately 300 million NOK, and approximately 15 000 different spare parts are in kept in stock, covering everything from protective clothing to expensive engines. This section will describe the purchasing functions and the purchasing processes of Upstream Norske Shell in detail, and their connection.

Thereafter, the performance measurement system in Upstream Norske Shell will be presented.

### **11.4.1 The Purchasing Function**

Two divisions in Upstream Norske Shell perform purchasing functions: (1) Contracting & Procurement; and (2) Maintenance Delivery Team. In Fig. 35, Contracting & Procurement is

the horizontal function, and the Maintenance Delivery Team is part of the vertical business Upstream.

This section presents the purpose, vision and organizational chart of the two divisions, respectively. Further, it gives a detailed presentation of the different roles and responsibilities within each division. Additionally, one important employee in Production Services works closely with Contracting & Procurement. Production Services, part of the vertical business Upstream, will therefore be presented.

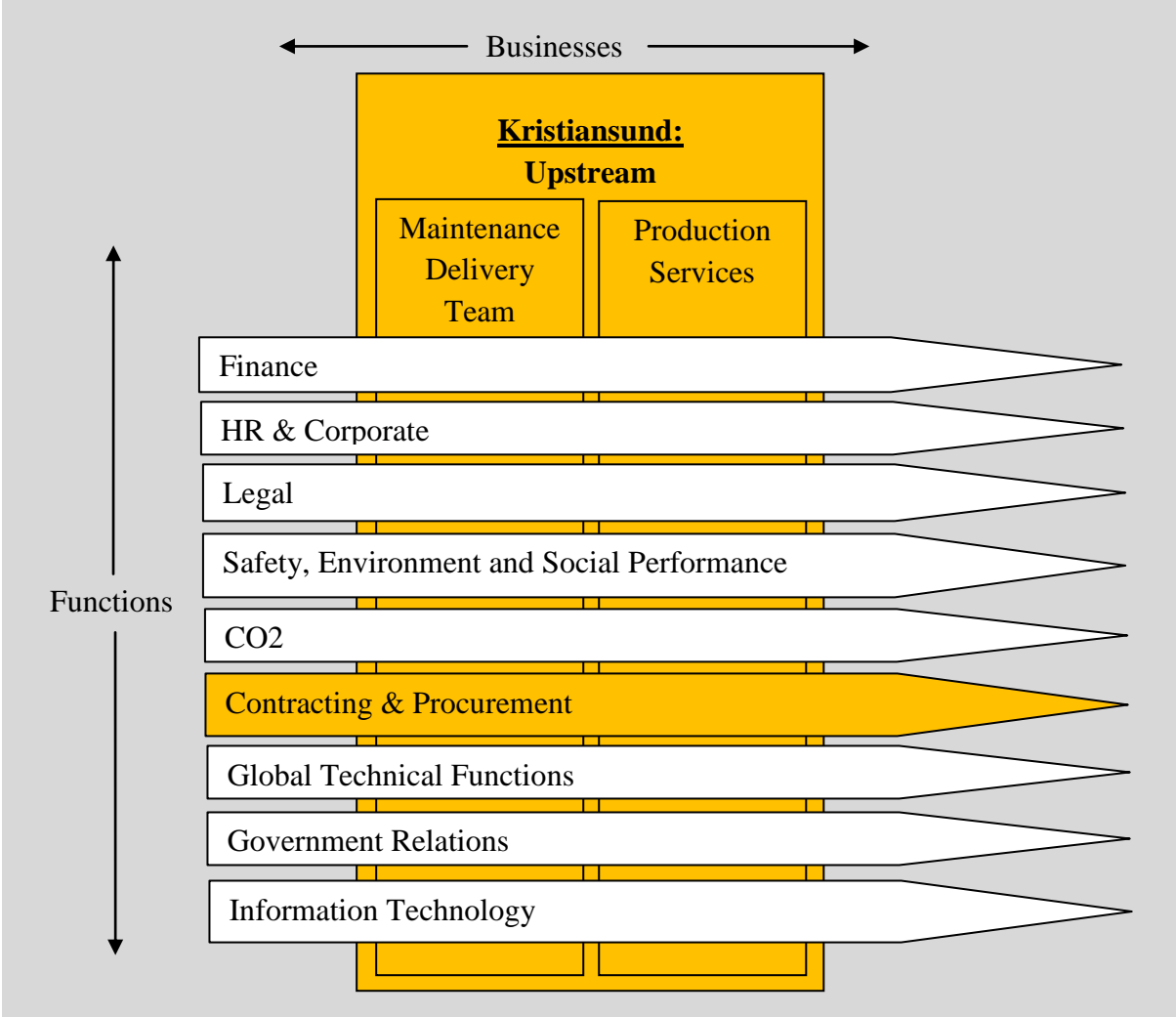


Figure 35: Matrix Structure of Purchasing

11.4.1.1 Contracting & Procurement

The purpose of the *Contracting & Procurement (C&P)* division in Upstream Norske Shell is twofold. First, C&P shall support the main activities of the Operations office in Kristiansund by performing tendering processes, and set up and handle supplier contracts. The Category Management and Contract Process (11.4.2.2) is used for tendering and contract management.

Second, the division is responsible for ensuring that the standard, global purchasing processes and procedures are used in line with Global Shell's expectations towards Upstream Norske Shell (11.2.2). To be able to ensure this, C&P must play an educational role towards every

employee in Upstream Norske Shell that has a role related to purchasing. Other responsibilities in C&P are purchasing to stock and inventory management, and management of Enterprise Framework Agreements (EFA) (11.2.2).

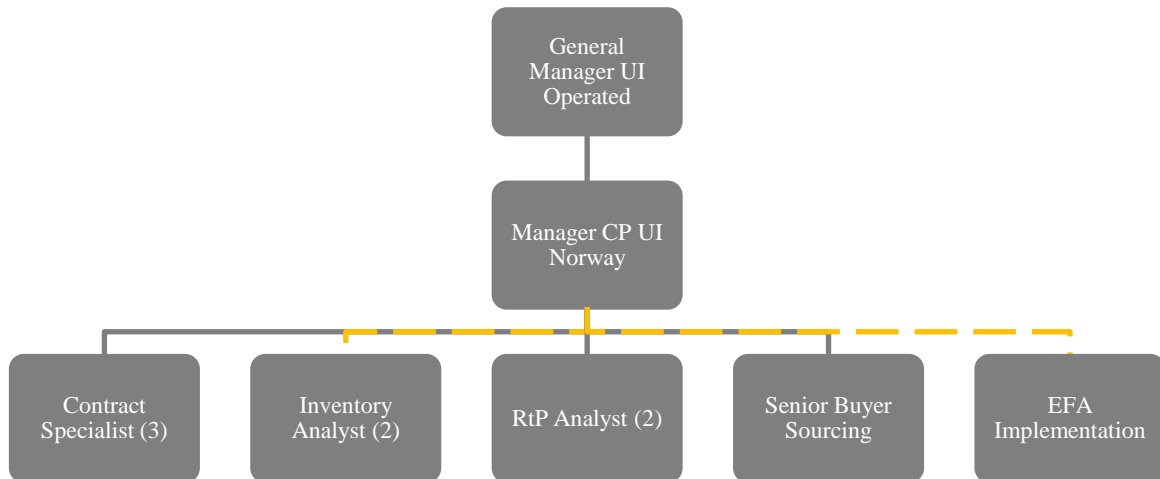
The vision of C&P is: (1) know the Business (the other functions in Upstream Norske Shell); (2) know the Suppliers; (3) be Commercial, and (4) execute Top Quartile. The vision guides the employees in C&P daily. In C&P, the culture is characterized by high performance delivery focus with much flexibility to prioritize own workdays. Since high performance delivery is prioritized, there is not much focus on training and development of the C&P resources. C&P strive to be an outward looking, business focused division with a close interaction with the other divisions in Upstream Norske Shell. C&P has an open and humorous environment, with room for the people to be themselves.

C&P in Norway is a part the global organization Upstream International Operated (UIO), and C&P is also referred to as UIO Norway. To manage its activities, UIO has its own Corporate Management System (CMS) (11.1.2), in which UIO Norway is included. The CMS for UIO and UIO Norway contains components that describe processes, people and assets that constitute the C&P organization in Upstream Norske Shell. In the CMS, processes are analyzed and broken down into critical activities. These critical activities, along with boundary conditions and performance requirements, are typically further described in Business Controlling Documents (11.1.2).

The CMS system that C&P is a part of serves a number of key objectives. It is a legal obligation to establish "a system of internal controls", with particular focus on HSSE and Finance. It further includes detailed descriptions of, among others, procedures and work instructions for how to manage Contracting & Procurement, e.g. Category Management Contracting Process (11.4.2.2).

C&P consists of ten employees and is considered one of the support functions in Upstream Norske Shell (Fig. 35). Due to the global matrix organization (11.1.1; 11.3.4), the employees in C&P report to different leaders, both in Norway and abroad. Figure 36 and Table 39 give together an overview of the organizational structure of C&P in isolation. Table 39 describes the gender, job title and who each report to. Figure 36 illustrates with grey lines the employees that report to the Contracting & Procurement Lead in Norway. The yellow, dotted line illustrates the employees subordinated C&P in Upstream Norske Shell, but that report to leaders in Global Shell.





**Figure 36: Organizational Structure of C&P**

**Table 39: Gender, Job Title and Reporting Line C&P**

Gender	Title	Reports to
Male	Manager Contracting & Procurement Upstream International Norway	UIO General Manager, Aberdeen
Female	Contract Specialist CP 1 UI Operated Norway	UIO Norway
Female	Contract Specialist CP 2 UI Operated Norway	UIO Norway
Male	Contract Specialist CP 3 UI Operated Norway	UIO Norway
Female	Senior Buyer Sourcing EU NL/UK/Nordics	Aberdeen
Male	RtP Continuous Improvement Analyst	UK
Female	RtP Continuous Improvement Analyst	UK
Female	Inventory Analyst Production	UK
Female	Inventory Analyst/Disposal Coordinator	UK
Male	Enterprise Framework Agreement (EFA) Implementation UIO	The Netherlands

### Manager Contracting & Procurement Upstream International Norway

The top manager of C&P is titled *Manager Contracting & Procurement Upstream International Norway* (henceforth C&P Lead). He reports to the *General Manager of Upstream International Operated* in Aberdeen. The *C&P Lead* is accountable for all the activities related to contracting and procurement in Upstream Norske Shell. As the head of C&P, he is responsible for putting C&P into effect as a support function for all the other divisions and employees in Upstream Norske Shell. The C&P Lead uses most of his time on the tendering Category Management and Contract Process for strategic and tactical contracts (11.4.2.2). This is because he is accountable for, and holds the top responsibility for, the execution of the Category Management and Contract Process. In addition to leadership tasks, he functions as a Contract Specialist (11.4.1.1 Contract Specialists) for a portfolio of strategic and tactical contracts, and holds the responsibility for implementation of EFAs (11.2.2).

The C&P Lead has three Contract Specialists reporting directly to him. The other six employees in C&P; two Inventory Analysts, two RtP Analysts, one Enterprise Framework Agreement and one Senior Buyer Sourcing, report to a leader either in Aberdeen, UK or in the Netherlands. The C&P Lead functions as a support focal contact point for all six employees reporting to a leader abroad, and they are therefore considered a part of C&P, shown with a dotted line to him in Fig. 36. The current C&P Lead has a Masters degree in Economics and Business Administration from NHH, and seventeen years of experience with contract negotiation and contract handling.

### Contract Specialists

There are three *Contract Specialists* in Upstream Norske Shell. They report to the C&P Lead. The *Contract Specialists'* main responsibility is to execute and manage the Category Management and Contract Process in practice for the tactical and strategic contracts. In addition, the *Contract Specialists* are responsible for the daily management of a defined portfolio of strategic and tactical contracts. (11.4.2.2) More details about the *Contract Specialist's* responsibilities in the Category Management and Contract Process are described in 11.4.2.2.

The *Contract Specialists* have different educational background and experiences. *Contract Specialist 1* has her education in logistics from the academy in Molde. She started in Norske Shell in 1992 within logistics in drilling. In 2004 she started to work with purchasing, contracting and inventory. She has been in current position as *Contract Specialist* since 2008. *Contract Specialist 2* has a bachelor degree from BI. Her first position in Norske Shell was as a HR advisor from 1993 and approximately twelve years. After that, she started in the position she has today as a *Contract Specialist*. The current *Contract Specialist 3* is educated in marketing in Norway and abroad. He has worked some years in Orkla before he recently started as a *Contract Specialist* for Upstream Norske Shell in March 2013.

### Senior Buyer Sourcing

The employee titled *Senior Buyer Sourcing* has a position divided between C&P and Finance in Upstream Norske Shell. As a part of C&P, the *Senior Buyer Sourcing* is as a *Contract Specialist* for all the eighty operational contracts (11.4.2.2) in Upstream Norske Shell. As a

Contract Specialist, she is responsible for managing the Category Management and Contract Process for operational contracts (11.4.2.2). The Senior Buyer Sourcing is a part of an international team and reports to a leader in Aberdeen. She has worked thirteen years with finance in Aker, before she was hired in Norske Shell as an administrative secretary in 2001. She started working in Norske Shell's finance department in 2003, and from 2004 and onwards she has worked in the current position.

#### RtP Continuous Improvement Analysts

Two employees, one man and one woman, are titled *RtP Continuous Improvement Analyst* (henceforth RtP Analyst). They are part of an international team and report to a leader in the Netherlands. Together they are responsible for operational excellence and continuous improvement of the Requisition-to-Pay process (11.4.2.1). Their main activity is to implement different optimizers throughout the entire RtP value chain (11.4.2.1 RtP Optimization) to improve the efficiency and automate the entire process.

Every part of the RtP Analysts' work are strictly guided by Global Shell's plans for RtP optimization. Global Shell makes the analysis for the different optimizers, and the RtP Analysts receive the instructions and implement the optimizers in the Requisition-to-Pay process in Upstream Norske Shell. The different task related to the implementation of the optimizers are divided between the two RtP Analysts, e.g. one is responsible for physically implementing POA with one supplier, the other for follow-up and monitor the contracts already implemented. They drive their own individual projects forward, but frequently discuss common issues.

The female RtP Analyst has two master degrees, one in economics and one in supply chain management. She has worked in Norske Shell for six years, first as a Contract Specialist, and thereafter as a RtP Analyst for the last three years. The male RtP Analyst has studied economics at BI, and worked in Norske Shell for twelve years. During those twelve years, he has worked five years as Accounting Assistant in Finance, five years as Hydrocarbon Accountant in Production, and the last two years he has held the current position.

#### Inventory Analysts

Two employees hold the responsibility for all stock materials. One of them is titled *Inventory Analyst/Disposal Coordinator* and the other is titled *Inventory Analyst*. Together the two Inventory Analysts are responsible for all purchasing to stock and inventory management for operations and maintenance at Draugen and Ormen Lange Land Plant. They are also responsible for tasks such as inventory management, physical inventory, and optimization of warehousing. The Inventory Analysts report to their team lead in UK, but have close dialogue with the C&P Lead, who is their Norwegian support contact point (Fig. 36). Pending structural changes (11.1.2), the Inventory Analysts shall report to C&P Lead in the near future. More details about their main job tasks are described in the Requisition-to-Pay-process in 11.4.2.1.

The current Inventory Analyst/Disposal Coordinator has eighteen years of experience with procurement, logistics and contracting in the oil and gas industry in Norway. She has worked for Upstream Norske Shell the last seven years, and has held the same position from day one.

She holds a bachelor degree from BI and is in the process of taking a masters degree. In addition, she has taken some courses from the petroleum logistics program at the academy in Molde. The Inventory Analyst has long experience in the Shell system, but has only been in her current position for one year. The Inventory Analyst has no specific technical background.

#### Enterprise Framework Agreement Implementation

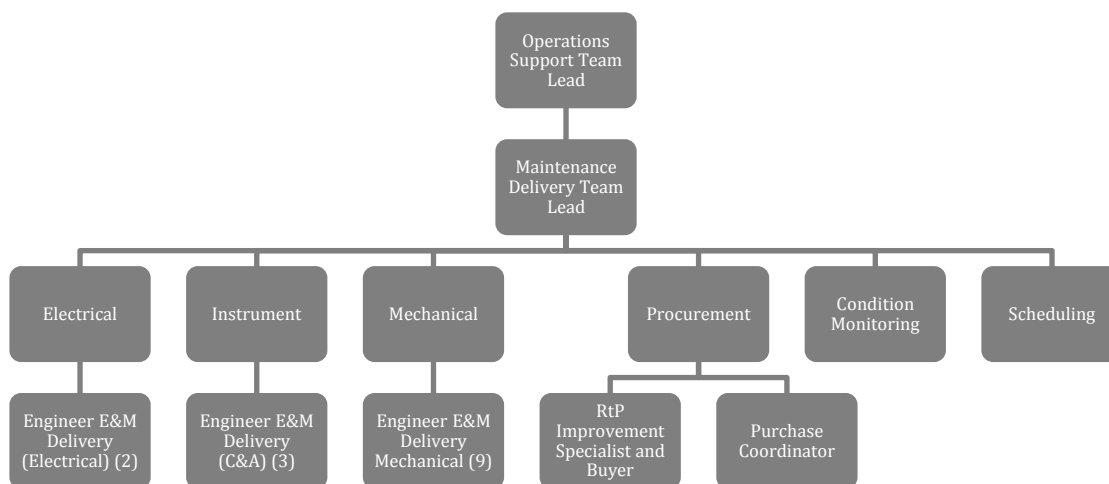
The person responsible for *Enterprise Framework Agreement Implementation* holds a regional position at the moment and reports to The Netherlands. Due to Global Shell's recent structural changes (11.1.2), this position is in the process of being changed from regional to national. The content of this new national position is not decided upon yet. He worked with implementation of EFAs (11.2.2) before the structural changes, which is now the responsibility of the C&P Lead (11.4.1.1 Manager Contracting & Procurement Upstream International Norway). At the moment, the Enterprise Framework Agreement's responsibilities are facilitation of the EFAs, e.g. prioritizing the EFA's according to their cost/benefit value for Upstream Norske Shell.

#### 11.4.1.2 Maintenance Delivery Team

The purpose of the *Maintenance Delivery Team* (henceforth Delivery Team) is to support the daily operation of the oil and gas production at Draugen and Ormen Lange Land Plant. The daily operation support comprises several tasks on different criticality levels. The most important support task is to prepare and plan all the maintenance operations to be executed on a daily basis at Draugen and Ormen Lange Land Plant. Based on a need or problem reported from Draugen and Ormen Lange Land Plant, the Delivery Team plan every step of the operations to be executed, from start to finalization. Materials and services play a large role in these operations.

Additionally, the Delivery Team is responsible for planning and executing shutdown of Draugen and Ormen Lange Land Plant. In a shutdown, all maintenance that cannot be performed when the plant is producing oil and gas, is executed. More details about the work processes in the Delivery Team are described in the Requisition-to-Pay process in 11.4.2.1.

The job tasks executed in the Delivery Team are considered one of the main processes of the matrix organization in the Upstream organization. The division mostly consists of technical employees with engineering background; specialists within electro, mechanical and instrument with full dedication to their field of expertise. In addition, two purchasers with responsibility for procurement to the daily operation of the two assets Draugen and Ormen Lange Land Plant are integrated in the Delivery Team. Figure 37 and Table 40 give together an overview of the organizational structure of the Delivery Team. Table 40 describes the gender, job title and who each report to. Figure 37 illustrates the organizational chart of the employees subordinated the Delivery Team.



**Figure 37: Organizational Structure of Delivery Team**

**Table 40: Gender, Job Title and Reporting Line Delivery Team**

Gender	Title	Reports to
Male	Maintenance Delivery Team Lead	Operations Support Team Lead
Male (2)	Engineer E&M Delivery (Electrical)	Maintenance Delivery Team Lead
Male (3)	Engineer E&M Delivery (Instrument)	Maintenance Delivery Team Lead
Male (9)	Engineer E&M Delivery (Mechanical)	Maintenance Delivery Team Lead
Female	RtP Improvement Specialist and Buyer	Maintenance Delivery Team Lead
Female	Purchase Coordinator	Maintenance Delivery Team Lead

#### Maintenance Delivery Team Lead

The *Maintenance Delivery Team Lead* (henceforth Delivery Team Lead) is the top manager of the Delivery Team. He has the overall responsibility for the job tasks that the team executes. He has held the position as a Delivery Team Lead for both Draugen and Ormen Lange Land Plant for a year. From 2007 up until 2012, he had the same role, but only with responsibility for Ormen Lange Land Plant. Before he started in Upstream Norske Shell in 2007, he worked for Aibel.

#### E&M Delivery Engineers

The engineers that work in the Delivery Team are titled *E&M Delivery Engineers* and report to the Delivery Team Lead. Each of the different disciplines Electro, Mechanical and Instrument comprises several E&M Delivery Engineers. The division Electrical consists of two employees, Instrument three, and Mechanical nine. The employees within the different

disciplines are located at different physical locations at the Operations office in Kristiansund. Due to limited office space at present date, the E&M Delivery Engineers cannot be co-located. The E&M Delivery Engineers are responsible for executing the step Work Order in the Requisition-to-Pay-process. Section 11.4.2.1 gives a detailed description of the job tasks of the E&M Delivery Engineers.

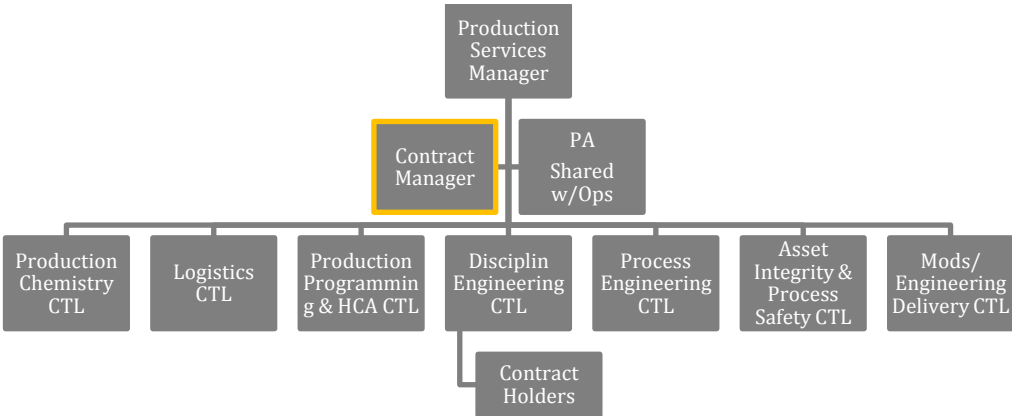
**Purchase Coordinators**

In Fig. 37, the organizational block named *Procurement*, integrated as a part of the Delivery Team, refers to the two employees responsible for all non-stock purchasing. They are titled *RtP Improvement Specialist and Buyer* and *Purchase Coordinator*, henceforth *Purchase Coordinators*, and report to the Delivery Team Lead. These two Purchase Coordinators are responsible for issuing Purchase Orders for all products that go directly into the daily operation at Draugen and Ormen Lange Land Plant, and not held on stock. That makes the RtP Improvement Specialist and Buyer and the Purchase Coordinator responsible for the step Purchase Order in the Requisition-to-Pay-process, which is described in 11.4.2.1.

The RtP Improvement Specialist and Buyer are entrusted with the responsibility for all procurement to Ormen Lange Land Plant. She has many years of experience from finance and invoicing processes in Norske Shell, and she has held the current position in the Delivery Team for approximately three years. She has participated in courses about the purchasing procedures in Norske Shell, and has thorough purchasing knowledge. The Purchase Coordinator handles all procurement for Draugen. She has around 20 years of experience from various positions in Norske Shell. She has many years of experience from the personnel department in Norske Shell, and has held the current position for three years. Neither has any technical background, or much formal training in purchasing and logistics in general.

**11.4.1.3 Production Services**

In Fig. 34, the organizational structure of Upstream Norske Shell was given. One of the employees subordinated the VP Upstream Norway is the *Production Services Manager*. Figure 38 shows the organizational structure of Norway Production Services, which is one of the business divisions in Upstream related to purchasing, as illustrated in Fig. 35.



**Figure 38: Organizational Structure of Production Services**

One of the employees subordinated the Production Services Manager is titled *Contract Manager*. The Contract Manager has a special role with both technical and commercial

responsibilities, and many tasks related to contract handling. The role of the Contract Manager functions as an intermediary between C&P (11.4.1.1), the Contract Holders (11.4.2.2 Contract Management), and the suppliers.

The main responsibility of the Contract Manager is to drive *Contract Management* in the Category Management and Contract Process (11.4.2.2 Contract Management) towards an even more professional execution of the Contract Management Framework for strategic (and tactical) contracts within Production Services (Fig. 38). This will be achieved through: (1) support current Contract Holders through reducing their work load and execution of the commercial and administrative conditions of the contract(s); (2) further develop contract structures and support organizations/functions to enable services to be provided; (3) enter the role as Contract Holder for 1-2 strategic contracts; (4) further strengthen the interface between Contract Holders and C&P; and (5) implement quality assurance process for all notes from Production Services to I&C Board.

The Contract Manager has education from NTNU and experience from both technical and more commercial positions in different companies. He has held the current position for approximately 2 years, and benefits from being able to talk both the technical and commercial language. This makes the Contract Manager able to understand both the division C&P and the Delivery Team.

**11.4.2 The Purchasing Process**

From a process perspective, purchasing in Upstream Norske Shell mainly comprises two sub-processes: (1) Requisition-to-Pay (RtP), the day-to-day purchasing process; and (2) Category Management and Contract Process (CMCP), the tendering process. This section gives a detailed description of the processes RtP and CMCP. Thereafter, the correlations between the two processes are outlined.

**11.4.2.1 Requisition-to-Pay**

Requisition-to-Pay is the standard, Global Shell process for "how to order stuff". In other words, the RtP-process is an ordering process. Norske Shell and Upstream Norske Shell use RtP for their day-to-day purchasing. As Upstream Norske Shell's objective is to operate and maintain the daily oil and gas production at Draugen and Ormen Lange Land Plant, the operators and activities at the two production assets mainly drive the purchase needs. Figure 39 illustrates the RtP-process and its six steps: (1) notification; (2) work order; (3) purchase requisition; (4) purchase order; (5) service & material entry; and (6) invoice. The different stages of the RtP-process are mostly executed in SAP. The steps will now be described in detail, illustrated by screen-shots from SAP, before an outline of the RtP Analyst's work with optimization of the entire RtP-process is given.



**Figure 39: Requisition-to-Pay**

## Notification

An operator at Draugen or Ormen Lange Land Plant identifies a job that needs to be done at the asset. The first step in initiating the job is to issue a *Notification*, also called a Work Request (Fig. 40). The operator on the asset makes a Notification in SAP. All the operators have access to do this. Examples of a Notification can be maintenance on a valve, change of machinery or clean up of spillage.

The screenshot shows the SAP 'Change PM Notification: Work Request' interface. At the top, there are navigation icons and a 'Partner' field. Below this, the notification details are displayed in a table-like format:

Notification	13822809	Z1	Pop-up fitret aer "popet"
Status	NOPR NOPT ORAS		APPR
Order	25628453		

Below the details, there are tabs for 'Description of Request', 'Damage Information', 'Impact', 'Dates', 'Activities', and 'Warranty'. The 'Description of Request' tab is active, showing the following information:

**Reference object**

Functional loc.	NO.NYH.IV-27-3111	1st stage export gas compressor outlet
Equipment	31000499822	HAAKON ELLINGSEN; CUSTOM MADE
Assembly		

**Responsibilities**

Planner group	NYM / NO01	Mechanical KSU
Main WorkCtr	NYH-M0	NO01 Mekaniker, Shell & Fast inneide
User responsibl		
Reported by	K HERMANSON	Notif.date 14.03.2013 18:26:49

**User data**

Consequence Category	A	Asset Damage/Deferment
Consequence Severity	1	Slight impact
Likelihood of Occurrence	A	Unlikely to occur within 12 mths
Response Criteria	7	Complete by 12 Mths

Figure 40: Notification

The Notification contains a description of the request, a risk analysis with damage information and impact, and dates for when the job must be finished. Based on the given priority of the job, a deadline called Latest Allowable Finish Date (LAFD) is set for the job. The content of the Notification should be as correct as possible and thoroughly prepared by the operator. When the Notification is made, the user status is set in Awaiting Approval (AWAP). The Delivery Team, specifically the E&M Delivery Engineers (11.4.1.2 E&M Delivery Engineers) are responsible for reviewing all the Notifications set in AWAP in SAP.

## Work Order

All the Notifications made the last twenty-four hours are revised at the daily morning meetings on Draugen and Ormen Lange Land Plant. Thereafter, the Notifications for the two assets are briefly discussed on the virtual morning meeting between the Delivery Team (11.4.1.2) and the leaders at the assets. After the morning meetings, the E&M Delivery Engineers search for the existing AWAP Notifications.

The Notifications are quality checked, prioritized by date and approved or rejected if evaluated as not as important. The E&M Delivery Engineer then gives the responsibility of the approved Notification to a *job planner* within one of the disciplines Electro, Instrument or Mechanical. The job planner may either be an E&M Delivery Engineer at Kristiansund, or an



engineer/operator at Draugen or Ormen Lange Land Plant. This depends on the characteristics of the job. It is mainly the E&M Delivery Engineers that get the responsibility.

The work preparation of the specific need begins after the Notification is evaluated, approved and assigned to a job planner. A Work Order associated with the Notification is made. The Work Order defines aspects like man-hour, service and material need, estimated cost, and final date for execution (original ROS). The job is planned in sequential operations, typically divided after discipline (electro, instrument, mechanical), work stage, often on different dates, e.g. scaffolds are built days or weeks before the actual job is performed. The amount of time it takes for the job planner to make a Work Order varies from 10 minutes to days and months. The planning time depends on the complexity of the job and the degree of risk involved.

An important part of the Work Order is to link different materials and services to the specific job operations. This is done in the banner Components, see Fig. 41. This is the responsibility of the job planner. The necessary materials and services to perform the job are found in the *Bill-Of-Materials* (BOM) in SAP. Almost every component at Draugen and Ormen Lange Land Plant were registered in the module Materials Management in SAP (11.1.3) when the assets were built. Mostly, the needed materials of the BOM are linked to unique material numbers. This is the number the components are registered with in the material master in SAP. The components marked with an L are stock-materials and the components marked with an N are non-stock-materials.

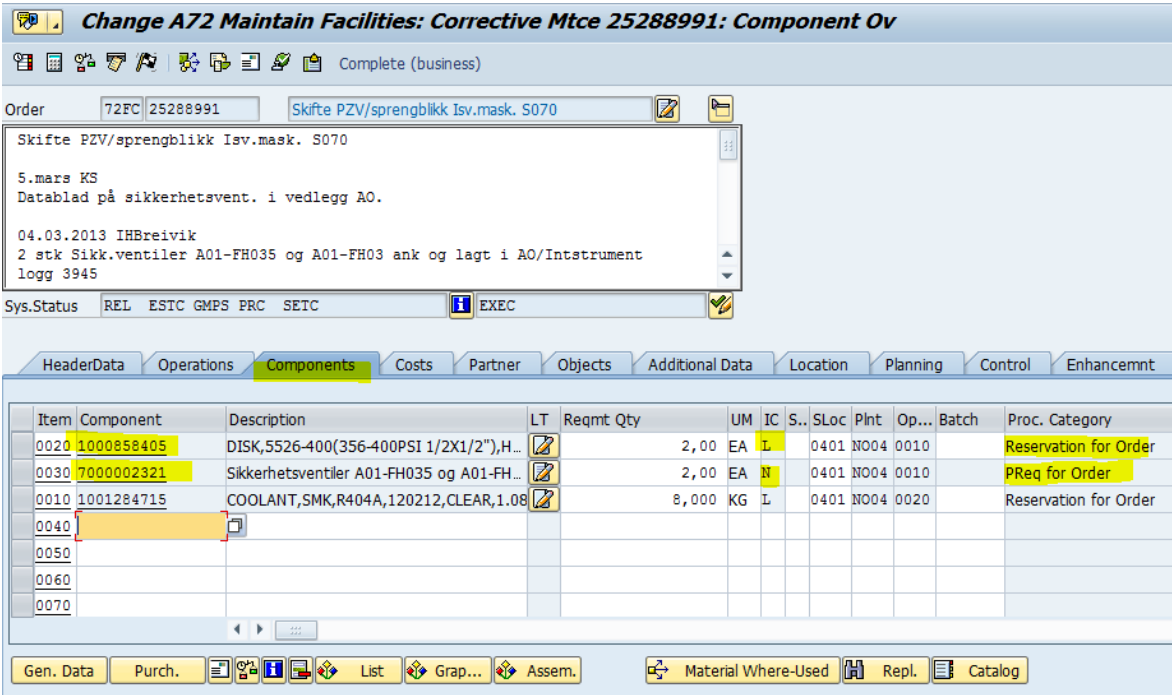


Figure 41: Word Order

Whenever a required non-stock material does not exist with a unique material number in the material master in SAP, the job planner needs to use a *generic number* to define the necessary component. In those cases, the job planner is also obliged to inform the Inventory Analysts about insufficient material masters. The generic number is a general number that can be

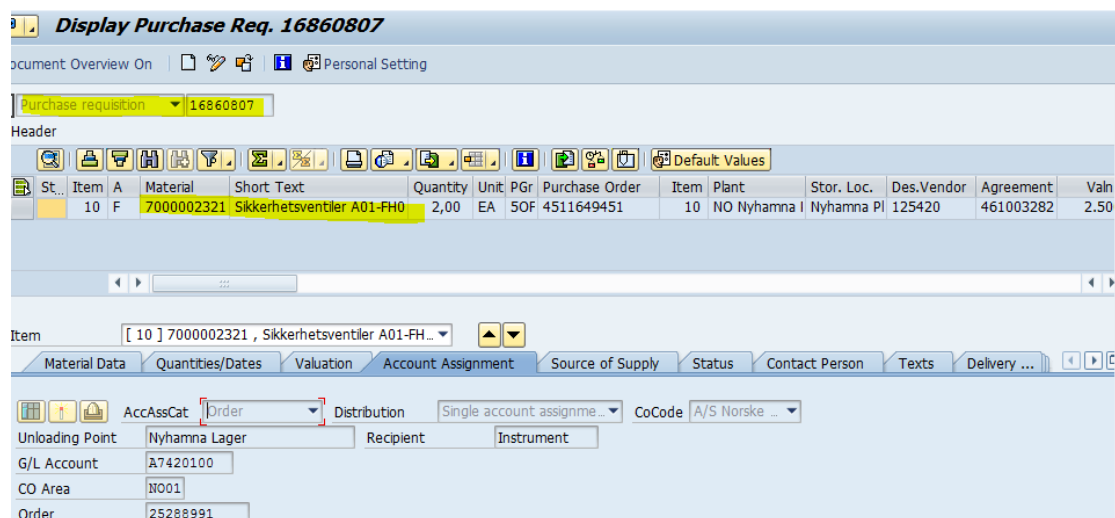
linked to any type of material, e.g. oil, gloves, pencils, and screw nuts. When the job planner uses a generic number for a material in the Work Order, he or she needs to write an additional comment in the Work Order to describe the material in detail.

The job planner needs extensive knowledge about both technical equipment and purchasing aspects to correctly choose the materials necessary for the job. Technicalities like the actual starting date for the job depends on several purchasing aspects. If the required material is a stock item, it is necessary to understand the warehouse availability and the delivery time if it must be bought. If it is a non-stock item, the delivery time is important to know. The job planners thus have regular and direct contact with the different suppliers themselves.

The job planners discuss both technical issues as well as necessary commercial aspects with the suppliers. Sometimes, supplier discussions end up in contractual offers from the suppliers. In those situations, the job planners forward this information to Inventory Analysts. The Work Order can be released to the purchasers when the Work Order is made and the responsible job planner has confirmed the job with the necessary stakeholders involved.

### Purchase Requisition

Based on the Work Order, a *Purchase Requisition* (Fig. 42) is automatically generated by the SAP system.



**Figure 42: Purchase Requisition**

The generation of a Purchase Requisition may be triggered by two situations: (1) the content of a specific Work Order released by SAP. A Work Order may initiate both a Purchase Requisition to stock and non-stock, since the Work Order often includes both stock and non-stock materials; and (2) inventory replenishment need, whenever *Material Requirements Planner* (MRP) in SAP reports that an inventory level is below minimum. The MRP system has at all times updated inventory information since the warehouse personnel register in SAP the material taken from inventory.

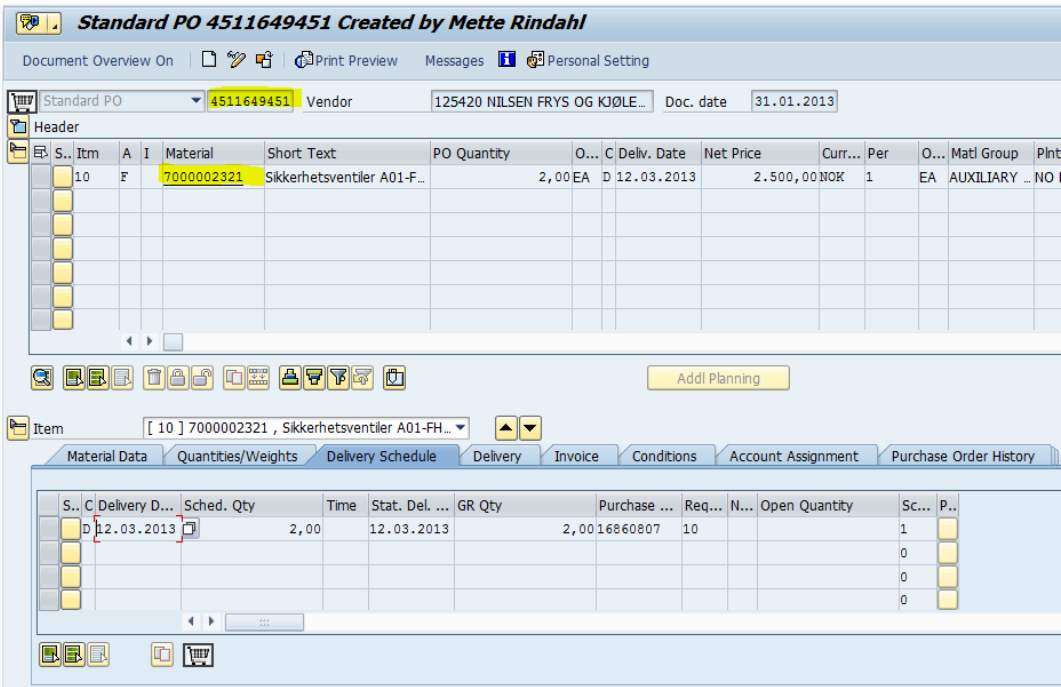
If the list of materials and services required in the Purchase Requisition exceeds \$ 10 000, the Purchase Requisition must be released by a superior employee of the Inventory Analysts

(11.4.1.1 Inventory Analysts) or the Purchase Coordinators (11.4.1.2 Purchase Coordinators). Otherwise, it is sent directly to the Inventory Analysts or to the Purchase Coordinators for Purchase Order generation.

**Purchase Order**

The Inventory Analysts and Purchase Coordinators make a *Purchase Order* based on the released Purchase Requisition. The Purchase Coordinators generate Purchase Orders to different suppliers based on the predetermined list of materials in the Purchase Requisition. The Inventory Analysts that purchases to stock, on the other hand, generate Purchase Orders based on two sources: (1) the Purchase Requisitions based on the Work Orders; and (2) the Purchase Requisitions from the MRP system.

The purchasers' job is to procure the predetermined materials and services, and they have no authority to make alterations on the required materials and services listed in the Purchase Requisition. If they have any contract- or purchasing related questions, e.g. need for a new contract or issues with the RtP-process, they are encouraged to contact C&P Lead. If the Purchase Order exceeds 250 000 NOK, it needs to be released by C&P before the Purchase Order is sent to the supplier. For every purchase below 250 000 NOK, the purchasers have authorization to send them directly to the suppliers. Figure 43 shows an example of a Purchase Order.



**Figure 43: Purchase Order**

The main thing the purchasers do to create the Purchase Order is to search for appropriate suppliers for the specific materials and services. The search is done in a supplier register in SAP. When the appropriate supplier is chosen, the supplier is connected to the specific materials and services. The purchasers evaluate the suppliers in the register and choose the supplier that matches the requirements of the materials and services listed in the Purchase Requisition. This evaluation is made based on experience.

Ideally, each material and service should be procured through a contract. The purchasers mostly use operational contracts, and only occasionally strategic and tactical contracts (11.4.2.2). When Upstream Norske Shell has a contract that covers the specific need of the Purchase Requisition, the purchasers are obliged to use that contract. Whenever Upstream Norske Shell has a contract that covers the specific need of the Purchase Requisition, and the purchaser places a *stand-alone Purchase Order* instead of linking the material to the contract, it is called a *contract leakage*.

A stand-alone Purchase Order is characterized by a purchase that is made outside a contract, but through a supplier in the supplier register in SAP. The practice of contract leakage is against company rules. Whenever the purchasers issue stand-alone Purchase Orders frequently on specific materials or services from suppliers, they are encouraged to report to the C&P Lead that Upstream Norske Shell should enter into a contract on that specific material or service.

When a required material or service is defined with a generic material number in the Work Order (11.4.2.1 Work Order), the generic number is also linked to the material or service in the Purchase Requisition and Purchase Order. Based on the description of the required material written by the job planner in the comment field (11.4.2.1 Work Order), the purchasers are authorized and expected to try to find the correct material number for the specific material. In doing so, the purchasers function as a control unit for the unwanted practice of *generic purchasing*: the practice of sending Purchase Orders of non-stock materials to suppliers without using specific material numbers.

The purchasers' job is to send Purchase Orders to suppliers with as detailed and correct descriptions of the materials and services as possible. Lack of important information may result in wrong deliveries from the suppliers, or extra questions from the suppliers about the Purchase Order. The purchasers often cannot answer any technical questions from suppliers. Whenever a supplier has technical questions due to a lack of material numbers in the Purchase Order, the purchasers need to redirect the supplier to the job planners that made the Work Order.

#### Service/Material Entry and Invoice

The Service/Material Entry and Invoice steps are closely connected. The two Purchase Coordinators hold the responsibility for the Service Entry. The Purchase Coordinators receive the Invoices for the Purchase Orders they make on services and are responsible for appropriation of Service Entry. This means that they initiate the entry of the service, before the Invoice is paid. They are also responsible for correcting the appropriations against the actual Invoices received. For Material Entry, the warehouse workers are responsible for receiving the supplies and register them in SAP.

When the Service/Material Entries are made, the Invoice is sent to the finance department in Upstream Norske Shell in Kristiansund. The finance department is the final approval authority. A purchase is closed when the supplier is paid, i.e. the finance department approves the Service/Material entry.

## RtP Optimization

The purpose of the role of the two RtP Analysts (11.4.1.1 RtP Continuous Improvement Analysts) is to optimize the entire RtP process described above. The different optimizers that are implemented in Upstream Norske Shell today are: POA, HUBWOO, SUS, Disk Upload, and ERS (Fig. 44). POA is the optimizer that RtP Analysts focus most of their implementation efforts on today. It will therefore be shortly described.

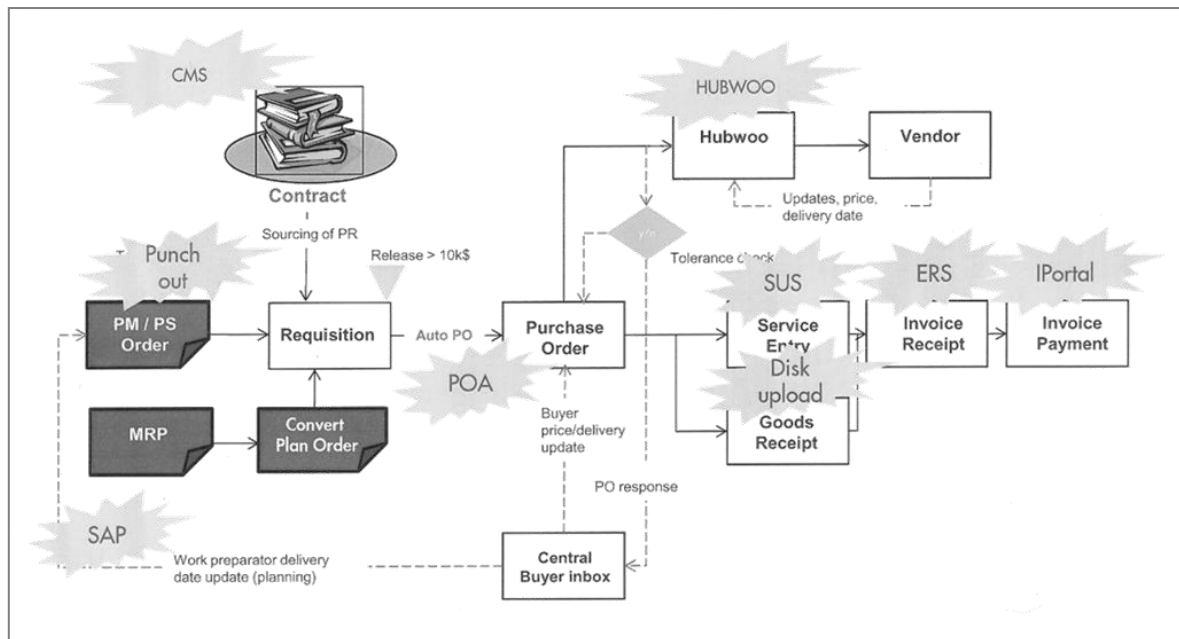


Figure 44: RtP Optimizers

*Purchase Order Automation (POA)* optimizes the work preparation and procurement process. The Purchase Orders are sent directly to the suppliers through SAP without intervention of the Purchase Coordinators, based on the Purchase Requisition. The practice with Purchase Order Automation reduces the workload of the Inventory Analysts and Purchase Coordinators. POA requires job planners to add all information relevant for the procurement process in the Work Order. Coded materials linked to an Outline Agreement, logistical instructions for delivery and separate delivery addresses on component level are included.

Overall, Upstream Norske Shell experiences some implementation challenges, e.g. suppliers have questions about incomplete Purchase Orders which forces the purchasers to manually deal with the purchase orders.

### 11.4.2.2 Category Management and Contracting Processes

The Category Management and Contracting Process (CMCP) is the standard, Global Shell tendering process procedure for making supplier contracts. Upstream Norske Shell are obliged to follow this standard process as one of the several commitments they have toward Global Shell (11.2.2). Figure 45 illustrates CMCP and its six steps: (1) Business Needs; (2) Market Analysis; (3) Supply Chain Cost Modelling; (4) Strategy Selection; (5) Sourcing and Award; and (6) Contract Management. Step 1 to 5 is characterized as the Pre-Award phase. Step 6 is called the Post-Award phase.

The Contract Specialists and Senior Buyer Sourcing in C&P (11.4.1.1 Contract Specialists; 11.4.1.1 Senior Buyer Sourcing) hold the responsibility of ensuring that the tendering process is transparent and conducted according to both the Global Shell guidelines, and Norwegian laws and regulations (10.8). The Contract Specialist/Senior Buyer Sourcing is the superior responsible for the Pre-Award processes. The Contract Manager (11.4.1.3) is the superior responsible for the Post-Award Contract Management process. It takes approximately a year to establish a contract, from Business Needs to Sourcing and Award is conducted.



**Figure 45: Category Management and Contracting Process**

CMCP is either triggered by: (1) a contract that has expired and needs to be renewed; or (2) a need for a new supplier contract that arises on Draugen, Ormen Lange Land Plant or at the Operations office in Kristiansund. C&P has to be proactive and ready to establish a new contract one year in advance of existing contracts' expiry date. C&P tries to facilitate that the contracts have different expiry date. The contracts are usually extended based on existing terms, but re-negotiation is possible.

The E&M Delivery Engineers or employees on Draugen and Ormen Lange Land Plant usually report a need for a new contract to the Contract Specialists or the C&P Lead. When a need is reported, C&P is responsible for examining whether Upstream Norske Shell already has a contract that covers the specific need. If a contract does not exist, a Contract Specialist starts CMCP to establish a new contract with a new or earlier used supplier.

The contract established after the CMCP is defined as *strategic*, *tactical*, or *operational* (Table 41). The contracts are further grouped into 16 categories, e.g. logistics, marine vessels, rotating equipment, aviation. The purpose of this contract segmentation is to optimize the way to manage contracts, in order to eliminate waste and maximize value. Each of the Contract Specialists is responsible for establishing and managing a number of strategic and tactical contracts, mainly within the same category. The Senior Buyer Sourcing is responsible for establishing and managing the operational contracts.

**Table 41: Contract Segmentation**

Strategic High Risk/High complexity	Tactical Medium Risk/Medium Complexity	Operational Low Risk/Low Complexity
>\$25M	\$7M>x<\$25M	<\$7M
Few in number, but represent more than 80 % of spend	Moderate in number, but represent 15 % of the spend	Can be very large in number, but represent only 5 % of the spend
Generally characterized by high value, high risk, and high complexity	Generally characterized by medium value, medium risk, and medium complexity	Generally characterized by low value, low risk, and low complexity

### Business Needs

The first step of CMCP, *Business Needs*, is the most important step of the whole process. The foundation for the contract is laid here, and it is of great importance that a lot of time and effort is devoted to this step. The execution of Business Needs comprises three steps: (1) establish team; (2) establish scope, spend, risk and complexity; and (3) determine business requirements. These three steps will now be described in detail.

In Step 1, a competent team with clear roles and responsibilities comprising both technical and commercial personnel must be established. A Roles and Responsibilities Matrix (RASCI) is used to bring structure and clarity in assigning the roles and responsibilities within the team (Appendix U). RASCI is a simple grid system that is used to align responsibilities of personnel within a team based on their competency subject to business requirements. The team always includes the following roles: *Contract Specialist*, *Contract Owner*, *Contract Holder*, and *Contract User*.

The Contract Specialists and Senior Buyer Sourcing from C&P hold the overall responsibility of the execution and management of CMCP. The Contract Owner is a senior technical employee from Upstream Norske Shell, responsible for the budget and other resources in delivering the business requirements. The Contract Holder is appointed by the Contract Owner. He or she is a technical, experienced person within a specific discipline that shall effectively manage the delivery of the business requirements.

The Contract User is the person(s) who call off their requirements from the contract and use the contracts. Further, the Contract User liaises with the Contract Holder and/or C&P employee on any issues regarding the contract. Operators at Draugen and Ormen Lange Land Plant, E&M Delivery Engineers, the Inventory Analysts and Purchase Coordinators are all Contract Users. The requirements to the different roles in the Business Needs team differ, depending on the type of contract that is to be established.

In Step 2, scope, spend, risk and complexity must be defined. The team must clearly describe and understand the business requirements. The need and scope for the goods and services to

be procured must be defined. Then, a stakeholder engagement plan must be developed and communicated, and a risk log to capture risk must be established. To evaluate the risk aspect of the content of the contract, the Risk Assessment Matrix (RAM) (Appendix V) is used. Four main risk categories are evaluated: (1) harm to people; (2) asset damage; (3) environmental impact; and (4) reputation impact.

Eventually, spend data must be gathered through the Enterprise Resource Planning (ERP) system and/or the Management Information System (MIS). Any export/import control restrictions and competition/anti-trust law concerns must be identified. The appointed team aims to determine and define the aforementioned aspects thoroughly.

In the preliminary meetings and discussions, the right questions need to be asked, thoroughly talked through and answered. This is where all the relevant stakeholders, people or groups of people, who affect or can affect the achievement of the team's purpose with the contract, are taken into account and included in the discussions. Examples of stakeholders might be Contract Users from the Delivery Team and operators at Draugen and Ormen Lange Land Plant. Risks must be identified and mitigated, external and internal understanding must be built, opportunities must be identified and optimized, and execution must be improved.

In Step 3, the business requirements are determined. Business demand is forecasted, the assumed business requirements are challenged to secure quality, and value improvement opportunities, delivery issues and risks are identified. The Key Outcomes of Business Needs are *Terms of Reference and Stakeholder Engagement and Communication Plan*. The objective of Terms of Reference is to identify and document the background, key business requirements, preliminary scope, key deliverables, boundaries, opportunities, budget, timeline and key stakeholders of the contract. The Terms of Reference needs to be endorsed by the Contract Owner and/or Contract Holder (11.4.2.2 Business Needs).

The purpose of the Stakeholder Engagement and Communication Plan is to coordinate those actions necessary to assure that Contract Owners, Contract Holders, Contract Users, C&P stakeholders, suppliers and other stakeholders optimize their contributions to CMCP. The intention of the plan is to generate awareness, create understanding and build commitment from the stakeholders.

### Market Analysis

The *Market Analysis* is executed in three steps: (1) understand industry structure; (2) identify and profile current and potential suppliers; and (3) analyze market conditions. These three steps will now be described in detail.

In Step 1, the industry structure is analyzed. This includes an assessment of the size and growth of the global market, and a breakdown of the market into geography and key industries procuring these products/services. Then, the major suppliers in the industry must be identified and profiled, and the industry average cost structure estimated. To gain the aforementioned information, the Contract Specialist uses information sources like Global Shell market report and trade journals. Market characteristics the Contract Specialist evaluates are, among others, whether the resources are difficult to get hold of, Upstream Norske Shell's



buyer power in the market, the industry's average cost structure, key price drivers, and future price trends.

Another source of information about potential suppliers is the external tool called ACHILLES. ACHILLES is an international tool that contains information about suppliers in all kinds of industries, and is used by companies all over the world. Most suppliers in the world are registered in this system. ACHILLES facilitates searches within different categories, e.g. countries, regions, disciplines, and services. In addition to ACHILLES, a local company in Molde provides a supplier database for Mid-Norway and Northern Norway that the Contract Specialists use frequently to secure local content of the contracts.

In Step 2, all the suppliers that have the capability to meet Upstream Norse Shell's business requirements are listed as relevant and potential vendors. Then, a profile for each of these suppliers is developed. This profile contains information about product and services offered, regions, markets and customers served, market share and financial conditions. In the evaluation of the suppliers, the Contract Specialist uses Contract Holders' experiences, in addition to his/her own. In Step 3, the market conditions are analyzed. The Key Outcome of Market Analysis is a compilation of market analysis findings.

#### Supply Chain Cost Modelling

The three steps executed in *Supply Chain Cost Modelling* are: (1) build supply chain maps; (2) build Total Cost of Ownership (TCO) model; and (3) develop list of key cost and value drivers.

In Step 1, the scope of the as-is process to be mapped is determined, and an activity map showing the cost elements incurred per activity is built. Together, this builds supply chain maps. In Step 2, a TCO model is developed. The relative magnitude of all costs incurred over the expected life of the product or service grouped by purchase price, acquisition costs, usage costs and end-of-life costs are identified and estimated. The cost elements at the supplier(s) level are also identified.

In Step 3, a list of key cost and value drivers is developed. The cost drivers that have the largest impact on TCO are identified and quantified. Then the Contract Specialist makes a list of factors that most significantly impact key cost drivers. Opportunities to influence the key cost drivers, which will reduce cost and increase value, are also determined. Key outcomes of the Supply Chain Cost Modelling are flow charts of key activities, costs incurred in the supply chain, a Total Cost of Ownership analysis, and a list of key cost and value drivers.

#### Strategy Selection

The previous steps, Business Needs, Market Analysis and Supply Chain Cost Modeling, lay the foundation for *Strategy Selection*. The Contract Specialist performs *Strategy Selection* in three steps: (1) finalize strategy; (2) develop sourcing strategy; and (3) confirm suppliers. These steps will now be described.

In Step 1, the sourcing strategy is finalized. Business needs, market analysis and supply chain cost modelling are verified, and input into category strategy is reviewed. Then, potential

sourcing strategies, in alignment with the strategy of the specific category, are formulated. Reward and performance tracking mechanisms for the category are defined, risk and insurance between Upstream Norske Shell and supplier(s) according to Global Shell standards are allocated, and the category strategy for endorsement by stakeholders are finalized and documented.

In Step 2, the sourcing tactics are developed. The sourcing tactics include a definition of sourcing scope and boundaries, market approach determination, a selection of contract type, and identification of resource requirements to manage the contract. All the sourcing tactics are finalized and documented for endorsement by stakeholders.

In Step 3, suppliers are confirmed. The selection criteria to short-list suppliers are established, as well as an evaluation process for sourcing and award. A contract must at least have criteria related to company health service, equipment, personnel, turnover, delivery time, service level, and HSE. Other criteria might be: quality, specifications, offshore experience, and qualified workforce available. The capabilities of the suppliers, listed in Market Analysis, are evaluated against these criteria. The outcome of this evaluation is the final suppliers that are chosen to attend a tender process. Usually, a maximum of five final suppliers are chosen. The key outcomes of Strategy Selection are a Category Strategy, a Sourcing Strategy and Sourcing Tactics.

#### Sourcing and Award

*Sourcing and Award* is performed in three phases: (1) develop sourcing package; (2) manage sourcing process; and (3) evaluate and award contract. These steps will now be presented.

In Step 1, the sourcing package is developed, commonly known as Invitation To Tender (ITT). The sourcing package consists of a set of documents, which convey the same deliverable requirements, pricing mechanisms, terms and conditions, obligations and risks under which the supply of goods and services shall be performed. Upstream Norske Shell sends the sourcing package to the short-listed suppliers. The sourcing package will enable a comparison of the supplier's technical and commercial proposals and evaluate them in line with Upstream Norske Shell's approved evaluation criteria.

The structure and content of the sourcing package needs to be agreed upon with the relevant stakeholders and should consist of: explanation of the steps that will be encountered in the sourcing process and the rules that need to be followed, all the requirements that need to be returned by the supplier for evaluation, and contract terms and conditions. Model Contracts can be applied in the Invitation To Tender.

In Step 2, the sourcing process with the short-listed supplier must be managed. The Contract Specialist usually specifies to the suppliers that attend the tender process that Upstream Norske Shell claims their right to re-negotiate the contract if necessary before award. In the re-negotiation the focus is on the aspects of the contract where most money can be saved, e.g. rates. In Step 3, the final evaluation of the suppliers in the tender is done and the contract is awarded to a supplier. The Key Outcomes of Sourcing and Award are the sourcing package, an approved award of contract and a signed contract.

## Contract Management

The final step of CMCP is the Post-Award *Contract Management*, and is executed in three steps: (1) initiate start-up; (2) manage performance and relationship; and (3) execute close out and feedback. The Contract Manager (11.4.1.3) is the superior responsible for the Post-Award Contract Management Process.

In Step 1, initiate start-up, a contract management team with defined roles and responsibilities as well as a Contract Management Plan, must be established. The contract management team is set up for effective contract management. The roles in the contract management team are: Contract Owner (CO), Contract Holder (CH), Contract User (CU) and Contract Specialist (CS) (Fig. 46). The employees given these roles may be the same employees that were in the respective positions in the first step Business Needs, or a new team is established.

Post Award Contract Mgmt: CO, CH, CS & CU R&R's		Contract Owner	Contract Holder		Contract Specialist	Contract User
Manage Performance & Relationship	Implement and maintain the post Award Contract Management Plan	C	R	A	S	C
	Conduct Business Performance Reviews/Contract Management Meetings	S	R	A	S	C
	Manage Contract Documentation /Change & Variations/Claims and Control Expenditure	C	A		R	C
	Ensure Contract Compliance	A	R		S	C

R = Responsible    A = Accountable    S = Support    C = Consulted

**Figure 46: Roles in Contract Management**

A Contract Owner and a Contract Holder is assigned to each new tactical and strategic contract. The *Contract Owner* is responsible for the budget and other resources in delivering the business requirements. The Contract Owner is accountable for overall contract performance: he/she sets budget, determines implementation approach and reviews delivery progress, ensures that the chosen Contract Holder has the needed competencies, and approves a Contract Management Plan.

The *Contract Holder's* responsibility is to effectively manage the delivery of business requirements. The Contract Holder is accountable for the delivery of the overall contract performance; budget delivery, spend monitoring and performance delivery reports. The Contract Holder is further responsible for implementing a Contract Management Plan. It is expected that the Contract Holder manages the day-to-day relationship with the supplier and provides ongoing performance feedback, serves as day-to-day catalyst to address improvement opportunities to reduce demand, improves forecasts and so on. It is the Contract

Manager's responsibility to support the Contract Holder in identifying and managing risks, and help establish and drive the execution of Contract Management Plan.

In Step 2, performance and relationships are managed. Here, the Post Award Contract Management Plan is implemented and maintained, and Business Performance Reviews are conducted. All scope changes, risk, business objectives, variations/claims, and control expenditures must be managed. The *Contract Management Plan* is used to align the contract objectives and tactics, and ensure that all stakeholders understand the contract. The Contract Management Plan includes the sections: commercial, performance compliance, relationship, and HSSE activities, and consists of improvement opportunities, associated actions, accountable individuals, and expected completion dates. The plan must be revised on a regular basis, minimum once a year. At a minimum, all contract reviews include the Contract Owner, Contract Holder, C&P, Finance, HSSE, and key suppliers or contractor personnel (except for internal Shell reviews).

The *Business Performance Review* is a key process element in managing the supply base and delivering value to stakeholder community. At these meetings, deliverables and improvement opportunities are documented and refreshed. The topics discussed are, at a minimum, resourcing, delivery of HSSE objectives, opportunities relating to the contract management plan, validation that the contract is delivering the desired commercial commitments, and that the supplier is delivering according to its commitments. The review meetings are held one or two times a year, depending on the type of contract.

The contract management procedures differ for the three different types of contracts, tactical, strategic and operational. Strategic contracts require a strong focus on HSSE and performance management elements, facilitated by KPIs and balanced scorecards, and an active Business Performance Review approach. Tactical contracts require a risk-based focus on HSSE and performance management elements, facilitated by KPIs and balanced scorecards, and periodic Business Performance Reviews. Usually, it is not necessary to perform Contract Management of the operational contracts, since they only require a minimal effort on HSSE and performance management.

Step 3 consists close out and feedback execution. Several critical activities need to take place in order to properly close out contracts; the supplier notifies Upstream Norske Shell of completion, and Upstream Norske Shell checks completions and list outstanding issues. A completion certificate is issued, the warranty period commences and the final completion certificate is issued. It is important that both the suppliers and Upstream Norske Shell's performance is evaluated and recorded. The Key Outcomes of Contract Management are: Contract Management Plan, contract management expectations, Business Performance Review report(s), contract close out checklist, and updated risk and opportunity log.

### 11.4.2.3 Link between RtP and CMCP

The basic link between RtP and CMCP is that the RtP-process shall use the contracts created in CMCP. This means that CMCP can be considered an underlying process facilitating the main purchasing process, RtP. This is because RtP is considered closest connected to the daily operations at Draugen and Ormen Lange Land Plant.

Figure 47 illustrates the connection between the main purchasing process RtP and the facilitating process CMCP. In Fig. 47, the RtP-process is largest and on top as it is considered the daily ordering process, and the CMCP-process is smaller and beneath due to its facilitating role. Curved arrows illustrate the dependency and continuous interaction between the two interrelated processes.

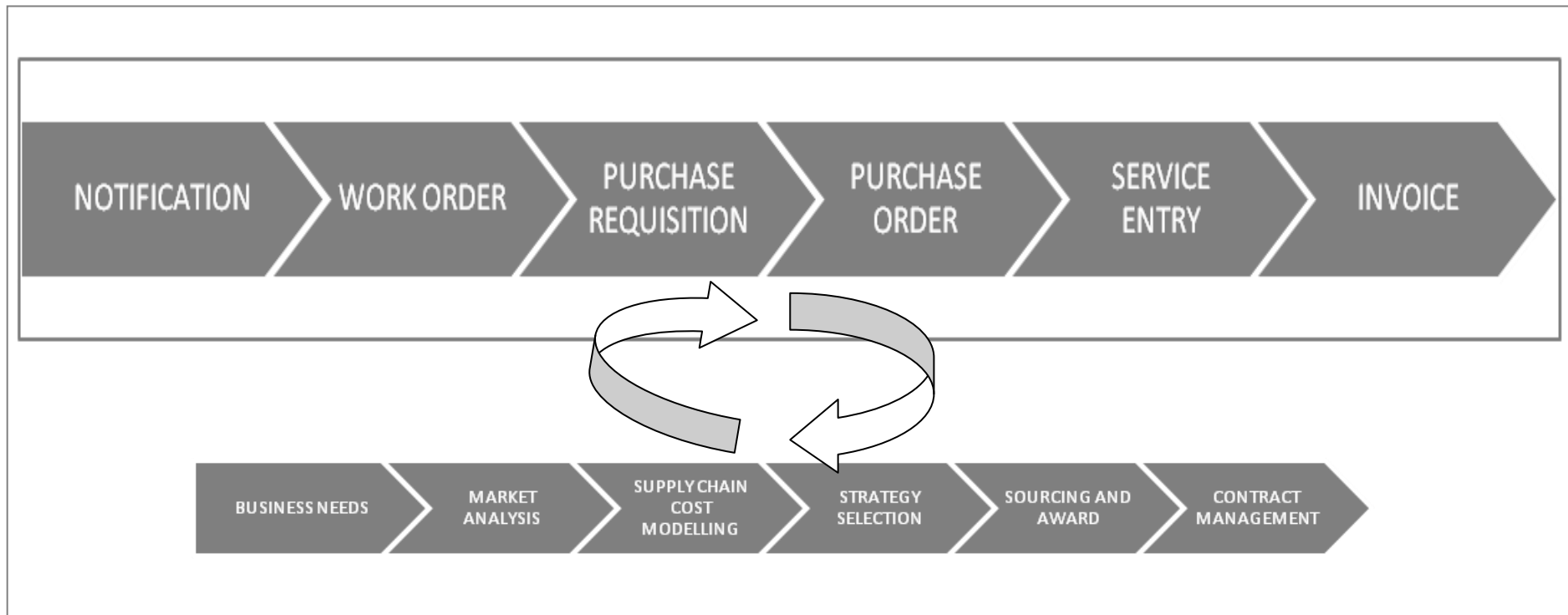


Figure 47: Link Between RtP and CMCP

### 11.4.3 Performance Measures

In Upstream Norske Shell, both the individual employee's performance and the company's processes are measured. This section will mostly focus on the measurement of Upstream Norske Shell's processes, specifically the purchasing processes RtP and CMCP.

#### 11.4.3.1 Goal, Performance and Achievement Agreement

The Goal, Performance and Achievement Agreement (GPA) measures the day-to-day performance of the individual employees. The GPA is an agreement between the employee and his or her manager for tasks and goals in the upcoming year. It is revised through performance appraisals with superior leader twice a year, and each employee's yearly bonus depends on the GPA achievement level.

#### 11.4.3.2 Key Performance Indicators

In Global Shell, Key Performance Indicators (KPIs) are designed globally, based on global analyses and evaluations. Every subsidiary of Global Shell are obliged to use the KPIs and deliver according to the measures. A Maintenance and Integrity Sustainability Report provides a measure-based summary and benchmark, enabling the Global Shell Upstream facilities to review their performance. The core business of Upstream Norske Shell, operation and maintenance of Draugen and Ormen Lange Land Plant, are thus measured through global, standardized KPIs. The Delivery Team Lead is responsible for these maintenance KPIs, except from Service Levels. Examples of a static picture (August 2012) of some of the maintenance KPIs are given in Table 42:

Table 42: Maintenance KPIs

KPI	Weight	Calculative	Proactive	Target
Preventive Maintenance compliance	20	85 %	90 %	98 %
Corrective Maintenance compliance	20	85 %	90 %	95 %
Schedule compliance	20	70 %	85 %	90 %
Emergency work	10	< 12 %	< 10 %	< 10 %
<i>Service Levels</i>	4			70 %
<i>Required-on-Site</i>	3	> 60 %	> 80 %	70 %
<i>Generic Materials</i>	3	< 20 %	< 20 %	30 %

Moreover, Upstream Norske Shell has KPIs measuring their purchasing processes CMCP and RtP. These KPIs are designed in conformity with the globally designed RtP-process and CMCP. Each contract related KPI is incorporated in all of Upstream Norske Shell's strategic and tactical contracts. In addition, the maintenance KPIs in the three last rows are considered RtP related KPIs. The following sections focus on Upstream Norske Shell's KPIs related to the purchasing processes CMCP and RtP. First, the contract related KPIs in CMCP will be presented. Thereafter, a discussion of

the three RtP related KPIs is given in the following order: (1) Service Levels; (2) Required on Site; and (3) Generic Materials.

#### Contract Related KPIs

As a part of the step Contract Management in CMCP, all tactical and strategic contracts Upstream Norske Shell uses, have a Contract Management Plan (11.4.2.2 Contract Management). Incorporated in the Contract Management Plan are different contract related KPIs that are aligned with business requirements and category objectives. The purpose of these contract related KPIs is to measure the performance of the supplier, as well as verify that Upstream Norske Shell delivers on its commitments to the supplier. Which KPIs that are used varies based on the nature of the contract.

Examples of strategic contract related KPIs are: HSE leadership, learning from incidents, engineering productivity, quality of procurement process, planning quality, and response to urgent needs and issues. Examples of tactical contract related KPIs are: compliance with HSE plan, work related sick leave, ability to deliver project resources on requirement, maintenance compliance, and payment performance.

The KPIs are evaluated at the contract review meetings (11.4.2.2 Contract Management). The suppliers are rewarded based on their KPI scores. Upstream Norske Shell develops their purchasing process and employees based on the KPI scores.

#### RtP related KPI 1: Service Level

The KPI Service Levels measures if the right material is on stock when needed. The objective of Service Levels is to measure the percentage of spare requests (reservations) with a required on site date within the reporting month which have been fully fulfilled. The spare requests included are only those requests for stock items that have been fully fulfilled. The business value of the KPI is that the score provides a good internal customer satisfaction measure. This measure is based on the effectiveness of the inventory management to provide stock materials on time. High Service Levels will result in on time execution of the work, resulting in low disruptions to the schedule and efficient work execution.

Service Levels is based on the final date for execution of a job operation, original ROS (11.4.2.1 Work Order). Consequently, Service Levels is designed with the assumption that if original ROS is modified, the reason is that material is not on stock when needed. Upstream Norske Shell, however, experience that the original ROS date is modified due to different reasons, e.g. capacity, which entails that the KPI does not give the right picture of reality.

In Upstream Norske Shell, the Inventory Analysts (11.4.1.1 Inventory Analysts) own and are responsible for the Service Levels. Figure 48 shows the Service Levels for Upstream Norske Shell for 2012 and the first two months in 2013. From Fig. 48, the Service Levels in Upstream Norske Shell was 44 % in February 2013. Based on the

Maintenance and Integrity Sustainability Report made by Global Shell, the target for Service Levels is above 70 %. In February 2013, Draugen's score was 26 % and Ormen Lange Land Plant's score was 56 %.

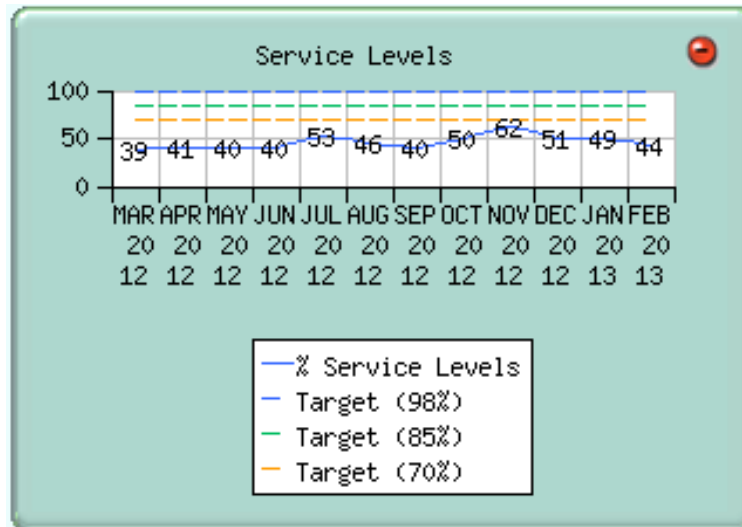


Figure 48: Service Levels Upstream Norske Shell

RtP related KPI 2: Required On Site

The objective of the KPI Required on Site is to measure the percentage of all non-stock material requests that have been delivered on or before their final date for execution, original ROS, in the reporting period. Non-stock materials are the materials that are not stocked on-site and need to be requested. In other words, the KPI Required on Site measures purchase-planning performance with relation to when the material should be on site and when it is delivered on site. Required on Site compliance gives a measure of the performance of the material request and delivery system.

High level of Required on Site compliance contributes to efficient on-time execution of maintenance work and high asset reliability due to timely execution of work. Low level of Required on Site compliance can be caused by poor communication between maintenance team (Work preparer, Maintenance technician) and CPL peers (buyers, materials coordinator), and material requisitions with unclear descriptions. In order for this KPI to measure true performance, however, the material needs to be linked to the job operation that depends on the material. In other words, the score does not show true performance if a material is linked to a different job operation than the job operation where the material is actually used.

In Upstream Norske Shell, the Delivery Team Lead (11.4.1.2) is responsible for Required On Site. Figure 49 shows the result from 2012 and the first two months of 2013, for Draugen and Ormen Lange Land Plant. The blue line shows the lowest target level, and the red line shows the highest target level. The yellow line shows the measured performance level, which fluctuates considerably.



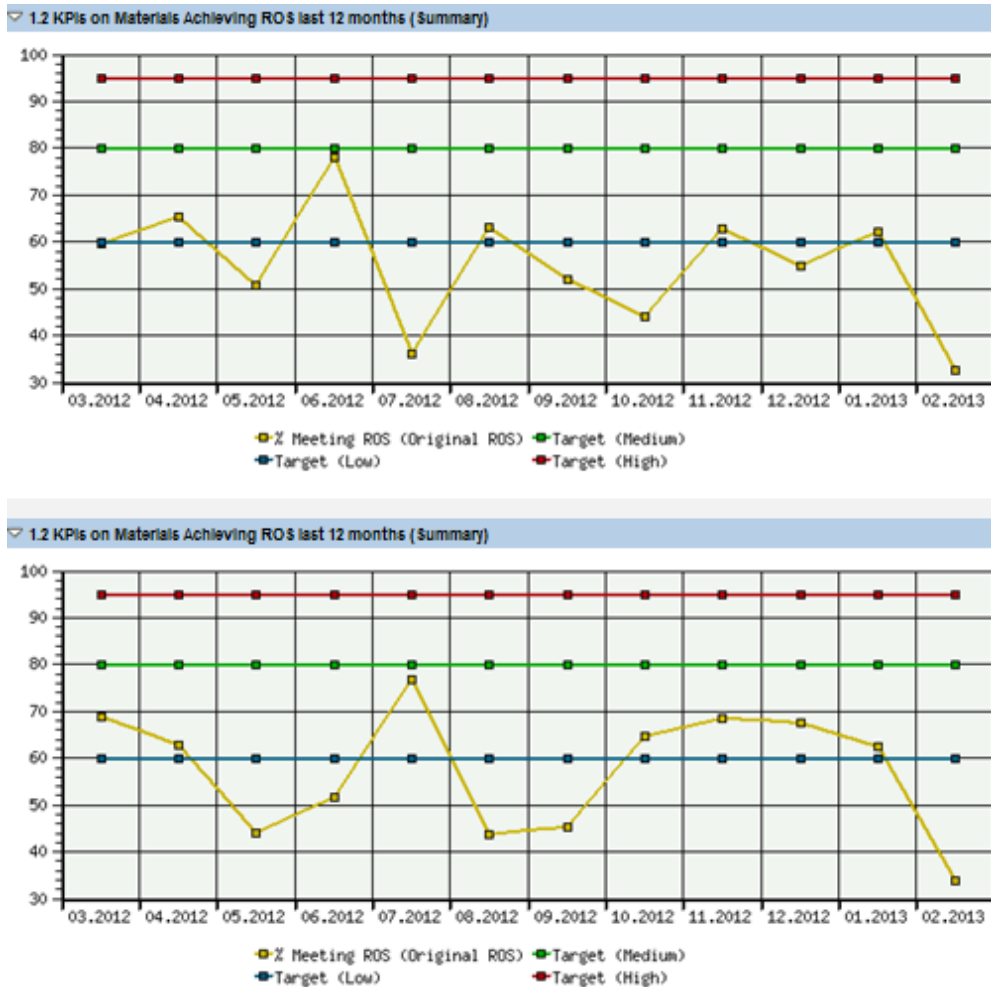


Figure 49: Required-on-Site Upstream Norske Shell

RtP related KPI 3: Generic Materials

The objective of the KPI Generic Materials is to measure the percentage of generic materials ordered compared to the total number of Purchase Requisition material items. Generics is the term used for items that are not stocked and do not have a material master in SAP. All materials that are bought frequently should be covered by a material master record and, if an equipment part, should be included in the equipment Bill Of Material.

Generic Materials Ordered allows both Maintenance and the supply chain to determine whether there is an unreasonable burden being put on the purchasing groups by a large amount of generic purchases. Low levels of Generic Materials lead to: (1) higher Reliability due to non-generically ordered materials arriving faster on site thereby decreasing the length of equipment downtime; and (2) better Integrity due to non-generically ordered material avoiding the danger of a poor specification and subsequently the wrong part arriving and being fitted.

High levels of Generic Materials indicate: (1) staff not using material masters or unwilling to search for the material masters; (2) material masters not fit for purpose; and (3) difficulties for staff to search and identify required items. Generic purchases require additional effort from the purchasing staff since they need to find an appropriate supplier, negotiate a price and manually order the part. This is a contrast to the seamlessly ordering of an item with a material master, most of which will be ordered automatically.

The score of Generic Materials does not always present the right percentage of generic purchases. Sometimes several different materials are attached to the same generic material number. This entails that one generic purchase may in reality represent several generic purchases. Consequently, the amount of generic purchases is sometimes *higher* than the given score of Generic Materials.

In Upstream Norske Shell, the Delivery Team Lead (11.4.1.2) is responsible for Generic Materials. Figure 50 shows the Generic Materials ordered for Upstream Norske Shell for 2012 and the first two months in 2013. In February 2013, 74 % Generic Materials were ordered. Based on the Maintenance and Integrity Sustainability Report made by Global Shell, the target for Generic Materials is below 20 %. In February 2013, Draugen's score was 69 % and Ormen Lange Land Plant's score was 72 %.

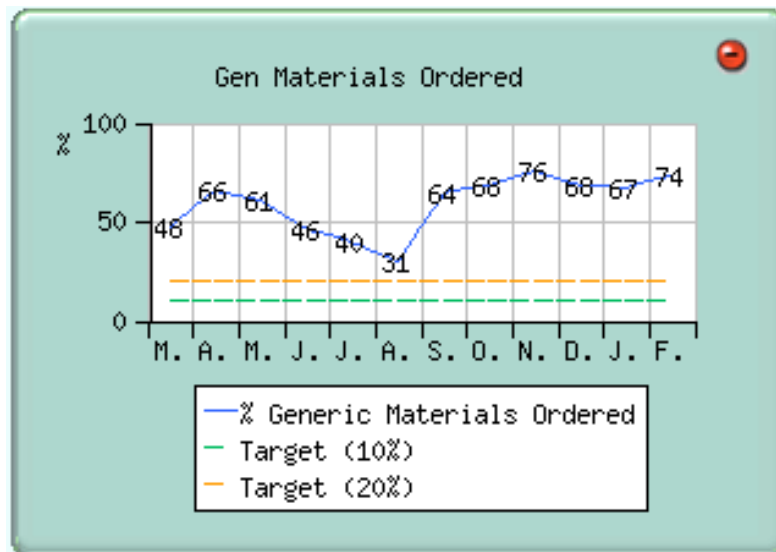


Figure 50: Generic Materials Upstream Norske Shell

## **PART 4: ANALYSIS**

*In this part, the conceptual model Purchasing Synergy Management Wheel presented in Chapter Eight will be applied as a diagnostic tool to analyze Upstream Norske Shell. First, the buying center of the case company will be identified, forming the scope of the whole analysis. Second, each element in the model will be analyzed separately. The aim is to identify realized purchasing synergies and unrealized synergy potentials in the case company and explain why they are present.*

*Subsequently, the most relevant links between the factors that cause realized and unrealized purchasing synergy potentials in all elements are drawn. The following analysis answers Research Question 3 by identifying purchasing synergies and explaining why certain synergy potentials remain unrealized. Lastly, challenges and recommendations based on the analyses of the factors that lead to unrealized purchasing synergy potentials are given.*

*The empirical content in this part largely refers back to the case description in Chapter Eleven, but may also be based on general understanding drawn from the interviews. In this analysis, the word 'purchasing' refers to both contracting and procurement related activities in the case company.*

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## 12. Approach and Scope of the Analysis

### 12.1 Approach

This analysis will use the Purchasing Synergy Management Wheel (Fig. 51) defined in Chapter Eight to diagnose the current purchasing situation in Upstream Norske Shell. The analysis applies the Purchasing Synergy Supply Wheel in accordance with the previously presented step-wise application procedure (8.6.1).

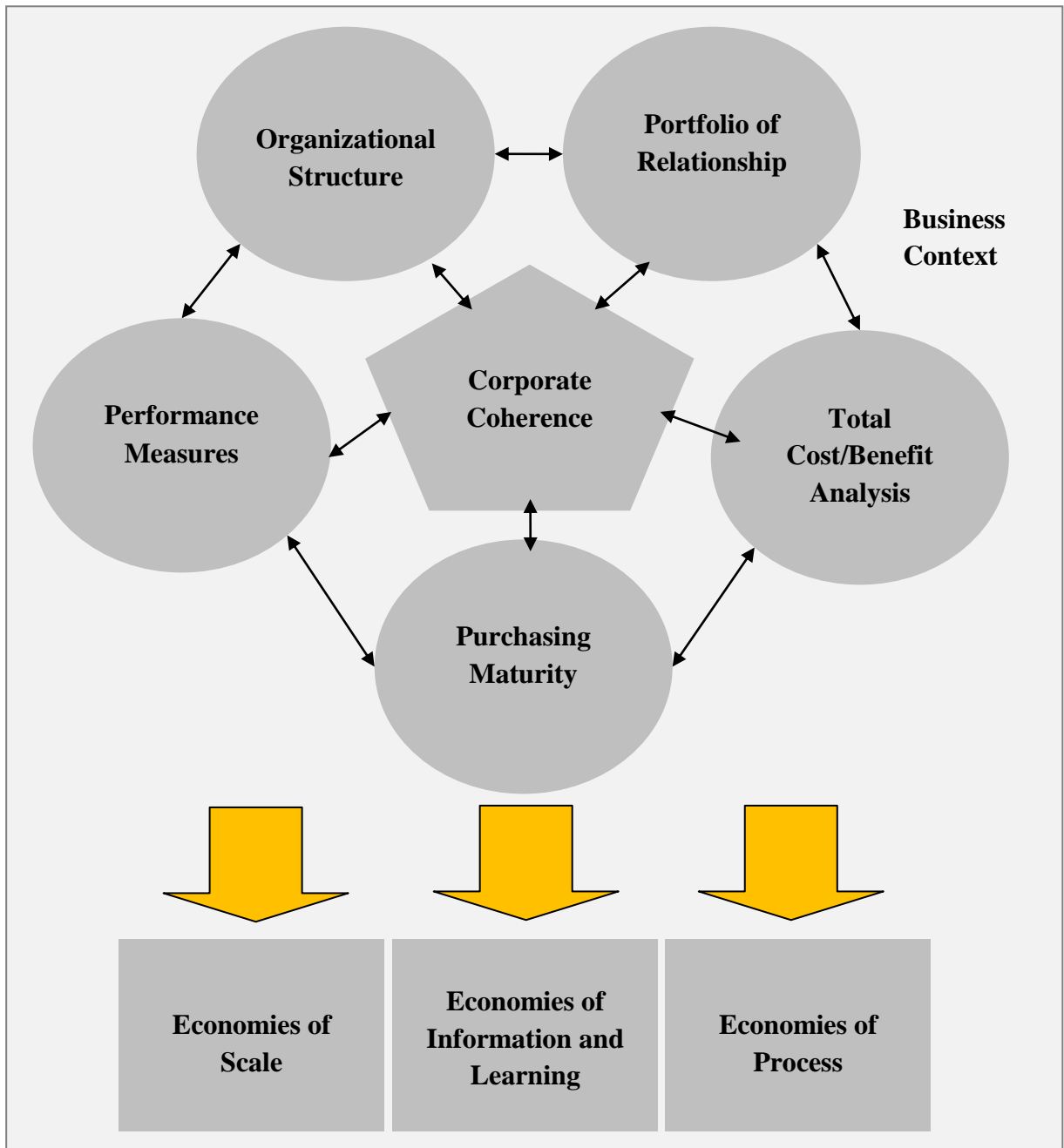


Figure 51: The Purchasing Synergy Management Wheel

Initially, the different wheel elements will be analyzed separately in line with their definitions. By doing so, both purchasing synergies that are present today as well as those who still remain unrealized will be identified.

Reasons for why certain purchasing synergies are realized and others not are explained by factors underlying each wheel element. The result will be summarized in Factor-Synergy Matrices for every wheel element, similar to the ones presented in Chapter Eight. The X'es marks the link between the particular factor and purchasing synergy. A detailed description of the specific type of purchasing synergy is given in parenthesis under the X'es.

The main difference between the matrices presented in Part Four and Part Two, however, is that the vertical columns in the matrices in Part Four are divided into *realized* purchasing synergies and *unrealized* purchasing synergies. This means that the factors listed in the horizontal rows either lead to realized or unrealized purchasing synergies. In other words, the factors are regarded as either *drivers* or *barriers* to purchasing synergy realization. The Factor-Synergy Matrices will be summarized into one final empirical matrix at the end of Chapter Thirteen.

Since the elements in the Purchasing Synergy Management Wheel are interrelated, the most relevant links between them are studied afterwards. Specifically, two or more elements are interrelated if relationships between factors underlying each element are demonstrated. Analysis of the links enables a deeper understanding of why certain purchasing synergies are realized and others not.

Based on the preceding analysis of elements and links, a set of challenges and recommendations are eventually drawn. These serve as managerial implications for Upstream Norske Shell. Ultimately, Part Four responds to RQ3.

## **12.2 Scope: the Buying Center**

To fully understand all activities that can affect the creation of purchasing synergies in Upstream Norske Shell, the scope of this analysis includes the whole buying center and not solely the purchasing function. The organizational buying behavior perspective on purchasing is thus chosen for this analysis, seeing organizational buying as a problem-solving decision-making process. The scope of this analysis is defined by the empirical data on Upstream Norske Shell presented in the case description in Chapter Eleven.

### **12.2.1 Roles in the Buying Center**

The decision-making process of organizational buying relates to the decisions of which materials and services that should be purchased, and from which suppliers the materials and services should be bought (3.2.3.1). The RtP-process in Upstream Norske Shell is considered the company's decision-making purchasing process. In accordance with section 11.4.2.3, CMCP is the underlying contracting process facilitating the main purchasing process RtP. The decision-making process may involve employees from different divisions, and not only the purchasing function

(3.2.3.2). To detect the roles of the *buying center*, a broad viewpoint of Upstream Norske Shell is thus taken.

At first glance, C&P is the division considered the purchasing function in the overall matrix structure of Norske Shell (Fig. 29). Studying Upstream Norske Shell's main RtP-process and its facilitating process CMCP more in depth, however, reveals that several other employees than those positioned in C&P execute purchasing activities. This analysis therefore takes into account the three divisions C&P, Delivery Team and Production Services, as described in Chapter Eleven.

Employees from the three divisions, included in this analysis, are: Operations Manager Norway, C&P Lead, Contract Specialists, Inventory Analysts, RtP Analysts, Senior Buyer Sourcing, EFA Implementation, Delivery Team Lead, E&M Delivery Engineers, Purchase Coordinators, Production Services Manager, operators on Draugen, operators on Ormen Lange Land Plant, Contract Manager and Contract Holders. This is illustrated in Fig. 52, where each employee is positioned along the processes.

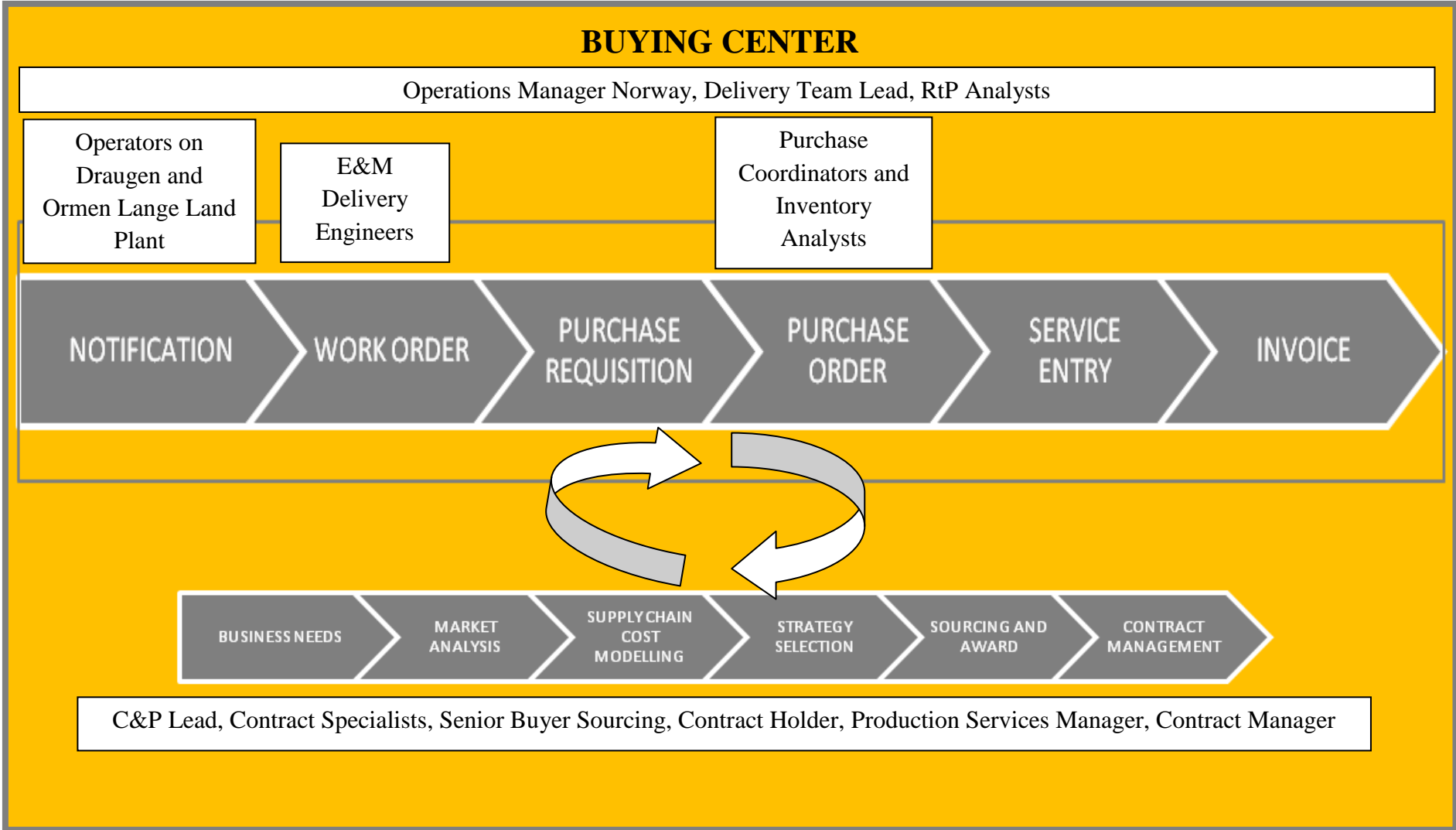


Figure 52: Buying Center Upstream Norske Shell

As Table 43 shows, a variety of these employees hold one or several of the buying center roles. This will be explained in detail in the following subsections, in which the buying center roles in Upstream Norske Shell and the organizational positions that hold the one or several of the buying center roles are presented.

**Table 43: Buying Center Roles Upstream Norske Shell**

Role	Title	Organizational Position	
Users: use the purchased product or service	<ul style="list-style-type: none"> <li>▪ Operators on Draugen</li> <li>▪ Operators on Ormen Lange Land Plant</li> </ul>	Delivery Team (Manufacturing/ Purchasing agents)	
Influencers: influence the decision-making process	<ul style="list-style-type: none"> <li>▪ Operators on Draugen</li> <li>▪ Operators on Ormen Lange Land Plant</li> <li>▪ Contract Specialist</li> <li>▪ Senior Buyer Sourcing</li> <li>▪ EFA Implementation</li> <li>▪ E&amp;M Delivery Engineers</li> <li>▪ Purchase Coordinators</li> <li>▪ Inventory Analysts</li> </ul>		
Deciders: authority to choose among alternative buying decisions	<ul style="list-style-type: none"> <li>▪ Inventory Analysts</li> <li>▪ Purchase Coordinators</li> <li>▪ E&amp;M Delivery Engineers</li> </ul>		
Buyers: people with formal responsibility and authority for contracting with suppliers	<ul style="list-style-type: none"> <li>▪ C&amp;P Lead</li> <li>▪ Contract Specialists</li> <li>▪ Senior Buyer Sourcing</li> <li>▪ Inventory Analysts</li> <li>▪ Purchase Coordinators</li> <li>▪ Contract Manager</li> <li>▪ Delivery Team Lead</li> <li>▪ Operations Manager Norway</li> </ul>		C&P (Support staff/Purchasing agents)
Gatekeepers: control the flow of information and materials into the buying center	<ul style="list-style-type: none"> <li>▪ Operations Manager Norway</li> <li>▪ C&amp;P Lead</li> <li>▪ Production Services Manager</li> <li>▪ Contract Specialists</li> <li>▪ E&amp;M Delivery Engineers</li> <li>▪ Senior Buyer Sourcing</li> <li>▪ Contract Holders</li> <li>▪ Contract Manager</li> <li>▪ RtP Analysts</li> </ul>		Production Services (Manufacturing)

*Users* are the employees that use the purchased product or service (3.2.3.2). In Upstream Norske Shell, the purchased products and services are used at the assets:



Ormen Lange Land Plant and Draugen. Consequently, the operators on Ormen Lange Land Plant and Draugen are classified as users.

The *influencers* in a buying center influence the decision-making process directly or indirectly (3.2.3.2). The operators at Ormen Lange Land Plant and Draugen make Notifications, which initiate the first step in the RtP-process. In these Notifications a description of the request is given. They have, however, not the authority to make the final purchase decision. (11.4.2.1 Notification) The operators are therefore influencers to the decision-making process through the Notification.

Moreover, the Contract Specialists and Senior Buyer Sourcing make the final decision of which suppliers Upstream Norske Shell enters into contracts with in CMCP. In other words, they set the boundaries for which suppliers the products and services can be purchased from. They are therefore influencers, seeing as all purchases should be linked to a contract (11.4.2.1 Purchase Order).

However, their decisions of whether to enter into a local contract or an EFA are influenced by the person responsible for EFA Implementations, who his responsible for facilitating and prioritizing the EFAs (11.4.1.1 Enterprise Framework Agreement Implementation). This entails that the person responsible for EFA Implementation indirectly influences the decision-making process.

The E&M Delivery Engineers, Purchase Coordinators and Inventory Analysts make suggestions to the Contract Specialists and Senior Buyer Sourcing of which materials and services that should be covered by a contract or which suppliers to enter into a contract with. They thus influence the decisions of the Contract Specialists and Senior Buyer Sourcing, and are therefore also indirect influencers to the decision-making process.

*Deciders* are the employees with authority to choose among alternative buying decisions (3.2.3.2). The E&M Delivery Engineers quality-check and approve the Notifications, and they have the authority to decide whether a job at one of the assets actually is necessary. In addition, they have the authority to overrule the material requested by the operators at the assets, and make an alternative buying decision. The E&M Delivery Engineers are therefore characterized as deciders. The Inventory Analysts and Purchase Coordinators have the authority to choose among alternative suppliers when they make Purchase Orders, which entails that they are also classified as deciders.

*Buyers* are defined as people with formal responsibility and authority for contracting with suppliers (3.2.3.2). In a buying-decision, the Inventory Analysts and Purchase Coordinators have the authority to release Purchase Requisitions if the list of materials and services requested do not exceed \$10 000. They are in these situations thus defined as buyers. If the value exceeds \$10 000, the purchase requisition must be released by Operations Manager Norway, Contract Manager, Delivery Team Lead, or

C&P Lead. (11.4.2.1 Purchase Requisition) In these situations, they are therefore characterized as buyers.

Moreover, the Contract Specialists, Senior Buyer Sourcing and C&P Lead have formal responsibility and authority to enter into contracts with suppliers, seeing as they execute the CMCP. Consequently, in these situations they are classified as buyers.

*Gatekeepers* control the flow of information and materials into the buying center (3.2.3.2). Depending on the situation, several employees in Upstream Norske Shell might hold the role as a gatekeeper. The Production Services Manager is superior the Contract Manager and Contract Holders (11.4.1.3), and therefore holds a responsibility for the flow of information and materials into the buying center He is thus characterized as a gatekeeper. The Contract Holder also acts as a gatekeeper in the role as a technical expert that manages the delivery of business requirements in the first step of CMCP (11.4.2.2 Business Needs).

Several other employees in Upstream Norske Shell also function as a gatekeeper. For instance, the Contract Manager acts as an intermediary between C&P, the Contract Holders, and the suppliers (11.4.1.3), which entails that he influences the flow of information into the buying center. Moreover, C&P Lead, Contract Specialists, Senior Buyer Sourcing, and E&M Delivery Engineers are also gatekeepers, since they have frequent contact with suppliers on technical and commercial issues. In addition, the Operations Manager Norway acts as a gatekeeper as part of his senior responsibility for the day-to-day operation of Draugen and Ormen Lange Land Plant (Table 38).

Moreover, the RtP Analysts are responsible for continuous improvement of the RtP-process by implementing different optimizers in SAP (11.4.1.1 RtP Continuous Improvement Analysts). Accordingly, the RtP Analysts influence the flow of information into the buying center, since SAP contains all purchasing related information and is the main purchasing tool. They are therefore also classified as gatekeepers.

### **12.2.2 Characteristics of the Buying Center**

Upstream Norske Shell is a large, technological-oriented organization. In these types of buying companies, the engineering people will dominate (3.2.3.2). The engineers in the buying center in Upstream Norske Shell (Delivery Team Lead, Production Services Manager, E&M Delivery Engineers, operators at Draugen and Ormen Lange Land Plant, Contract Holders and Contract Manager) have a great impact on the decision-making process, which is in line with theory.

Further, the most common participants in a buying situation are personnel from purchasing, quality control and manufacturing departments (3.2.3.2), and the right-most column in Table 43 shows that this is the case in Upstream Norske Shell as well. These more commercial employees are: C&P Lead, Inventory Analysts, Contract

Specialists, Senior Buyer Sourcing, EFA Implementation, Purchase Coordinators, RtP Analysts.

Some organizational buying decisions are made jointly, others only by one party (3.2.3.2). In Upstream Norske Shell, the contracting decisions are most often made jointly due to high perceived risk, but sometimes also by one party, i.e. one Contract Specialist or the Senior Buyer Sourcing. The repetitive and routine daily purchasing, which often is under time pressure, on the other hand, are mostly made by one party, i.e. Inventory Analysts or Purchasing Coordinators.

### **12.3 Summary**

Over the course of this chapter, the approaches to study the case company are outlined, along with the scope of the analysis. The analysis uses the Purchasing Synergy Management Wheel as a diagnosis tool, following the devised step-wise approach. Factor-Synergy Matrices are applied to show the realized purchasing synergies and unrealized potentials and how purchasing synergy realization is affected by factors underlying, or between, wheel elements.

The scope of the analysis takes a buying-center perspective. The relevant interactions between the buying center roles in Table 43, illustrated in Fig. 52, are analyzed within the context of the decision-making purchasing process RtP and its underlying facilitating process CMCP. In the analysis, the different employees will mostly be referred to with their *title*, and not their buying center role. Further, the analysis mainly emphasizes Delivery Team and C&P, where most of the purchasing related activities take place.

### 13. Analysis of Elements

In this section, each element of the Purchasing Synergy Management Wheel will be analyzed separately to identify the realized purchasing synergies and the unrealized purchasing synergy potentials in Upstream Norske Shell. Reasons for why certain purchasing synergies are realized and others not will also be given. At the end of each subsection, a Factor-Synergy Matrix will summarize these findings. An explanation of the interpretation of the matrices is found in 12.1.

#### 13.1 Business Context

This analysis focuses on the Business Context of Upstream Norske Shell. It should be noted, however, that many of the same external variables likely also influence a broader part of the Shell organization, such as Norske Shell or even Shell globally. In line with the definition of Business Context (8.4.1), Fig. 53 is used as a point of departure for this analysis. Figure 53 shows that the Business Context variables that have an indirect effect on a company's realization of purchasing synergy are: social, physical, technological, economical, and political/legal. These variables will now be discussed in their respective sections.

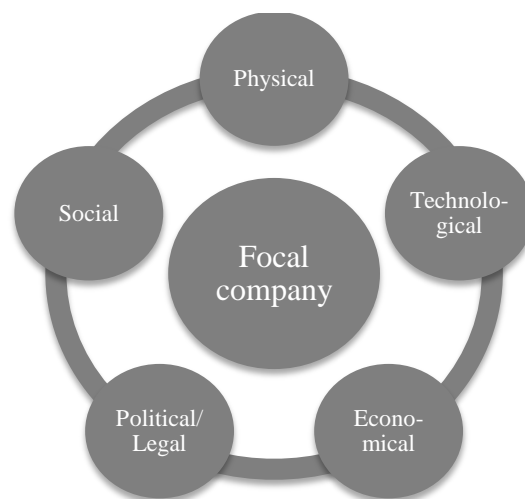


Figure 53: Business Context Variables

##### 13.1.1 Social

Social variables of a company's Business Context relate to national labor rates, quality of working life, protection of national structural industries, and ethical issues (8.4.1). A precondition for Upstream Norske Shell's operations is the coexistence of the company and other users of the sea and land area (10.4). As an aid to achieve this, Upstream Norske Shell aims to use and develop local suppliers.

Moreover, The Norwegian Government expects Upstream Norske Shell to be at the forefront of practicing corporate social responsibility (CSR) (10.7). In order to meet these expectations, Upstream Norske Shell is committed to contribute to sustainable development, including the need to balance short-term and long-term interests, and integrate economic, environmental and social considerations into business decision-making.

Focusing on social variables, such as other industries and CSR, may have a positive effect on Upstream Norske Shell's reputation. This again influences the impression suppliers in the industry, as well as employees and potential employees, have of the company. It may thus become easier for Upstream Norske Shell to attract qualified suppliers and employees. This has a positive effect on the company's competitive advantage and buyer-supplier relationships, which is a source to realization of all three types of purchasing synergies.

### **13.1.2 Physical**

Physical variables incorporate geographic, climate, environmental, and ecological variables (8.4.1). Upstream Norske Shell is the only petroleum company with production operations in Møre and Romsdal County. The local municipalities and businesses thus expect that the company will contribute to the development of the local communities. These expectations influence the company's choice of supplier base. For example, Upstream Norske Shell has set out a deliberate strategy to increase the number of local suppliers. This may prove beneficial in terms of increased service level and potential synergy gains like reduced costs.

Petroleum production constitutes a major environmental risk (10.4; 10.5). Accordingly, Upstream Norske Shell's activities affect the environment and are closely monitored by environmental organizations. The risk of damaging the environment entails that Upstream Norske Shell has to take the risk aspect into consideration in all their choices. This includes ensuring that critical materials are in stock, using products and services of high quality, and choosing solutions according to the risk involved.

Consequently, the environmental risk aspect influences purchasing in Upstream Norske Shell. This may lead to cost reduction, a shared working style, and knowledge and information sharing. In other words, environmental risk may indirectly realize all three types of purchasing synergy.

### **13.1.3 Technological**

Technological variables are concerned with shortened product innovation cycles, reductions in imperative time to market, opportunities in e-supply, and increased globalization (8.4.1). Technological innovation is crucial in order for petroleum companies to stay competitive in the industry (10.6). Upstream Norske Shell must thus apply the latest technology and engage in research and development. The innovation culture in Upstream Norske Shell is characterized by a general desire to innovate and improve existing processes. Ideas are generated and closely worked on within the technical engineering environments at the three assets.

The Norwegian authorities expectations of collaboration on innovation projects between petroleum companies, suppliers, and research institutions (10.6) affect Upstream Norske Shell's relations with these parties. For example, the company collaborated with a supplier in the early development phases of a new technological

robot for inspection of vessels. The pressure on the importance of being innovative entails that employees in Upstream Norske Shell have to monitor the market of products and services, and be creative to find new and better solutions.

Upstream Norske Shell is also affected by technological innovations in related businesses. For example is SAP used throughout the organization (11.2.2), and is the most important purchasing tool. Technological changes of the SAP system will naturally affect the company's working procedures, e.g. through improved usability.

Another example is the two RtP Analysts who are responsible for optimizing the Requisition-to-Pay process (11.4.1.1 RtP Continuous Improvement Analysts). Their job thus influences the standardized working procedures of the other employees in Upstream Norske Shell. The optimizers they implement (11.4.2.1 RtP Optimization) are the result of technological innovations, which entails that these innovations affect their work, as well as the working procedures of the other employees in Upstream Norske Shell.

Consequently, product innovation cycles and the importance of innovation affect the products and services Upstream Norske Shell purchases, as well as the company's relations to suppliers. Moreover, the importance of innovation and technological changes influence the working style of the employees. In other words, the pressure on technological innovation indirectly affects the creation of all three types of purchasing synergy.

#### **13.1.4 Economical**

Economical variables focus on recession, depression, global competition, industry alliances, and corporate mergers (8.4.1). The competitive situation of the petroleum industry is affected by supply and demand on the global market and other geopolitical conditions, resulting in fluctuating oil prices (Olje- og Energidepartementet, 2012), which also has an impact on Upstream Norske Shell's revenues.

There are several area fees, as well as taxes, that petroleum companies operating in Norway are obliged to pay in order to carry out petroleum related activities (10.5). The economical regulations have a major financial impact on Upstream Norske Shell, as well as other petroleum companies operating in Norway. Consequently, the economic freedom of Upstream Norske Shell depends, among others, on its economical obligations to the authorities.

In other words, fluctuating oil prices, area fees, and taxes impact the economical freedom of Upstream Norske Shell. If the economic freedom is changed, the company has to either increase income, reduce cost, or both. Thus, the oil price, fees and taxes affect the company's focus on cost reduction, for example in purchasing, which again may influence Upstream Norske Shell's focus on realizing purchasing synergy, i.e. economies of scale.

### **13.1.5 Political/Legal**

Political/legal variables address constraints of regulation and regional development policies (8.4.1). Upstream Norske Shell must comply with strict ethical and political standards. The company is dependent on the central government both for financial support and granting licenses for doing their business (10.4; 10.5; 10.6).

Licenses are always rewarded to a group of companies, which gives Upstream Norske Shell the freedom to choose exploration and development partners. In turn, the government expects them to follow Norwegian laws and regulations (10.8). Upstream Norske Shell therefore voluntarily follows the Norwegian Public Procurement Act to secure fair competition and transparency in the sourcing process.

The governmental regulations thus influence Upstream Norske Shell's relationships with other companies and the government, which indirectly affect the creation of economies of information and learning in these relations. Moreover, the government's expectations regarding the Norwegian Public Procurement Act affect the company's standardized working procedures, and thus indirectly influence the realization of economies of process.

### **13.1.6 Summary**

The analysis of Upstream Norske Shell's Business Context shows that the company needs to be very systematic in its managing of stakeholder relationships. Reputation directly and indirectly influences the relationship Upstream Norske Shell has with the Norwegian government, various interest groups and other stakeholders in the Norwegian society. By association, reputation also affects the company's performance and thereby its share price, as well as its supply base. The Business Context also has a financial impact on the company, in which the oil price, taxes and fees affect the company's economic freedom. Moreover, Upstream Norske Shell's standardized working procedures are affected by both the risk aspect and innovation cycles.

Consequently, the Business Context and all its variables have a major impact on the company's business activities and indirectly influence the realization of all three types of purchasing synergy.

## **13.2 Corporate Coherence**

To study Corporate Coherence, an evaluation of alignment in strategy, information platform, and culture should be performed (8.4.2). First, alignment in strategy will be studied on different levels: between supply strategy and corporate strategy and between business level strategies. Business level in this scope refers to C&P and Delivery Team. Specifically, compliance to standard procedures and deviations from them will be assessed, followed by a discussion on different internal priorities in C&P. Subsequently, alignment in information platform, and culture across Upstream Norske Shell will be evaluated. Lastly, summarizing the aforementioned issues will lead to a classification of the degree of corporate coherence.

## 13.2.1 Strategy

### 13.2.1.1 Standard Procedures

Global Shell requires every operating company and its underlying business units (including Upstream Norske Shell) to follow standard procedures and work instructions. These are typically stated in Business Controlling Documents (BCDs) and incorporated in the Corporate Management System (CMS). (11.1.1) Upstream Norske Shell, together with other business units, follow the same two main purchasing processes: Category Management and Contracting Process (CMCP) and Requisition-to-Pay (RtP) process. Moreover, they are obliged to use Enterprise Framework Agreements (EFAs) when applicable. (11.2.2) As a result, Upstream Norske Shell's supply strategy becomes closely aligned with Global Shell's strategies. By definition, this creates corporate coherence and facilitates realization of purchasing synergies (8.4.2).

In general, economies of process are achieved through establishing a common way of working (5.1). Explicit guidelines clarify and ease the working procedures and create a shared platform for cooperation across business units and national borders. Flow of information becomes more effective and transparent, facilitating economies of information and learning. Economies of scale, such as unit cost reduction, quantity discounts, avoiding duplicated efforts and pooling negotiation power (5.1), can also be achieved. In other words, alignment between corporate and supply strategy enables creation of all three types purchasing synergy.

### 13.2.1.2 Maverick Buying

Whenever actual buying behavior, however, deviates from standard procedures, corporate coherence is weakened. This is also defined as maverick buying (3.5). Examples of deviating behavior in the RtP-process are personnel on the assets that bypass the steps in the process and directly place orders with suppliers. An emergency situation may call for a workaround, which can be classified as *forced maverick buying* (3.5).

Bypassing RtP-process may also happen if the operator appears to be a new or inexperienced employee. Due to lack of training on purchasing practices in use, employees may not be aware of how the contracts and the ordering systems built around them function. This refers to *unintentional maverick buying* (3.5). In other cases, employees may wish to maintain a previous supplier relationship. Driven by self-interest, *casual maverick buying* occurs (3.5).

Generic purchasing is the practice of sending purchase orders to suppliers without linking them to specific material numbers (11.4.2.1 Purchase Order). Since it is generally unwanted, generic purchasing can also represent a form of maverick buying. Sometimes material numbers simply do not exist. Generic purchasing is then referred to as forced maverick buying, as the employees encounter barriers to comply with the preferred process (3.5). In other situations, the employees may not sense a need to



change old purchasing habits, or there are no organizational incentives to push towards using the preferred process. This resembles casual maverick buying (3.5).

Contract leakage is another example of maverick buying in Upstream Norske Shell. This is characterized by stand-alone purchase orders instead of linking the purchase to an existing contract (11.4.2.1 Purchase Order). In reality, this form of non-compliant work behavior is perceived to be rare or non-existent, since employees are accustomed to follow standard procedures. In a climate where compliance to organizational rules and practices is generally encouraged, maverick buying are less likely to occur (3.5). Others, however, suggest that there is a silent acceptance in the organizational culture for this sort of behaviors.

In all cases of maverick buying, Upstream Norske Shell's ability to negotiate favorable price and service levels with suppliers will be undermined. Purchasing costs, in terms of purchasing price and purchasing process costs will increase. (3.5) The consequences of maverick buying may therefore result in lost economies of scale (8.5). Bypassing or deviating from the RtP-process also hurts the positive intentions of standardization of working procedures and the ability of showing one line of conduct towards suppliers. Potentials for economies of process are thus impaired.

#### *13.2.1.3 Top-Down Fiat*

The previously mentioned deviations mostly result from unwillingness to comply or lack of understanding of the formalized procedures. However, in many situations, deviations arise due to the long hierarchical distance between Global Shell and Upstream Norske Shell. New guidelines and directives may be promulgated without sufficient description and explanation or taking into account local conditions. Employees thus experience challenges understanding the purpose of the new initiatives and how they specifically affect their daily work.

As a consequence, the global procedures can easily be felt as a kind of top management fiat that is difficult, or even meaningless, to obey. This can lead to misalignment between corporate and supply strategy in practice, even if Upstream Norske Shell's purchasing process is governed by and subordinate to the global processes. Creation of all three types of purchasing synergy, depending on the particular situation, can in turn be negatively affected.

#### *13.2.1.4 Internal Alignment in C&P*

Even though the ten employees that represent C&P formally follow the same standard procedures, they still have different responsibilities, budgets and priorities to comply with. Moreover, the employees report to different global teams. Only four of them report to C&P's global organization Upstream International Operated (UIO) Norway. The others report to other parts of Global Shell outside C&P. (11.4.1.1) This may entail that the different employees in C&P do not always work in the same direction, or are aligned on issues defying their own scope of work. Faced against challenges on internal alignment, C&P may have difficulties aligning their overall strategy with

corporate strategy. Potentials for the all three types of purchasing synergy can in turn be weakened.

C&P are facing this type of alignment challenges on a daily basis. An illustrative example is the issue of handling an operational contract that has reached its maximum budget value use and no longer can be connected to a purchase order. In that situation, issuing stand-alone purchasing orders is the only way the Inventory Analysts can keep purchasing from the supplier when the contract no longer is valid. Their goal, however, is to keep stand-alone purchasing order to a minimum. The Inventory Analysts therefore wish to increase the value of the contract to avoid placing stand-alone purchasing orders with the particular supplier.

However, if the value of the contract already has reach its maximum for being defined as an operational contract, an increase of the value of the contract will entail the contract to be defined as tactical or strategic. That means that the contract must become a part of the contract portfolio of the Contract Specialists. From the Contracts Specialists point of view, this is not a desired scenario. The relocation from operational to tactical or strategic contract may not be based on the requirements to HSE that is typical for tactical and strategic contracts. The Contract Specialists would thus prefer that the operational contract stay operational.

Consequently, if the situation persists and the Inventory Analysts continue to place stand-alone purchase orders, potentials for cost reduction and economies of scale are lost. This is undesired for the Contract Specialists who are concerned with minimization of contract leakage. The work process also becomes less efficient for the Inventory Analysts, which may represent unrealized potentials for economies of process.

#### *13.2.1.5 Alignment Between C&P and Delivery Team*

Two divisions, C&P and Delivery Team, perform purchasing functions in Upstream Norske Shell (5.4.1). An alignment between these divisions enhances Corporate Coherence and should necessarily be assessed. The vision of C&P is to be a business-focused division, to know the Business and support them through close interaction (11.4.1.1). Business in this sense refers to the main activities of the operation office in Kristiansund, in which the Delivery Team is considered part of (11.4.1). Accordingly, the two divisions should formally be aligned on vision and strategy, with primary focus on securing the oil and gas production at Draugen and Ormen Lange Land Plant. This can lead to economies of information and learning through frequent interaction, and economies of process through sharing work styles and exchanging best practices (5.1).

In practice, the two divisions also have different focuses and priorities to comply with. Participants of the buying center are usually awarded by the organization for performance in their area of expertise (3.2.3.2). Being a technical division, Delivery Team is primarily concerned with technical criticalities (11.4.1.2). As a combination

of production personnel and engineers, they are awarded for efficient scheduling and quality control (3.2.3.2). C&P, on the other hand, has an outspoken vision to be a professional purchasing function with a commercial mindset (5.4.1.1). Considered as purchasing agents, they are awarded for economy (3.2.3.2). Accordingly, the two divisions are awarded for different area of expertise. In a buying decision, they will also have dissimilar expectations and understandings that can give rise to conflicts (3.2.3.2).

Specifically, the primary responsibility of E&M Delivery Engineers is preparing and planning all maintenance operations on the assets (11.4.1.2). Understanding of contracting and procurement context is desirable, but not outermost necessary. The situation, however, is different for the Purchase Coordinators that actually performs non-stock purchasing activities and places Purchase Orders (11.4.1.2). Since they only report to the Delivery Team, however, no formal integration with C&P takes place. This makes it more difficult to align the strategies between C&P and Delivery Team, which represent a challenge to Corporate Coherence. The true amount of realized economies of process and economies of information and learning may also be questioned.

### **13.2.2 Information Platform**

Every operating company under Global Shell, including Norske Shell and thereby Upstream Norske Shell, uses the ERP system SAP (11.1.2). The main benefits of SAP, among others real-time, integrated data across the entire corporation, facilitates creation of economies of information and learning (5.1). Flow of purchasing information also becomes more transparent and efficient through the SAP module Materials Management (11.1.2). Furthermore, common and standardized interfaces creates a common way of working and thereby economies of process (5.1). An alignment in information platform consequently realizes economies of information and learning and economies of process.

### **13.2.3 Culture**

The overall impression from both C&P and Delivery Team is that the culture in the two divisions, and across Upstream Norske Shell, seems quite unified. It is described as open and humorous, with room for people to be themselves (11.4.1.1). In general, alignment in culture can make it easier to establish a common way of working and thereby realize economies of process. It also facilitates interaction on different levels, both between individuals and between divisions, which can lead to economies of information and learning.

Nevertheless, the employees in C&P and Delivery Team come from different backgrounds. Delivery Team consists of mainly employees with technical expertise, while C&P professionals are mainly educated from economics studies. (11.4.1) The two divisions will thus "speak a different language" to some extent, which also can lead to some cultural differences. This may entail that the two divisions share less in common and does not fully comprehend each other's standings. In turn, the creation

of economies of information and learning and economies of process can be negatively impacted.

### 13.2.4 Classification

In summary, alignment between corporate and supply strategy materializes in the two main purchasing processes, CMCP and RtP, which in turn facilitates all three types of purchasing synergy. Deviation from the standard procedures, so-called maverick buying, on the other hand, represents unrealized potentials for purchasing synergy. Maverick buying may be due to incorrect behaviors, both intentional and unintentional. Deviations may also stem from resistance to top-down instructions.

Internal misalignment in C&P can further lead to misalignment between C&P strategy and corporate strategy. Alignment between C&P and Delivery Team is established, but also challenging to accomplish in practice. Common information platform through SAP and a unified organizational culture both facilitates creation of purchasing synergies. Based on these results, Table 44 summarizes the factors that either increase or undermine Corporate Coherence:

Table 44: Degree of Corporate Coherence

Factors	Effect on Corporate Coherence
Standard procedures (CMCP, RtP, EFA)	+
Maverick buying	÷
Top-down fiat	÷
Internal misalignment in C&P	÷
Formalized alignment between C&P and Delivery Team	+
Difference in focus between C&P and Delivery Team	÷
Use of SAP	+
Unified organizational culture	+
Difference in background between employees in C&P and Delivery Team	÷

The amount of factors that either increase or undermine Corporate Coherence is roughly the same. This means that the degree of Corporate Coherence can neither be classified as high or low. High or low should entail a large amount of factors that either has a solely positive or negative effect on the degree of Corporate Coherence. In a simplified manner, the degree of Corporate Coherence in Upstream Norske Shell is consequently classified as *moderate*. As seen from the discussion, the factors listed in Table 44 also influence the creation of purchasing synergies. They may be regarded as factors, i.e. drivers and barriers, that either result in realized purchasing synergies or unrealized synergy potentials. The relationships between factors and the corresponding purchasing synergies are illustrated in Table 45. The factors are divided into main factors (*italic*), and sub-factors (*tabulated*).

**Table 45: Factor-Synergy Matrix Corporate Coherence**

Factor	Realized Purchasing Synergies			Unrealized Purchasing Synergies		
	Economies of Scale	Economies of Information and Learning	Economies of Process	Economies of Scale	Economies of Information and Learning	Economies of Process
<i>Alignment in strategy</i>						
Standard procedures (CMCP, RtP, EFA)	X (Unit cost reduction, quantity discounts, no duplicated efforts, pooled negotiation power)	X (effective and transparent flow of information)	X (Common way of working)			
Maverick buying				X (Lost negotiation power, increased purchasing price and process costs)		X (Lack of standardized working procedures, failure to show one line of conduct towards suppliers)
Top-down fiat				X	X	X
Internal alignment in C&P				X	X	X

Formalized alignment (C&P and Delivery Team)		X (Frequent interaction)	X (Sharing best practices and working styles)			
Difference in focus (C&P and Delivery Team)					X (Too little interaction)	X (Lack of sharing best practices and working styles)
<i>Information platform (SAP)</i>		X (Effective and transparent flow of purchasing information)	X (Common way of working)			
<i>Culture</i>						
Unified organizational culture (C&P and Delivery Team)		X (Frequent interaction)	X (Common way of working)			
Difference in background (C&P and Delivery Team)					X (Infrequent Interaction)	X (Lack of sharing best practices and working styles)

### **13.3 Purchasing Maturity**

This section addresses the sophistication and professionalism in Upstream Norske Shell's purchasing function, which directly impact potentials for realizing purchasing synergy. An evaluation will be performed of the reporting line, visibility and organizational perception, information access and information technology, skills and competencies, training and development, strategic decision-making, and professionalism towards supplier of the purchasing professionals. The level of Purchasing Maturity in Upstream Norske Shell is determined based on this evaluation.

#### **13.3.1 Reporting Line**

Purchasing's position within the organization can be evaluated through the organizational chart which indicates reporting line, and thereby the formal organizational power, of the purchasing function (8.4.3). C&P is considered a support function in Upstream Norske Shell's matrix organization. It is thus not part of the organizational structure that describes the case company's main business activities. (11.3.4) In other words, C&P does not report to the top management in Upstream Norske Shell, the team centered on the Operations Manager Norway. This entails that C&P is likely not included in operation and strategy issues on a regular basis, since there is no formal link between C&P and the top management.

Delivery Team, on the other hand, is part of Upstream Norske Shell's main business activities. The division, however, has a quite lengthy reporting chain to the top management. Specifically, Delivery Team is subordinate Operations Support Team Lead, whom reports to the Operations Manager Norway (11.3.4). This entails that the reporting line between Delivery Team and the top management is formalized, but lengthy. In both cases, non-formalized or lengthy reporting line to the top management deprives purchasing sophistication (8.4.3), which may in turn weakens C&P- and Delivery Team's possibilities for creating purchasing synergies in general.

#### **13.3.2 Visibility and Organizational Perception**

The general perception of C&P from the rest of the organization is positive. Most people acknowledge the importance of contracting and procurement activities, which after all accounts for a huge amount of the case company's operational expenditures (11.4). This may accommodate for economies of information and learning through more frequent interaction, and economies of process through better integration in working styles.

However, daily purchasing is still perceived as a processing capacity and does not feature in any strategic planning activities. This indicates somehow the lack of status that the purchasing function is afforded by the organization, even if the importance of purchasing is generally recognized. In this way, purchasing's possibilities for sharing know-how and participating in joint decision-making will be deprived, which likely

represents unrealized economies of information and learning and economies of process.

C&P wish to play an educational role towards every employee in Upstream Norske Shell regarding purchasing (11.4.1.1). However, the knowledge of purchasing among rest of Upstream Norske Shell is still limited. Most people are unfamiliar with C&P's main responsibilities and roles, and unaware of which contracts are available. Clearly, C&P has not been able to fully educate the organization on its purposes and strategic inputs, resulting in limited visibility. C&P's possibilities to gain more acceptance and respect within Upstream Norske Shell as a vital function for company success are thereby deprived. This may affect its potentials to drive cost reduction initiatives, share knowledge and monitor purchasing processes, resulting in latent purchasing synergies.

Moreover, few people understand the responsibilities of the Contract Manager. It is a relatively new position associated with varied and complex tasks, some of them also pending. The effect is that the Contract Manager becomes less visible, which may prevent him from functioning as an intermediary between C&P, Contract Holders and suppliers (11.4.1.3). This can in turn lead to unrealized economies of information and learning, if knowledge transfer proves to be difficult.

### **13.3.3 Information Access and Information Technology**

The accessibility of information is essential for a highly sophisticated purchasing function (8.4.3). In Upstream Norske Shell, huge amount of purchasing information, in terms of procedures and work instructions, reports and formal forms are available via Intranet and SAP. Information on suppliers can be found in Global Shell market reports, trade journals, and the external tool ACHILLES (11.4.2.2 Market Analysis). In principle, purchasing has access to basically all information needed, which provides to be valuable for strategic decision-making. Access to critical information facilitates economies of information and learning, including shared know-how on e.g. both internal requirements and external market trends.

Since the amount of information is so enormous, the challenge, however, is often to identify which type of information that exists and how to extract the correct information, e.g. to know where and which keyword to search for. An example is the lesson learnt from a lean project conducted by the Contract Manager and one Contract Specialist. They studied potentials for reducing waste and improving CMCP and actually found several ready-to-use tools to aid in this matter, tools that they did not know existed before conducting the project.

The example illustrates the importance of user-friendly information systems that are easily accessible, which brings the discussion towards information technology. SAP, being an integrated information platform, enables information to be handled in an accurate and timely manner (11.1.2). Upstream Norske Shell thus has come a way in utilizing information technology. This can enable more effective information sharing



and higher compatibility with other functions and suppliers, thereby achieving economies of information and learning, and economies of process.

The downside of SAP is that it has a relatively high usability threshold. Many people in Upstream Norske Shell struggle with using it in a correct manner. Yet, their work is dependent on SAP knowledge. For example, the job planners that place Work Orders must access material master and search for Bill-Of-Materials in SAP (11.4.2.1 Work Order). Some of them have previously held a technical position with no experience with this SAP module. The worst-case scenario may be that the Work Orders are placed incorrectly, which affects the later stages in the RtP-process and thereby the realization of economies of process.

To increase the work efficiency, many SAP-operations are now handled by a SAP Service Center located in Manilla (11.1.2). Employees in Upstream Norske Shell fill out a request form, and the SAP Service Center performs the desired actions. In many cases, this standardized procedure indeed increases work efficiency. Other times, however, employees feel that they no longer have the power to control their own work, and that they get too many follow-up questions from Manilla, so that any increased efficiency is lost. The challenge is thus how to make use of the information technology in a best possible way to reap the benefits of economies of process and economies of information and learning.

#### **13.3.4 Skills and Competencies**

The skills and competencies of the purchasing professionals in Upstream Norske Shell are very heterogeneous. Their educational background ranges from Master's Degrees to no formal relevant education at all. Over the years, however, they have all gained experience in all or some of the following fields: procurement, logistics, invoicing and contracting. (11.4.1) The broad range of required skills and competencies amongst the contracting and purchasing staff enable them to work strategically and see potential purchasing synergies in their efforts.

A problem that most purchasing professionals have in common is a lack of technical education and in-depth technical knowledge (11.4.1). This sometimes creates difficulties when handling purchasing orders with unfamiliar technical terms. As a result, the purchasers are not able to correct work orders that have incorrect material numbers, or make proper vendor evaluation for unfamiliar materials. Necessary control tasks, e.g. to prevent the unwanted practice of generic purchasing, are left unperformed. (11.4.2.1 Purchase Order)

Moreover, the purchasing professionals will experience difficulties in communicating with technical personnel and answer any technical questions that suppliers may have. These questions must therefore be redirected to the job planners, which represent an extra workload for all parties. (11.4.2.1 Purchase Order) The lack of technical knowledge thus creates a less efficient workflow and leaves the purchasing function

with insufficient state-of-the-art purchasing process knowledge. This may limit the potentials for unrealized economies of process.

The E&M Delivery Engineers, on the other side, benefit from in-depth technical knowledge. However, placing a Work Order and finding the right material number requires SAP knowledge in addition to extensive technical skills (11.4.2.1 Work Order). Initially, most of the E&M Delivery Engineers may not possess the necessary SAP knowledge. Before they become familiar with SAP, work efficiency is decreased, which may result in unrealized economies of process.

### **13.3.5 Training and Development Program**

Even though an outspoken goal is to execute top quartile, C&P as a whole does not place much focus on training and development (11.4.1.1). This may be due to the high performance delivery focus, so everything else that is not directly related to the delivery is given lower priority. Employees in C&P generally enjoy much flexibility to plan their own workday. This can make it easier for them to prioritize a task with short deadline instead of following course sessions that may be time consuming. However, if C&P-resources do not get the necessary training and development, they may stagnate in their work.

Among other employees in Upstream Norske Shell, it is rather uncertain how much relevant purchasing training they get. The Delivery Team and C&P have occasionally had common training sessions with focus on the RtP-process, but no ongoing development program exists.

Lack of focus on training and development may lead to incorrect working behavior and increased process costs and thereby unrealized potentials for economies of scale. Opportunities for knowledge sharing are lost, resulting in unrealized potentials for economies of information and learning. Possibilities to standardize and increase work efficiency are also deprived, representing latent potentials for economies of process.

### **13.3.6 Strategic Decision-Making**

The goal of the purchasing function is to no longer be viewed as a secondary or clerical function basing decisions solely on price (11.4.1.1). The C&P Lead participates in meetings with the leadership team of the Production Service Manager, subordinate the VP Upstream Norway. Given that C&P is recognized as part of the top management team, purchasing contribution and value to strategic management decision-making can be significant (8.4.3), thereby fostering purchasing synergies.

Both the CMCP and the RtP-process are strategic processes that require complex problem solving skills (11.4.2). In the CMCP, the Contract Specialists and Senior Buyer Sourcing perform and coordinate various strategic decision issues on scope, spend, risk and complexity of the contracts. The RtP Analysts, on the other hand, address strategic issue of whether to optimize the entire RtP-process. If the purchasing function succeeds in being team players, good decision-makers and communicators, they can benefit from all the three types of purchasing synergy.

Not all employees in the current purchasing function, however, perform strategic tasks. The Purchase Coordinators are left with mainly processing tasks, placing Purchase Orders. They do not function as control units with respect to contract compliance and various forms of maverick buying (13.3.2). This is undesirable, as their possibilities to contribute to realization of purchasing synergies are deprived.

### **13.3.7 Professionalism Towards Suppliers**

In many ways, Upstream Norske Shell exhibits a significant degree of professionalism towards suppliers by virtue of the existence of uniform buying policies and systems for contract management. Upstream Norske Shell requires suppliers to deliver according to its commitments and suppliers are monitored through the Business Performance Review (11.4.2.1 Contract Management). Feedback from the suppliers suggests that the case company is perceived as a demanding, but professional customer. This enables Upstream Norske Shell to capitalize on true market position and potential buying power, thereby creating economies of scale.

In certain situations, the purchasing function, however acknowledges that they struggle to be perceived as a professional customer by their suppliers. In case of maverick buying and bypass of the RtP-process (13.2.1.2), invoices will be received in a wrong matter, which may lead to long payment delays from Upstream Norske Shell. This gives suppliers a negative impression and may damage Upstream Norske Shell's reputation. .

Moreover, because both Delivery Team and C&P have supplier contact (11.4.1), a single supplier may deal with several different contact points in Upstream Norske Shell. If the responsibilities between the several contacts points are not clearly divided, this may led to misunderstandings and problems with clarifying details around the delivery. For example, both Delivery Team and C&P have dealt with price negotiations. Failure to show one line of conduct leaves an unprofessional impression with the suppliers and represent unrealized potentials for economies of process, which may also in turn lead to lost negotiation power, and thereby economies of scale.

### **13.3.8 Classification**

To summarize, C&P and Delivery Team have non-formalized and lengthy reporting line to the top management in Upstream Norske Shell, respectively. The purchasing function enjoys a generally positive perception, but lacks sufficient status. Its purpose and activities are not well known in the rest of the organization, indicating low visibility. Information access is largely granted, the challenge is how to extract the information needed. SAP is a powerful information technology tool, but the user threshold remains high.

All purchasing professionals have acquired some kind of purchasing skills, but generally lack technical skills. C&P, however, does not focus much on training and development of their human resources. Most purchasing professionals are involved in strategic decision-making, except from the Purchase Coordinators. When it comes to

professionalism towards suppliers, Upstream Norske Shell scores generally high, but unprofessionalism may arise due to several supplier contact points.

To determine the degree of Purchasing Maturity, Table 46 compares results from the aforementioned discussion against Table 28, the theoretical classification matrix suggested in 8.4.3. Each factor listed corresponds to three different degrees of Purchasing Maturity: low, moderate or high.

**Table 46: Degree of Purchasing Maturity**

Factors	Description	Degree of Purchasing Maturity
Reporting line	Non-formalized/lengthy	Low
Visibility and Organizational perception	Positive perception, limited status and visibility	Low/moderate
Information access	Both internal and external	Moderate/high
Information technology	SAP, high user barrier	Moderate
Skills and competencies	Sufficient purchasing skills, lack of technical/SAP knowledge	Moderate
Training and development program	Low priority	Low
Strategic decision-making	Strategic processes, Purchase Coordinators processing capacity	Moderate
Professionalism towards suppliers	Uniform buying policies, several contact points	Moderate

Based on the average score corresponding to each factor discussed, findings from Table 46 suggest that most factors lead to moderate degree of Purchasing Maturity. Accordingly, in a simplified manner, the overall degree of Purchasing Maturity should be classified as *moderate*.

Further, Table 47 summarizes how each factor underlying this wheel element affects the realization of purchasing synergies. The factors are divided into main factors (*italic*), and sub-factors (tabulated).

**Table 47: Factor-Synergy Matrix Purchasing Maturity**

Factor	Realized Purchasing Synergies			Unrealized Purchasing Synergies		
	Economies of Scale	Economies of Information and Learning	Economies of Process	Economies of Scale	Economies of Information and Learning	Economies of Process
<i>Reporting line</i>				X	X	X
<i>Visibility and organizational perception</i>						
Positive perception of C&P		X (Frequent interaction)	X (Integration in working styles)			
Limited status and visibility				X (Lost potentials for cost reduction)	X (Inability to Share know-how)	X (Lack of joint decision-making)
<i>Information access</i>		X (Sharing know-how)				
<i>Information technology</i>						
Use of SAP		X (Information sharing)	X (Compatibility)			
High usability threshold						X (Inefficiency)

<i>Skills and competencies</i>						
Purchasing skills	X	X	X			
Lack of technical skills						X (Lost process knowledge)
Lack of SAP knowledge						X (Inefficiency)
<i>Training and development program</i>				X (Lost potentials for cost reduction)	X (Lack of knowledge sharing)	X (Inefficiency and lack of standardization)
<i>Strategic decision-making</i>						
Strategic processes	X	X	X			
Processing capacity				X	X	X
<i>Professionalism towards suppliers</i>						
Uniform buying policies	X (Negotiation power)					
Multiple contact points				X (Lost negotiation power)		X (Failure to show one line of conduct)

### 13.4 Organizational Structure

The organizational structure of purchasing exerts a significant impact on the competitiveness and profitability of a company (3.3). A company’s organizational structure and type of specialization, facilitates specific purchasing synergies (8.4.4). Based on the definition in 8.4.4, this section identifies the current organizational structure of purchasing in Upstream Norske Shell. From the overall matrix structure, C&P and Delivery Team are included in the analysis (Fig. 54).

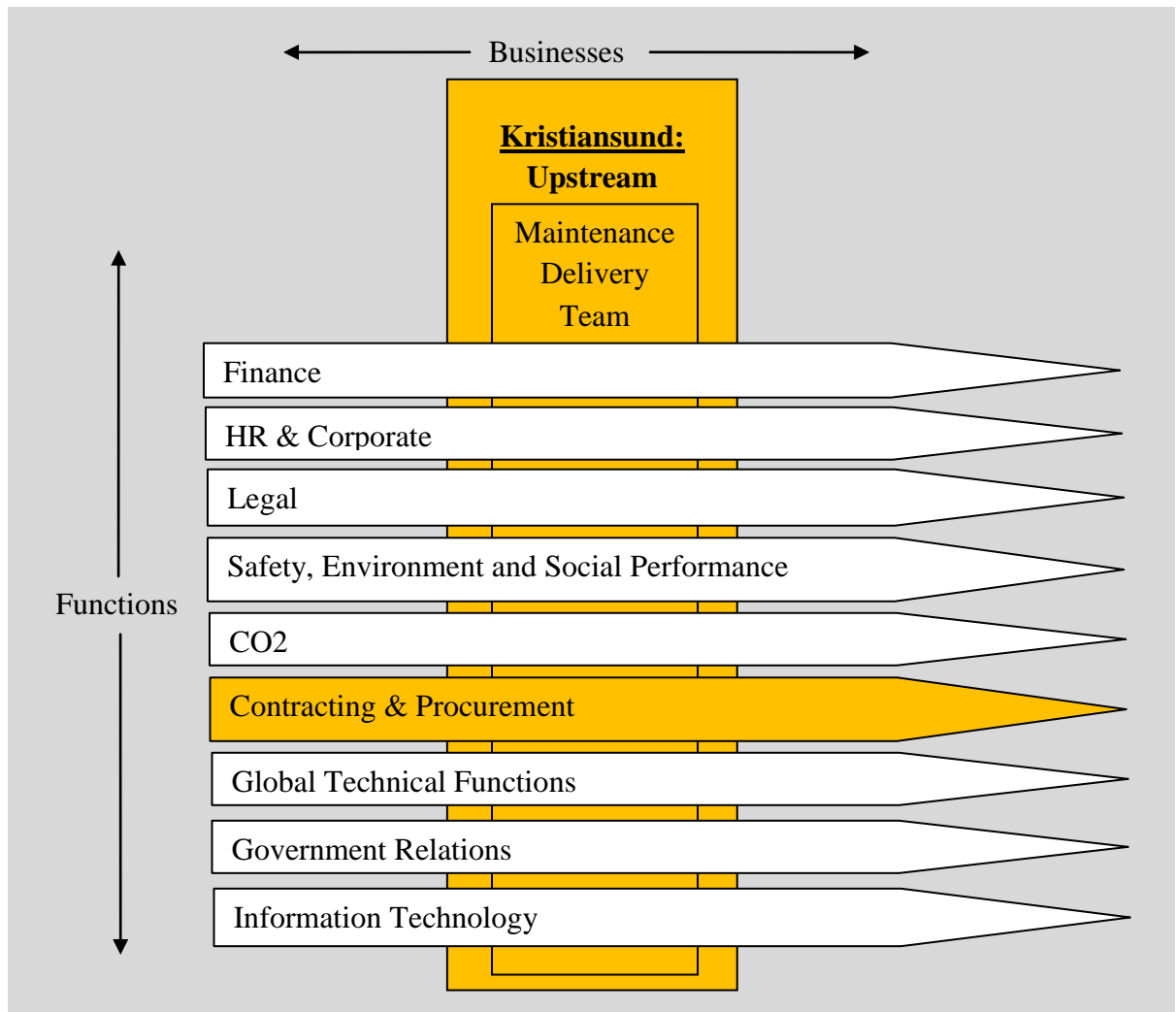


Figure 54: Organizational Structure of Purchasing Upstream Norske Shell

First, the role and structure of C&P will be addressed, before the Delivery Team structure is analyzed. Together, the structure of C&P and Delivery Team describe the overall structure of Upstream Norske Shell. Subsequently, based on the identified levels of Corporate Coherence (13.2.4) and Purchasing Maturity (13.3.8), a suggested governance structure for the company is given. Finally, the fit between the present organizational structure and the recommended governance structure is examined.

### **13.4.1 C&P**

The employees in Upstream Norske Shell that hold a role related to contract work and purchasing, are distributed between the two divisions C&P and Delivery Team (11.4.1). C&P is the central purchasing unit that makes the materials and services contracts, as well as conveys the commitment to the processes RtP and CMCP (11.4.1.1). Consequently, C&P resembles the role of corporate coordinator, in the structure Coordinated Purchasing.

The corporate coordinator is the unit in the organization that makes central policies, ensures coordination, and promotes professionalization of purchasing in the organization (6.2.2). All negotiation on contract terms and conditions is centralized in C&P and performed by the executants of CMCP: the C&P Lead, the Contract Specialists and the Senior Buyer Sourcing (11.4.1; 11.4.2). In this way, the organization achieves realized economies of scale, i.e. pooled negotiation power through centralization of negotiation on terms and conditions.

C&P also works independently from all the other divisions in Upstream Norske Shell. The organization of C&P can thus be characterized as having a vertical orientation: a traditional function or silo with hierarchical structure and functional orientation. Further, the employees comprising the C&P function: C&P Lead, Contract Specialists, Senior Buyer Sourcing, RtP Analysts, EFA Implementation and Inventory Analysts, work with individual tasks and mostly independently from each other. This suggests that functional silos are also present internally in C&P, even though cooperation would seem natural by having the shared responsibility of being a corporate coordinator. This structure prevent collaboration, which represent unrealized knowledge and information sharing, i.e. economies of information and learning. The internal functional silos also inhibit mutual learning on common working procedures, and may thus create unrealized economies of process.

### **13.4.2 Delivery Team**

The Purchase Coordinators and E&M Delivery Engineers in the Delivery Team (11.4.1.1) make the daily buying decisions on non-stock materials and services. They are both classified as influencers, deciders and buyers, but on different aspects. In addition, the E&M Delivery Engineers hold the role as a gatekeeper. (12.2.1) The Purchase Coordinators and E&M Delivery Engineers are the executors of the RtP-process, and thus follow the standard RtP policies as well as strict guidelines for how to make Purchase Orders and use existing contracts. Together, they can be characterized as a business unit that makes its own buying decisions, which is a feature of the governance structure coordinated purchasing (6.2.2).

Further, due to the interconnectedness of the Work Order and Purchase Order in RtP (5.4.2.1), the Delivery Engineers and Purchase Coordinators are positioned together in the same office space. They are divided into two teams, one responsible for Draugen and the other for Ormen Lange Land Plant. Each team comprises one Purchase Coordinator and one E&M Delivery Engineer from each technical



discipline. Since both the Purchase Coordinators and E&M Delivery Engineers in the respective teams make buying decisions, they can be considered joint purchasing teams.

Coordinated purchasing is characterized by a joint purchasing team that reports to both a corporate purchasing coordinator and a business manager, i.e. a classical matrix structure (6.2.2). The Purchase Coordinators and E&M Delivery Engineers, however, only formally report to the Delivery Team Lead (11.4.1.2). There is no formal reporting line from the Purchase Coordinators, who have the formal buyer role, to C&P. The current structure is thus lacking a mechanism facilitating cooperation between the C&P organization and the Purchase Coordinators, which may lead to unrealized potential for economies of information and learning.

The joint purchasing teams in the Delivery Team can be characterized as cross-functional since they comprise both E&M Delivery Engineers with technical backgrounds, and Purchase Coordinators with commercial backgrounds. Furthermore, E&M Delivery Engineers and Purchase Coordinators are responsible for subsequent stages of the RtP-process, and sit together in one office. Consequently, the structure resembles a process oriented horizontal organization: built up by processes and cross-functional teams.

By sitting next to each other, they benefit from close cooperation, both between the Purchase Coordinators and the E&M Delivery Engineers, and between the E&M Delivery Engineers. This represents realized economies of information and learning. Further, it is easy for the Purchase Coordinator to verify the Purchase Orders against the Work Orders by asking the E&M Delivery Engineers directly. This enables economies of process by facilitating common way of working and reducing overlapping work within the team.

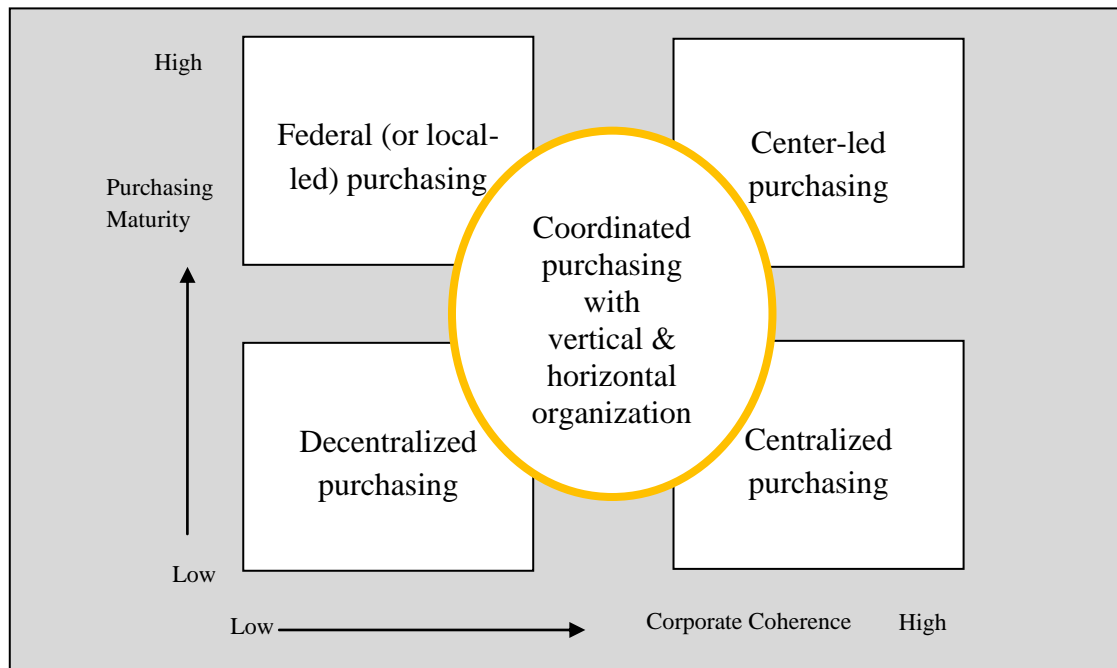
However, the Purchase Coordinators in the two different purchasing teams do not collaborate with each other. This entails that knowledge and information sharing between them is rather low, and it becomes difficult to establish a common way of working. Lack of collaboration between the Purchase Coordinators may thus represent unrealized potential for economies of information and learning, and economies of process.

### **13.4.3 Classification**

Based on the aforementioned descriptions of the organization of C&P and Delivery Team, purchasing in Upstream Norske Shell is characterized as coordinated purchasing, including both vertical and horizontal features. In section 13.2.4 and 13.3.8, Upstream Norske Shell's degree of Corporate Coherence and Purchasing Maturity were classified as moderate. Based on this level, the governance structure best suited for Upstream Norske Shell is thus coordinated purchasing (Fig. 55).

This gives that the main structure of purchasing in Upstream Norske Shell, both the structure that exists today and the structure that is recommended based on the level of

Corporate Coherence and Purchasing Maturity, is coordinated purchasing. Accordingly, the company's organizational structure are therefore said to be aligned with the company's level of Corporate Coherence and Purchasing Maturity.



**Figure 55: Coordinated Purchasing with Vertical and Horizontal Features**

As summarized in Table 48, the coordinated purchasing structure facilitates creation of certain purchasing synergies. For example, the company has realized economies of scale by centralizing contract negotiation. Interaction in the joint, cross-functional purchasing teams in the Delivery Team facilitates economies of information and learning, and economies of process.

However, even though the type of organizational structure seems appropriate, the structure itself contains weaknesses. An unrealized potential for economies of information and learning is present due to lacking communication mechanism between C&P and Delivery Team. Further, C&P being a functional silo may lead to unrealized potentials for economies of information and learning and process. This gives that the coordinated purchasing structure is not optimal.

**Table 48: Factor-Synergy Matrix Organizational Structure**

Factor	Realized purchasing synergies			Unrealized purchasing synergies		
	Economies of scale	Economies of information and learning	Economies of process	Economies of scale	Economies of information and learning	Economies of process
Coordinated Purchasing	X (Central negotiation on terms and conditions)				X (Lack of knowledge and information sharing)	
Horizontal Specialization (Delivery Team)		X (Knowledge and information sharing)	X (Common way of working)		X (Lack of knowledge and information sharing)	X (Different way of working)
Vertical Specialization (C&P)					X (Lack of knowledge and information sharing)	X (Different way of working)

### 13.5 Performance Measures

In this section, the performance measurement system in Upstream Norske Shell is analyzed to see whether it provides information about purchasing synergy. The focus in this analysis is the company’s RtP related KPIs and contract related KPIs (11.4.3.2). In accordance with the definition of Performance Measures and the related Fig. 56 (8.4.5), these KPIs are examined based on the five roles such a system incorporates: Align Measures, Measure Performance Accurately, Influence Behavior and Develop Purchasing, and Communicate Measures. First, the contract related KPIs are analyzed, followed by an assessment of the RtP related KPIs.



**Figure 56: Five-step Performance Measures Process**

### 13.5.1 Contract Related KPIs

The contract related KPIs (henceforth contract KPIs), incorporated in Upstream Norske Shell's contracts, are derived in CMCP and aligned with business requirements and category objectives (11.4.3.2 Contract Related KPIs). Consequently, the first role of a performance measurement system, to align measures with strategic priorities, is fulfilled. This, again, creates alignment between working procedures in Upstream Norske Shell, and thus realizes economies of process.

In line with the definition of a performance measurement system (8.4.5), the contract KPIs should *measure performance* in critical areas. The contract KPIs measure the performance of the contracts, and function as reward and tracking mechanisms. Examples of KPIs are compliance with HSE, payment performance, and planning quality (11.4.3.2 Contract Related KPIs), which are considered critical areas of the contracts. The measures evaluate the performance of the suppliers and are used to verify that Upstream Norske Shell delivers on its commitments to the supplier. Consequently, the score of the contract KPIs measure if the performance of Upstream Norske Shell and the supplier is satisfactory. These measures can thus be used to create a coherent way of working which will realize economies of process.

Since the performance of both the suppliers and Upstream Norske Shell are evaluated, the contract KPIs *influence their behavior*. The suppliers are rewarded based on their performance, and the evaluation affects Upstream Norske Shell as a buying company. Moreover, the rewards align the supplier's and Upstream Norske Shell's expectations and activities, which is a source to economies of process. *Purchasing is developed* when the evaluation initiated improves performance in the buying company Upstream Norske Shell.

The measures are *communicated* and discussed at the contract review meetings (11.4.3.2 Contract Related KPIs), which creates economies of information and learning between the suppliers and the Contract Specialists, as well as other employees in the meetings. Based on these evaluations, improvement initiatives are created, which can lead to the creation of all three types of purchasing synergy. For example, if an initiative is to avoid duplicated efforts, and making the work more standardized and efficient, economies of scale and process are created respectively.

### 13.5.2 RtP related KPIs

Upstream Norske Shell uses three RtP related KPIs (henceforth RtP KPIs). These are Service Levels, Required on Site and Generic Materials (11.4.3.2). These KPI measures are *derived* from global analyses and evaluations (11.4.3.2), and thus aligned with corporate strategy and objectives. This alignment creates standardized procedures, and thus facilitates realization of economies of process.

Performance of areas critical to a firm's success should be *measured* (8.4.5), and Service levels, Required on Site and Generic Materials can be said to measure important areas of the RtP-process. However, none of the three KPIs measure the

performance of the RtP-process in Upstream Norske Shell accurately. The KPIs are designed in conformity with the globally designed RtP-process (11.4.3.2). Therefore, one reason that the KPIs do not function properly is that the RtP-process executed in Upstream Norske Shell is not exactly the same as the global standard RtP-process designed by Global Shell. The accuracy of the three KPIs will now be discussed separately.

The KPI Service Levels does not measure true performance. This KPI is based on original ROS and the assumption that this date is only modified when material is not in stock when needed. However, the job planners (e.g. E&M Delivery Engineers) change the original ROS due to several other reasons as well. (11.4.3.2 RtP related KPI 1: Service Levels) As a result, Service Levels is not able to measure the true amount of times material actually is in stock when needed. In other words, this KPI does not give Upstream Norske Shell correct process knowledge, which may represent unrealized potential for economies of process.

Required on Site is intended to measure if non-stock material is delivered when needed to perform a job at Ormen Lange Land Plant or Draugen. However, this score is erroneous since materials are not always linked to the correct jobs in the Work Orders (11.4.3.2 RtP related KPI 2: Required on Site). In other words, Required on Site measures if the Work Orders are made properly. Upstream Norske Shell could beneficially use this KPI to correct the procedure of creating correct Work Orders, and thus realize economies of process. However, this is not in line with the initial purpose of this KPI. Consequently, Required on Site does not fulfill its purpose of measuring if the standardized working procedures related to non-stock material purchases are followed. Therefore, the measure cannot be used to achieve state of the art purchasing process knowledge, and unrealized potential for economies of process may be present

Generic Materials almost manages to measure the correct amount of generic purchases. The score can thus create correct purchasing process knowledge amongst the employees and realize economies of process. However, since several generic purchases sometimes are linked to the same generic number in the same Work Order, this KPI does not register the true amount of generic purchases (5.4.4.2 RtP related KPI 3: Generic Materials). This creates incorrect purchasing process knowledge, and may represent unrealized potential for economies of process.

For the RtP KPIs to *influence and develop purchasing*, Upstream Norske Shell must keep a strong focus on the KPIs' performance. From Table 42 in section 11.4.3.2, it is clear that the weights of the three RtP KPIs (4,3,3) are low compared to the other KPIs (between 10 and 20). This entails that focus on improving these three KPIs are given less priority than the others, which limits the degree to which the RtP KPIs can influence behavior. This can represent unrealized potentials for economies of scale (purchasing process costs), information and learning (knowledge and information sharing), and process (purchasing process knowledge).

However, the RtP KPI Generic Materials clearly influence employees in the company despite the low weighting. For example, the poor Generic Materials score influence the E&M Delivery Engineers. Together with both Inventory Analysts and RtP Analysts, they work on reducing generic purchases and thus develop purchasing. In the weekly meetings between E&M Delivery Engineers and Inventory Analysts, generic purchasing is frequently discussed. Together, they agree on improvement actions to reduce the amount of generic purchasing. These meetings facilitate information and process knowledge sharing, realizing economies of information and learning and economies of process. Further, by reducing the use of generic purchasing through improvement actions, Upstream Norske Shell may increase their purchasing power and reduce purchasing process costs, giving rise to economies of scale.

Performance measures should be *communicated* throughout the company to all employees, including executive management (8.4.5). In Upstream Norske Shell, the scores of the RtP KPIs are available for everyone in SAP. In addition, the scores are compiled in Global Shell's Maintenance and Integrity Sustainability Report (11.4.3.2). This creates both economies of information and learning, and process. On a daily basis, however, Upstream Norske Shell does not focus on communicating the RtP KPIs, causing low employee awareness. For example, employees in the company are unaware of who actually holds the responsibility for the RtP KPIs, and how their activities affect the scores. This low level of communication of the content and purpose of the KPIs represents unrealized potential for economies of information and learning, and process.

### 13.5.3 Summary

Table 49 summarizes which factors that realize, or have the potential to realize, the different types of purchasing synergies. The matrix describes which KPI each of the fields with X'es represent, e.g. RtP KPIs, Contract KPIs, Service Levels. The contract KPIs can lead to economies of process if its measures of the performance of Upstream Norske Shell and suppliers are used to create a coherent working style. Economies of information and learning are realized in the contract review meetings. At these meetings, improvement initiatives are agreed upon, which can lead to all three types of purchasing synergies.

The RtP KPIs measure true performance to a certain extent, leading to realized, but mostly unrealized economies of process. Due to deviating RtP-process execution from the globally designed RtP-process, the RtP KPIs do not measure performance accurately. This gives rise to unrealized economies of process. Without a strong focus on the KPIs throughout the company, the KPIs cannot influence and develop purchasing. However, despite the low priority given to the three RtP KPIs compared to other maintenance KPIs, Generic Materials manages to influence employee behavior. The KPI scores are communicated through reports and SAP, but the lack of daily communication may represent a potential for economies of information and learning, and process.

**Table 49: Factor-Synergy Matrix Performance Measures**

Factor	Realized Purchasing Synergies			Unrealized Purchasing Synergies		
	Economies of Scale	Economies of Information and Learning	Economies of Process	Economies of Scale	Economies of Information and Learning	Economies of Process
Align Measures with Strategic Priorities			X (Aligned working procedures) - Contract KPIs			
			(Standardized procedures) - RtP KPIs			
Measure performance accurately			X (Coherent working style) - Contract KPIs			X (Lost purchasing process knowledge) - RtP KPIs
			(Purchasing process knowledge) - Generic Materials			

<p>Influence behavior and develop purchasing</p>	<p>X (Purchasing process costs, negotiation power) - Generic Materials</p>	<p>X (Knowledge and information sharing) - Generic Materials</p>	<p>X (Aligned working procedures) - Contract KPIs</p> <hr/> <p>(Purchasing process knowledge) - Generic Materials</p>	<p>X (Increased purchasing process costs) - Service Levels - Required On Site</p>	<p>X (Lack of knowledge and information sharing) - Service Levels - Required On Site</p>	<p>X (Lost purchasing process knowledge) - Service Levels - Required On Site</p>
<p>Communicate measures</p>	<p>X - Contract KPIs</p>	<p>X (Knowledge and information sharing) - Contract KPIs - RtP KPIs</p>	<p>X - Contract KPIs</p> <hr/> <p>(Purchasing process knowledge) - RtP KPIs</p>		<p>X (Lack of knowledge and information sharing) - RtP KPIs</p>	<p>X (Lost purchasing process knowledge) - RtP KPIs</p>



## **13.6 Total Cost/Benefit Analysis**

In accordance with the definition of a cost/benefit analysis (8.4.6), this section analyses how Upstream Norske Shell seeks to balance costs, benefits and relationship strategies. The focus Upstream Norske Shell has on total cost of ownership and cost/benefit analyses in the RtP-process and the contracting process CMCP will be presented in this section.

### **13.6.1 RtP**

#### *13.6.1.1 TCO Perspective*

In the execution of the RtP-process, both the operators making the Notifications, and the job planners (mainly E&M Delivery Engineers) making the Work Orders, have to make cost/benefit ponderations in their work. In the Notification, the operators make decisions regarding the risk and Latest Allowable Finish Date. In making the Work Orders, the job planners make decisions like original ROS, cost estimates, sequential operations plans and what materials to link to the jobs. (11.4.2.1)

The four subsequent steps of the RtP-process directly build upon the Notification and Work Order. Since the choices made in the first two steps lay the foundation for the subsequent decisions, the operators and job planners have to think about how their choices affect the rest of the RtP-process. With this line of reasoning, the RtP-process can be said to build on a total cost of ownership philosophy. This reduces process costs and facilitates realization of economies of scale, and aligns the executors of the process on common ways of thinking, which may create economies of process.

#### *13.6.1.2 Use of Cost/Benefit Analyses*

In the first step, when an operator creates a Notification, the Latest Allowable Finish Date is set based on a risk analysis with damage information (11.4.2.1 Notification). In this analysis, the criticality of the job is weighted against the risk of not performing the job right away. This type of cost/benefit analysis is performed once more when the job planners set the final date for execution in the Work Order (11.4.2.1 Work Order). Thoroughly made cost/benefit analyses save money as benefits outweigh costs, which is a source to realizing economies of scale. Further, common ways of working in the step Notification and Work Order can create economies of process.

### **13.6.2 CMCP**

#### *13.6.2.1 TCO Perspective*

CMCP is built on a total cost of ownership philosophy in which costs that may arise during the whole contract period are taken into account when the process progresses. Cost/benefit ponderations and technical and commercial assessments are executed throughout the process, and decisions are consciously taken based on their interconnectedness to subsequent steps. This may lead to reduced process costs, and thus realize economies of scale. Moreover, by aligning the executors of the process on common ways of working, economies of process may be created.

### ***13.6.2.2 Use of Cost/Benefit Analyses***

In the first step of CMCP, Business Needs, cost/benefit evaluations are made related to spend data, value improvements, delivery issues and risks (11.4.2.2 Business Needs). In addition, based on a cost/benefit assessment, a team with clear roles and responsibilities is established to avoid duplicated efforts (11.4.2.2 Business Needs). In setting up new contracts, the Contract Specialists are obliged to check if an EFA exists that covers the business needs. In the evaluation of whether to choose an existing EFA or make a new contract, the Contract Specialists conduct a cost/benefit analysis. The outcome of this analysis is whether the EFA covers the needs adequately, or if it is necessary to initiate CMCP to establish a contract that covers the needs to a greater extent.

In the fourth step of CMCP, cost/benefit analyses used are supply chain maps and a TCO model. In addition, a list of key cost and value drivers are developed (11.4.2.2 Supply Chain Cost Modelling). The objective in this step is to gain an understanding of the cost and value drivers in the supply chain (11.4.2.2 Supply Chain Cost Modelling), which illustrates that Upstream Norske Shell has a supply chain focus.

The outcome of these cost/benefit evaluations made during CMCP may lead to, among others, unit cost reduction and a reduced supplier base, which represent economies of scale (5.1). Economies of scale is also created by establishing a team to avoid duplicated efforts. Moreover, the cost/benefit tools and evaluations facilitate discussions and standardized working procedures, which may lead to economies of information and learning and economies of process, respectively.

### **13.6.3 Contract Segmentation**

The contracts Upstream Norske Shell uses are categorized as strategic, tactical or operational (11.4.2.2). The evaluation of which of these categories a contract should be defined as is based on a cost/benefit analysis, in which the risk, complexity, and value of the contract is weighted against the time and resources needed to manage the contract (11.4.2.2 Contract Management). This segmentation optimizes the management of the contracts, in which most effort and resources are devoted to the contracts that have the highest risk, complexity and value, and thus require more attention than the other contracts. As a consequence, less human resources are needed.

Since the workload is lowest for operational contracts, only one employee in Upstream Norske Shell is responsible for these contracts (11.4.1.1 Senior Buying Sourcing). Each of the Contract Specialists, on the other hand, is responsible for a part of the tactical and strategic contracts, which amounts to a smaller proportion than the operational contracts (11.4.2.2). The contract segmentation is a source to economies of scale since less human resources are needed. In addition, economies of process may be created since the work related to contract management is made more efficient.

### **13.6.4 Summary**

Table 50 summarizes the purchasing synergies, and their related reasons, that Upstream Norske Shell realizes or that remain unrealized by conduction cost/benefit analyses. The cost/benefit tools and evaluations conducted in the CMCP and RtP-process may create all

three types of purchasing synergies. Contract segmentation optimizes the management of contracts, which is a source to economies of scale and process. The matrix describes which process each of the fields with X'es represent, e.g. RtP, CMCP, Contract Segmentation.

**Table 50: Factor-Synergy Matrix Total Cost/Benefit Analysis**

Factors	Realized Purchasing Synergies			Unrealized Purchasing Synergies		
	Economies of Scale	Economies of Information and Learning	Economies of Process	Economies of Scale	Economies of Information and Learning	Economies of Process
TCO Perspective	X (Purchasing process costs)  - RtP - CMCP		X (Common way of working)  - CMCP			
Use of Cost/Benefit Analyses	X (Purchasing process costs, supplier base reduction, avoid duplicated efforts)  - RtP - CMCP - Contract Segmentation	X (Knowledge and information sharing)  - CMCP	X (Common way of working)  - RtP - CMCP - Contract Segmentation			

**13.7 Portfolio of Relationships**

The level of collaboration in the inter- and intra-firm relationships affects the level of purchasing synergy achievement in Upstream Norske Shell. The different relationships in Upstream Norske Shell should be analyzed to understand where today's purchasing synergies lie, and where there are purchasing synergy potentials. This section therefore characterizes and discusses the most cooperative and less cooperative intra-firm relationships in the buying center (12.2). It also includes aspects of the inter-firm supplier interaction.

Based on the definition of this wheel element (8.4.7), the intra-firm buying center roles, and inter-firm roles considered important are: suppliers, external customers, top management, central purchasing unit, business unit managers, business unit purchasers, internal customers and others influencing the purchasing process. Adapted to the scope of this analysis: the

Operations Manager Norway is top management. C&P is considered the central purchasing unit. The Production Services Manager, C&P Lead and Delivery Team Lead are the Business unit managers. The Inventory Analysts, E&M Delivery Engineers and Purchase Coordinators are the Business unit purchasers. Other purchasing related employees are: Contract Manager, Contract Holders, Contract Specialists, RtP Analysts, Senior Buyer Sourcing, EFA Implementation and operators on Draugen and Ormen Lange Land Plant.

Figure 57 illustrates the intra- and inter-firm roles that will be examined in this section.

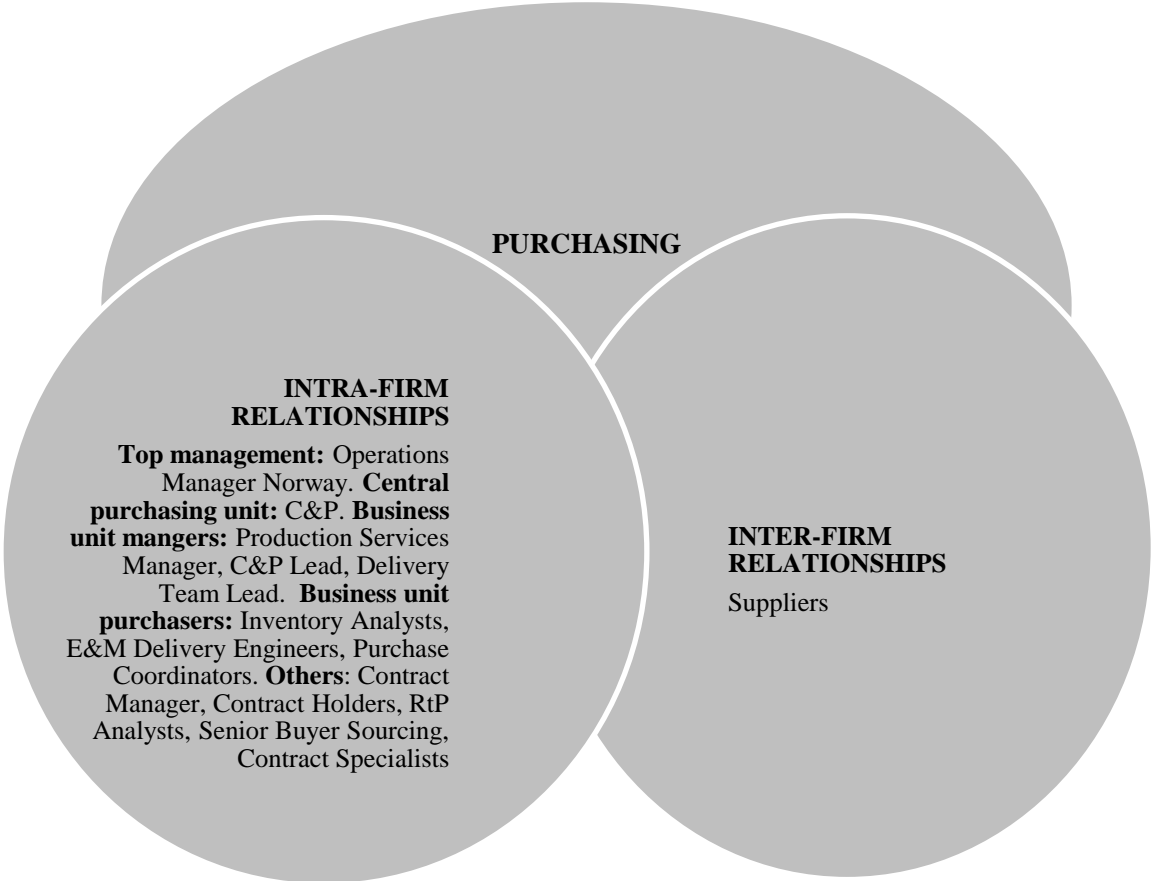


Figure 57: Inter- and intra-firm Roles

**13.7.1 Intra-Firm Relationships**

The level of cooperation between the aforementioned intra-firm roles will now be analyzed, aiming to highlight existing purchasing synergies and unrealized synergy potentials.

*13.7.1.1 C&P Lead and Delivery Team Lead*

The objectives of C&P, to support the Operations office by performing tendering processes and set up and handle contracts, is quite different from the ones of Delivery Team, which gives operations and maintenance support to Draugen and Ormen Lange Land Plant (11.4.1). This indicates that it is not necessary for the C&P Lead and Delivery Team Lead to collaborate on a frequent basis. However, the two Purchase Coordinators subordinated

Delivery Team Lead can be considered both C&P and Delivery Team resources, although they formally only report to the C&P Lead (13.4.2).

This is related to the Purchase Coordinators having two buying center roles, in which they hold the role as a decider regarding making the final decision of which suppliers to buy from, and the role as an influencer seeing as they make suggestions to C&P of which contracts that should be established based on their experience gained from their role as a decider. However, collaboration between the two leaders on how to best put the Purchase Coordinators into use is insufficient. Therefore, this interaction link may represent unrealized potential for economies of information and learning, i.e. lack of knowledge and information sharing.

#### *13.7.1.2 C&P Lead and Inventory Analysts*

The Inventory Analysts are considered a part of the C&P organization, even though they not formally report to C&P Lead yet (11.4.1.1). The Inventory Analysts participate in regular C&P division meetings held by C&P Lead, and communicate when necessary. This collaboration might be valuable since the C&P Lead is a gatekeeper and controls information into the buying center, whereas the Inventory Analysts are both buyers and influencers, depending on the situations; i.e. choose suppliers to purchase from or suggest contracts to C&P. In this way, they are able to gain insights into, and give feedback about, mutually relevant contract and purchasing related information. This collaboration can lead to economies of information and learning, i.e. knowledge and information sharing.

#### *13.7.1.3 C&P Lead and Purchase Coordinators*

The Purchase Coordinators formally report to the Delivery Team Lead (11.4.1.2 Purchase Coordinators). The non-existence of a formal reporting line from the Purchase Coordinators to the C&P Lead has disadvantages for both sides. The two parties only interact when the Purchase Coordinators execute their role as an influencer and report to the C&P Lead that they need a contract on a specific material or service, which is rare. General contract and purchasing information from C&P to the Purchase Coordinators is thus scarce, and the Purchase Coordinators are not included in any of the formal purchasing training courses that the other employees in C&P participate in.

This is unfortunate seeing as the Purchase Coordinators also hold the role as a buyer and is influenced by the contracts established in CMCP. Lack of collaboration can lead to a low degree of information sharing and makes it difficult to establish a coherent working style. Consequently, unrealized potentials for economies of information and learning and economies of process are likely present.

#### *13.7.1.4 Purchase Coordinators*

The Purchase Coordinators, one responsible for Draugen and one for Ormen Lange Land Plant, sit in different teams in the same office area (13.4.2). Both Purchase Coordinators hold the same roles as buyers, deciders, and influencers, in which making Purchase Orders are part of their responsibility as a buyer and decider (11.4.2.1 Purchase Order). This entails that they encounter much of the same challenges, such as technicalities in SAP, collaboration with E&M Delivery Engineers, interaction with suppliers, use of contracts, and interaction with C&P Lead.

However, the extent of collaboration between the two Purchase Coordinators is low. They mostly communicate in informal settings or by e-mail, and rarely about purchasing related challenges. The lack of cooperation between these two may thus represent unrealized potentials for economies of information and learning. Furthermore, there are potentials for aligning common ways of working with the Purchase Order generation, which can lead to unrealized economies of process.

#### *13.7.1.5 Inventory Analysts and Purchase Coordinators*

The two groups of purchasers, Inventory Analysts and Purchase Coordinators, do not collaborate with each other. Both groups are buyers and deciders, and thus hold information on material usage patterns, use of contracts, and use of SAP. This information and knowledge are relevant for both parties. Consequently, there are unrealized potentials for economies of information and learning through information and knowledge sharing, and economies of process through common ways of working between them. Furthermore, the lack of intra-firm collaboration and unified information reporting on, e.g. contract needs and use, from the four purchasers to C&P, may cause lost opportunities for e.g. contract bundling and supplier base reduction. This may in turn represent unrealized potentials for economies of scale.

#### *13.7.1.6 Inventory Analysts and E&M Delivery Engineers*

The Inventory Analysts collaborate on a daily basis with the E&M Delivery Engineers, both informally and in weekly meetings. They frequently discuss technicalities of the materials used, new contract needs, degree of generic materials and insufficient material masters in SAP. The E&M Delivery Engineers forward information to the Inventory Analysts about suppliers they see is beneficial to enter into contracts with, and when they find insufficient material masters in SAP when they make the Work Orders (11.4.2.1 Work Order).

These interactions are valuable since they both hold the role as a decider; E&M Delivery Engineers decide which materials and service the Inventory Analysts should buy, and the Inventory Analysts decide from which suppliers to purchase these materials and services. Moreover, the E&M Delivery Engineers are gatekeepers and thus gain information through their interaction with suppliers.

Often, the E&M Delivery Engineer make the first evaluation and negotiation with suppliers, which reduces the Inventory Analysts workload as they are spared from doing this research on relevant suppliers. Since it is likely that the Inventory Analysts would use more time on doing the first evaluation due to a lower degree of technical competence, this may represent realized economies of scale through reduced purchasing process costs (less man hour etc.).

In the weekly meetings between the E&M Delivery Engineers and Inventory Analysts, they discuss common interests like continuous improvement of inventory handling, inventory levels, previous and future consumption of materials, generic purchasing and the level of collaboration between themselves.

These meetings have increased their knowledge of each other's work and mutual challenges, which is a source to realized economies of information and learning. As a consequence of the increased knowledge, the meetings have resulted in material cost reductions, which may

represent realized economies of scale. Furthermore, by discussing the practice of generic purchasing, the parties have aligned their goals and working procedures to reduce generic purchasing, which may enable creation of economies of process.

#### *13.7.1.7 Purchase Coordinators and E&M Delivery Engineers*

The Purchase Coordinators and E&M Delivery Engineers are both deciders, whereas the former decides which suppliers to buy from and the latter which materials and services that should be purchased. They thus collaborate frequently about, amongst other, the content of the Purchase Requisitions. This secures that the Purchase Orders are made correctly. Since the Purchase Coordinators' technical knowledge increases as a part of the Delivery Team, and the E&M Delivery Engineers' purchasing knowledge increases as well, this collaboration creates economies of information and learning. Further, by sitting close to each other, they can easily align working procedures and common ways of working, which may represent realized economies of process.

#### *13.7.1.8 Contract Specialists*

The main job of all the Contract Specialists, including C&P Lead, is to perform and drive forward the Pre-Award part of CMCP for all tactical and strategic contracts. Further, they manage a defined portfolio of existing strategic and tactical contracts in one category (e.g. logistics, rotating equipment, marine vessels, aviation). (11.4.1; 11.4.2) This makes them to some extent category experts, and it becomes difficult to cooperate in their daily work with the contracts.

Despite the fact that they do exactly the same work, only on different contracts, they work independently from each other, both regarding CMCP and contract management. They participate and communicate in formal meeting. However, informal information sharing and lack of collaboration leads to missing opportunities for group learning and experience sharing on common ways of working, e.g. how to perform the risk assessment in Business Needs. This is unfortunate since they hold the same buying center roles. Unrealized potentials for economies of information and learning and economies of process are therefore likely present.

#### *13.7.1.9 Contract Specialists and Senior Buyer Sourcing*

The Contract Specialists execute CMCP for strategic and tactical contracts, whereas Senior Buyer Sourcing executes CMCP for operational contracts (11.4.1; 11.4.2). However, even though they have the same buying center roles, they do not collaborate or discuss CMCP experiences and challenges with each other. This may represent latent potentials for common ways of working, i.e. unrealized economies of process, and knowledge and information sharing, i.e. unrealized economies of information and learning.

#### *13.7.1.10 Contract Specialists and Purchase Coordinators*

The job activities of the Contract Specialists and Purchase Coordinators are interconnected; the Contract Specialists are influencers and make the material and service contracts that the Purchase Coordinators, as deciders, use. Despite the interconnectedness of their work, they do not collaborate, e.g. on how the contracts should be designed in SAP, how detailed the description of Scope of Work in the contract should be, or about general user-friendliness of the contracts in SAP.

This lack of mutual learning and information sharing on mutual influencing work areas likely represent an unrealized potential for economies of information and learning. Furthermore, the Contract Specialists could, based on information from the Purchase Coordinators, align common ways of working in how they incorporate new contracts in SAP. Consequently, unrealized potential for economies of process may be present.

#### *13.7.1.11 Contract Specialists and E&M Delivery Engineers*

The Contract Specialist and E&M Delivery Engineers interact when a need for a new supplier contract arises in the Delivery Team, and an E&M Delivery Engineer reports the need to one of the Contract Specialists (11.4.2). This represents both formal and informal communication. Further, the Contract Specialists collaborate with the E&M Delivery Engineers in the first step of CMCP, Business Needs. In this step, the E&M Delivery Engineers are internal customers who are involved to ensure that the technical need business needs are covered in the contract. (11.4.2.2 Business Needs).

These interactions between the Contract Specialists and E&M Delivery Engineers can be seen in relation to their buying center roles. The E&M Delivery Engineers influence which contracts the Contract Specialists should establish since they are influenced by the contracts made available by the Contract Specialists. It is thus valuable that the E&M Delivery Engineers and Contract Specialists share know-how seeing as their responsibilities affect each other. This intra-firm collaboration between the Contract Specialists and E&M Delivery Engineers may therefore create economies of information and learning, i.e. knowledge and information sharing, across the two divisions C&P and Delivery Team.

#### *13.7.1.12 Senior Buyer Sourcing and the E&M Delivery Engineers*

E&M Delivery Engineers and Senior Buyer Sourcing collaborate and share information about the practical use of different operational contracts. Additionally, the E&M Delivery Engineers forward information to the Senior Buyer Sourcing about suppliers they see beneficial to enter into operational contracts with. This happens both in formal and informal settings.

The necessity of their interaction is related to their buying center roles. The E&M Delivery Engineers are influenced by the operational contracts established by the Senior Buyer Sourcing. They therefore collaborate so that the Senior Buyer Sourcing can establish the contracts they need. This intra-firm collaboration thus likely represents realized economies of information and learning.

#### *13.7.1.13 RtP Analysts*

The tasks related to the implementation of optimizers throughout the RtP value chain are divided between the two RtP Analysts. For example, when one of the RtP Analysts is responsible for physically implementing POA with a supplier, the other is responsible for follow-up and monitor the implemented contract. This demerger presupposes a certain degree of frequent information sharing and collaboration between the RtP Analysts. Consequently, there are likely realized economies of information and learning in this relationship.



#### *13.7.1.14 RtP Analysts and C&P Lead*

The RtP Analysts are considered C&P-resources (11.4.1.1). However, there is no reporting line between the RtP Analysts and the C&P Lead. This entails that they mostly communicate informally, and formal communication and extensive collaboration is lacking.

This is unfortunate as the RtP Analysts are responsible for continuous improvement of the RtP-process by implementing different optimizers in SAP (11.4.2.1 RtP Optimization). Accordingly, the RtP Analysts hold the role as a gatekeeper and influence the flow of information into the buying center, since SAP contains all purchasing related information and is the main purchasing tool. The information available in SAP impacts both the work of C&P and Delivery Team. Consequently, the lack of collaboration in this relationship may represent unrealized potentials for economies of information and learning, i.e. information and knowledge sharing.

#### *13.7.1.15 Contract Manager and Contract Holders and Contract Specialists (including C&P Lead)*

Interaction between Contract Manager and Contract Specialists, as well as between Contract Manager and Contract Holders is related to the Contract Manager's role as a gatekeeper, in which he acts as an intermediary between these two organizational positions. The Contract Manager and the Contract Specialists (including the C&P Lead), cooperate on driving commercial negotiations in CMCP. This may represent realized economies of information and learning and economies of process. The Contract Manager functions as a commercial contract support for the Contract Holders in their daily work, and maintain effective communication with Contract Holders. This can lead to realized economies of information and learning.

#### *13.7.1.16 Summary*

Figure 58 illustrates, with whole and dashed lines, the existing, and less frequent or lacking collaboration in the intra-firm relationships, respectively. The figures are based on the overall matrix illustration in Fig. 35 in section 11.4.1, where Delivery Team and Production Services are part of the vertical business, and C&P is one of the horizontal functions. Table 51 summarizes the realized and unrealized purchasing synergies these existing and lacking collaborations lead to. The matrix describes which relationships each of the fields with X'es represent, e.g. the type of purchasing synergy realized or not between Inventory Analysts and E&M Delivery Engineers.

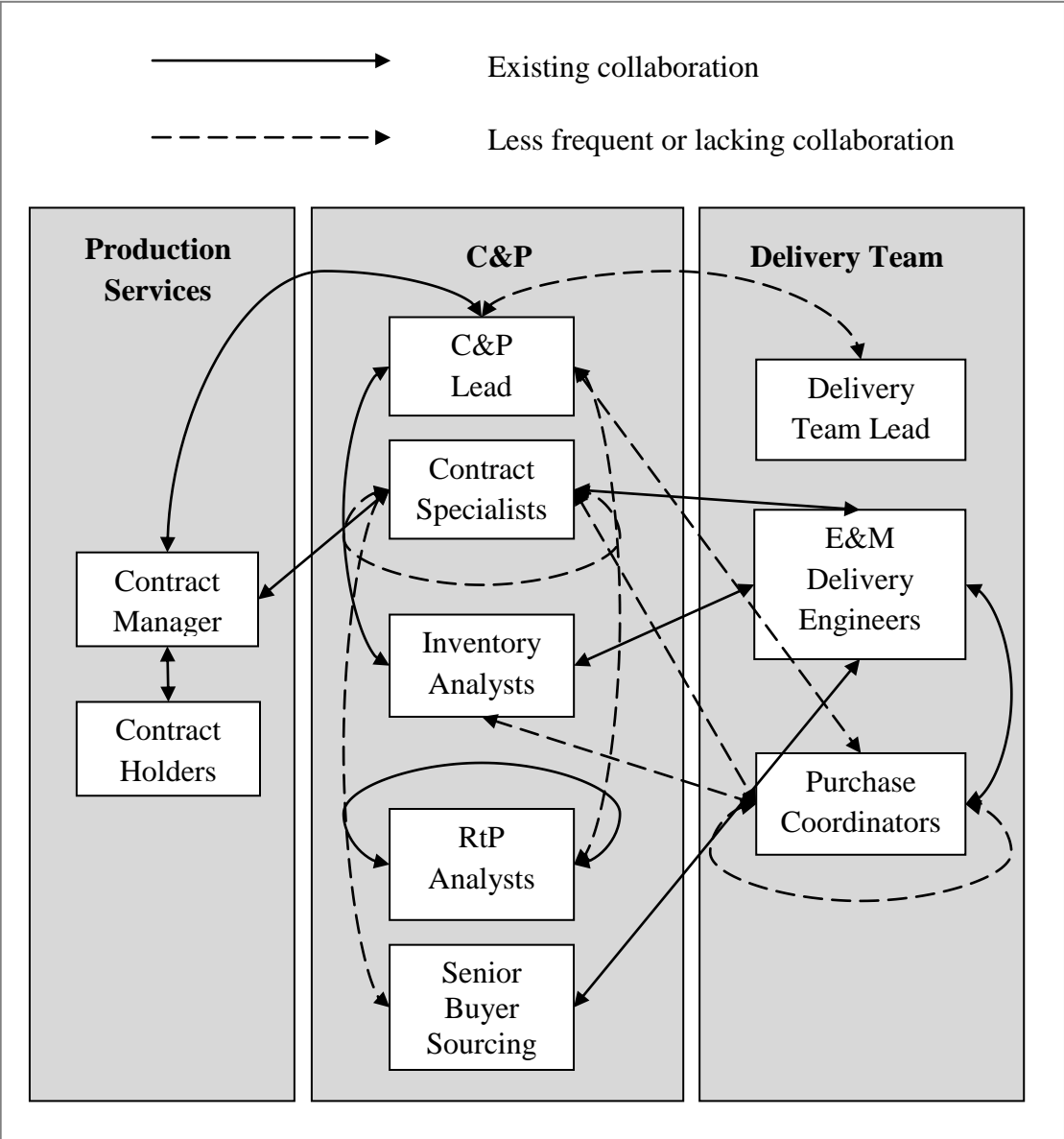


Figure 58: Existing and Lacking Collaboration in the Intra-firm Relationships

**Table 51: Factor-Synergy Matrix Intra-firm Portfolio of Relationships**

Factor	Realized purchasing synergies			Unrealized purchasing synergies		
	Economies of Scale	Economies of information and learning	Economies of process	Economies of Scale	Economies of information and learning	Economies of process
Collaboration	<p>X</p> <p>(Purchasing process costs, material costs)</p> <ul style="list-style-type: none"> <li>- Inventory Analysts and E&amp;M Delivery Engineers</li> </ul>	<p>X</p> <p>(Knowledge and information sharing)</p> <ul style="list-style-type: none"> <li>- C&amp;P Lead and Inventory Analysts</li> <li>- Inventory Analysts and E&amp;M Delivery Engineers</li> <li>- Purchase Coordinators and E&amp;M Delivery Engineers</li> <li>- Contract Specialists and E&amp;M Delivery Engineers</li> <li>- Senior Buyer Sourcing and E&amp;M Delivery Engineers</li> <li>- RtP Analysts</li> <li>- Contract Manager and Contract Holders and Contract Specialists (including C&amp;P Lead</li> </ul>	<p>X</p> <p>(Common way of working)</p> <ul style="list-style-type: none"> <li>- Inventory Analysts and E&amp;M Delivery Engineers</li> </ul>	<p>X</p> <p>(Lost negotiation power)</p> <ul style="list-style-type: none"> <li>- Inventory Analysts and Purchase Coordinators</li> </ul>	<p>X</p> <p>(Lack of knowledge and information sharing)</p> <ul style="list-style-type: none"> <li>- C&amp;P Lead and Delivery Team Lead</li> <li>- C&amp;P Lead and Purchase Coordinators</li> <li>- Purchase Coordinators</li> <li>- Inventory Analysts and Purchase Coordinators</li> <li>- Contract Specialists</li> <li>- Contract Specialists and Senior Buyer Sourcing</li> <li>- Contract Specialists and Purchase Coordinators</li> <li>- RtP Analysts and C&amp;P Lead</li> </ul>	<p>X</p> <p>(Different way of working)</p> <ul style="list-style-type: none"> <li>- Purchase Coordinators</li> <li>- Inventory Analysts and Purchase Coordinators</li> <li>- Contract Specialists</li> <li>- Contract Specialists and Senior Buyer Sourcing</li> <li>- Contract Specialists and Purchase Coordinators</li> </ul>

### **13.7.2 Inter-Firm Relationships**

Employees in both C&P and Delivery Team have frequent supplier contact. The most important supplier interactions in Upstream Norske Shell will now be described. The communication between the E&M Delivery Engineers and the suppliers will be described first, before the communication between the Contract Specialists, Senior Buyer Sourcing and suppliers is presented.

#### *13.7.2.1 E&M Delivery Engineers and Suppliers*

The E&M Delivery Engineers communicate and interact frequently with different local suppliers. The E&M Delivery Engineers ask the suppliers about technical issues regarding the materials and equipment used at Draugen and Ormen Lange Land Plant. The suppliers contact the E&M Delivery Engineers when they have technical questions regarding the Purchase Orders. The supplier interaction increases the E&M Delivery Engineers' knowledge of specific materials and equipment, as well as the suppliers' knowledge of how their products are used in practice. This collaboration creates economies of information and learning. The discussions with the suppliers also help the E&M Delivery Engineers to reduce the error percentage in planning the Work Orders, and may thus realize economies of process.

The interaction may also result in contract offers. In discussing and negotiating specific offers with the suppliers, the E&M Delivery Engineers are often able to receive good prices due to their technical expertise. For example, the Inventory Analysts once received an offer on a centrifuge for 16,5 million NOK. The engineers managed after two to three months of negotiation to reduce the price down to 3,5 million NOK. This is one of many positive outcomes of the E&M Delivery Engineers' collaboration with suppliers, and likely represents realized economies of scale.

#### *13.7.2.2 Contract Specialists (including C&P Lead), Senior Buyer Sourcing and Suppliers*

As part of CMCP (11.4.2.2), the Contract Specialists and Senior Buyer Sourcing mainly have formal supplier interaction through the different stages of the tendering process. Further, they have regular supplier meetings in the Post-Award Contract Management phase, depending on the contract's complexity and how difficult the contract is to use. This collaboration with the suppliers throughout CMCP enables knowledge and information sharing, and may thus represent realized economies of information and learning.

#### *13.7.2.3 Summary*

Figure 59 illustrates, with whole lines, the existing inter-firm collaboration. This figure is based on the overall matrix illustration in Fig. 35 in section 11.4.1, where Delivery Team and Production Services are part of the vertical business, and C&P is one of the horizontal functions. Table 52 summarizes the purchasing synergies realized in the different inter-firm collaborations.

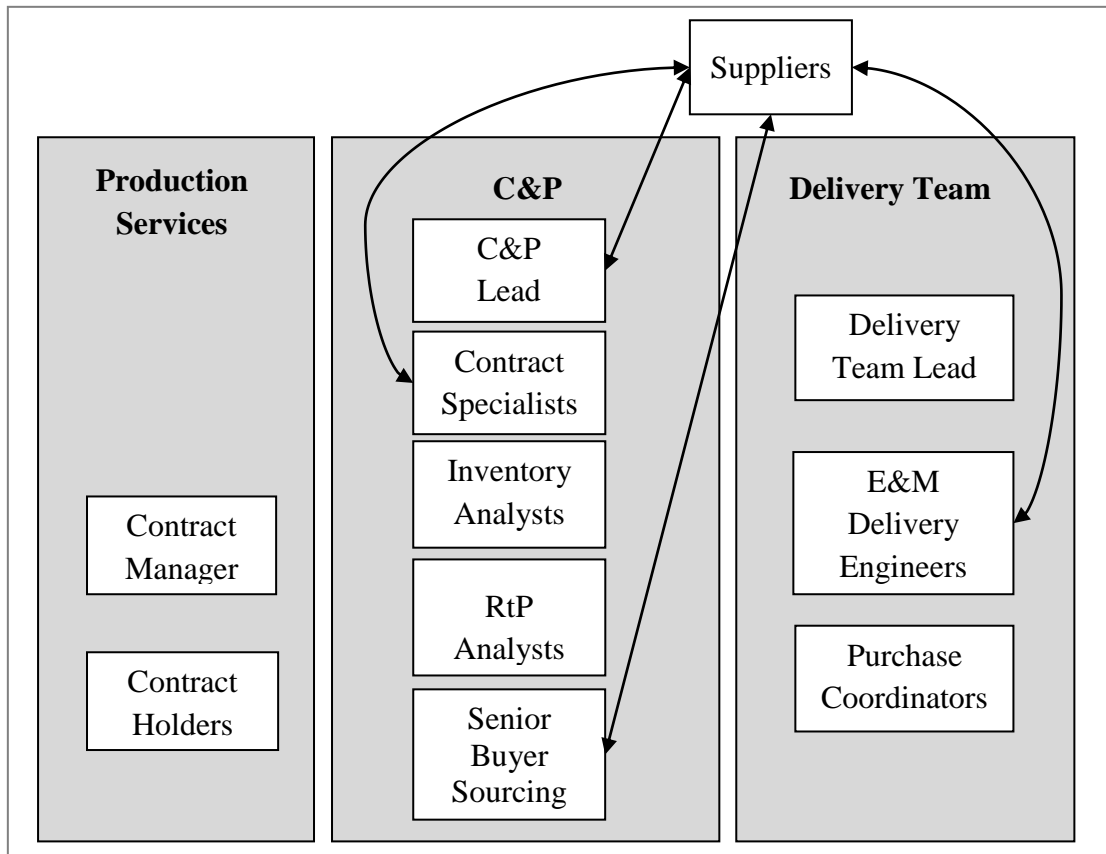


Figure 59: Existing Collaboration in the Inter-firm Relationships

Table 52: Factor-Synergy Matrix Inter-firm Portfolio of Relationships

Factor	Realized purchasing synergies			Unrealized purchasing synergies		
	Economies of Scale	Economies of information and learning	Economies of process	Economies of Scale	Economies of information and learning	Economies of process
Collaboration	<p>X (Purchasing costs)</p> <p>- E&amp;M Delivery Engineers and Suppliers</p>	<p>X (Knowledge and information sharing)</p> <p>- E&amp;M Delivery Engineers and Suppliers</p> <p>- Contract Specialists (including C&amp;P Lead), Senior Buyer Sourcing and Suppliers</p>	<p>X (Common way of working)</p> <p>- E&amp;M Delivery Engineers and Suppliers</p>			

### 13.8 Summary

In Table 53, the key Factor-Synergy results from the element-by-element analysis above are summarized in a Factor-Synergy Matrix. For each element, the respective factors, i.e. drivers and barriers, show realized and unrealized purchasing synergy potentials, respectively. Business Context indirectly affects purchasing synergy creation. All wheel elements affect creation of all three forms of purchasing synergy: economies of scale, economies of information and learning, and economies of process. The elements Corporate Coherence, Purchasing Maturity, Organizational Structure, Performance Measures and Portfolio of Relationships, all explain both realized and unrealized purchasing synergies. The element Total Cost/Benefit analysis, however, only give explanations for realized purchasing synergies. The final row summarizes the amount of total identified purchasing synergies divided into the three forms, either realized or unrealized. In Part 5, the findings will be discussed and concluded upon.

**Table 53: Final Empirical Factor-Synergy Matrix**

Factor	Realized Purchasing Synergies			Unrealized Purchasing Synergies		
	Economies of Scale	Economies of Information and Learning	Economies of Process	Economies of Scale	Economies of Information and Learning	Economies of Process
Business Context						
Indirect effect						
Corporate Coherence						
<i>Alignment in strategy</i>						
Standard procedures (CMCP, RtP, EFA)	X	X	X			
Maverick buying				X		X
Top-down fiat				X	X	X
Internal alignment in C&P				X	X	X

Formalized alignment (C&P and Delivery Team)		X	X			
Difference in focus (C&P and Delivery Team)					X	X
<i>Information platform (SAP)</i>		X	X			
<i>Culture</i>						
Unified organizational culture (C&P and Delivery Team)		X	X			
Difference in background (C&P and Delivery Team)					X	X
<b>Purchasing Maturity</b>						
<i>Reporting line</i>				X	X	X
<i>Visibility and organizational perception</i>						
Positive perception of C&P		X	X			
Limited status				X	X	X

and visibility						
<i>Information access</i>		X				
<i>Information technology</i>						
Use of SAP		X	X			
High usability threshold						X
<i>Skills and competencies</i>						
Purchasing skills	X	X	X			
Lack of technical skills						X
Lack of SAP knowledge						X
<i>Training and development program</i>				X	X	X
<i>Strategic decision-making</i>						
Strategic processes	X	X	X			
Processing capacity				X	X	X
<i>Professionalism towards suppliers</i>						
Uniform buying policies	X					
Multiple contact points				X		X



Organizational Structure						
Coordinated Purchasing	X				X	
Horizontal Specialization (Delivery Team)		X	X		X	X
Vertical Specialization (C&P)					X	X
Performance Measures						
Align Measures with strategic priorities			X			
Measure performance accurately			X			X
Influence behavior and develop purchasing	X	X	X	X	X	X
Communicate measures	X	X	X		X	X
Total Cost/Benefit Analysis						
TCO perspective	X		X			
Use of Cost/Benefit Analyses	X	X	X			
Portfolio of Relationships						
Collaboration (intra-firm relationships)	X	X	X	X	X	X
Collaboration (inter-firm relationships)	X	X	X			
<b>IN TOTAL</b>	<b>11</b>	<b>15</b>	<b>17</b>	<b>10</b>	<b>14</b>	<b>19</b>

## **14. Analysis of Links Between Elements**

The previously presented Factor-Synergy Matrix (Table 53) identifies factors for realized purchasing synergies and barriers for unrealized synergy potentials separately under each wheel element. This somewhat conflicts with the philosophy of the Purchasing Synergy Management Wheel. In the model, no one element should be looked upon in isolation, as each element of the model affects the others (8.6.1). Misalignment between elements represents an obstacle to the realization of purchasing synergies.

The aim of this section is to examine the most important links between the wheel elements in the Purchasing Synergy Management Wheel. A way to demonstrate these relationships is to show how some of the most important factors underlying each wheel element are related to each other. This provides a deeper understanding of the mechanisms contributing to purchasing synergy creation in Upstream Norske Shell, thereby giving a more comprehensive answer to Research Question 3.

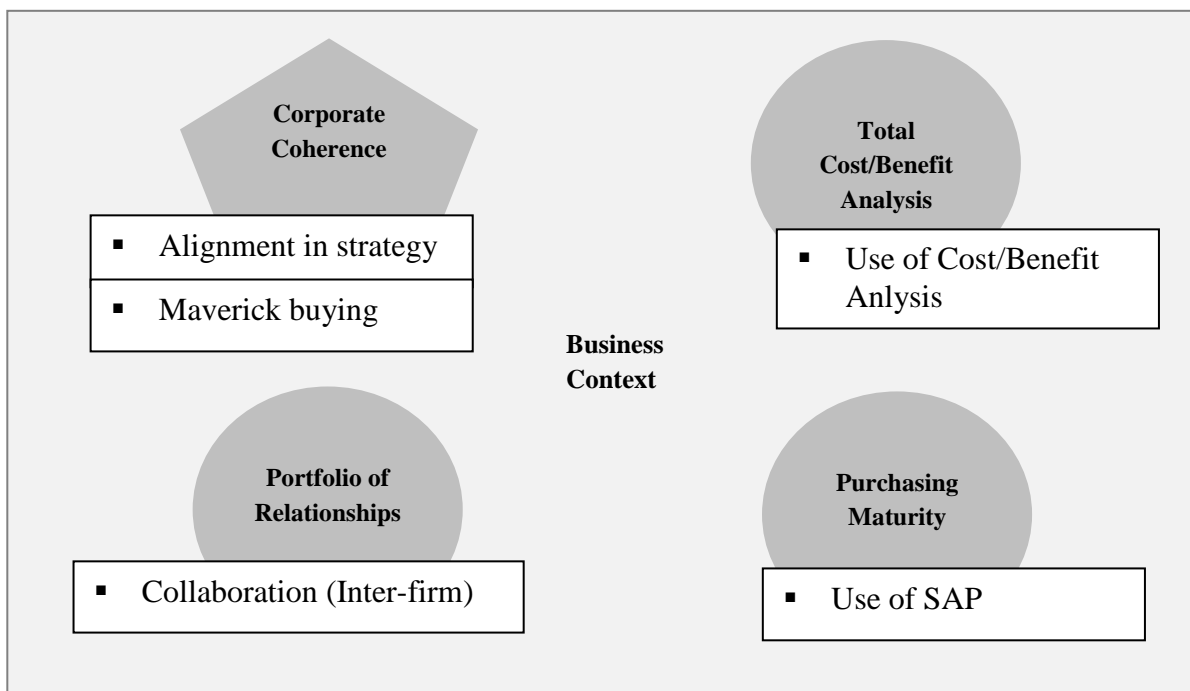
The approach is structured as follows: First, taking the Factor-Synergy Matrix (Table 53) as a starting point, the most relevant links between the various factors are identified before being analyzed in-depth. Each link is discussed and illustrated in their matching subsections. Due to the relatedness between its underlying factors, the corresponding wheel elements are automatically linked to each other.

This section presents eight overall links between the elements: (1) Business Context - Corporate Coherence - Purchasing Maturity - Total Cost/Benefit Analysis - Portfolio of Relationships; (2) Corporate Coherence and Purchasing Maturity; (3) Corporate Coherence - Performance Measures; (4) Corporate Coherence - Total Cost/Benefit Analysis; (5) Organizational Structure - Portfolio of Relationships; (6) Corporate Coherence - Portfolio of Relationships; (7) Purchasing Maturity - Portfolio of Relationships; and (8) Corporate Coherence - Purchasing Maturity - Organizational Structure - Portfolio of Relationships.

### **14.1 Business Context, Corporate Coherence, Purchasing Maturity, Total Cost/Benefit Analysis and Portfolio of Relationships**

Upstream Norske Shell's Business Context affects, among others, factors underlying the wheel elements Corporate Coherence, Purchasing Maturity, Total Cost/Benefit Analysis, and Portfolio of Relationships. The Business Context thus indirectly affects the purchasing synergies that can be realized by these factors.

The factors and how the Business Context influences these factors examined in this section are: (1) alignment in strategy (Corporate Coherence); (2) Use of SAP (Purchasing Maturity) – Maverick Buying (Corporate Coherence); (3) use of cost/benefit analyses (Total Cost/Benefit Analysis); and (4) inter-firm collaboration (Portfolio of Relationships). This is illustrated in Fig. 60.



**Figure 60: Business Context, Portfolio of Relationships, Total Cost/Benefit Analysis and Purchasing Maturity**

#### **14.1.1 Alignment in Strategy**

The Business Context of Upstream Norske Shell influences the company’s strategy, and thus has an indirect effect on the degree of Corporate Coherence, as well as the realization of purchasing synergies. For example, Upstream Norske Shell is dependent on the central government for financing and licenses. The company thus attempts to comply with the Norwegian Public Procurement Act as part of its corporate strategy.

This means that any future changes in the Norwegian Public Procurement Act will necessitate changes in the supply strategy of Upstream Norske Shell. In order to maintain the alignment between the two strategies, a change in the supply strategy calls for a change in the competitive strategy as well. Conversely, changes in Business Context may affect the corporate strategy, and thus necessitate changes in the supply strategy. Corporate Coherence is accordingly positively affected if corporate and supply strategies remain aligned at all times. This facilitates creation of all three types of purchasing synergy.

#### **14.1.2 Use of SAP and Maverick Buying**

Purchasing Maturity in Upstream Norske Shell is influenced by the accessibility of purchasing information in systems such as SAP and ACHILLES. These systems need to be user-friendly in order to facilitate creation of purchasing synergy. (13.3.3) Both the SAP-system and ACHILLES are developed by other business in Upstream Norske Shell’s Business Context (13.1.3). The user-friendliness of these systems and the potential for realizing purchasing synergy is thus dependent on technological innovations in Upstream Norske Shell’s Business Context.

Moreover, increased usability of SAP through technical changes may facilitate reduction of maverick buying in Upstream Norske Shell. For example, unintentional maverick buying may arise due to unawareness of how to use the SAP system (13.2.1.2). This unawareness can be

related to the complexity of the SAP system and thus the amount of training required to understand how to use the system (13.3.3). Consequently, technological changes that lead to a SAP system easier to understand and use, may indirectly create economies of process by enabling reduction of unintentional maverick buying.

#### **14.1.3 Use of Cost/Benefit Analyses**

The cost/benefit analyses conducted in the two purchasing processes RtP and CMCP, and in relation to EFA implementation, incorporate Business Context factors such as pressure from local suppliers and the local municipality, and environmental risk. The Business Context thus affects the use, and outcome, of the company's cost/benefit analyses.

In the RtP-process, for example, cost/benefit evaluations are made to assess when and how to perform a job at either Ormen Lange Land Plant or Draugen (13.7.1.1). Environmental risk of the identified problem, e.g. maintenance of a valve, influences the outcome of these evaluations in terms of Latest Allowable Finish Date and final date for execution.

Moreover, political/legal factors underlying the Business Context influence Upstream Norske Shell's economical freedom (13.1.5), which impacts the company's focus on cost reduction in these analyses. This entails that the Business Context affects the weighting of the analyses' input variables related to cost considerations, and thus how these analyses are used.

In relation to EFA implementation, the local municipalities' expectations that the company uses local suppliers (13.1.2) may influence Upstream Norske Shell's cost/benefit analyses of whether to implement an EFA or not. These expectations may thus cause the company to choose to enter into a contract with a local supplier instead of implementing and EFA.

In summary, the Business Context influences the factor use of cost/benefit analyses underlying Total Cost/Benefit Analysis. This influence affects the outcome of these analyses, which indirectly affect realization of purchasing synergies. Seeing as decisions related to, among others, unit cost reduction, size of supplier base, and EFA implementation is influenced.

#### **14.1.4 Cooperative Buyer-Supplier Relationships**

The environmental risk in Upstream Norske Shell's Business Context impacts the importance of taking technicality and risk aspects into account in purchasing related decisions (13.1.2). This entails that it is necessary for the E&M Delivery Engineers to discuss technical aspects with the suppliers that deliver materials used at Ormen Lange Land Plant and Draugen (13.8.2.1). The greater the risk, the more important it becomes to have frequent supplier contact in order to reduce the error percentage in planning the Work Order. The Business Context thus influences the inter-firm relationships and the factor collaboration underlying the wheel element Portfolio of Relationships. This indirectly affects the creation of economies of information and learning in these buyer-supplier relationships.

#### **14.1.5 Summary**

Figure 61 summarizes the factors influenced by Upstream Norske Shell's Business Context. The preceding discussion shows that the Business Context influences the company's supply

strategy, usability of SAP and ACHILLES, the outcome of the cost/benefit analyses and frequency of interaction between the E&M Delivery Engineers and suppliers. Overall, Business Context indirectly affects realization of all three types of purchasing synergy.

This section illustrates the importance of Business Context. However, all the various external aspects that indirectly impact purchasing synergy creation are outside the scope of this thesis. They are too complicated to be dealt with in the subsequent chapter on challenges and recommendations. Nevertheless, Upstream Norske Shell should, as they surely already do, continuously monitor the external business environment and manage relationships with stakeholders.

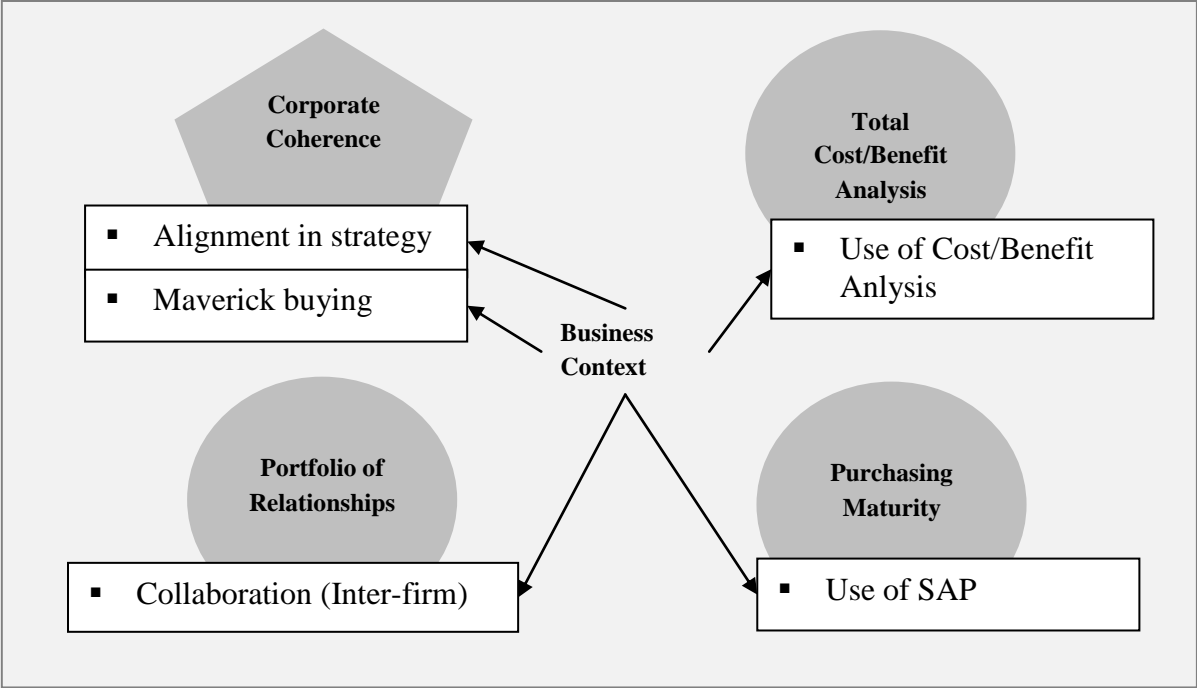


Figure 61: Link Between Corporate Coherence, Portfolio of Relationships, Total Cost/Benefit Analysis and Purchasing Maturity

### 14.2 Corporate Coherence and Purchasing Maturity

The two wheel elements, Corporate Coherence and Purchasing Maturity, are closely interrelated. This is shown by the relatedness between the factors underlying the two elements. Some of the related factors are in pairs, but links also exist between several factors. The links to be studied are: (1) use of SAP - standard procedures - information platform; (2) high usability threshold/lack of SAP knowledge - maverick buying; (3) training and development program - maverick buying; (4) limited status and visibility - maverick buying; and (5) reporting line - top-down fiat - strategic decision-making. This is illustrated in Fig. 62.

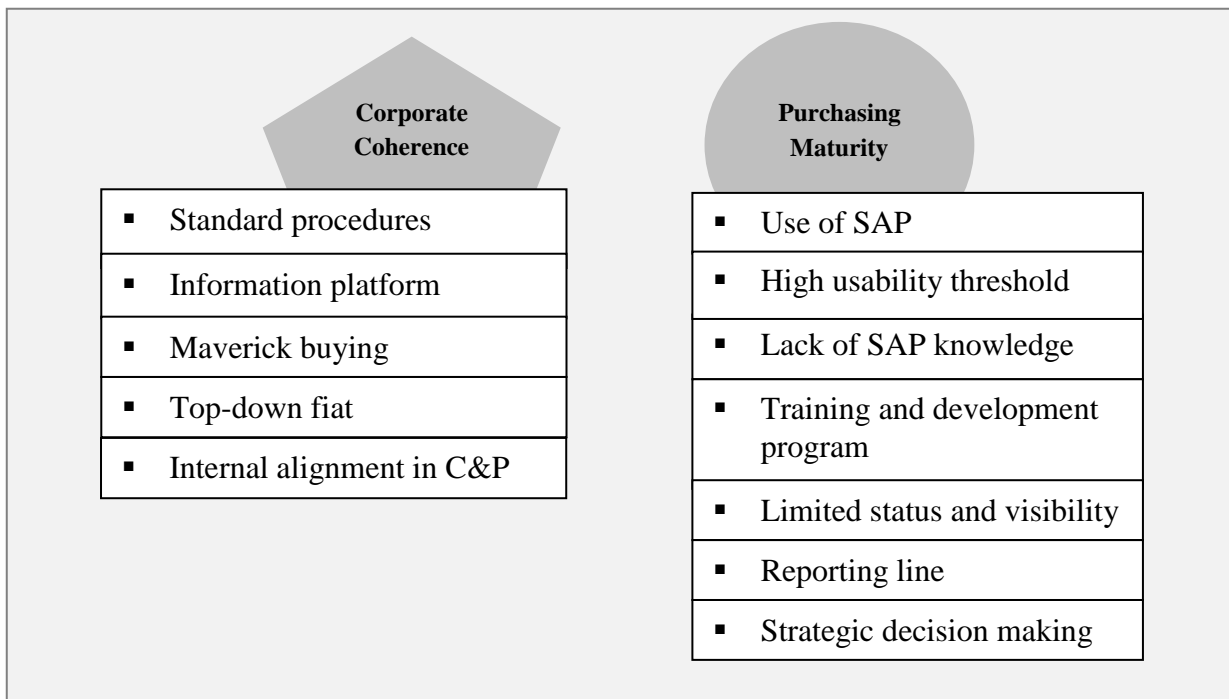


Figure 62: Corporate Coherence and Purchasing Maturity

#### 14.2.1 Use of SAP - Standard Procedures - Information Platform

SAP is a form of integrated, real-time information technology. It increases the degree of Purchasing Maturity and facilitates economies of information and learning through information sharing, but also economies of process through higher compatibility across the entire corporation. (13.3.3) This is because SAP also represents an information platform, aligning the company through common and standardized interfaces (13.2.2).

Use of SAP further enables a common way of working and availability of information (13.2.2), thereby accommodating compliance to standard procedures. The result is higher degree of Corporate Coherence and realization of the same two type of purchasing synergies, economies of information and learning and economies of process. In other words, use of SAP across the entire corporation creates a common information platform and facilitates following of standard procedures. The three factors: use of SAP, information platform and standard procedures are accordingly closely related.

#### 14.2.2 Reasons of Maverick Buying

Three factors underlying the wheel element Purchasing Maturity are identified as being related to, and possible reasons of, maverick buying. These factors, i.e. barriers are: high usability threshold/lack of SAP knowledge, limited status and visibility, and training and development program. For the matter of simplicity, they are introduced together under this subheading.

SAP is applied throughout the whole purchasing process. Yet, its user threshold remains high, which may decrease work efficiency, and even worse, cause incorrect work behavior. Lost efficiency represents unrealized potentials for economies of process. (13.3.3) Specifically,

technical personnel that place Notifications and Work Orders may not possess the requisite SAP knowledge (13.3.4). This may eventually lead to maverick buying, where employees unintentionally deviate from standard procedures (13.2.1.2). Accordingly, the combination of SAP's high usability threshold and lack of SAP knowledge explain the occurrence of unintentional maverick buying.

In other cases of maverick buying, personnel may be driven by self-interest or stick to old habits, referred to as causal maverick buying. This is often due to lack of organizational incentives to push towards using the preferred procedures (13.2.1.2). It is C&P's responsibility to play an educational role towards every employee in Upstream Norske Shell to ensure compliance to standard purchasing processes (13.3.2). However, no systematic training and development is currently given by C&P to guide towards correct work behaviors, which may lead to all three types of unrealized purchasing synergy (13.3.5). In this case, economies of scale are lost due to increased process costs and economies of process are unrealized because of inability to standardize.

Another possible source to causal maverick buying is that C&P enjoys limited status and visibility. Without sufficient standing among the other divisions in Upstream Norske Shell, C&P may struggle with fulfillment of playing an educational role. (13.3.2) The result is that minimizing maverick buying may not have made a priority, or employees may not see the total cost of ownership effect of not complying with set procedures. The consequence is lost economies of scale through negotiation power and latent potentials for economies of process through work efficiency. Accordingly, both lack of status and visibility, and training and development program can prove to be reasons to causal maverick buying.

In sum, the factors that explain occurrence of the different types of maverick buying result in the same consequences: unrealized economies of scale and economies of process. This is in accordance with the analysis of Corporate Coherence in section 13.2.

#### **14.2.3 Reporting Line - Top-down Fiat - Strategic Decision-making**

Since C&P is considered a support function in Upstream Norske Shell, its reporting line to the top management is not formalized. This suggests that C&P is likely not included in strategic and operational issues on a regular basis in Upstream Norske Shell (13.3.1). Possibilities for purchasing synergy creation are thus deprived.

The division mostly gets instructions from a global C&P organization, which, due to long hierarchical distance, can easily be felt like top-down fiat. Specifically, conflicts may arise if these instructions do not take into account local conditions, which may also lead to all three types of unrealized purchasing synergy. (13.2.1.3) In this way, lack of formalized reporting line to Upstream Norske Shell may have easier triggered the feeling of top-down fiat.

If C&P gains insufficient autonomy from the global C&P organization, its opportunities to decide upon its own matters will in turn be weakened. This may deprive C&P's possibilities to participate in strategic decision-making, and contribute to value creation within Upstream Norske Shell. In other words, top-down fiat may contribute negatively to strategic decision-making and thereby realization of purchasing synergies in general.

A chain of influence consequently connects the three factors. C&P's non-formalized reporting line gives rise to top-down fiat, which in turn negatively affects its ability for strategic decision-making. Both the three drivers themselves and the link between them lead to the same three types of unrealized purchasing synergy.

**14.2.4 Internal Alignment in C&P - Limited Status and Visibility**

Due to different reporting lines and priorities to comply with, the different employees in C&P do not always work in the same direction. This creates somewhat internal misalignment in C&P. (13.2.1.4) C&P may struggle with appearing as a coherent division, with clear agendas and areas of responsibility. In turn, this makes it more difficult for C&P to exercise its educational role and gain a higher degree of status and visibility. The rest of the organization will be unfamiliar with C&P's role and responsibilities, resulting in unrealized potentials for economies of information and learning through sharing know-how and economies of process through joint decision-making (13.3.2). C&P's limited status and visibility can consequently be seen in relation to the challenge of internal alignment in C&P.

**14.2.5 Summary**

Figure 63 summarizes the links between factors underlying Corporate Coherence and Purchasing Maturity. The direction of the links indicates how factors influence each other and thereby affect the creation of purchasing synergy. Based on the preceding discussion, three important conclusions can essentially be drawn. First, the use of SAP is crucial to company success, but it can also give rise to problems due to its high usability threshold. Second, several barriers may lead to maverick buying, showing the complexity of the issue. Third, C&P's importance to strategic decision-making is ultimately dependent on its reporting line.

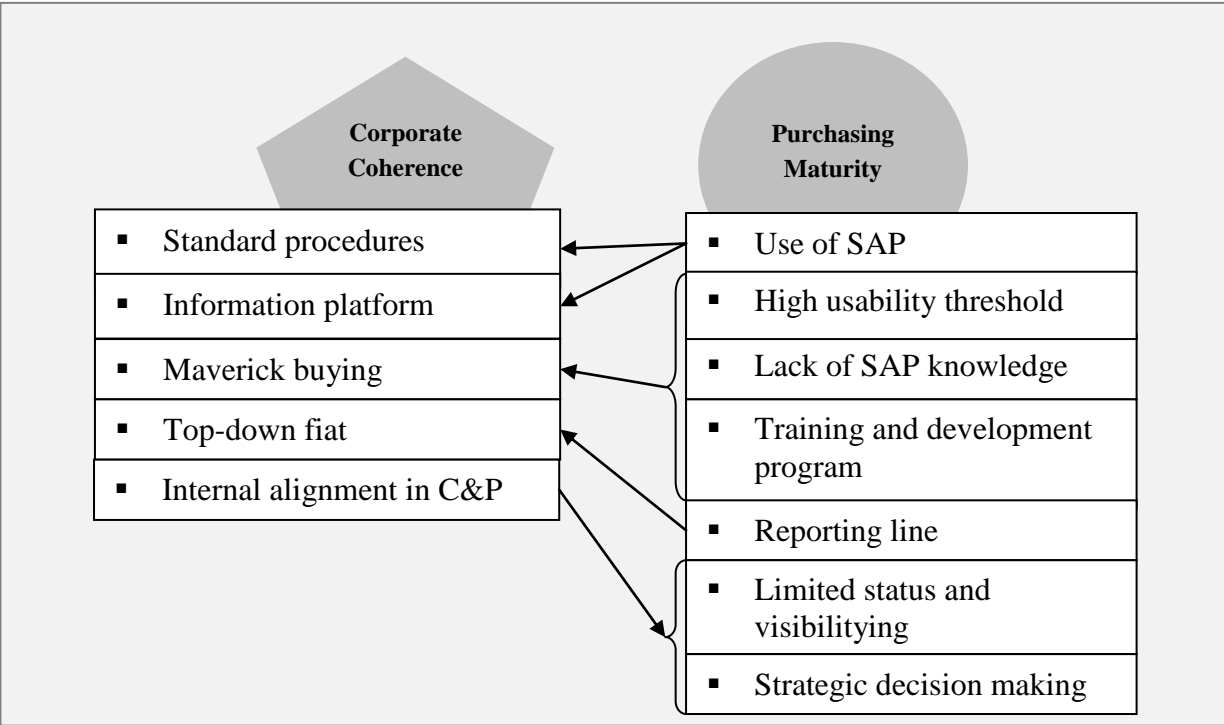


Figure 63: Link Between Corporate Coherence and Purchasing Maturity



### 14.3 Corporate Coherence and Performance Measures

The analysis of the factors measure performance accurately, influence behavior and develop purchasing, and communicate measures, underlying the wheel element Performance Measures, identified that the RtP related KPIs are not able to measure true performance. This malfunctioning can be seen in relation to two of the factors underlying the wheel element Corporate Coherence, namely maverick buying and top down fiat. This section will thus examine the links between Performance Measures and Corporate Coherence, illustrated in Fig. 64.

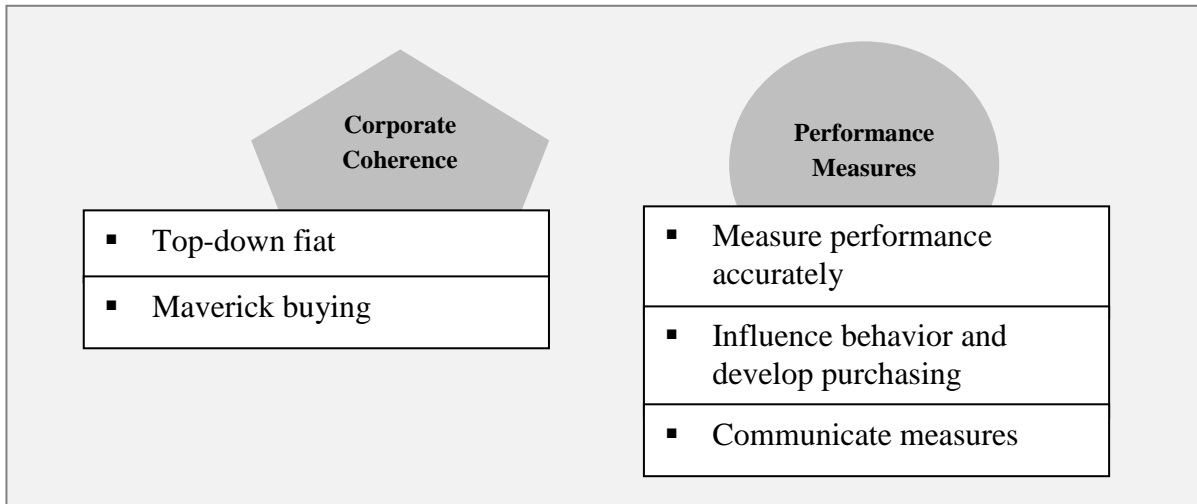


Figure 64: Corporate Coherence and Performance Measures

#### 14.3.1 Top-down Fiat - Maverick Buying – Factors in Performance Measures

This section will discuss the interrelatedness between maverick buying, top-down fiat, and the factors underlying Performance Measures: align measures, measure performance accurately, influence behavior and develop purchasing, and communicate measures.

In the RtP-process in Upstream Norske Shell, situations happens where original ROS is changed, materials are linked to wrong jobs, and several generic purchases are linked to the same generic number in one Work Order (13.5.2). This represents deviating behavior from the global, standard RtP-process, and can be classified as maverick buying.

The result of maverick buying is that scores on the three RtP KPIs, which are based on the correctly designed RtP-process, are measured incorrectly. In this way, maverick buying causes the RtP KPIs in Upstream Norske Shell unable to measure true performance. This represents unrealized potentials for economies of process through gained process knowledge. Consequently, maverick buying affects the scores of the KPIs negatively, and thereby the accuracy of the KPIs. As a result, the KPI will not be able to influence behavior or develop purchasing. Maverick buying thus also affects this factor negatively.

On the other hand, wrong KPIs make it difficult for Upstream Norske Shell to focus on and use the KPIs to minimize maverick buying. This shows that the two factor, maverick buying and influence behavior and develop purchasing, affect each other, and that this link is

bidirectional. Furthermore, communicating the measures raises the employees' awareness and the company's focus on the KPIs (13.5.2). This entails that how well the measures are communicated influences the amount of maverick buying in Upstream Norske Shell.

Accordingly, maverick buying in this case describes misalignment between the RtP practice in Upstream Norske Shell and the globally designed KPIs. This can have many possible explanations. One likely reason may be top-down fiat, a factor underlying the wheel element Corporate Coherence. Top-down fiat is a result of the long hierarchical distance between Global Shell and Upstream Norske Shell (13.2.1.3). Because of top-down fiat, the KPIs may not be adjusted to local conditions, including the RtP-practice of Upstream Norske Shell. In this way, top-down fiat may cause unintentional or involuntary maverick buying.

**14.3.2 Summary**

Figure 65 summarizes the links between the factors underlying Corporate Coherence and Performance Measures. From the preceding discussion, it is evident that the factors maverick buying, tow-down fiat and the factors underlying Performance Measures are interconnected. The RtP related KPIs does not function as intended because of the existence of maverick buying. However, the main cause might be top-down fiat: with a long distance to Global Shell, the KPIs might not be adapted to local circumstances.

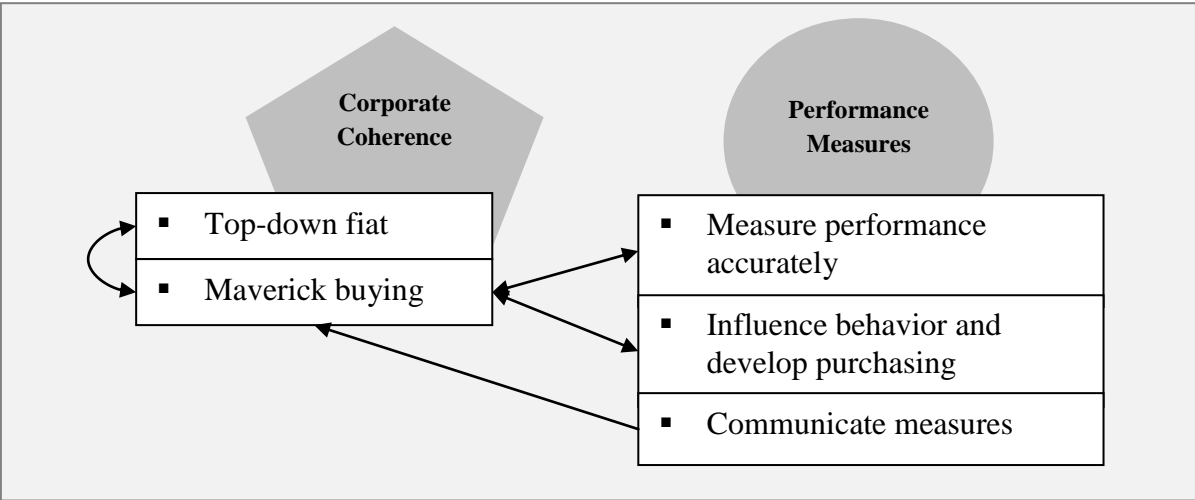


Figure 65: Link Between Corporate Coherence and Performance Measures

**14.4 Corporate Coherence and Total Cost/Benefit Analysis**

Upstream Norske Shell uses cost/benefit tools and analyses in the RtP-process and CMCP, as well as in the evaluations related to contract segmentation (13.6). In this way, all three types of purchasing synergies can be realized, depending on the particular cost/benefit decision.

The working instructions describing the use of cost/benefit analyses are stated in standard procedures, which realizes all three types of purchasing synergies by facilitating a common way of working, sharing of information and knowledge, and cost reduction. In order to realize these purchasing synergies, cost/benefit analyses have to be used (13.2.1.1). In this case, using

the cost/benefit analysis thus facilitates the creation of the same purchasing synergies as by following standard procedures.

As illustrated in Fig. 66, there is a bidirectional link between the factor standard procedures underlying the wheel element Corporate Coherence and the factor use of cost/benefit tools underlying Total Cost/Benefit Analysis. This link illustrates the importance of following standard procedures, seeing it as a source to all three types of purchasing synergies.

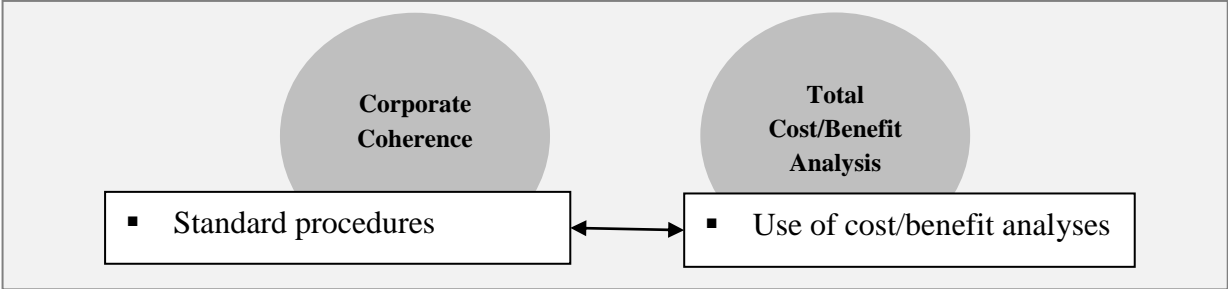
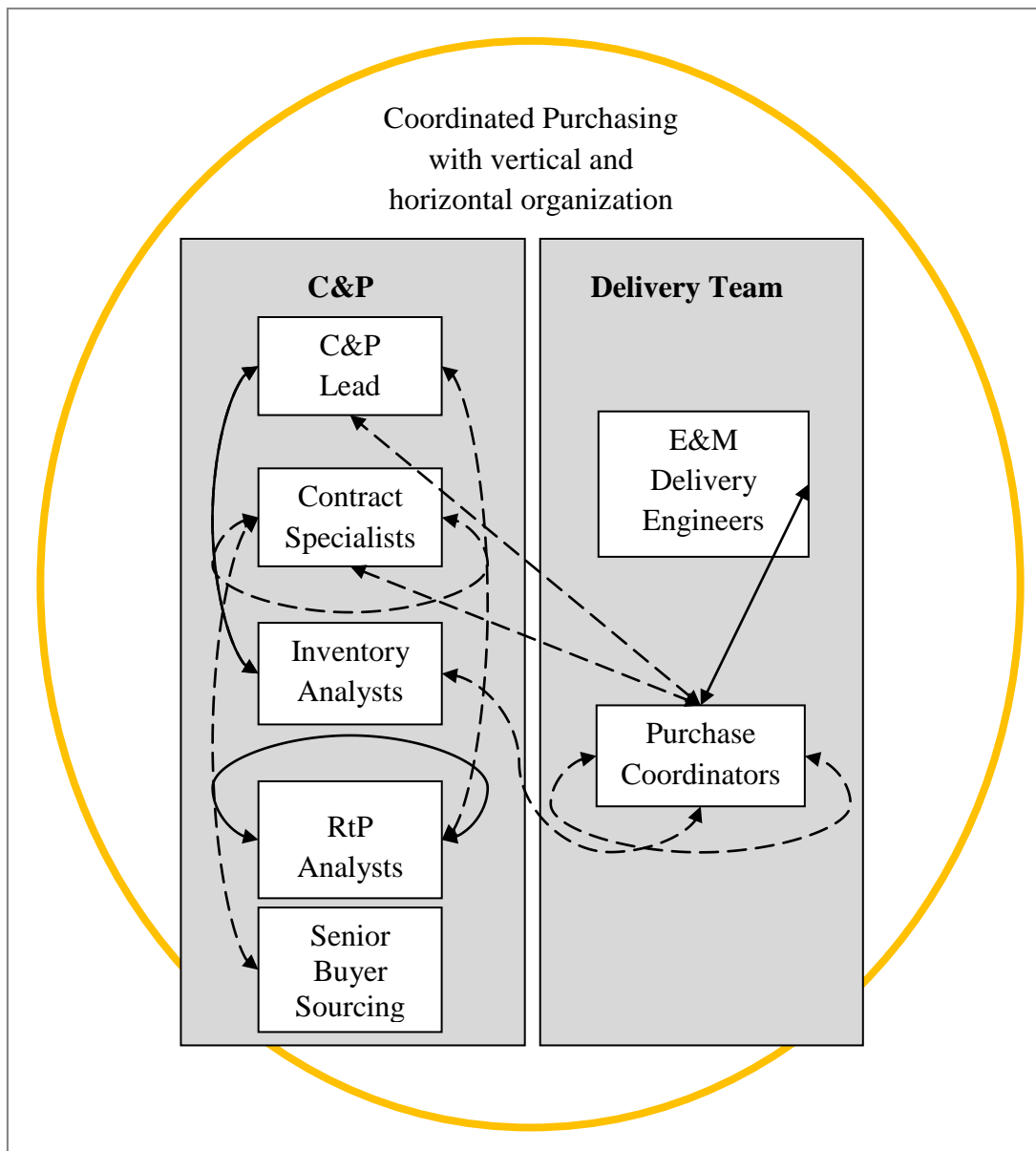


Figure 66: Link Between Corporate Coherence and Total Cost/Benefit Analysis

### 14.5 Organizational Structure and Portfolio of Relationships

The organizational structure of purchasing in Upstream Norske Shell is characterized as coordinated purchasing with vertical and horizontal features, comprising both C&P and Delivery Team (13.4.3). As shown by Fig. 67, different intra-firm relationships, both within and between C&P and Delivery Team, exist in the structure coordinated purchasing. These relationships are between: C&P Lead and Inventory Analysts, C&P Lead and RtP Analysts, Contract Specialists, RtP Analysts, Contract Specialists and Senior Buyer Sourcing, Purchase Coordinators, C&P Lead and Purchase Coordinators, Contract Specialists and Purchase Coordinators, Inventory Analysts and Purchase Coordinators, and E&M Delivery Engineers and Purchase Coordinators.



**Figure 67: Intra-firm Relationships Within Coordinated Purchasing**

This section studies the links between the different factors underlying the two wheel elements: Organizational Structure (coordinated purchasing, horizontal specialization, vertical specialization) and Portfolio of Relationships (collaboration and lack of collaboration). This is illustrated in Fig. 68. The analysis focuses on how the organizational structure affects the different relationships within the organization, and the implications for purchasing synergies realization.

First, the links between the organizational characteristics of C&P and the intra-firm relationships within C&P are analyzed. The links between the organization of Delivery Team and its relationships are then discussed. Finally, the links between the organization of C&P and Delivery Team, and the relationships across the two divisions are analyzed. Together, this describes the interconnectedness between the wheel element Organizational Structure and Portfolio of Relationships.

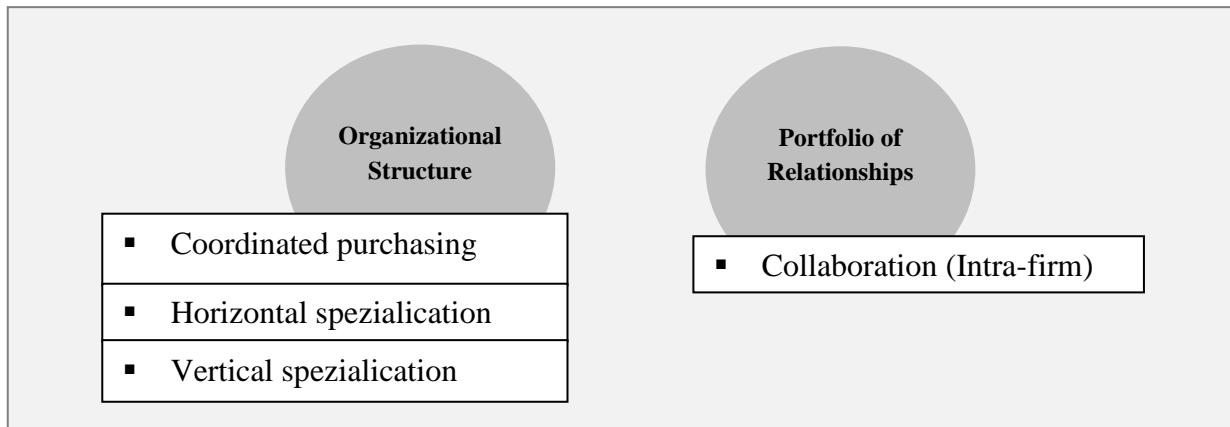


Figure 68: Organizational Structure and Portfolio of Relationships

### 14.5.1 C&P

Within coordinated purchasing, C&P is the corporate coordinator responsible for making central policies, ensuring coordination, and negotiate contract terms and conditions (13.4.1). The intra-firm relationships internally in C&P are: (1) C&P Lead and Inventory Analysts; Contract Specialists; (2) Contract Specialists and Senior Buyer Sourcing; (3) RtP Analysts; and (4) RtP Analysts and C&P Lead (Fig.57; 13.7). Some purchasing synergies are created within the corporate coordinator and the intra-firm relationships it comprises. Collaboration between C&P Lead and Inventory Analysts, and between RtP Analysts, creates economies of information and learning.

Although high levels of cooperation on shared responsibilities between the employees comprising the corporate coordinator would be preferable, C&P is, however, a functional silo. This vertical specialization structure prevents realization of purchasing synergies internally in C&P. (13.4.1) There are thus lots of unrealized potentials for economies of information and learning and process in the relationships in C&P. A lack of collaboration between the Contract Specialists, Contract Specialists and Senior Buyer Sourcing and RtP Analysts and C&P Lead represent significant unrealized potentials for economies of information and learning and process (13.7.1).

Consequently, the vertical organization part of the coordinated purchasing structure affects the relationship factor: collaboration. This structure thereby affects the level of purchasing synergies realized in the different intra-firm relationships internally in C&P. This means that the same outcome of realized and unrealized purchasing synergies from the structure, can be found in the different relationships.

### 14.5.2 Delivery Team

In the joint, cross-functional purchasing teams within Delivery Team, E&M Delivery Engineers and Purchase Coordinators are responsible for subsequent stages of the RtP-process. This constitutes a horizontal specialization organization. (13.4.2) Collaboration between the Purchase Coordinators and E&M Delivery Engineers creates economies of information and learning and process: knowledge and information sharing, and common ways of working (13.4.2; 13.7.1.7).

However, there are unrealized economies of information and learning and process between the two Purchase Coordinators that essentially have the same job description. The reason may be that they are placed in two separate purchasing teams. (13.4.2; 13.7.1.4). Accordingly, the horizontal organization part of the coordinated purchasing structure affects the relationship factor: collaboration. The structure thereby affects where and which purchasing synergies that are realized in the different intra-firm relationships internally in the Delivery Team, and the same purchasing synergies are analyzed in both the structure and the relationships.

#### **14.5.3 Between C&P and Delivery Team**

C&P and Delivery team both belong to the coordinated purchasing structure (Fig. 68). With respect to the buying center roles, both C&P and Delivery Team include influencers, deciders, buyers and gatekeepers, but on different aspects (13.7.1). As previously stated, C&P is the corporate coordinator with vertical features, and Delivery Team consists of joint, cross-functional purchasing teams with horizontal features.

Three intra-firm interaction lines between the vertical and horizontal parts of the organization, i.e. Purchase Coordinators and C&P, are analyzed in 13.7.1: (1) C&P Lead and Purchase Coordinators; (2) Contract Specialists and Purchase Coordinators; and (3) Inventory Analysts and Purchase Coordinators. The links between the factors underlying Organizational Structure and Portfolio of Relationships related to the relationships across C&P and Delivery Team will now be analyzed.

There is no mechanism facilitating collaboration between the vertical part and the horizontal part of the organizational structure, i.e. Purchase Coordinators and C&P. This leads to several unrealized purchasing synergies in the three different relationships across the two divisions. The non-existence of a formal reporting line from Purchase Coordinators to C&P Lead represents lack of collaboration (13.4.2; 13.7.1.3). No purchasing training is given to the Purchase Coordinators and no information and experience sharing exists between them, i.e. unrealized economies of information and learning and economies of process (13.7.1.4).

Furthermore, the lack of collaboration between the Purchase Coordinators and Contract Specialists on their interconnected work with contracts leads to unrealized economies of information and learning and process (13.7.1.10). Lastly, a lack of collaboration between Purchase Coordinators and Inventory Analysts represents unrealized potentials for economies of information and learning and process. (13.7.1.5)

Consequently, it can be shown that the separation between the vertical organization part and the horizontal organization part of the coordinated purchasing structure affects the relationship factor: collaboration. The structure thus affects the level of purchasing synergies realized in the different intra-firm relationships between Purchase Coordinators in Delivery Team and C&P, and the same synergies revealed in the analysis of the structure are found in the different relationships.

#### **14.5.4 Summary**

In conclusion, the coordinated purchasing structure in Upstream Norske Shell, with horizontal and vertical features, both facilitates and inhibits realization of purchasing synergies. In

13.7.1, and in the preceding analysis, the very same realized and unrealized purchasing synergies are identified in the different intra-firm relationships. The underlying factors in the elements Organizational Structure and Portfolio of Relationships are thus connected as illustrated by the arrows in Fig. 69 below. Consequently, the organizational structure of purchasing if Upstream Norske Shell is the main facilitator of which purchasing synergies that exist in the intra-firm relationships internally in C&P, and between the C&P organization and Purchase Coordinators.

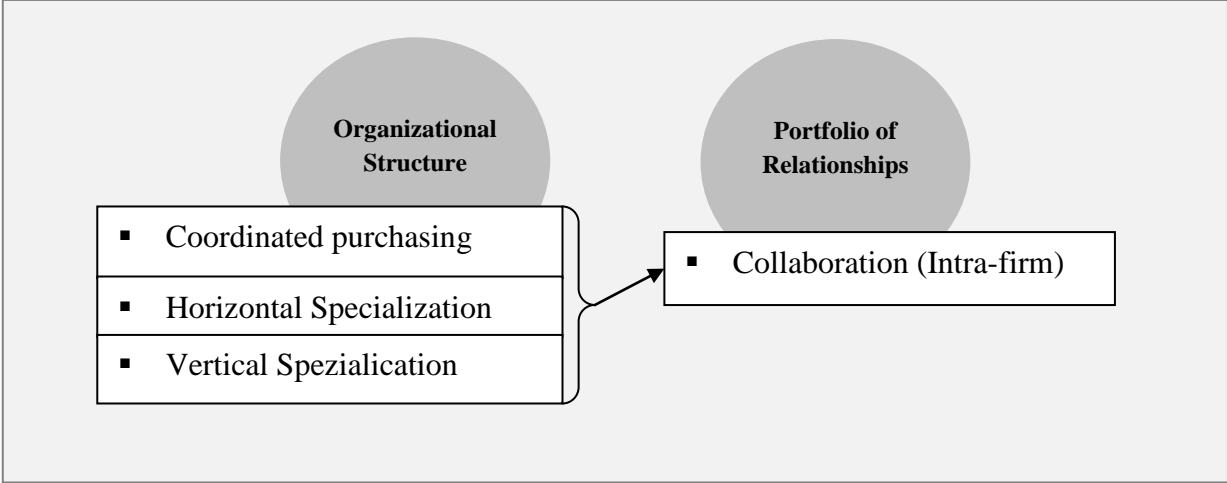


Figure 69: Link Between Organizational Structure and Portfolio of Relationships

**14.6 Corporate Coherence and Portfolio of Relationships**

The analysis of the C&P organization in the two wheel elements Portfolio of Relationships and Corporate Coherence are linked together. This interconnectedness can be shown in the links between the underlying factors: internal alignment in C&P (Corporate Coherence) and collaboration (Portfolio of Relationships) (Fig. 70).

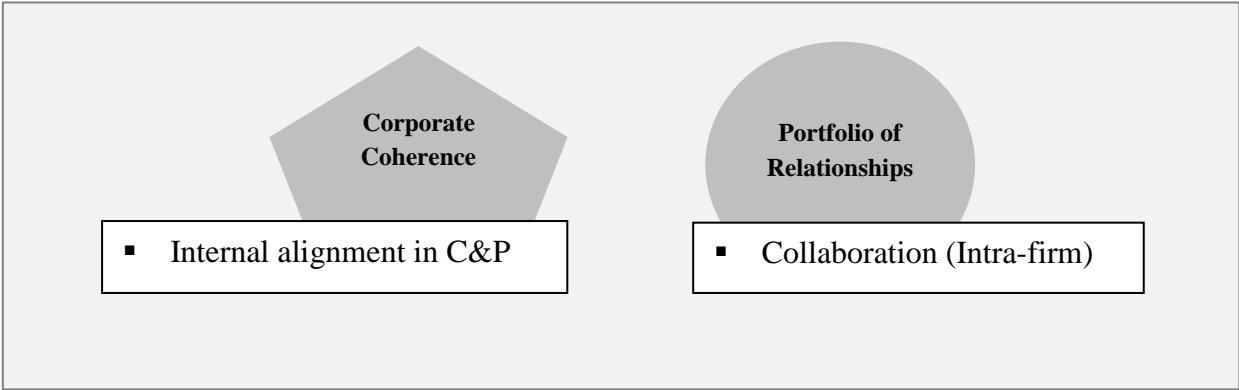


Figure 70: Corporate Coherence and Portfolio of Relationships

C&P comprises the three following intra-firm relationships: (1) C&P Lead and Inventory Analysts; (2) Contract Specialists; (3) Contract Specialists and Senior Buyer Sourcing; (4) RtP Analysts; and (5) RtP Analysts and C&P Lead (Fig. 58 in 13.7.1.16). The Inventory Analysts, Senior Buyer Sourcing and RtP Specialists report to a leader in Global Shell, while the Contract Specialists report to C&P Lead (13.7.1). They all have different responsibilities, budgets and priorities to comply with (13.2.1.4). This may result in little cooperation between

them, and that they may not always work in the same direction or be aligned on issues defying their own scope of work (13.7.1; 13.2.1.4).

Conversely, the internal alignment challenges in C&P may stem from lack of cooperation. Unrealized potentials for economies of information and learning, and process in the intra-firm relationships consequently exist within C&P (13.7.1). In this way, the underlying factors of the two elements affect each other, and together they affect the possibilities for purchasing synergy realization. This gives that the links are bidirectional. Figure 71 summarizes the links between factors underlying Corporate Coherence and Portfolio of Relationships, indicating with arrows how the factors influence each other.

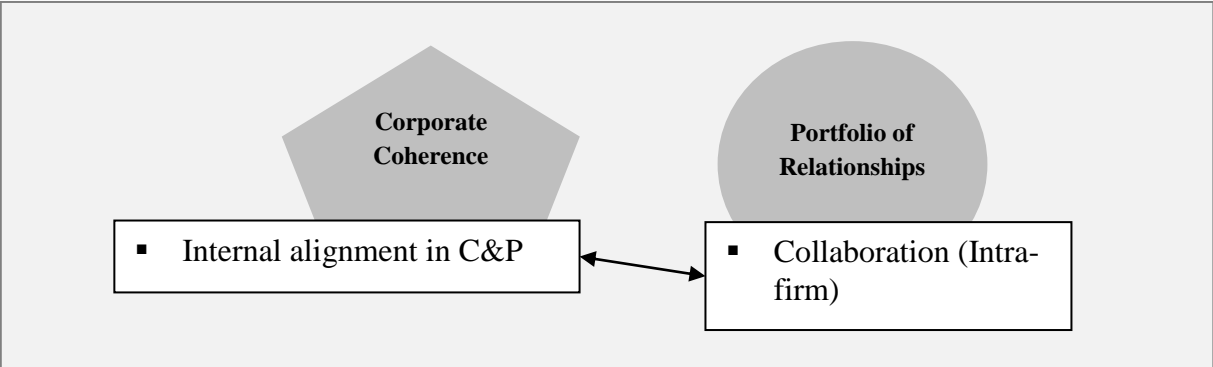


Figure 71: Link Between Corporate Coherence and Portfolio of Relationships

### 14.7 Purchasing Maturity and Portfolio of Relationships

The factor underlying Purchasing Maturity, professionalism towards supplier, and the factor underlying the inter-firm relationships in Portfolio of Relationships, collaboration, are connected. This connection will now be discussed.

Upstream Norske Shell exhibits significant degree of professionalism towards suppliers, and is, by suppliers, perceived as a demanding and professional customer (13.3.7). Buyer-supplier collaborations exist between the same suppliers and E&M Delivery Engineers, Contract Specialists and C&P Lead. A single supplier may deal with several contact points (13.7.2; 13.3.7). When more inter-firm relationships exist between several divisions and the same suppliers, all three forms of purchasing synergies can be created several places in Upstream Norske Shell. This may result in positive corporate effects like increased competitive advantage for the company.

However, failure to show one line of conduct leaves an unprofessional impression with the suppliers and represents unrealized potentials for purchasing synergies (13.3.7). This may happen if the same contact points in Upstream Norske Shell discuss the same aspects with the suppliers, e.g. negotiate on price, or in case of maverick buying where the outcome is negative for the supplier, e.g. long payment delays from Upstream Norske Shell.

In conclusion, professionalism towards supplier, and buyer-supplier collaboration are interconnected. It is mainly the characteristics of the buyer-supplier collaboration that affect the professionalism towards supplier, as illustrated by the arrow in Fig. 72. Several inter-firm



relationships and contact points may lead to an unprofessional supplier impression, but it may also increase the amount of realized purchasing synergy in the relationships.

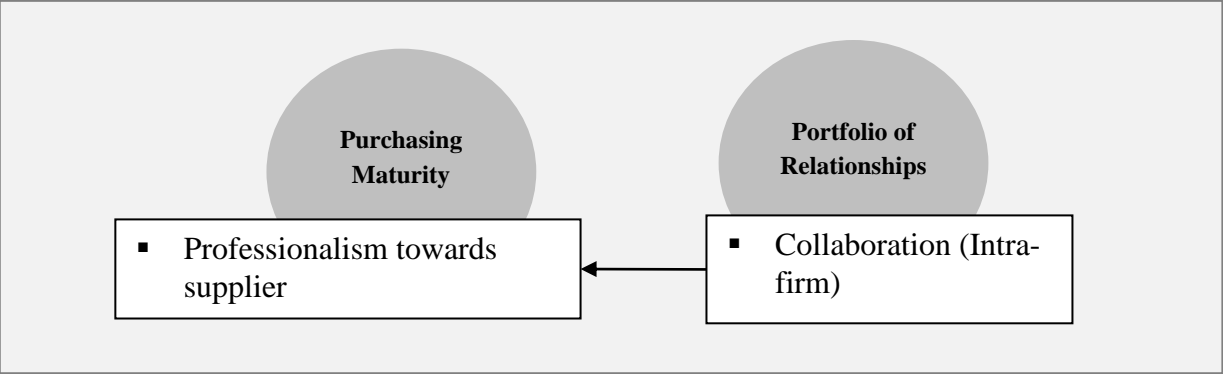


Figure 72: Link Between Purchasing Maturity and Portfolio of Relationships

**14.8 Corporate Coherence, Purchasing Maturity, Organizational Structure and Portfolio of Relationships: Coordination between C&P and Delivery Team**

Since C&P and Delivery Team both are involved in and responsible for the purchasing process, coordination and alignment between the two divisions are considered essential. Several wheel elements deal with this matter. Accordingly, it is important to understand how the wheel elements and its underlying factors interact with each other.

In particular, the related factors and their corresponding wheel elements are: coordinated purchasing (Organizational Structure) - alignment between C&P and Delivery Team (Corporate Coherence) - inter-firm relationships collaboration (Portfolio of Relationships) - processing capacity/training and development program (Purchasing Maturity). This somewhat complex link is illustrated in Fig. 73.

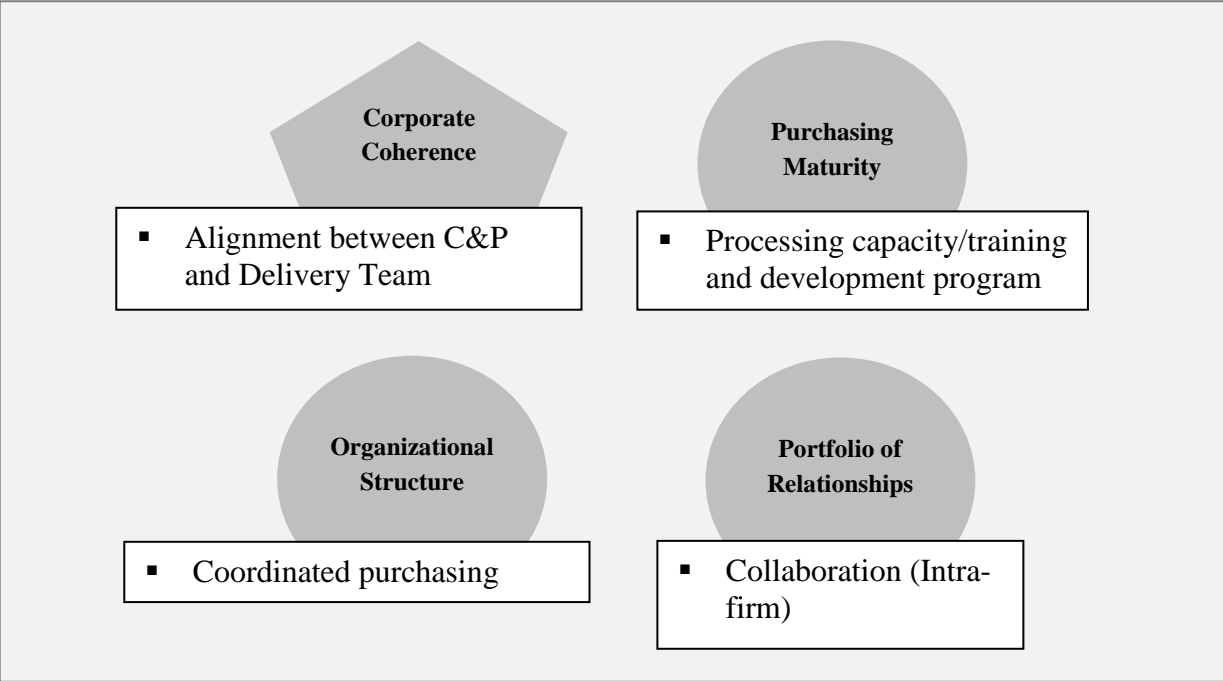


Figure 73: Corporate Coherence, Purchasing Maturity, Organizational Structure and Portfolio of Relationships

Coordination and alignment between C&P and Delivery Team necessitate communication and interaction. However, the analysis of Portfolio of Relationships revealed that the communication lines between the two divisions are either lacking or missing (13.7.1). This includes several interactions, not only between the leaders of the two divisions, but also between other employees: (1) C&P Lead and Purchase Coordinators; (2) Inventory Analysts and Purchase Coordinators; and (3) Contract Specialists and Purchase Coordinators (13.7.1). As a result, coordination and alignment between the two divisions is impeded by the lack of collaboration between the involved parties. The consequence is unrealized potentials for all three types of purchasing synergy.

Furthermore, being a joint purchasing team in a coordinated purchasing structure, Delivery Team should report to both a corporate purchasing coordinator (C&P) and a business manager (Delivery Team Lead). However, there is no formalized reporting line between Delivery Team and C&P. (13.4.2) This can negatively affect the alignment in strategy between Delivery Team and C&P, which represents unrealized potentials for both economies of information and learning and economies of process (13.2.1.5). In other words, the incomplete collaboration mechanism in the coordinated purchasing structure makes it difficult to align focuses and priorities between C&P and Delivery Team.

Insufficient communication and alignment in strategy between the two divisions both represent challenges to Purchasing Maturity. This can materialize in several ways. One negative consequence may be the role of Purchase Coordinators that becomes processing capacities. An explanation is the difference in focus and priorities between C&P and Delivery Team (13.2.1.5). This is further amplified by the lack of communication and cooperation between the C&P Lead and the Delivery Team Lead on how to best put the Purchase Coordinators in use (13.7.1.1).

Moreover, no communication platform facilitates sharing know-how between the Purchase Coordinators and the Inventory Analysts and Contract Specialists (13.7.1.5). Altogether, the possibilities for the Purchase Coordinators to act as control functions and perform strategic tasks are deprived, resulting in latent purchasing synergy potentials.

Another possible outcome of missing communication line and alignment in strategy are the lack of focus on joint training and development between C&P and Delivery Team. Both C&P and Delivery Team experience challenges with respect to insufficient knowledge. C&P employees lack technical skills that E&M Delivery Engineers possess, while E&M Delivery Engineers may not always be familiar with SAP-operations in the RtP-process (13.3.4). Nevertheless, no joint training and development efforts happen today on a regular basis (13.3.5), likely because the need is not being properly addressed by any parties. Lack of focus on training and development cause unrealized potentials for all three types of purchasing synergy.

In conclusion, the coordination between C&P and Delivery Team is somewhat unsatisfactory. The reason may be the lacking collaboration between the two divisions, and the missing coordination mechanism in the coordinated purchasing structure of Upstream Norske Shell. In turn, these factors negatively affect the alignment in focus and priorities between C&P and

Delivery Team. The end result represents challenges to Purchasing Maturity. In particular, Purchase Coordinators become processing capacities and the two divisions lack focus on joint training and development. Figure 74 summarizes the links between the factors.

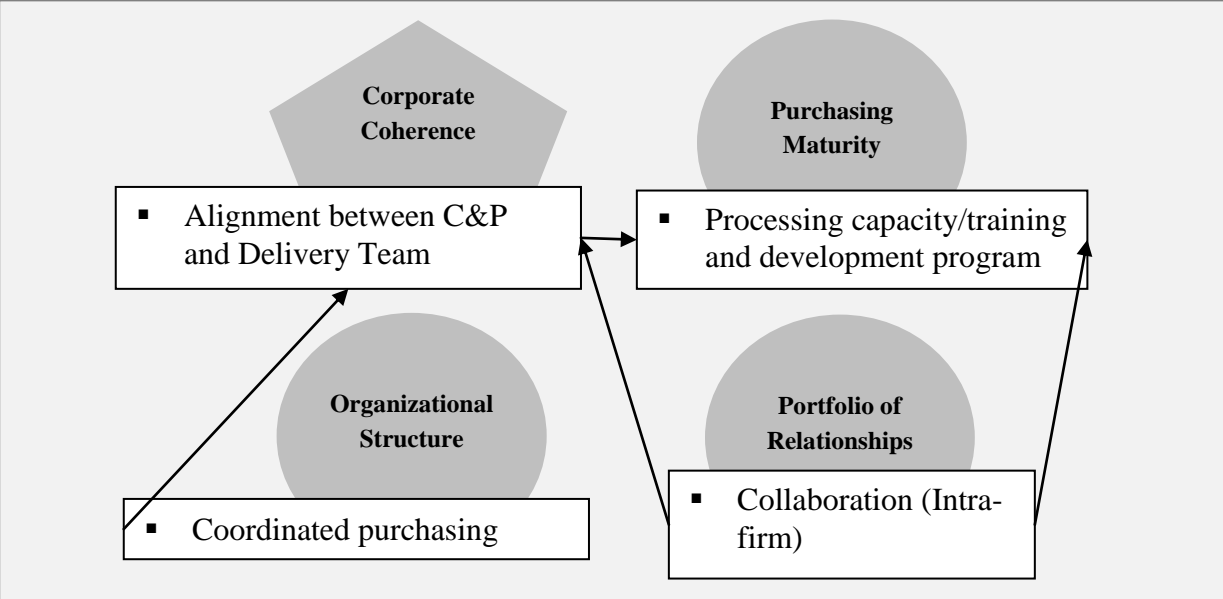


Figure 74: Link Between Corporate Coherence, Purchasing Maturity, Organizational Structure and Portfolio of Relationships

**14.9 Summary**

In conclusion, Fig. 75 summarizes the eight overall links between the wheel elements identified in the aforementioned analyses. This gives a more in-depth explanation of why certain purchasing synergies are realized and others not. Each of the overall links is illustrated with an individual color, and includes two or several elements. The links are either one-directional or bidirectional, in which the arrows either points in one direction or both. Furthermore, several links can be drawn between the very same elements. In Part 5, the findings will be discussed and concluded upon.

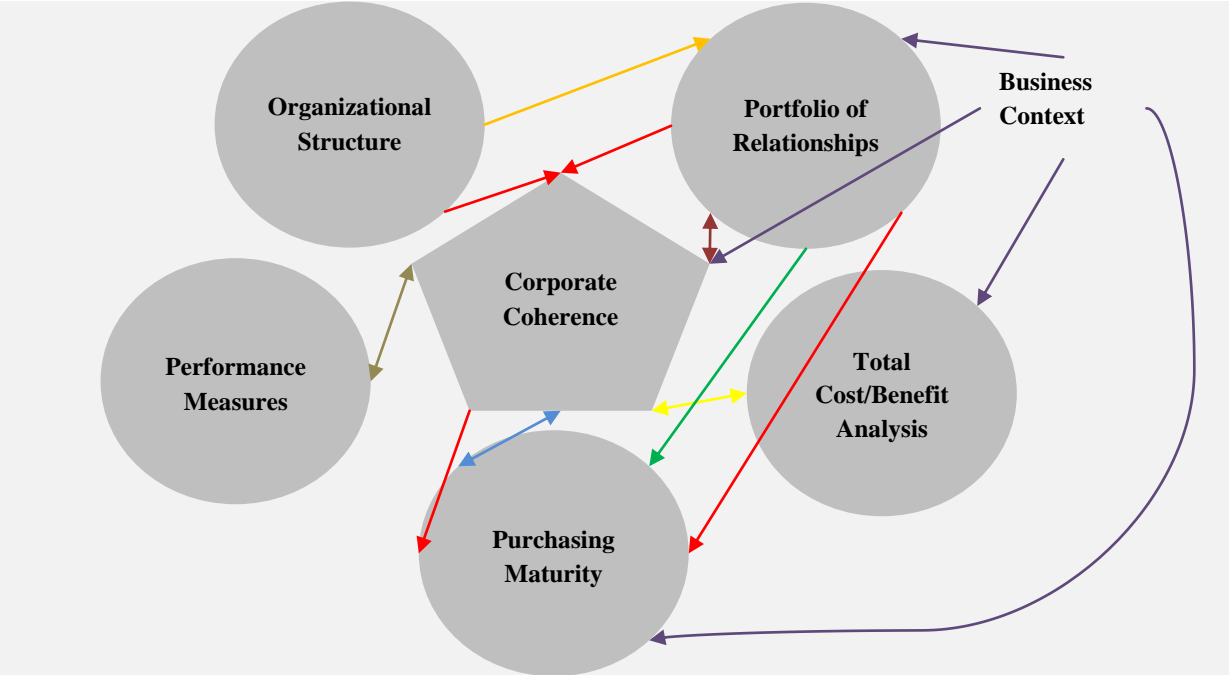


Figure 75: Overview of Links Between Elements

## **15.Challenges and Recommendations**

### **15.1 Challenges**

The Purchasing Synergy Management Wheel has been applied as a diagnostic tool to Upstream Norske Shell in order to identify factors that lead to realized purchasing synergies and unrealized purchasing synergy potentials. First, each wheel element has been analyzed separately, identifying the underlying factors, i.e. drivers and barriers, for realized and unrealized purchasing synergies (13). Next, in line with the core philosophy of the Purchasing Synergy Management Wheel, the alignment between the different wheel elements and how they affect each other were analyzed (14).

The unrealized purchasing synergy potentials identified in the separate wheel elements, and in their eventual misalignment, are considered *challenges* to the realization of purchasing synergies. Based on the preceding analysis, six main challenges are recognized: (1) organizational structure of purchasing; (2) internal alignment and collaboration in C&P; (3) status and visibility of C&P; (4) coordination between C&P and Delivery Team; (5) maverick buying; and (6) RtP-related KPIs. First, the parts of the analysis that identify each challenge are pointed out, followed by an elaboration of each challenge. The origins and implications of the challenge are then outlined if possible.

#### **15.1.1 Organizational Structure of Purchasing**

The organizational structure of purchasing in Upstream Norske Shell is considered a challenge based on the analysis of the wheel element Organizational Structure (13.4) and Portfolio of Relationships (13.7), and the analysis of the link between Organizational Structure and Portfolio of Relationships (14.5). Specifically, these analyses identify the organizational structure factors (coordinated purchasing, vertical specialization and horizontal specialization) as inhibitors to the realization of purchasing synergies in and between the relationships comprising C&P and Delivery Team.

The challenge might best be explained by looking at the conclusions from the three analyses. The isolated discussion in the wheel element analysis in 13.4 identifies the structure itself as creating unrealized potentials for economies of information and learning and economies of process. In the discussion of Portfolio of Relationships in 13.7, the analysis of the different employee interactions in the coordinated purchasing structure shows the same unrealized potentials for information and learning and process. The link between Organizational Structure and Portfolio of Relationship (14.5) thus finds that the structure is the cause of the unrealized potentials for economies of information and learning and process in the relationships in and between C&P and Delivery Team.

Consequently, for the different employee interactions in and between C&P and Delivery Team, the main implications of the existing coordinated purchasing structure are: a lack of internal collaboration in C&P, lack of collaboration between the Purchase Coordinators in Delivery Team and lack of collaboration between C&P and Delivery Team. Following this line of reasoning, it may be argued that the coordinated purchasing structure of Upstream Norske Shell does not facilitate the necessary level of collaboration between the employees in

C&P and Delivery Team. Changes in the structure would make Upstream Norske Shell capable of realizing the purchasing synergy potentials therein.

### **15.1.2 Internal Coordination in C&P**

*Internal coordination in C&P* is recognized as a challenge based on the preceding analysis regarding: (1) the wheel element Portfolio of Relationships (13.7); and (2) the link between Corporate Coherence and Portfolio of Relationships (14.5). Specifically, the link and thereby challenge concerns relatedness between the following factors: internal alignment in C&P and intra-firm relationships collaboration.

The challenge consists of two aspects: *alignment* and *collaboration*. Alignment refers to how the tasks and responsibilities are coordinated internally in C&P. When goals and priorities of the different employees are conflicting, misalignment arises. Collaboration encompasses all the characteristics of the relationships between the C&P professionals: information and knowledge sharing and communication.

Origin to the challenge of internal alignment and collaboration in C&P are twofold. First, the different employees in C&P do not report to the same leader. The Contract Specialist report to C&P Lead, while Inventory Analysts, Senior Buyer Sourcing and RtP Specialist report to different leaders globally. This leads to differences in focus and priorities and thereby danger of misalignment. Lack of understanding of each other's focus further negatively affects collaboration in terms of information and knowledge sharing and communication.

The other explanation, however, stems from a lack of cooperation-climate in C&P in general, irrespective of difference in reporting lines. Despite reporting to the same leader and performing the same tasks, the interaction between the Contract Specialists is relatively low. They have individual tasks and work mostly independently. None of the employees actively share know-how about how they conduct their work, challenges they are facing, and information about suppliers and markets. This makes it even more difficult to establish a coherent working style in C&P.

### **15.1.3 Status and Visibility of C&P**

*C&P's status and visibility* is identified as a challenge based on the following parts of the analysis: (1) wheel element Purchasing Maturity (13.3.1; 13.3.2); and (2) the link between Corporate Coherence and Purchasing Maturity (14.2.3; 14.2.4). The challenge concerns the following factors that might lead to unrealized purchasing synergies: reporting lines, internal alignment in C&P, lack of status and visibility and strategic decision making.

The challenge concerning the status and visibility of C&P is related to the organizational perception of C&P, i.e. how well C&P is able to exercise its educational role with regards to purchasing, and to what degree it is recognized as a vital function in Upstream Norske Shell. Limited status and visibility result in lost opportunities for the sharing of know-how and participation in joint decision-making, representing unrealized potentials for economies of information and learning and economies of process.

There are two possible explanations for the origin of this challenge. One of them is related to internal alignment in C&P. Due to internal differences in focus and priorities, C&P may struggle with exercising its educational role and presenting itself as a coherent division to the rest of the organization. The rest of the organization will consequently be less familiar with C&P's purposes and agendas, depriving it of status and visibility.

Moreover, C&P's status and visibility is affected by the division's reporting line to the larger organization of Shell. The division is considered a support function in Upstream Norske Shell's matrix organization. It has no formalized reporting line to the top management in Upstream Norske Shell surrounding the Operation Manager Norway. This reduces C&P's status and visibility and makes it more challenging to create awareness of C&P among the employees in rest of the organization.

The implication of this challenge is a deprivation of possibilities for C&P to participate in strategic decision-making on a regular basis. Low status and visibility means that C&P is likely not recognized as an important contributor to value creation in Upstream Norske Shell. Its opportunities for sharing knowledge and decision-making in its own matters may be weakened, resulting in all three forms of unrealized purchasing synergy.

#### **15.1.4 Coordination Between C&P and Delivery Team**

The identification of coordination between C&P and Delivery Team as a key challenge is based on section 14.8, which shows the relation between four of the wheel elements and several of their underlying factors. More precisely, this complex link deals with the coordination between these two divisions. Other aspects concerning this challenge are the link between professionalism towards suppliers (Purchasing Maturity) and inter-firm relationships collaboration (Portfolio of Relationships) described in section 14.7.

The challenge of coordination deals essentially with *alignment* and *collaboration* between C&P and Delivery Team. Alignment refers to how the tasks and responsibilities are coordinated across the two divisions. When goals and priorities conflict, misalignment arises. Collaboration encompasses all the characteristics of the relationships between the employees involved: information and knowledge sharing and communication. In sum, coordination between the two divisions influences the creation of all three forms of purchasing synergy.

Section 14.8 outlines the origins of this challenge. Coordination between C&P and Delivery Team is somewhat unsatisfactory for two main reasons. The first is related to missing lines of communication between the employees in the two divisions. The second concerns the incomplete coordination mechanism in the coordinated purchasing structure of Upstream Norske Shell.

Lack of coordination between the two divisions has several implications. Two are mentioned in section 14.8. The first implication is related to utilization of the role of Purchase Coordinators optimally. This proves to be difficult since a formal communication line between Delivery Team Lead and C&P Lead is missing, as well as between the Purchase Coordinators and C&P Lead. Low degree of coordination also makes it difficult for the

Purchase Coordinators to execute the strategic control function; instead, they function similar to processing capacities.

Moreover, lack of coordination means no joint training and development between C&P and the Delivery Team. For this reason, the employees are unable to share knowledge and learn from each other. Delivery Team is prevented from gaining expertise on strategic issues regarding CMCP and RtP. C&P, on the other hand, misses an opportunity to acquire more technical skills and information about day-to-day purchasing activities.

Last but not least, coordination between C&P and Delivery Team affects Upstream Norske Shell's professionalism in supplier relations. That is, how the buyer-supplier relationships are handled from the side of C&P and Delivery Team (seeing as both divisions are engaged in supplier contact). If several roles discuss the same aspects with suppliers or engage in price negotiation, the result is a failure to show one line of conduct.

#### **15.1.5 Maverick Buying**

The challenge of maverick buying is identified from the interrelatedness between the following wheel elements: (1) Corporate Coherence and Performance Measures (14.3); and (2) Corporate Coherence and Purchasing Maturity (14.2). Three reasons underlying the wheel element Purchasing Maturity, and one underlying Performance Measures, are identified as possible causes of maverick buying: top-down fiat, training and development program, high usability threshold/lack of SAP knowledge and limited status and visibility.

First, unintentional maverick buying may arise because employees lack the required expertise in SAP. This problem is further aggravated by the difficulties of using the SAP system. Second, a lack of purchasing training and development, and the resulting low employee awareness for the total cost effect of deviating behavior, are other factors that might help explain the existence of casual maverick buying.

Third, casual maverick buying may also be driven by the limited status and visibility of C&P in the organization. This inhibits C&P from educating the organization on the effects of deviating behavior. Fourth, top-down fiat may explain maverick buying in relation to the practice of executing the globally designed RtP process correctly. This is because the global procedure may not be compatible with local conditions.

The aforementioned reasons for maverick buying illustrate the significance and complexity of this challenge. An outline of the consequences of maverick buying should serve to further highlight its importance; maverick buying may lead to decreased work efficiency, increased process costs, inability to standardize, lost negotiation power, and incorrect RtP-related KPI measures.

#### **15.1.6 RtP Related KPIs**

In the analysis of the wheel element Performance Measures, as well as in the link between Corporate Coherence and Performance Measures (13.5.2: 14.3), RtP-related KPIs are identified as a challenge. More specifically, unrealized purchasing synergy potentials exist in three of the underlying factors of Performance Measures: 'measure performance accurately',

'influence behavior and develop purchasing', and 'communicate measures'. Reasons for the occurrence of this challenge may therefore be explained by studying the reasons for the three underlying factors.

The RtP-related KPIs do not measure accurately because the RtP process in Upstream Norske Shell is not executed exactly like the global RtP process is designed. In other words, maverick buying may be the reasons for inaccurate RtP-related KPI measures.

Further, the lack of company focus on and low prioritization of the RtP-related KPIs makes the measures unable to influence behavior and develop purchasing to a satisfying extent. The lack of company focus also forms part of the reason for why the KPI scores are not communicated on a daily basis. Taken together, these issues show how RtP-related KPIs represent a challenge to Upstream Norske Shell.

The implications may be a lack of purchasing process knowledge and an inability to comply with the philosophy of continuous improvement. Other implications are low awareness among the employees with regards to how their activities impact the scores of the measures, and more importantly, the total performance of the purchasing process.

## **15.2 Recommendations**

Capturing the existing unrealized purchasing synergy potentials may give Upstream Norske Shell significant corporate benefits. Overcoming the aforementioned challenges is therefore of great importance. Recommendations for *how* to improve and respond to the challenges will be suggested here. Each recommendation is comprised of concrete actions that, if completed successfully, can overcome several challenges at once.

It should be noted, however, that the primary purpose of the analysis is to diagnose Upstream Norske Shell's current purchasing situation. The Purchasing Synergy Management Wheel is only used as a diagnostic tool, not as a tool for implementing synergy initiatives. The recommendations in this chapter are therefore general in nature and solely based on the challenges identified in the analysis of the wheel elements and links. To ensure that the desired effects may be achieved, a more thorough investigation should be conducted before any changes are implemented.

### **15.2.1 Completing the Matrix Structure**

The organizational structure of purchasing in Upstream Norske Shell is considered a challenge that inhibits purchasing synergy realization (15.1.1). The coordinated purchasing structure comprises a corporate coordinator, the horizontal C&P function, joint purchasing teams, and the vertical business Delivery Team (Fig. 76). To complete the matrix structure of coordinated purchasing, and gain the ability to realize the purchasing synergy potentials, two recommendations are given:



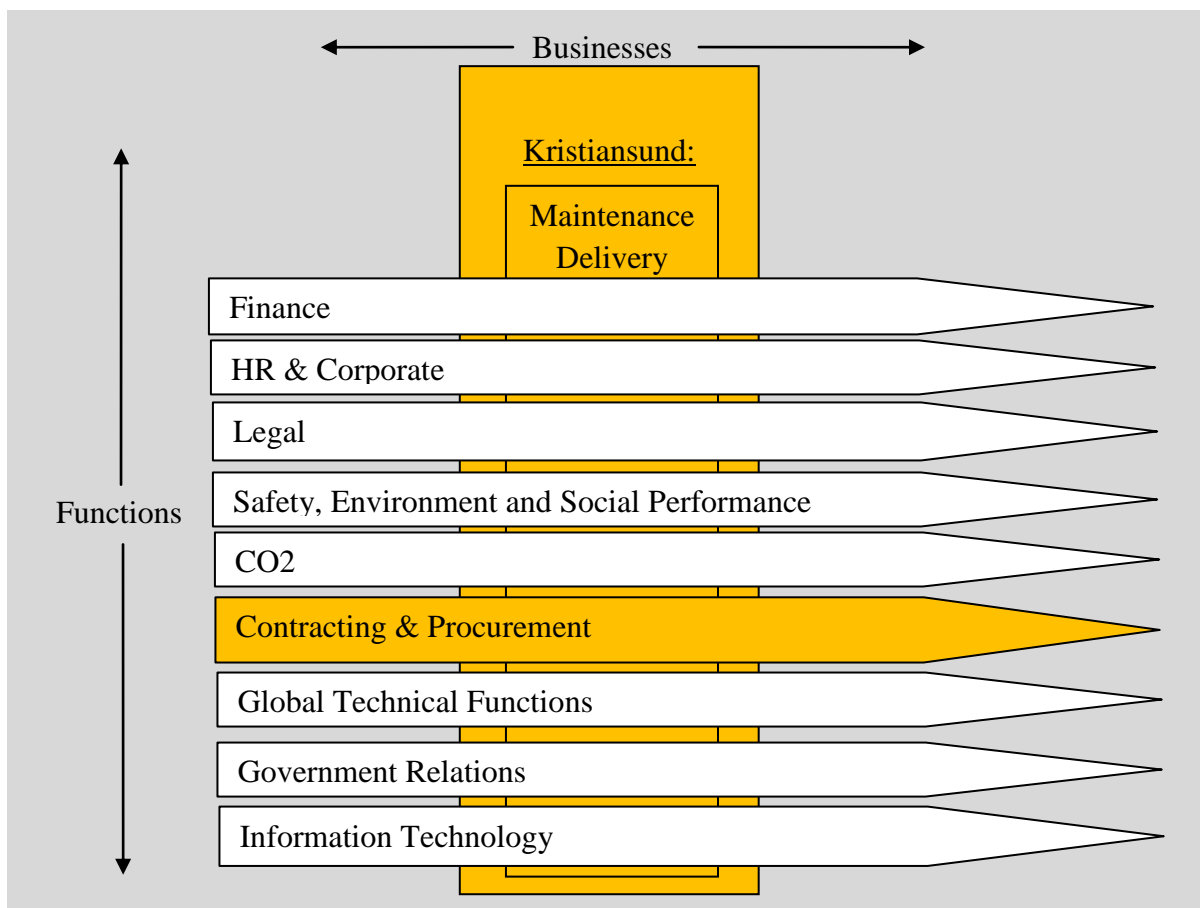


Figure 76: Matrix Structure of Purchasing in Upstream Norske Shell

C&P Lead. This way, a reporting line is created from the joint purchasing teams to the leader of the corporate coordinator. This will remove the organizational barrier for purchasing synergy creation between the corporate coordinator and joint purchasing teams in the coordinated purchasing structure. It will also help increase the coordination between C&P and Delivery Team. Following this recommendation realizes economies of information and learning and economies of process.

The second recommendation is that the two RtP Analysts, the two Inventory Analysts and the Senior Buyer Sourcing, report to the C&P Lead. Implementing these reporting lines will strengthen C&P's role as a unified coordinator, and facilitate an increase in intra-firm collaboration in C&P. It will help remove the inconvenient functional silos in C&P, and facilitate an alignment of disparate goals and priorities internally. An increased internal alignment may also improve C&P's status and visibility. This may in turn lead to the creation of all three types of purchasing synergy.

Together, these recommendations, a reporting line from Purchase Coordinators to C&P, reporting lines from RtP Analysts, Inventory Analysts and Senior Buyer Sourcing to C&P Lead, will help complete the matrix structure of the coordinated purchasing structure.

### 15.2.2 Creating a Climate of Cooperation

Collaboration between the employees in the purchasing organization is limited. By creating a collaborative culture, one could realize all unrealized potentials for economies of scale,

information and learning, and process in the relationships. This naturally represents significant benefits for Upstream Norske Shell. Three challenges may be overcome with a collaborative climate: internal alignment in C&P, status and visibility of C&P, and coordination between C&P and Delivery Team.

Internally in C&P, the Contract Specialists should cooperate and share experiences regarding the execution of CMCP for strategic and tactical contracts. The Contract Specialists should also cooperate with the Senior Buyer Sourcing, who also performs CMCP, only for operational contracts. Collaborating and fostering a learning environment between these CMCP accountabilities would facilitate a coherent working style in the execution of CMCP. This could further increase internal alignment of goals and responsibilities, create a more unified corporate coordinator, and increase the status and visibility of C&P.

Increased collaboration between the Purchase Coordinators in the Delivery Team would realize hitherto latent potentials for economies of information and learning and process. More specifically, Upstream Norske Shell would gain knowledge and information sharing, which in turn eases the coordination between the two purchasing teams in Delivery Team, and makes their daily work more efficient.

Improved collaboration between C&P and Delivery Team has several positive implications. Intra-firm collaboration between C&P Lead and Delivery Team Lead would better align the differing goals and priorities of C&P and Delivery Team. It would also make the leaders able to work in common to find better ways of utilizing the shared capacities of the Purchase Coordinators, e.g. make adjustments to the role by giving them more strategic decision-making tasks. If the leaders of the two divisions collaborate, this cultural aspect could better be transferred to their respective subordinates. Having them stand out as leading role models for the rest of the purchasing organization would make creating a collaborative working environment easier.

Collaboration between employees across C&P and Delivery Team could be increased in this manner. More collaboration between Contract Specialists/Purchase Coordinators and Inventory Analysts/Purchase Coordinators would further strengthen the coordination between C&P and Delivery Team. The more contact points where employees learn from and develop each other and share information and experiences, the better aligned and coordinated C&P and Delivery Team will be.

In conclusion: creating a climate of collaboration in the coordinated purchasing structure, both in and between C&P and Delivery Team, facilitates the realization of economies of scale, information and learning and process. The two parties become more aligned and coordinated, strengthening purchasing in Upstream Norske Shell.

### **15.2.3 Strengthening C&P's Profile**

Four C&P-related challenges are identified in 15.1. C&P suffers from somewhat of an internal misalignment and an insufficient status and visibility among rest of Upstream Norske Shell. Two other challenges, maverick buying and RtP-related KPIs, are also associated with C&P's

responsibilities for ensuring that standardized global purchasing processes and procedures are being followed.

Accordingly, to be able to exercise its educational role with respect to purchasing and gain acceptance as a vital function to value-creation, C&P must strengthen its profile. This requires several actions to be initiated in concert: (1) C&P must show the rest of the organization what it stands for; (2) it must gain more autonomy to align priorities internally; and (3) it must take control over the performance of purchasing in Upstream Norske Shell. Only by following these initiatives can C&P truly become a strategic function.

First, in order to raise its visibility and status, the purposes and areas of responsibility of C&P must be made clear to rest of the organization. A suitable arena for sharing this type of information is Upstream Norske Shell's Intranet. A page should be created in which C&P's role and responsibilities are defined, and which describes what type of help and support they may offer to rest of the organization. This page should also contain information about which suppliers Upstream Norske Shell has contracts with and how the contracts are to be used. In this way, employees can always seek the page as a reference point to C&P-related matters.

To remind all employees in Upstream Norske Shell of the information in the contracts, a notification or email can be sent out immediately after the finalization of contract negotiation in the last step of the pre-award phase of CMCP. The notification should inform employees of the content of the contract and how it can be used. Altogether, these actions increase the awareness of C&P and focus on standard procedures in terms of contracts. If employees gain more insight into how the contracts are to be used, deviation from standard procedures and maverick buying can further be reduced.

Next, the importance of sufficient autonomy given to C&P from Global Shell is illustrated by the danger of top-down fiat and the tendency of ignoring C&P as a support function. Whenever local conditions conflict with global procedures, C&P should be authorized to decide in its own matters. In this way, casual maverick buying caused by incompatibility between local RtP practice and globally designed procedures may be reduced effectively. It also becomes easier for C&P to align its own priorities without excessive consideration of global guidelines. This enables C&P to work in a more coherent way, further strengthening its profile.

Moreover, despite not reporting formally to the top management in Upstream Norske Shell, C&P can likewise be involved in, and contribute more actively to, strategic decision-making. The C&P Lead can, for example, be invited to participate more frequently in decision-making processes in Upstream Norske Shell on a higher level. This can aid the perception of C&P as an important contributor to the success of Upstream Norske Shell.

Finally, since C&P is accountable for ensuring compliance to standard purchasing procedures, the division must take active control over the performance of purchasing in Upstream Norske Shell. This primarily entails C&P being given the ultimate responsibility of RtP-related KPIs. It is recommended that the C&P Lead becomes the highest responsible for all purchasing-related KPIs, with the ability to further delegate responsibility to the relevant parties. The

C&P Lead should thus also be responsible for communicating the KPIs. Overall, centralization of the responsibility for the KPIs in C&P creates higher awareness of, and focus on, the KPIs.

The present three KPIs related to RtP today do not measure all the critical areas of the RtP-process. Additional measures might be implemented to gain more process knowledge and thereby increase performance in every parts of the process. Relevant measures could be the creation of KPIs that measure whether a Notification and Work Order is created according to standard procedures or whether the amount of Purchase Orders are linked to a contract.

In sum, the three initiatives that strengthen C&P's profile may aid in the creation of all three types of purchasing synergy. Through increased status and visibility, C&P can drive cost reduction initiatives, share knowledge on suppliers and markets and monitor purchasing performance. A common way of working could be created internally in C&P. Reducing maverick buying strengthens Upstream Norske Shell's negotiation power, reduces process costs, and improves efficiency. Communicating the KPIs sends correct signals and facilitates a standardized working style.

#### **15.2.4 Prioritizing Training and Development**

In order to overcome the challenges with respect to internal alignment in C&P, coordination between C&P and Delivery Team, maverick buying, and RtP-related KPIs, training and development in purchasing should be prioritized. This can be accomplished by conducting several initiatives: (1) increase internal focus in C&P; (2) perform joint training between C&P and Delivery Team; (3) establish awareness on maverick buying; and (4) actively apply the RtP-related KPIs. Together, these training and development initiatives can improve purchasing performance significantly and increase the professionalism of the employees.

First, as the corporate coordinator with the responsibility of exercising an educational role in purchasing towards rest of the organization, C&P itself should emphasize training and development to a larger extent. Today, employees insufficiently prioritize this focus due to tight schedule and looming deadlines. It is thus up to the C&P Lead to ensure that a sufficient amount of time is devoted to training and development activities. C&P driving purchasing performance in Upstream Norske Shell should be considered something in all parties' interest. Internal courses and webinars, and external industry gathering and networking events, might all prove beneficial in this respect. C&P should also create an internal platform for knowledge sharing, which automatically enables internal alignment and collaboration.

Second, joint training and development activities should be performed across C&P and Delivery Team. Due to the difference in area of expertise, the divisions obviously can learn a lot from each other. Contract Specialists and the Senior Buyer Sourcing can educate Delivery Team on CMCP-related issues, such as the use of contracts. RtP-Analysts are advised to give Delivery Team training on correct RtP practice and compliance with the different RtP optimizers. In this manner, Delivery Team is able to better execute its work, enabling the reduction of maverick buying. Purchase Coordinators may be able to better perform the desired function of strategic control.

The E&M Delivery Engineers, on the other hand, may educate the Purchase Coordinators and C&P on relevant technical issues. This may help the Contract Specialists and Senior Buyer Sourcing to better understand the business needs in CMCP. The Purchase Coordinators might more easily act out their strategic control function and communicate with suppliers on technical matters. Joint training and development increases mutual understanding and facilitates better coordination between C&P and Delivery Team.

Thirdly, awareness of maverick buying should be increased, in the sense that sufficient SAP training is given and that all employees strive to combat maverick buying in their daily work. For this all-embracing focus to work, the employees should be given insight into the consequences of maverick buying and total cost effects of deviance from standard procedures. Optimally, a dedicated SAP team should give SAP training. This team should also function as the contact point for any SAP-related request for assistance. Only through continuous focus and skill development can maverick buying effectively be reduced to a minimum.

Last, the RtP-related KPIs should be used actively to influence behavior and develop purchasing. They should also be communicated internally to raise awareness of purchasing in general and important issues such as maverick buying. This presupposes that maverick buying is either sufficiently reduced so that the current measures are accurate, or that the KPIs are redesigned and adapted to fit local RtP practices. The KPIs may be applied to facilitate dialogue between involved parties in the buying center, which may in turn initiate concrete actions leading ultimately to an increase in purchasing performance.

In conclusion, training and development is beneficial as it leads to creation of purchasing synergies itself through reduced process costs, better knowledge sharing and increased work efficiency. Training and development further facilitates coordination both internally in C&P and between C&P and Delivery Team. It helps combat maverick buying and serves as a key factor in the process of increasing purchasing performance through the KPIs. Overcoming these challenges leads to the creation of all types of purchasing synergy.

### **15.3 Summary**

In conclusion: six challenges are identified that inhibit purchasing synergy realization in all three economies: scale, information and learning and process. These challenges are: organizational structure of purchasing, internal coordination in C&P, status and visibility of C&P, coordination between C&P and Delivery Team, maverick buying and RtP-related KPIs. To overcome these challenges and capture all three forms of latent purchasing synergy potentials, four recommendations are given: completing the matrix structure, creating a climate of cooperation, strengthening C&P's profile, and prioritizing training and development.

## 16. Summary Part 4

As a conclusion to Part Four, this chapter outlines the essence of each of the aforementioned chapters' contents: the approach and scope of the analysis, the analysis of individual elements, and the analysis of links and challenges and recommendations. The approach of the analysis essentially shows how the Purchasing Synergy Management Wheel is applied as a diagnostic tool. The approach uses a step-wise application procedure: (1) a separate analysis for each wheel element; (2) Factor-Synergy Matrix for key findings; (3) identification of most relevant links between elements; and (4) challenges and recommendations based on the results from step one, two and three. The scope of the analysis constitutes the buying center of Upstream Norske Shell. The roles in the buying center are identified in relation to the decision-making purchasing process (RtP) and the facilitating contracting process (CMCP). These are: users, influencers, deciders, buyers and gatekeepers. General characteristics of Upstream Norske Shell's buying center are given thereafter.

The element analysis chapter discusses each of the elements in the Purchasing Synergy Management Wheel in relation to Upstream Norske Shell. They are: Business Context, Corporate Coherence, Purchasing Maturity, Organizational Structure, Performance Measures, Total Cost/Benefit Analysis and Portfolio of Relationships. The identified realized purchasing synergies and unrealized purchasing synergy potentials for each of the elements are presented in separate Factor-Synergy Matrices. Last, a final Factor-Synergy Matrix summarizes the findings from each wheel element analysis.

Next, the link analysis chapter discusses the most important links between the wheel elements, by identifying how the underlying factors of the elements affect each other. The analyses give a more in-depth explanation for the realized and unrealized purchasing synergies. Eight links are identified between the elements: (1) Business Context - Corporate Coherence - Purchasing Maturity - Total Cost/Benefit Analysis - Portfolio of Relationships; (2) Corporate Coherence and Purchasing Maturity; (3) Corporate Coherence - Performance Measures; (4) Corporate Coherence - Total Cost/Benefit Analysis; (5) Organizational Structure - Portfolio of Relationships; (6) Corporate Coherence - Portfolio of Relationships; (7) Purchasing Maturity - Portfolio of Relationships; and (8) Corporate Coherence - Purchasing Maturity - Organizational Structure - Portfolio of Relationships.

Finally, managerial implications for Upstream Norske Shell are outlined, in terms of recommendations for how to improve and respond to the challenges identified. Four recommendations are suggested: (1) completing the matrix structure; (2) creating a climate of cooperation; (3) strengthening C&P's profile; and (4) prioritizing training and development.

Taken together, these recommendations seek to overcome the following challenges: (1) organizational structure of purchasing; (2) internal coordination in C&P; (3) status and visibility of C&P; (4) coordination of C&P and Delivery Team; (5) maverick buying; and (6) RtP-related KPIs. Overall, the analysis answers RQ3, identifying which types of and why purchasing synergies are realized and unrealized, and the resulting managerial implications for Upstream Norske Shell.

## **PART 5 DISCUSSION AND CONCLUSION**

*This chapter discusses findings from the literature review and the analysis, draws conclusions, outlines contributions, and presents limitations and implications for managers and researchers.*

*It starts off by discussing and answering each research question separately. First, RQ1 is answered by defining the term purchasing synergy and its strategic importance in business today. Next, RQ2 is answered by creating a new framework to identify and realize purchasing synergies. The resulting framework, developed by correlating existing literature against Cousins et al.'s (2008) Strategic Supply Wheel, has been named the Purchasing Synergy Management Wheel.*

*Answering RQ3 necessitates a closer diagnosis of the current state of purchasing in Upstream Norske Shell. For this reason, the thesis applies the Purchasing Synergy Management Wheel as a diagnostic tool to uncover which purchasing synergies are present in Upstream Norske Shell today, what synergy potentials remain unrealized, and why. RQ4 evaluates the degree of correspondence between theory and practice, and discusses further research.*

*The subsequent part addresses the overall problem statement based on the answers to the research questions. Finally, the chapter concludes with a discussion in which the limitations of the conducted study are identified.*

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## **17. Problem Statement and Research Questions**

The following sections address the research questions stated in the introduction and research methodology chapter. They seek to provide concise answers to the research questions. The overall problem statement is eventually addressed based on the answers found for the research questions.

### **17.1 Research Question 1**

#### **What is purchasing synergy and why is it important?**

This research question is best answered by defining the term purchasing synergy and its strategic importance in contemporary business. The following section will thus start by explaining and defining the concept of purchasing synergy. It then presents an argument for the importance of achieving purchasing synergies.

##### **17.1.1 What is purchasing synergy?**

As revealed in the literature review, no unanimous explanation of the term exists as of the time of writing, though fortunately, no conflicting or opposing definitions were found. Some authors do not explicitly use the term purchasing synergy. It is described, instead, in general terms when looking at phenomena like cost reduction, leverage initiatives, standardization of specifications, centralized procurement, coordination of (decentralized) purchasing, negotiating corporate agreements, or reduction of suppliers.

Nevertheless, the studied articles share similar patterns with regards to their citation of previous research. Ulli Arnold, a frequently cited source, is considered the first scholar to distinguish between the three potential benefits of intra-firm cooperation in purchasing: (1) economies of scale; (2) economies of information and learning; and (3) economies of process. Inspired by strategic management literature on synergy, Frank Rozemeijer, another dominant scholar in the field of purchasing synergy, has subsequently provided a proper definition for the term. Rozemeijer explains purchasing synergy as the increase in purchasing performance realized when two or more business units join their forces and/or share functional resources, information and knowledge.

More recent research, such as Smart and Dudas (2007) and Trautmann et al. (2009a), has largely adapted the contributions of Arnold and Rozemeijer. Their adaptations have taken place by way of clarifying and providing examples for the definitions, i.e. the three forms of purchasing synergy. Economies of scale are the attainment of lower unit cost by pooling negotiation power and standardization of categories, reduce number of suppliers and share tangible resources. Economies of information and learning refer to the benefits derived from the sharing of information and knowledge across different sites and locations. Economies of process are about establishment of a common way of working, making the work more efficient and standardized, and showing one line of conduct to external partners.

The term 'purchasing synergy' emerges and is adapted from 'business synergy' in strategic management literature. Business synergy is defined by Benecke et al. (2007) as: "a concept that describes the systemic process whereby business units of diverse, complex organizations will generate greater value through working together as one system than working as separate



entities". One of the presumptions of the definition, that synergy in its basic form is created between two or more business units, however, is questioned by strategic management scholars. Both Gruca et al. (1997) and Ensign (1998) argue that synergy can be created not only between business units or particular business activities, but within a single business unit as well, between the relationships that constitute the unit.

This thesis recognizes that there is no agreed-upon definition of synergy, and does not seek to take part in the discussion or choose sides. For this reason, it broadens its definition of business synergy:

Synergy is an increase in business performance realized when two or more business units, or relationships within one business unit, join their forces and/or share functional resources, information and knowledge.

This broadened perspective on business synergy makes the concept easier to generalize. As purchasing synergy is defined here based on the presumptions of business synergy, it too requires a broader definition. From this emerges a more generalized definition of purchasing synergy, based on Arnold's three-part classification and Rozemeijer's definition, and rooted in the new definition of synergy from the strategic management field:

Purchasing synergy is an increase in purchasing performance realized in one of three forms: economies of scale, economies of information and learning and economies of process. A purchasing synergy is realized when two or more business units, or relationships within one business unit, join their forces and/or share functional resources, information and knowledge.

An overview of all reviewed literature on purchasing synergy is summarized in Table 54. The matrix shows the form of purchasing synergy discussed for each article reviewed. Out of the three forms, economy of scale is clearly the topic that has been given the most attention. Economy of process seems comparatively less developed. Overall, very few authors consider the three types of synergy all at once and in relation to each other. Companies can, however, only take full advantage of purchasing synergy benefits by focusing on all three types of synergy potentials at once: economies of scale, economies of information and learning, and economies of process.

**17.1.2 Why is purchasing synergy important?**

The importance of 'purchasing synergy' can be found in the explanation of the importance of the two concepts 'purchasing' and 'synergy' (Fig. 77).

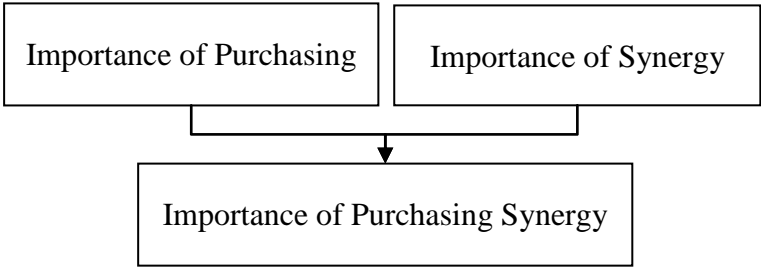


Figure 77: Importance of Purchasing Synergy

Purchasing is increasingly being recognized, by academics and purchasing professionals alike, as a contributor to companies' bottom line. As a strategically important part of company success, purchasing is increasingly integrated into corporate level decision-making. The importance of synergy lies in its significant benefits, i.e. cost savings, reduced duplication and new business opportunities. Focus on corporate synergy initiatives has received extensive focus in companies for a long time and made synergy a natural part of corporate level decision-making. For example, how one should organize organizations in order to best achieve corporate synergies.

Together, a larger focus on purchasing's impact on company performance, and the awareness of synergy benefits in general, academics and purchasing professionals have opened their eyes to purchasing synergy. Realized purchasing synergies are, among others, bundling, supplier base reduction, standardization, common ways of working, intra-firm information sharing and collaboration, negotiation power, sharing of best practices, formalization, joint training and development. One of the aspects companies focus on is how they should organize to create corporate-level purchasing synergies, without losing the benefits of decentralized purchasing. A strong belief in the corporate and competitive advantage within purchasing through the realization of purchasing synergies.

### **17.1.3 Contribution**

Reviewing the literature on purchasing synergy reveals unanimous foci, definitions and perspectives. The thesis has identified two authors, Arnold and Rozemeijer, as the main contributors to the definition of purchasing synergy. These two scholars are widely recognized and appreciated by other purchasing synergy researchers. The definition made by Rozemeijer builds upon the three forms of purchasing synergy introduced by Arnold, but not explicitly.

To increase the generalizability of purchasing synergy and make it more virtuous, an extension of the definition of the concept purchasing synergy is made. This thesis thus broadens purchasing synergy to arise not only in relationships and activities between business units, but also in relationships and activities within one business unit. Furthermore, this thesis explicitly includes the three types of purchasing synergy: economies of scale, economies of information and learning and economies of process in the definition.

### **17.1.4 Summary**

To conclude: purchasing synergy is defined as: an increase in purchasing performance realized in one of three forms: economies of scale, economies of information and learning and economies of process. A purchasing synergy is realized when two or more business units, or relationships within one business unit, join their forces and/or share functional resources, information and knowledge. The importance of seeking purchasing synergies lies in the strategic importance of purchasing and synergy in general: purchasing synergy realization beneficially contributes to competitive advantage and shareholder value. This answers what purchasing synergy is, and why it is important.

## 17.2 Research Question 2

### What framework may be best suited to identify and realize purchasing synergies?

Identifying and realizing purchasing synergy is achieved by managing purchasing synergies. Several of the authors in the literature review talk about management of purchasing synergies, and thus indirectly about identification and realization of purchasing synergy. However, none of the authors specifically define the concept *purchasing synergy management*.

In order to answer RQ2, purchasing synergy management is defined first, followed by a discussion of the authors that talk about the concept. None of the works reviewed, however, cover the definition to its full extent. A systematic process to develop a new conceptual framework is initiated. This results in the Purchasing Synergy Management Wheel.

#### 17.2.1 Definition of Purchasing Synergy Management

Strategic management literature defines synergy management. Based on the strategic management literature, a definition is given to explain the concept synergy management within purchasing. The definition is as follows:

Purchasing synergy management is the use of approaches, processes and organizational changes to identify and realize potentials for three forms of purchasing synergy: economies of scale, economies of information and learning and economies of process. Such synergies are identified and realized in activities and relationships between and within business units.

Accordingly, a valid framework for purchasing synergy management should satisfy a set of five criteria: (1) identification of purchasing synergy opportunities or unrealized synergy potentials; (2) approaches to create and deal with purchasing synergy; (3) organizational change; (4) direct link to each form of purchasing synergy; and (5) encompass the broadened unit of analysis.

#### 17.2.2 Four Different Purchasing Synergy Management Tools

Four different purchasing synergy management tools are identified: (1) Rozemeijer; (2) Faes et al. (2000); (3) Smart and Dudas (2007); and (4) Trautmann et al. (2009a). Table 54 summarizes the authors' contribution, correlated and measured against the set of five criteria that together constitute the definition of purchasing synergy management.

**Table 54: Comparison of the Works on Purchasing Synergy Management to the Definition**

Elements in the definition of purchasing synergy management	Rozemeijer	Faes et al. (2000)	Smart and Dudas (2007)	Trautmann et al. (2009a)
Identification of purchasing synergy opportunities or unrealized synergy potentials			X	X
Approaches to create and deal with purchasing synergy	X	X	X	
Organizational change	X	X		
Link to each form of purchasing synergy	X			X
Unit of analysis	Only between business units	Only between business units	Only between business units	Only between business units

The most important finding is that none of the works discussed above are completely aligned with the definition of purchasing synergy management. Each of them covers some of the features of the definition, but not all at once. Explicit linkages to the three types of purchasing synergy have only been made from a global sourcing and an organizational structure point of view. The unit of analysis of these works only considers purchasing synergy realization between, but not within, business units.

The lack of complete alignment with the definition of purchasing synergy management and lack of comprehensiveness in relating the frameworks to the three forms of purchasing synergy, are identified as a significant gap in the literature. This triggers a need for developing a new conceptual framework to identify opportunities for and create purchasing synergy and thereby respond to RQ2: a framework that should be in line with the definition of purchasing synergy management.

### 17.2.3 Towards a New Conceptual Framework

A stepwise approach is devised to develop a new conceptual framework for purchasing synergy management: (1) explain the rationale for use of the Strategic Supply Wheel as a point of departure; (2) present the literature to be correlated against the Strategic Supply Wheel; (3) correlate literature and identify factors to purchasing synergy creation; and (4) outline key issues not explicitly covered by the Strategic Supply Wheel and their contribution to realization of purchasing synergies. These four steps form the basis for the new conceptual framework. Figure 17 illustrates this stepwise approach.

Firstly, the rationale for applying the Strategic Supply Wheel as a point of departure is explained. The wheel is introduced in the chapter on purchasing as a purchasing management tool. Table 55 summarizes the reasons for the use of this model and possibilities for adopting its philosophy in Purchasing Synergy Management.

**Table 55: Relevance of the Strategic Supply Wheel**

Reason	Description	Adoption in Purchasing Synergy Management
Applicability	It can both be used as a <i>diagnosis</i> tool to identify the present situation of purchasing and as an <i>implementation</i> tool to realize new initiatives in purchasing.	Diagnose currently realized purchasing synergies and unrealized synergy potentials. Implement purchasing synergy initiatives.
Integration of organizational change	As a dynamic model, it emphasizes the need for changing the wheel elements in order to maintain a balance between them.	Implementing purchasing synergy initiatives deals with organizational change.
Comprehensiveness	Six interrelated wheel elements that cover numerous important aspect of purchasing management.	The elements should be considered no matter what specific field of interest within purchasing.
Unit of analysis	Purchasing analyzed within, and between, business units.	Purchasing synergy realization analyzed within, and between, business units.

Using the aforementioned line of reasoning, the Strategic Supply Wheel form the basis for developing a conceptual framework for purchasing synergy management. This means that the new framework should adopt all the four important features of the Strategic Supply Wheel:

applicability, integration of organizational change, comprehensiveness, and unit of analysis, materialized into an interrelated wheel model.

Secondly, relevant literature must be correlated against the Strategic Supply Wheel, for it to be reinvented, and become a purchasing synergy management framework. In addition to purchasing synergy management literature, other literature presented in the chapter on purchasing and purchasing synergy is also included. The reason is twofold: paucity of literature on purchasing synergy management, and relevance of other literature to purchasing synergy management. Among others, literature on organizational buying behavior and maverick buying is incorporated.

Thirdly, in the correlation, the focus area of the articles is sorted into the six wheel elements of the Strategic Supply Wheel. In the discussion of each supply wheel element, linkages between the literature incorporated and its relevance to purchasing synergy creation are drawn. These linkages are summarized in Factor-Synergy Matrices at the end of each subsection. The matrices illustrate how each factor underlying a particular wheel element can lead to one or more specific forms of purchasing synergy.

Fourthly, not all key issues relevant for purchasing synergy management are explicitly covered by the six supply wheel elements. These key issues are therefore identified, along with an explanation of their relevance to purchasing synergy creation, summarized into a Factor-Synergy Matrix.

All together, the Factor-Synergy Matrices show that all literature incorporated deals with the creation of purchasing synergy. Literature listed in the matrix can rightfully be taken into account when outlining a new conceptual framework for purchasing synergy management. The Factor-Synergy Matrices thus contributes in validating the expanded literature base forming a new conceptual framework.

#### **17.2.4 Purchasing Synergy Management Wheel**

Based on the preceding stepwise-approach, a framework for purchasing synergy management is developed. It is named the Purchasing Synergy Management Wheel and contains six interrelated wheel elements, in addition to the Business Context. The scope of the framework encompasses not only the purchasing function, but also all roles in the buying center. The framework takes a corporate level perspective and employs a unit of analysis that emphasizes purchasing synergy creation both between business units, but also in activities and relationships within a single business unit.

Table 56 summarizes the main building blocks of the framework, including the definition of the wheel elements and Business context, and their underlying factors, i.e. drivers and barriers, that influence purchasing synergy creation.

**Table 56: Main Building Blocks of the Purchasing Synergy Management Wheel**

Main Feature	Description	Underlying Factors
Business Context	Takes into consideration external factors, which affect a company's purchasing strategy and thus indirectly influence the creation of purchasing synergy.	Indirect effect on purchasing synergy creation.
Corporate Coherence	Addresses alignment of management style, vision, strategy, culture and information platform across the entire corporation to foster purchasing synergy	Alignment between corporate and supply strategy, alignment between business level strategies, maverick buying, information platform, organizational culture and management style
Purchasing Maturity	The professionalism and sophistication of the purchasing function and the entire buying center that enables purchasing activities and processes to obtain purchasing synergy.	Reporting line, visibility and organizational perception, information access, information technology, skills and competencies, training and development program, strategic decision-making, professionalism towards suppliers
Organizational Structure	The design of the buying center characterized by: (1) type of governance structure suggested by the level of Corporate Coherence; and (2) balance between vertical and horizontal organizational features.	Centralized purchasing, decentralized purchasing, federal purchasing, center-led purchasing, coordinated purchasing, horizontal specialization, vertical specialization
Performance Measures	Aim to align measures with strategic priorities, measure performance, influence behavior, foster learning and improvement and communicate the measures for carrying out the work of obtaining purchasing synergies.	Align measures with corporate and supply strategy, measure performance accurately, influence behavior and develop purchasing, communicate measures
Total Cost/Benefit Analysis	Emphasizes the need to verify, demonstrate and measure the cost effects of a purchasing synergy initiative and to employ a total cost of ownership perspective.	Use of cost/benefit analysis, TCO perspective
Portfolio of Relationships	Concerns the boundary spanning intra-firm (buying center) and inter-firm relationships to achieve purchasing synergy.	Collaboration (Intra- and inter-firm relationships)

The Purchasing Synergy Management Wheel in the end result of the systematic development towards a framework that is line with the definition of purchasing synergy management and thereby answers RQ2. To demonstrate its alignment with the definition of purchasing synergy management, Table 57 describes how the Purchasing Synergy Management Wheel satisfies all five criteria of the definition.

**Table 57: Characteristics of the Purchasing Synergy Management Wheel**

Elements in the definition of purchasing synergy management	Purchasing Synergy Management Wheel
Identification of purchasing synergy opportunities or unrealized synergy potentials	Used as a diagnosis tool
Approaches to create and deal with purchasing synergy	Used as an implementation tool
Organizational change	Dynamic model that emphasize need for changing the wheel elements to maintain a balance between them
Link to each form of purchasing synergy	Factor-Synergy Matrices illustrate the explicit linkages between the framework and the three forms of purchasing synergy
Unit of analysis	Purchasing synergy realization can be analyzed within, and between, business units

### 17.2.5 Contribution

Addressing RQ2, the literature review may provide additional insight into the field of purchasing synergy management by structuring and correlating the current literature. First of all, purchasing synergy management is defined. The term incorporates the important features of the definition of synergy management: identification, realization and organizational change. It also encompasses the main features of the definition of purchasing synergy: direct link to the three forms of purchasing synergy and a broadened unit of analysis. This enables the approaches for managing purchasing synergy to be discussed further using the criteria of the definition of purchasing synergy management.

Following the definition of purchasing synergy management, a new conceptual framework, the Purchasing Synergy Management Wheel, is developed. It satisfies all criteria of the definition and thus increases the applicability and performance of a framework for purchasing synergy management in general. Specifically, Factor-Synergy Matrices are developed to show the explicit linkage between elements of the incorporated literature, and the three forms of purchasing synergy. In this way, apart from the current limited selection of purchasing synergy management, the framework



is also able to encompass other relevant literature for purchasing synergy management.

### 17.2.6 Summary

To answer RQ2, the concept of purchasing synergy management is defined thus as: the use of approaches, processes and organizational changes to identify and realize potentials for three forms of purchasing synergy: economies of scale, economies of information and learning and economies of process. Such synergies are identified and realized in activities and relationships between and within business units.

A literature review of existing purchasing synergy management literature revealed that none of the frameworks identified are completely in line with the definition of purchasing synergy management. A systematic development of a new conceptual framework is conducted, using the Strategic Supply Wheel as a point of departure. The literature base is considerably broadened, linked to purchasing synergy creation via Factor-Synergy Matrices. The Purchasing Synergy Management Wheel is aligned with the definition of purchasing synergy management. It represents the end result of the development and the final answer to RQ2.

### 17.3 Research Question 3

**Which types of purchasing synergies are realized in Upstream Norske Shell and what purchasing synergy potentials are currently unrealized? Why are certain purchasing synergies realized and others not, and what are the managerial implications for Upstream Norske Shell?**

Answering RQ3 necessitated a diagnosis of the current state of purchasing in Upstream Norske Shell. The analysis thus applied the Purchasing Synergy Management Wheel as a diagnostic tool to uncover which purchasing synergies are present in Upstream Norske Shell today and what synergy potentials remain unrealized, and why. The stepwise analysis approach devised was followed: (1) each wheel element analyzed separately; (2) Factor-Synergy Matrices drawn for each element; (3) summarizing Factor-Synergy Matrix made; (4) most relevant links between elements identified; and (5) challenges and recommendations to synergy creation revealed.

The findings from the analysis approach will here be presented, answering RQ3 in the following sequence: First, the main findings from the separate wheel elements are given: why and which types of purchasing synergies are currently realized and unrealized. Second, the important links between the factors underlying the wheel elements give a more in-depth and complex explanation of why some synergies exist and others not. Together, this answers which and why purchasing synergies are realized and unrealized. Third, the identified managerial implications for Upstream Norske Shell, i.e. challenges hampering the realization of purchasing synergies and recommendations to overcome the barriers, are concluded upon.

### 17.3.1 Wheel Elements: Purchasing Synergies Realized or Not and Why

The findings from the separate wheel elements are presented in individual tables in each section below. The first column presents the factors, drivers for why specific synergies exist, and barriers for why certain synergies remain unrealized. The three right-most columns present which types of purchasing synergies are currently realized and unrealized. The findings are presented in the following order: (1) Business Context; (2) Corporate Coherence; (3) Purchasing Maturity; (4) Organizational Structure; (5) Performance Measures; (6) Cost-Benefit Analysis; (7) Portfolio of Relationships; and (8) links between elements.

#### 17.3.1.1 Business Context

The analysis of the variables constituting Upstream Norske Shell's business context: social, physical technological, economical and political/legal, showed that the overall business context indirectly affects the realization of purchasing synergies. The business context sets the limitations for how Upstream Norske Shell as a company can conduct business in general. The realization of certain purchasing synergies cannot be explained directly. In other words, no drivers or barriers are found that directly realize or inhibit purchasing synergy creation.

#### 17.3.1.2 Corporate Coherence

Corporate Coherence in Upstream Norske Shell realizes all three types of purchasing synergies (Table 58). The factors or drivers that are the reasons behind realized purchasing synergies are: use of standard procedures, formalized alignment between C&P and Delivery Team, use of the information platform SAP, and a unified organizational culture in C&P and Delivery Team.

Table 58: Corporate Coherence: Which Types Realized and Why

WHY	WHICH TYPES REALIZED		
	Economies of scale	Economies of information and learning	Economies of process
Standard procedures (CMCP, RtP, EFA)	X	X	X
Formalized alignment (C&P and Delivery Team)		X	X
Information platform (SAP)		X	X
Unified organizational culture (C&P and Delivery Team)		X	X

Factors or barriers underlying Corporate Coherence also exist, inhibiting realization of all three purchasing synergies: maverick buying, top-down fiat, internal alignment

in C&P, difference in focus and background between C&P and Delivery Team (Table 59).

**Table 59: Corporate Coherence: Which Types Unrealized and Why**

WHY	WHICH TYPES UNREALIZED		
	Economies of scale	Economies of information and learning	Economies of process
Maverick buying	X		X
Top-down Fiat	X	X	X
Internal alignment in C&P	X	X	X
Difference in focus (C&P and Delivery Team)		X	X
Difference in background (C&P and Delivery Team)		X	X

### 17.3.1.3 Purchasing Maturity

Purchasing Maturity in Upstream Norske Shell realizes all three types of purchasing synergies due to these underlying factors: positive perception of C&P, use of SAP, existing purchasing skills and strategic processes, uniform buying policies towards suppliers (Table 60).

**Table 60: Purchasing Maturity: Which Types Realized and Why**

WHY	WHICH TYPES REALIZED		
	Economies of scale	Economies of information and learning	Economies of process
Positive perception of C&P		X	X
Information access		X	
Use of SAP		X	X
Purchasing skills	X	X	X
Strategic processes	X	X	X
Uniform buying policies	X		

Purchasing Maturity also inhibits realization of all three purchasing synergies (Table 61). The explanation lies in the barriers: non-formalized or lengthy reporting line from C&P and Delivery Team to top management, high usability threshold of SAP, lack of technical skills and current SAP knowledge, lack of focus on training and

development, purchasers functioning as processing capacities, and multiple contract points.

**Table 61: Purchasing Maturity: Which Types Unrealized and Why**

WHY	WHICH TYPES UNREALIZED		
	Economies of scale	Economies of information and learning	Economies of process
Reporting line	X	X	X
Limited status and visibility	X	X	X
High usability threshold			X
Lack of technical skills			X
Lack of SAP knowledge			X
Training and development program	X	X	X
Processing capacity	X	X	X
Multiple contact points	X		X

#### 17.3.1.4 Organizational Structure

The coordinate purchasing organization with horizontal and vertical specialization features, both realizes and inhibits all three types of purchasing synergies. These are presented in the following Table 62 and Table 63.

**Table 62: Organizational Structure: Which Types Realized and Why**

WHY	WHICH TYPES REALIZED		
	Economies of scale	Economies of information and learning	Economies of process
Coordinated Purchasing	X		
Horizontal Specialization (Delivery Team)		X	X

**Table 63: Organizational Structure: Which Types Unrealized and Why**

WHY	WHICH TYPES UNREALIZED		
	Economies of scale	Economies of information and learning	Economies of process
Coordinated Purchasing		X	
Horizontal Specialization (Delivery Team)		X	
Vertical Specialization (C&P)		X	X

**17.3.1.5 Performance Measures**

The performance measurement system incorporated in the contracts and in the RtP-process in Upstream Norske Shell, both creates and inhibits all three types of purchasing synergies. The factors that realizes purchasing synergies are: alignment between Contract KPIs and RtP KPIs and strategic priorities, accurate performance measures of Contract KPIs and Generic Materials and behavior influence and purchasing development from the Contract KPIs and Generic Materials, and communication of Contract KPIs and RtP KPIs. (Table 64)

**Table 64: Performance Measures: Which Types Realized and Why**

WHY	WHICH TYPES REALIZED		
	Economies of scale	Economies of information and learning	Economies of process
Align Measures with Strategic Priorities			X - Contract KPIs - RtP KPIs
Measure performance accurately			X - Contract KPIs - Generic Materials
Influence behavior and develop purchasing	X - Generic Materials	X - Generic Materials	X - Contract KPIs - Generic Materials
Communicate measures	X - Contract KPIs	X - Contract KPIs - RtP KPIs	X - Contract KPIs - RtP KPIs

Barriers to purchasing synergy realization are: inaccurate RtP performance measures (Service Levels, Required On Site and Generic Materials), low degree of behavior

influence and purchasing development (Service Levels and Required On Site), and the way the RtP measures are communicated. This is shown in Table 65.

**Table 65: Performance Measures: Which Types Unrealized and Why**

WHY	WHICH TYPES UNREALIZED		
	Economies of scale	Economies of information and learning	Economies of process
Measure performance accurately			X - RtP KPIs
Influence behavior and develop purchasing	X - Service Levels - Required On Site	X - Service Levels - Required On Site	X - Service Levels - Required On Site
Communicate measures		X - RtP KPIs	X - RtP KPIs

#### 17.3.1.6 Total Cost/Benefit Analysis

TCO perspective of RtP and CMCP, and the use of cost/benefit analyses throughout the processes RtP and CMCP, and contract segmentation, realizes all three forms of purchasing synergy (Table 66).

**Table 66: Total Cost/Benefit Analysis: Which Types Realized and Why**

WHY	WHICH TYPES REALIZED		
	Economies of scale	Economies of information and learning	Economies of process
TCO Perspective	X - RtP - CMCP		X - CMCP
Use of Cost/Benefit Analyses	X - RtP - CMCP - Contract Segmentation	X - CMCP	X - RtP - CMCP - Contract Segmentation

#### 17.3.1.7 Portfolio of Relationships

The degree of collaboration in the intra- and inter-firm relationships in Upstream Norske Shell determines which types of purchasing synergies realized, and which synergies remain unrealized. Existing collaboration realizes purchasing synergies,

whereas lack of collaboration represents unrealized potentials for purchasing synergies. The findings are summarized in Table 67 and Table 68.

**Table 67: Portfolio of Relationships: Which Types Realized and Why**

WHY	WHICH TYPES REALIZED		
	Economies of scale	Economies of information and learning	Economies of process
Collaboration (Intra- and inter-firm relationships)	<p style="text-align: center;"><b>X</b></p> <ul style="list-style-type: none"> <li>- Inventory Analysts and E&amp;M Delivery Engineers</li> <li>- E&amp;M Delivery Engineers and Suppliers</li> </ul>	<p style="text-align: center;"><b>X</b></p> <ul style="list-style-type: none"> <li>- C&amp;P Lead and Inventory Analysts</li> <li>- Inventory Analysts and E&amp;M Delivery Engineers</li> <li>- Purchase Coordinators and E&amp;M Delivery Engineers</li> <li>- Contract Specialists and E&amp;M Delivery Engineers</li> <li>- Senior Buyer Sourcing and E&amp;M Delivery Engineers</li> <li>- RtP Analysts</li> <li>- Contract Manager and Contract Holders and Contract Specialists (including C&amp;P Lead)</li> <li>- E&amp;M Delivery Engineers and Suppliers</li> <li>- Contract Specialists (including C&amp;P Lead), Senior Buyer Sourcing and Suppliers</li> </ul>	<p style="text-align: center;"><b>X</b></p> <ul style="list-style-type: none"> <li>- Inventory Analysts and E&amp;M Delivery Engineers</li> <li>- E&amp;M Delivery Engineers and Suppliers</li> </ul>

**Table 68: Portfolio of Relationships: Which Types Unrealized and Why**

WHY	WHICH TYPES UNREALIZED		
	Economies of scale	Economies of information and learning	Economies of process
Collaboration (Intra- and inter-firm relationships)	<p style="text-align: center;">X</p> <ul style="list-style-type: none"> <li>- Inventory Analysts and Purchase Coordinators</li> </ul>	<p style="text-align: center;">X</p> <ul style="list-style-type: none"> <li>- C&amp;P Lead and Delivery Team Lead</li> <li>- C&amp;P Lead and Purchase Coordinators</li> <li>- Purchase Coordinators</li> <li>- Inventory Analysts and Purchase Coordinators</li> <li>- Contract Specialists</li> <li>- Contract Specialists and Senior Buyer Sourcing</li> <li>- Contract Specialists and Purchase Coordinators</li> <li>- RtP Analysts and C&amp;P Lead</li> </ul>	<p style="text-align: center;">X</p> <ul style="list-style-type: none"> <li>- Purchase Coordinators</li> <li>- Inventory Analysts and Purchase Coordinators</li> <li>- Contract Specialists</li> <li>- Contract Specialists and Senior Buyer Sourcing</li> <li>- Contract Specialists and Purchase Coordinators</li> </ul>

**17.3.1.8 Evaluation of the Findings**

Some main features to be evaluated can be drawn from the aforementioned findings. It is clear that all three forms of purchasing synergy: economies of scale, economies of information and learning and economies of process, are identified (realized and unrealized) from each of the separate wheel elements. In other words, all three forms of purchasing synergy can be found by looking at purchasing from all the different wheel element perspectives. This gives that there are many factors facilitating and inhibiting purchasing synergy, and that it is important to study purchasing synergies from all the perspectives of the different wheel elements.

Comparing the amount of economies of scale, economies of information and learning and economies of process found, there are only slight differences that separates the three purchasing synergies. It is important to notice, however, that the amount of economies of information and learning and process applies to many different intra- and inter-firm relationships. This gives that each of the fields in the Factor-Synergy matrices, e.g. one cross for economies of information and learning, can represent several relationships.



Following this line of reasoning, it can be concluded that there are more occurrence of economies of information and learning and economies of process, than economies of scale. The lack of economies of scale findings, on the other hand, have one of its explanations in the small amount of quantitative empirical data on the case company's performance. This can be exemplified by the element Portfolio of Relationships, where almost no realized or unrealized potentials for economies of scale are found. Obviously, there are more economies of scale to be identified in Upstream Norske Shell, although this analysis does not incorporate it.

The type of economies of information and learning that is most often realized or unrealized is 'knowledge and information sharing'. The type of economies of process that is most often realized or unrealized is 'common way of working'. This can be explained in the focus the analysis has on the relationship collaboration in and between the divisions C&P and Delivery Team, and on use of the existing standard procedures in RtP and CMCP, respectively.

Two of the elements, Total Cost/Benefit Analysis and the inter-firm relationships included in Portfolio of Relationships, only find realized purchasing synergies and no unrealized potentials. This can be explained by the thesis' lack of empirical data and lack of supplier perspective, respectively. The analyses carried out on these two aspects are thus relatively cursory.

### **17.3.2 Link Analysis: Why are Certain Purchasing Synergies Realized and Others Not?**

The link analysis shows that several of the underlying factors in the separate wheel elements are linked together. This gives a more in-depth explanation of why certain purchasing synergies are realized and others not. Figure 78 illustrates how the different wheel elements and their underlying factors are linked together. The different colors separates the different links discussed in Chapter Fourteen, and corresponds to Fig. 75. In each link, several underlying factors are linked together. This is thus represented by the multiple arrows with same color. The illustration shows that the links are either one-directional or bidirectional in which the arrows either points in one direction or both.

The following bidirectional links are found: Corporate Coherence - Purchasing Maturity, Corporate Coherence - Performance Measures, Corporate Coherence - Total Cost/Benefit Analysis, Corporate Coherence - Portfolio of Relationships. In other words, all bidirectional links include Corporate Coherence.

The one-directional links found are: (1) from Business Context to Portfolio of Relationships, Corporate Coherence, Total Cost/Benefit Analysis and Purchasing Maturity; (2) from Organizational Structure to Portfolio of Relationships; (3) from Portfolio of Relationships to Purchasing Maturity; (4) from Organizational Structure to Corporate Coherences; (5) from Portfolio of Relationships to Corporate Coherence;

(6) from Portfolio of Relationships to Purchasing Maturity; and (7) from Corporate Coherence to Purchasing Maturity.

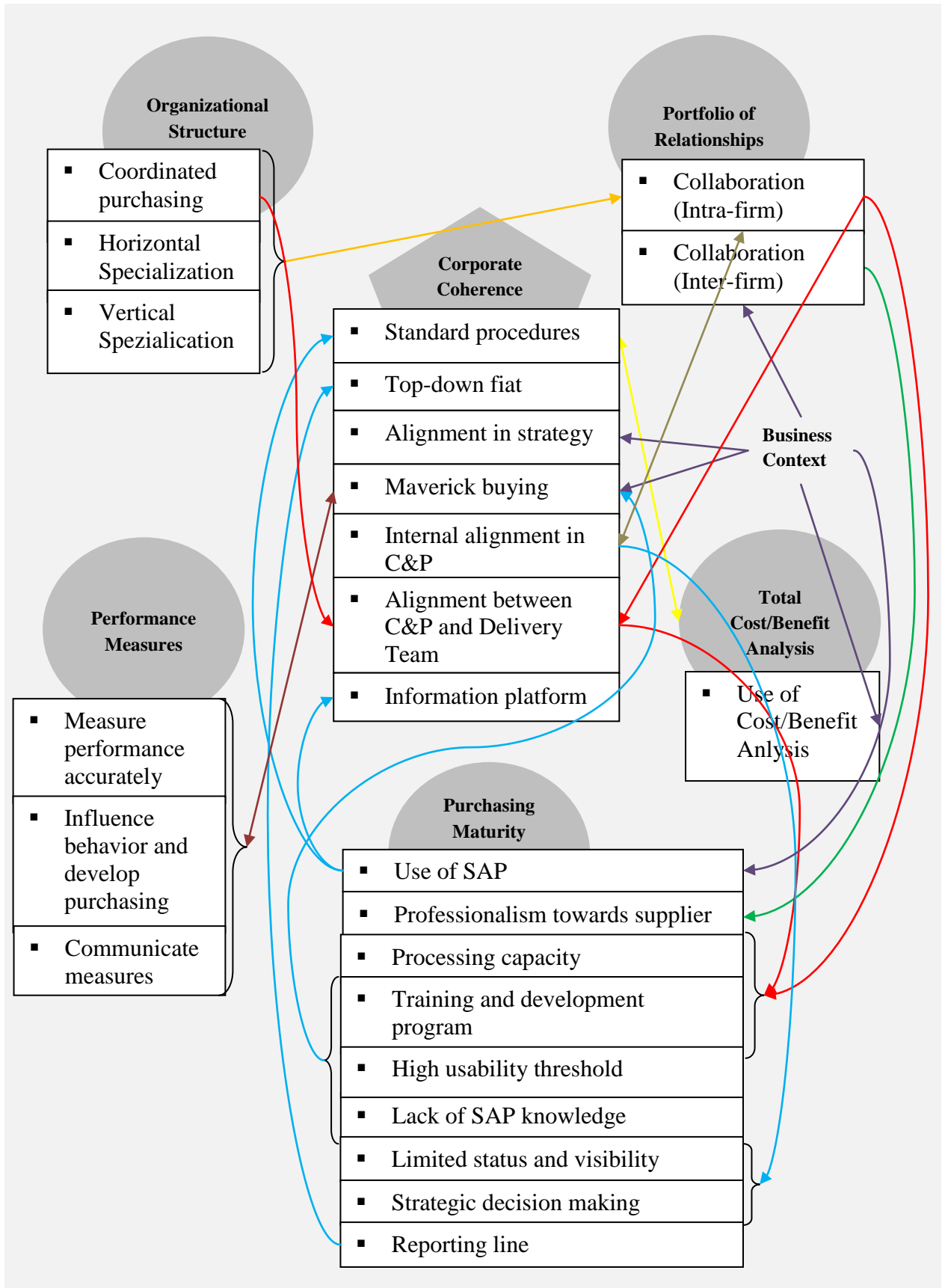


Figure 78: Overview of Links Between Factors

Several links can also be drawn between the very same elements. It can be shown in both Fig. 75 and the more detailed version in Fig. 78, that different factors underlying the elements can be linked together in multiple ways. In example, Corporate Coherence and Purchasing Maturity are linked in two ways, both with a blue line and a red line. This suggests that some of the wheel elements, such as Corporate Coherence and Purchasing Maturity, should preferably be managed simultaneously.

Connections between several of the factors underlying the different wheel elements are found. Several factors might lead to the *same* purchasing synergies, i.e. one realized or unrealized purchasing synergy can have its explanation in several drivers or barriers. In example: coordinated purchasing (Organizational Structure) leads to the same economies of information and learning and process as collaboration (Portfolio of Relationships). Another example is that the factor standard procedures (Corporate Coherence) leads to the same purchasing synergies as use of cost/benefit analysis (Total Cost/Benefit Analysis).

Furthermore, one factor underlying one wheel element can be the reason for the existence of other factors underlying other wheel elements. In example: maverick buying (Corporate Coherence) is the underlying reason for the current status of the factors measure performance accurately and influence behavior and develop purchasing (Performance Measures). Furthermore, high usability threshold, lack of SAP knowledge and training and development program (Purchasing Maturity) are the underlying reasons for the current situation with maverick buying (Corporate Coherence).

The analysis of the links shows that several factors might lead to the same purchasing synergies, and that one factor underlying one wheel element can be the reason for the existence of other factors underlying other wheel elements. This gives that the reasons for the realized and unrealized purchasing synergies might be very complex and difficult to spot, and only the link-analyses can really give the intricate explanations for the current realized and unrealized purchasing synergies.

### **17.3.3 What are the Managerial Implications for Upstream Norske Shell?**

The types of purchasing synergies identified as realized in Upstream Norske Shell are considered to have positive implications for the company. The realized purchasing synergies can thus be said to represent corporate and competitive advantage, and should be maintained.

Since all wheel elements, in addition to most links between the wheel elements, affect all three forms of purchasing synergy, the challenges identified naturally also can lead to unrealized potentials for all three forms purchasing synergy. As a consequence, the recommendations given also facilitate realization of all three types of purchasing synergy. Altogether, six main challenges are found.

First, the organizational structure of purchasing in Upstream Norske Shell creates many unrealized potentials for purchasing synergy, especially economies of

information and learning (knowledge and information sharing) and economies of process (common way of working). In other words, unrealized potentials are latent in intra-firm relationships both in and between C&P and Delivery Team. The coordinated purchasing structure with vertical and horizontal features is thus characterized a challenge.

Second, internal coordination in C&P is a challenge that consists of the two aspects alignment and collaboration. Lack of internal alignment in C&P and lack of collaboration in the intra-firm relationships comprising C&P represent lots of unrealized potentials for purchasing synergy, which makes internal coordination in C&P a significant challenge.

Third, because of lack of internal alignment in C&P and C&P's status as support function in the overall matrix organization in Upstream Norske Shell, C&P's status and visibility is considered a challenge. Limited status and visibility result in lost opportunities for sharing know-how and participate in joint decision-making, representing unrealized potentials for economies of information and learning and economies of process.

Fourth, lack of alignment and collaboration across C&P and Delivery Team are main reasons for many of the unrealized purchasing synergy potentials identified. It makes the divisions unable to utilize the their capacity potentials and appear as professional. Coordination between C&P and Delivery Team is thus considered an important challenge.

Fifth, maverick buying is the reason behind huge amounts of unrealized potentials for all three types of purchasing synergy: decreased work efficiency, increased process costs, inability to standardize, lost negotiation power, and incorrect RtP related KPI measures. Maverick buying is therefore considered a significantly important challenge in Upstream Norske Shell.

Sixth, the inaccurate RtP related KPIs represent unrealized purchasing potentials in Upstream Norske Shell: lack of purchasing process knowledge, ability to comply with continuous improvement philosophy, awareness among the employees of how their activities impact the scores of the measures, and the total performance of the purchasing process. Therefore, the RtP related KPIs are considered an important challenge.

Capturing the existing unrealized purchasing synergies and overcoming the six challenges, four recommendations are given. The recommendations seek to overcome several of the challenges and realize all three types of purchasing synergies. Table 69 presents the suggested managerial implications for Upstream Norske Shell:

**Table 69: Managerial Implications for Upstream Norske Shell**

Challenges	Organizational structure of purchasing	Internal coordination in C&P	Status and Visibility of C&P	Coordination between C&P and Delivery Team	Maverick Buying	RtP related KPIs
Completing the matrix structure	X	X	X	X		
Creating a climate of cooperation		X	X	X		
Strengthening C&P's profile		X	X		X	X
Prioritizing training and development		X	X	X	X	X

#### 17.3.4 Contribution

The findings from the systematic approach of applying the Purchasing Synergy Management Wheel contribute to the research field of purchasing synergy. The findings give insights into the existence of purchasing synergies in the empirical world through a single case study. It not only identifies the existing realized and unrealized purchasing synergy potentials, it also explains why they are realized and unrealized. This contributes to the paucity of existing empirical research on the field. The empirical findings from the analyses can serve as a comparison for other research on the same topic.

#### 17.3.5 Summary

This chapter has given clear answers to RQ3: Which types of purchasing synergies are realized in Upstream Norske Shell and what purchasing synergy potentials are currently unrealized? Why are certain purchasing synergies realized and others not, and what are the implications for Upstream Norske Shell? The findings from the separate wheel elements explains "which types of purchasing synergies are realized in Upstream Norske Shell and what purchasing synergy potentials are currently unrealized?", and together with the findings from the link analysis, answers "why are certain purchasing synergies realized and others not?". Lastly, the identified challenges and recommendations answer "what are the implications for Upstream Norske Shell?"

## 17.4 Research Question 4

### **To what extent do theory and practice correspond, and what are the implications for further theoretical and empirical research?**

The two preceding research questions, RQ1 and RQ2, address the definition and importance of purchasing synergy and how it may be identified and realized from a theoretical perspective in the literature review. RQ3, on the other hand, seeks to explain which and why purchasing synergies are realized in practice in the analysis of Upstream Norske Shell. It is of high scientific value to study the correspondence between theory and practice, so that implications for both theoretical and empirical further research can be drawn. RQ4 is used to this end.

The chapter on analysis applies the conceptual framework Purchasing Synergy Management Wheel outlined in the literature review. It is therefore natural to begin with a comparison of findings from using the framework against the theoretical description of it. This implies studying the wheel elements, the factors as drivers or barriers to purchasing synergy, the links between the factors and use of organizational buying theory. Subsequently, the degree of correspondence between the overall definition of purchasing synergy and the identification of the three types of purchasing synergy in the analysis is discussed. Implications for further research, from a theoretical and an empirical perspective, are lastly drawn, along with contributions.

#### **17.4.1 Application of the Purchasing Synergy Management Wheel**

This section studies the application of the conceptual framework Purchasing Synergy Management Wheel in the analysis. Specifically, the definition of each element of the framework in the literature is compared with the analysis of each element, followed by a discussion of the relevant links between the elements. Lastly, the use of organizational buying theory in the literature and in the analysis is studied in search for correspondence.

##### *17.4.1.1 Business Context*

By definition in the literature, *Business Context* describes how the external environment impacts a company and indirectly affects realization of purchasing synergies. The external environment is further divided into variables such as physical, technological, economical, political/legal, and social. The analysis studies the external variables and confirms that each of them, in one way or another, indirectly influences purchasing synergy creation.

Moreover, the analysis uncovers how Business Context influences the wheel elements and their underlying factors, including: purchasing strategy, usability of information technology, outcome of cost/benefit analysis, and supplier interaction. This suggests that Business Context indirectly affects purchasing synergy creation through affecting the wheel elements and their underlying factors that can lead to purchasing synergies.

Accordingly, the suggestion on Business Context's indirect effect on purchasing synergy in the literature is further strengthened.

#### *17.4.1.2 Corporate Coherence*

*Corporate Coherence* is defined as the center wheel element in the Purchasing Synergy Management Wheel and acts as the hub and driver element of the theoretical framework. This corresponds well with the most important links between the elements in the analysis. A clear pattern shows that Corporate Coherence is the only element that is identified as being related to all others. The importance of Corporate Coherence in purchasing synergy management is also illustrated by the major challenges identified in the analysis. Internal alignment in C&P, and alignment between C&P and Delivery Team in strategy are seen as vital to purchasing synergy creation.

This also leads to the perception that alignment in strategy is somewhat more important than alignment of e.g. culture and information platform. The analysis identified that several major factors influencing purchasing synergy creation underlie alignment in strategy, including standard procedures, maverick buying and top-down fiat. This contradicts with the literature, which does not consider the weighing of alignment of the different aspects.

The literature also suggests that the overall degree of Corporate Coherence should be classified into low, moderate and high. However, no approach to do so is identified. The analysis thus improvises and classifies the overall degree based on the amount of factors that either increase or undermine Corporate Coherence. This is not necessarily an accurate approach. However, it is difficult to evaluate the accuracy of the approach due to insufficient theoretical findings.

#### *17.4.1.3 Purchasing Maturity*

In the literature, *Purchasing Maturity* refers to the level of professionalism and sophistication of the entire buying center in the purchasing process. Many important factors are derived from the literature to measure purchasing's overall professionalism and sophistication. The analysis studies all these factors. Visibility and organizational perception is identified as a major challenge to purchasing synergy creation, which may further prevent strategic decision-making. This illustrates that theory and practice agree upon the importance of Purchasing Maturity.

The literature also suggests that maturity of purchasing is not a static condition. Rather, continuous focus on development is necessary to achieve high level of Purchasing Maturity. This corresponds with findings from the analysis, in which the prioritization of training and development is given as an important recommendation. Training and development lead to purchasing synergy creation itself, but it also facilitates coordination, helps reduce maverick buying and increases performance through use of KPIs.

An approach to classify the degree of Purchasing Maturity is derived from the literature. This simple approach indicates either low, or high, level of Purchasing Maturity depending on the factors studied. The analysis follows this approach, however, several of the factors studied indicated neither a low or high level of Purchasing Maturity. The true answer likely lies somewhere in between. For example, the analysis of professionalism towards suppliers reveals that Upstream Norske Shell applies uniform buying policies, but suppliers have to deal with several contact points, which may lead to unprofessionalism. Accordingly, findings from the analysis suggest that the approach to classify the degree of Purchasing Maturity in the literature seems somewhat unrefined and inaccurate.

#### *17.4.1.4 Organizational Structure*

Theoretical findings suggest that the level of Corporate Coherence and Purchasing Maturity determine the appropriate Organizational Structure. In order to find the correct structure, the level of Corporate Coherence and Purchasing Maturity has to be cautiously defined. However, as discussed in the two preceding subsections, no one accurate classification approach is identified in the literature. This can cause the determination of appropriate Organizational Structure to become less accurate.

Nevertheless, the analysis identified coordinated purchasing as the current structure in Upstream Norske shell, initially based on organizational features that resemble the structure. This coincides with the appropriate structure classified based on level of Corporate Coherence and Purchasing Maturity and strengthens the reliability of the result.

In the literature, coordinated purchasing is one of the five identified types of Organizational Structure. It facilitates economies of scale through centralized contract negotiation and economies of information and learning through cooperation between the separated business units making own purchase decisions. However, even through Upstream Norske Shell has a coordinated purchasing structure, the structure is somewhat incomplete. Lacking coordination mechanisms prevents economies of information and learning through cooperation between C&P and Purchase Coordinators. This explains why not all purchasing synergies are realized in Upstream Norske Shell compared to the theoretical findings.

Moreover, Organizational Structure is identified as a major challenge to purchasing synergy realization in the analysis. This supports the findings from literature, suggesting that the structure itself can be regarded as driver or barrier to purchasing synergy creation.

#### *17.4.1.5 Performance Measures*

By definition in the literature, *Performance Measures* are designated to fulfill five purposes. The purposes can be considered steps as an overall five-step process so that the Performance Measures can serve its purposes to a full extent. The analysis revealed that Upstream Norske Shell is able to align RtP-related measures with



strategic priorities, but partly fails in the four subsequent steps. Since the KPIs do not measure performance accurately, they cannot effectively be communicated or used to influence behavior and develop purchasing. This corresponds well with the five-step process illustrated in the literature. The previous steps in the process must be completed in order for the subsequent steps to function.

An interesting finding from the analysis of links between Performance Measures and Corporate Coherence points out the close relationship between maverick buying and Performance Measures. On the one hand, maverick buying is identified as the reason of inaccurate KPI-measures. On the other, inaccurate KPI-measures are less usable to influence behavior and develop purchasing, so that maverick buying can be minimized. This relationship is not emphasized in the literature.

In the analysis, the ultimate reason for maverick buying which lead to incorrect KPIs is identified as top-down fiat. As a result of long hierarchical distance between Global Shell and Upstream Norske Shell, the KPIs may not be adjusted to local conditions, which cause them to function incorrectly. This corresponds well with the literature, which detects that centrally designed purchasing performance measurement system is not always suitable to a local unit level.

#### *17.4.1.6 Total Cost/Benefit Analysis*

By definition, a *Total Cost/Benefit Analysis* emphasizes the need to employ a total cost of ownership perspective. The analysis of Upstream Norske Shell shows that the two main purchasing processes derived from standard procedures, RtP and CMCP, are indeed built from a TCO perspective. This lays a solid foundation for all purchasing activities in Upstream Norske Shell and corresponds to the literature that emphasizes the great importance of TCO perspective.

The literature regards cost savings as a driver for purchasing synergy, which necessitates the use of cost/benefit analyses to measure the cost effects of a purchasing synergy initiative. Due to lack of quantitative data, however, the analysis does not consider cost issues on a detailed level. In this way, some important cost/benefit aspects may have been disregarded, which in turn raises doubt on the significance of this wheel element in the analysis.

Overall, the wheel element Total Cost/Benefit Analysis is somewhat neglected in the literature. Only two factors that influence purchasing synergy creation are identified. This may limit the focus of the analysis of this wheel element, seeing as none unrealized purchasing synergy potentials are recognized. Analysis of all other wheel elements has uncovered several unrealized potentials for purchasing synergy realization. This shows that the lack of comprehensiveness in the literature may impact the quality of the analysis.

#### *17.4.1.7 Portfolio of Relationships*

In the literature, *Portfolio of Relationships* emphasize collaboration and communication within intra-firm and inter-firm relationships. The importance of

cooperative relationships with both formal and informal communication is largely confirmed by the analysis. Lack of collaboration is identified as major challenges to coordination both internally in C&P and between C&P and Delivery Team. Creating a climate of cooperation thus becomes a crucial recommendation to strengthening the overall purchasing performance in Upstream Norske Shell. In general, findings from the analysis highlight the significance of this wheel element.

The analysis studies relationships on an individual level. This enables very detailed findings and a mapping of all communication lines in the buying center, those that are present, and those that are missing. In this way, concrete actions for improving the cooperation can be initiated, which increases the chances of success in creating a collaborative climate. The definition of Portfolio of Relationships in the literature enables this detailed level of analysis. The literature, however, does not explicitly state the importance of analyzing individual relationships, which represent a gap between theory and practice.

#### *17.4.1.8 Overall Comparison of the Elements in Theory and Practice*

Seeing the seven elements altogether, it is evident that the definition of the elements in the literature largely correspond to the analysis of each element. What is highlighted as important in the literature seems also crucial in the analysis, such as: alignment across the corporation, professionalism in purchasing, appropriate organizational structure, use of performance measures, TCO perspective, and collaboration in the boundary-spanning unit of purchasing.

Moreover, the same factors described in the literature that impact purchasing synergy creation are identified in the analysis. The only difference is that some of the factors are split into sub-factors due to its complexity in the analysis, e.g. alignment between business level strategy and skills and competencies. This is a natural consequence of the detail level of the analysis.

The literature does not intend to distinguish elements that are more important than others. However, the wheel element Total Cost/Benefit Analysis may still have received less research attention than others. This is reflected in the analysis of this same wheel element that may somewhat lack comprehensiveness, since it is unable to identify potentials for unrealized purchasing synergies.

Besides, most of the elements apart from Business Context focus on purchasing synergies in intra-firm environment in the literature. The analysis also takes a largely intra-firm, buying center perspective. This can potentially explain why no potentials for unrealized purchasing synergies in inter-firm relationships are uncovered.

#### *17.4.1.9 Relevant Links Between Elements*

The literature emphasize that no one element should be looked upon in isolation, as each element of the model affects the others. The analysis demonstrates this statement by showing how some of the most important factors underlying each element are related to each other. Since the factors are linked to each other, so are the elements.

The results in the analysis contributes to a deeper understanding of *why* certain purchasing synergies are realized and others not, in a sense that the reasons are often complex. Accordingly, all wheel elements are closely related, and should be more or less managed simultaneously. This is in line with the philosophy of the Purchasing Synergy Management Wheel, initially adapted from the Strategic Supply Wheel, in which no elements should be handled separately.

However, no concrete links between factors and elements are drawn in the literature, and no guidelines to a systematical approach of how to do so are outlined. It is therefore unfeasible to make any comparison between theory and practice, and make any judgment of the reliability of the results in the analysis.

#### *17.4.1.10 Use of Organizational Buying Theory*

Organizational buying is incorporated in the literature review to emphasize that all employees in a buying center, not only within the purchasing function, have an impact on a buying decision. The buying center therefore also influences purchasing synergy management. It is incorporated in the Purchasing Synergy Management Wheel in two ways: the scope of the framework and intra-firm relationships.

The analysis takes the buying center perceptives into framing the scope. It designates the different buying center roles to the different employees comprising the buying center. In the analysis of intra-firm relationships, the interactions between these employees are studied on an individual level, in which buying center roles are used to explain their need for interaction. The analysis thus confirms the importance of recognizing the entire buying center. Otherwise, important employees and interrelationships between them may be overlooked, which then create an incomplete picture of purchasing synergies that can be identified and explained.

In the context of Organizational Buying in Upstream Norske Shell, it is also interesting to compare the findings from the analysis with an article by Reve and Johansen (1982), which studies *organizational buying in the Norwegian petroleum industry*. First, Reve and Johansen (1982) define four departments that normally constitute the buying center in the industry: purchasing, engineering, operations, and top management. This largely coincides with the buying center of Upstream Norske Shell. C&P correspond to purchasing, Delivery Team equivalent to engineering, operators on the assets being operations, and Operations Manager Norway function as top management.

Second, Reve and Johansen (1982) suggest that the different departments, as they put it, contribute to the buying decisions using evaluations along different salient criteria. This means that purchasing is guardians of market variables and engineering of product variables. In Upstream Norske Shell, it is also evident that C&P and Delivery Team have different focus and priorities, C&P with mostly commercial focus, while the Delivery Team emphasize technical criticalities. However, what Reve and

Johansen (1982) do not explicit touch on is that this can lead to challenges in coordination and alignment of strategies.

Third, Reve and Johansen (1982) propose that top management is mostly involved in buying decisions with high complexity, such as buying of a production platform module. These kinds of buying decisions are not made by Upstream Norske Shell, which primarily buys for operational use. Accordingly, top management seems less prominent in buying decisions in the case company. This corresponds to findings from Reve and Johansen (1982). The analysis takes this one step further. It suggests that lack of top management attention can in turn lead to purchasing not given sufficient status and perception and possibilities to participate in strategic decision-making.

Accordingly, the findings from Reve and Johansen (1982) largely correspond to findings from the analysis of Upstream Norske Shell from an organizational buying perspective. The article by Reve and Johansen (1982) is based on studies of several of the largest oil companies operating on the Norwegian continental shelf. It can therefore verify and validate the findings from the analysis. Together, the corresponding findings from the article and the analysis strengthen the credibility and importance of the organizational buying approach, also in the theoretical field of purchasing.

#### **17.4.2 Identification of Purchasing Synergies**

In this section, the review of purchasing synergy literature, and the subsequent outlined theoretical Factor-Synergy Matrices, are compared to purchasing synergies identified in the analysis. These findings stem from the analysis of each wheel element summarized into the same type of Factor-Synergy Matrices. Furthermore, correspondence between the definition of purchasing synergy, in particular its unit of analysis, and the analysis of purchasing synergy in the case company, is studied. This section concludes with a discussion of the importance of purchasing synergy.

##### ***17.4.2.1 Unit of Analysis***

The definition of purchasing synergy expands the existing literature to encompass purchasing synergy creation not only between, but also within, business units. The unit of analysis of the Purchasing Synergy Management Wheel adapts this line of reasoning. In the analysis, purchasing synergy realization *within* Upstream Norske Shell, a business unit in Global Shell, is studied. The findings show that every type of purchasing synergy can be identified in business activities and interrelationships, within Upstream Norske Shell. This demonstrates the validity of the definition of purchasing synergy, and thereby the unit of analysis of the conceptual framework.

##### ***17.4.2.2 Factor-Synergy Matrices and the Three Types of Purchasing Synergy***

A comparison of the overall theoretical Factor-Synergy Matrix to the one in the analysis shows a high degree of correspondence. The same factors largely influences the same types of purchasing synergies. In other words, the analysis validates the

findings from the literature and the applicability of the theoretical Factor-Synergy Matrices.

Some factors in the matrix identified in the literature are specific, while others are more general in nature. This can explain the deviations in certain aspects. For example, the factors skills and competencies do not specify any particular skill. In the analysis, it is divided into sub-factors, including purchasing and technical skills, and SAP knowledge based on the empirical data gathered. The different sub-factors can naturally lead to realization of different purchasing synergies.

Both the overall theoretical Factor-Synergy Matrix and the one in the analysis shows the same tendency in amount of each type of purchasing synergy identified. Slightly more economies of process are identified compared to economies of information and learning, but this is not necessarily significant, since the fields of the matrices are not weighted.

However, least amount of economies of scale is found in the analysis. This is rather surprising compared to the reviewed literature on purchasing synergy, in which economies of scale is clearly given most attention. One explanation may be the focus of cost reduction prevailing in early literature, in contrast to the conceptual framework and the analysis that seek to take a more holistic focus.

Another reason may be that conceptual framework accommodates for studying purchasing synergy within business units, which is demonstrated in the analysis of Upstream Norske Shell. This enables a detailed level of study that emphasize interrelationships. The analysis of Portfolio of Relationships, for example, mostly identifies economies of information and learning and economies of process.

On the other side, benefits of economies of scale, such as pooling negotiation power, standardizing categories, and synchronizing requirements, result largely from coordination between business units. The other types of purchasing synergy may not be readily to observe on an aggregate level. This explains the difference in focus with respect to the three forms of purchasing synergy, between existing purchasing synergy literature and the conceptual framework along with the analysis.

Nevertheless, the Factor-Synergy Matrices in the literature and the analysis demonstrates the importance of all three forms of purchasing synergy, seeing as all three types are identified in every wheel element. This is in line with the intention of the definition of purchasing synergy, which is explicitly linked to the three types of purchasing synergy.

Following this line of reasoning, the three types of purchasing synergy should be considered altogether, in order to achieve the desired benefits of purchasing synergy. This logic in the literature corresponds with recommendations given in the analysis, which are meant to facilitate creation of all three types of purchasing synergy.

### *17.4.2.3 Importance of Purchasing Synergy*

Purchasing synergy is given a high importance in the literature, seeing as it overall contributes to increased competitive advantage. This is demonstrated in the analysis, which identifies many already realized purchasing synergies contributing to increased purchasing performance in Upstream Norske Shell. Examples are negotiation power through uniform buying policies, integrated flow of information through use of SAP, and integration in working styles through standard procedures. The analysis also highlights unrealized potentials for purchasing synergy, and the negative consequences of them, which impacts costs, knowledge and efficiency. Overall, the analysis confirms the importance of purchasing synergy.

### **17.4.3 Implications for Further Research**

By studying the correspondence between theory and practice, a need for further research has emerged. Implications for both theoretical and empirical research are outlined. These may be divided into two broad categories: namely, the study of purchasing synergy and the development of the Purchasing Synergy Management Wheel. The first two implications are related to the former, whereas the remaining seven are related to the conceptual framework.

First, all three types of purchasing synergy prove to be important. The aspect that has been given most attention in literature is economies of scale. Economies of information and learning and economies of process are given less attention. The analysis, however, focuses on all three types of purchasing synergy, in particular the two that is given less attention in literature. Further research should therefore continue to pay more attention to economies of information and learning and economies of process, and consider all three types together rather than individually.

Second, the definition of purchasing synergy is broadened to include purchasing synergy realization within, not only between, business units. This line of reasoning is adapted by the Purchasing Synergy Management Wheel and tested successfully in the analysis. However, this unit of analysis still deserves to be studied more thoroughly both in conceptual and empirical research to verify its validity.

Third, the wheel elements in the Purchasing Synergy Management Wheel have received somewhat different research attention. Least attention is given to Total Cost/Benefit Analysis, which may have affected the comprehensiveness of the analysis of this wheel element negatively. Since all wheel elements are important and interrelated, this calls for future research to focus on purchasing synergy management in relation to all wheel elements, especially the least developed like Total Cost-Benefit Analysis.

Fourth, topics like maverick buying and organizational buying is deliberately included in the literature and the analysis proves their relevance to purchasing synergy creation. Maverick buying itself represent a challenge in Upstream Norske Shell and is identified as being related to several other factors that also influence realization of

purchasing synergy. It is therefore worthwhile to study the phenomenon of maverick buying in-depth empirically in other industries and companies, and also conceptually, to highlight its importance and uncover ways of reducing it.

Fifth, organizational buying is identified as an interesting perspective that may well supplement literature on purchasing. It is, however, only incorporated in the scope of the conceptual framework and mostly in the wheel element Portfolio of Relationships. Further research should thus seek to develop the Purchasing Synergy Management Wheel, so that it may better encompass the organizational buying perspective. Empirically, it may be interesting to follow the different buying center roles throughout the entire purchasing process, to better understand their decision-making pattern and evaluation criteria.

Sixth, The definition of Organizational Structure describes a causal relationship between the wheel element and Corporate Coherence and Purchasing Maturity. This demands an accurate classification of the latter two wheel elements, which is somewhat lacking in the literature. Further research should seek to develop a method for classification in order to build a more solid framework.

Seventh, a systematic approach for identifying the links between the factors underlying each element has not yet been developed. This made it unable to compare findings from the analysis to any theoretical standing. Such an approach should accordingly be developed as part of the revised practical application of the conceptual framework. Subsequently, further research should seek to gain a deeper understanding of the relationships between the elements. This is to identify whether some elements should be managed simultaneously and how to do so.

Eight, no method for conducting the implementation process to realize purchasing synergies is outlined in the literature. The conceptual framework is twofold and may also be used as a tool in an implementation process for realizing purchasing synergies. Further research should thus conduct conceptual research to derive a method for use of the framework as a tool for implementation. Change management literature may aid in this matter. Moreover, the analysis only applied the Purchasing Synergy Management Wheel as a diagnostic tool. Empirical studies should also be conducted where the framework is used to implement purchasing synergy initiatives.

Finally, the complexity of the Purchasing Synergy Management Wheel is illustrated in the definition of the wheel elements that cover so many various aspects. The analysis also demonstrates the interrelatedness between the wheel elements, and that several factors may explain why certain purchasing synergies are realized and others not. The findings drawn from the analysis may thus seem too intricate and complicated for readers unfamiliar with purchasing synergy. Further research should therefore seek to develop managerial guidelines for the use and the interpretation of the conceptual framework.

#### **17.4.4 Contributions**

Overall, comparing theory with practice demonstrates the validity of both the literature and the analysis. Since the findings in the analysis largely correspond to the ones in the literature, the findings that answers RQ3 are further strengthened. This likely means more reliable implications for Upstream Norske Shell in terms of challenges and recommendations.

On the other hand, the conceptual framework Purchasing Synergy Management has been successfully tested empirically. This entails that the literature incorporated in developing the framework, including topics such as organizational buying and maverick buying, indeed are important in relation to purchasing synergy. Altogether, the comparison of literature and analysis contributes in terms of outlining implications for further research.

#### **17.4.5 Summary**

To address RQ4, the degree of correspondence between theory and practice is analyzed from different perspectives. Application of the Purchasing Synergy Management Wheel deals with a comparison between findings in RQ2 and RQ3. Identification of purchasing synergies discuss how well findings in the analysis together with the outlined conceptual framework correspond to findings in RQ1.

This results in an overall high degree of correspondence between theory and practice, in terms of the application of wheel elements, use of organizational buying theory, identification of the three types of purchasing synergy, unit of analysis, and importance of purchasing synergy. Some aspects, nevertheless, show divergence, which form the basis for outline of implications for further research.

### **17.5 Problem Statement**

**How can realized purchasing synergies and unrealized synergy potentials be explained?**

As stated in 2.4, the research questions, taken together, provide an answer to the overall problem statement. This section thus seeks to address the problem statement and present a final conclusion, based on the responses given to each research question.

#### **17.5.1 RQ1: Relevance of the Problem Statement**

An answer to the problem statement first requires an understanding of the overall topic of purchasing synergy and why it deserves research attention. This is addressed through answering RQ1 and thus defining what purchasing synergy is and its importance.

Purchasing synergy is defined as the increase in purchasing performance realized in one of three forms: economies of scale, economies of information and learning and economies of process. A purchasing synergy is realized when two or more business



units, or relationships within one business unit, join their forces and/or share functional resources, information and knowledge.

The importance of purchasing synergy traces back to the importance of purchasing and of synergy. With the greater focus on purchasing's impact on company performance, and the awareness of synergy benefits in general, academics and purchasing professionals alike have opened their eyes for purchasing synergy.

### **17.5.2 RQ2: How to Answer the Problem Statement in Theory**

After gaining an initial understanding of the topic, answering the problem statement demands an assessment of how purchasing synergies are identified and realized, namely purchasing synergy management. This is addressed by the answers to RQ2.

In line with the definition, a valid framework for purchasing synergy management should satisfy a set of five criteria: (1) identification of purchasing synergy opportunities or unrealized synergy potentials; (2) approaches to create and deal with purchasing synergy; (3) organizational change; (4) direct link to each form of purchasing synergy; and (5) encompass the broadened unit of analysis.

Based on a stepwise development approach, a framework for purchasing synergy management is outlined. It is named the Purchasing Synergy Management Wheel. It satisfies all criteria of the definition and thus increases the applicability and performance of a framework for purchasing synergy management in general.

Specifically, Factor-Synergy Matrices are developed to show the explicit linkage between elements of the incorporated literature, and the three forms of purchasing synergy. In this way, apart from the current limited selection of purchasing synergy management literature, the framework is also able to encompass other relevant literature for purchasing synergy management.

### **17.5.3 RQ3: How to Answer the Problem Statement in Practice**

To truly answer the problem statement, answers to RQ3 present a real-world application of the Purchasing Synergy Management Wheel on the case company, Upstream Norske Shell. The analysis uncovers which purchasing synergies are present in Upstream Norske Shell today and what synergy potentials remain unrealized, and why.

Through the analysis, all three forms of purchasing synergy: economies of scale, economies of information and learning and economies of process, are identified (realized and unrealized) from each of the separate wheel elements. Moreover, many factors facilitating and inhibiting purchasing synergy. It is thus important to study purchasing synergies from all the perspectives of the different wheel elements.

The study of relevant links between the wheel elements shows that several factors might lead to the same purchasing synergies, and that one factor underlying one wheel element can be the reason for the existence of other factors underlying other

wheel elements. This implies that the reasons for the realized and unrealized purchasing synergies might be very complex and intricate.

Factors that represent barriers to purchasing synergy creation constitute main challenges for Upstream Norske Shell. The identified challenges and corresponding recommendations together represent managerial implications: importance of organizational structure, coordination within the buying center, status and position of purchasing, maverick buying and performance measures.

#### **17.5.4 RQ4: Correspondance Between Theory and Practice**

Finally, it is of high scientific value to study the correspondence between theory and practice regarding the answers to the problem statement. RQ4 compares findings from RQ3 with theoretical findings from RQ1 and RQ2, and draws implications for both theoretical and empirical research.

Application of the Purchasing Synergy Management Wheel shows overall correspondence between literature and analysis. What is highlighted as important in the literature seems also crucial in the analysis. This includes, in particular, definition of wheel elements, interrelatedness of the wheel elements, and the importance of organizational buying perspective in the study of purchasing synergy and purchasing in general.

Purchasing synergies identified the most in the analysis does not fully correspond to the research attention of purchasing synergy literature. Economies of scale are clearly given more attention in the literature, while the analysis found mostly economies of information and learning, and economies of process. This can be explained by the difference in focus, unit of analysis, and type of data availability between theory and practice.

Implications for further research are grouped into two categories: study of purchasing synergy in general and the development of the Purchasing Synergy Management Wheel. In particular, development of the conceptual framework entails encompassing all relevant literature, strengthening its implementation function, and outlining managerial using guide.

#### **17.5.5 Conclusion**

This section has reviewed the answers for each research question and showed that these answers, combined, give an answer to the overall problem statement. In conclusion, realized purchasing synergies and unrealized synergy potentials are explained by a framework for purchasing synergy management. A framework, the Purchasing Synergy Management Wheel, has been developed specifically for this purpose.

However, the identification of purchasing synergies depends on certain aspects. This includes the use of quantitative versus qualitative data and unit of analysis i.e. study of purchasing synergy between, or within, business units. In other words, difference

in focus can lead to different types of purchasing synergies identified in practice. A holistic focus would have demanded a far more complex analysis.

Yet, complexity seems to be a recurring theme in this thesis. The Purchasing Synergy Management Wheel incorporates literature from various fields, outside the field of purchasing synergy literature, and even outside purchasing. The literature is correlated into seven elements, and explicitly connected to the three types of purchasing synergy via Factor-Synergy Matrices for each element.

When applying the conceptual framework to answer the problem statement, the intuitive understanding is that the explanations for realized purchasing synergies and unrealized synergy potentials seem rather intricate. The reasons can be traced back to so many different perspectives, strategic, operational, structural, and relational. Additionally, the reasons may be interrelated, and sometimes multiple reasons explain a single purchasing synergy.

The complexity of the problem statement suggests that purchasing synergy may well be a comprehensive philosophy, seeing as the topic incorporates various important aspects of purchasing. Of key importance is to synthesize it into a manageable research field with a clear message to contribute to competitive advantage through purchasing. This thesis can be viewed as a tentative step in this direction. Further initiatives for purchasing synergy realization can only be successfully implemented, if existing purchasing synergies and potentials are carefully explained.

## **18.Limitations**

The objective of this thesis was to contribute to the field of ‘purchasing synergy’. Both the literature review and the empirical study have their limitations. Some of them are naturally connected with the implications for further research drawn in an answer to RQ4. The following nine limitations will be presented and discussed: (1) publications with a wide age range are correlated; (2) limited focus on some of the wheel elements; (3) some unclear linkages between ‘purchasing synergy’ and other disciplines; (4) use of organizational buying theory; (5) no weighting of the factors in the Factor-Synergy Matrix; (6) no approach for identifying the links between the factors; (7) no step-wise approach for a change process initiative; (8) complex framework; and (9) case study only contributed to one of the two main functions of the model.

First, publications with a wide age range are correlated. While most of the publications are from the 2000s, seven are written between 1972 and 1999. However, the society, e.g. technological development, has changed since the 1970’s. This may entail that the researchers’ area of attention may have changed and their discussions may be based on different assumptions. Moreover, some of the conclusions in the earliest publications may not be valid today. Correlating publications written in the 1970’s with articles written in the 2000s may thus lead to some wrong conclusions. This may, to some degree, limit the definitions of the elements and their underlying factors.

Second, the Purchasing Synergy Management Wheel incorporates seven different elements and topics, and each of these may be viewed as a distinct research field in itself. A broad range of focus could have been at the expense of studying fewer topics more thoroughly. This might have affected the factors related to each wheel element, seeing as Cost/Benefit Analysis only has two related factors, whereas the other elements have between four and eight.

Third, some of the publications from the purchasing literature and synergy literature do not explicitly state that the factors discussed, such as reporting line and performance measures, may realize purchasing synergy. They are, however, included seeing as they are relevant for purchasing synergy management. As a consequence, while most of the linkages between the literature incorporated and its relevance to purchasing synergy are clear, some of them remain somewhat unclear. The authors have analyzed these publications in relation to the definition of purchasing synergy and drawn conclusions of their influence on purchasing synergy management. If the authors have misinterpreted some of these publications, these conclusions might have been influenced.

Fourth, organizational buying theory might have been applied to a greater extent, both in the literature review and in the analysis, if the authors had been aware of its importance earlier in the research process. Organizational buying theory could thus

have been included in other parts of the literature review to obtain a more comprehensive understanding of the topic purchasing synergy. This would have influenced the authors' view of the literature discussed, and given the discussions of the literature a new dimension. The conclusions drawn might thus have been affected.

Moreover, the scope of the analysis might have been extended if the authors had been aware of the importance of organizational buying behavior earlier, especially the buying center aspect. Some of the buying center roles that might be part of an organization's buying center according to literature – such as marketing, design engineering and research and development – are not examined in the case company. This may have limited the understanding of how these roles influence the purchasing processes in the case company.

Fifth, the Factor-Synergy Matrix does not take into account the weighting of the different factors. This entails that it becomes difficult to evaluate the different factors against each other. For example, whether use of cost/benefit analysis may realize more purchasing synergies than by establishing training and development programs, or the other way around. This thus limits the practical application of the Factor-Synergy Matrix.

Sixth, in the step-wise approach for practical application of the Purchasing Synergy Management Wheel, identifying relevant links between the factors in different wheel elements plays an important role. However, no systematic approach has been developed for identifying these links. The links are instead identified based on the understanding of the content of each wheel element from the wheel element analyses. Managers might thus overlook relevant links, which limits the given framework's practical application.

Seventh, a step-wise approach for how to apply the Purchasing Synergy Management Wheel in a change process initiative for creating purchasing synergies has not been developed. This limits the practical application of this framework when used as an implementation tool. Studying other disciplines, such as change management, might have enabled the authors to create such a step-wise approach.

Eight, the Purchasing Synergy Management Wheel is a complex framework, in which it consists of six different wheel elements that are interrelated and should remain balanced. This is a consequence of the comprehensiveness of the topic purchasing synergy, seeing as it is related to several other topics, such as performance measures and organizational structure, and can be created both between and within business units.

To increase the usability of the Purchasing Synergy Management Wheel, the authors have developed the step-wise approach to analyze as-is situation. However, the framework may still be difficult for managers to understand and use in practice. A

less complex framework, on the other hand, might not have been able to cover purchasing synergy in its entirety.

Finally, the case study has only applied one of the two main functions of the Purchasing Synergy Management Wheel, namely the procedure for analyzing the as-is situation. This limits the study since the empirical research has only contributed to the use of the model as a diagnosis tool. The framework could have been validated to an even greater extent if the model had been applied to the second approach as well, i.e. in a change process for realizing purchasing synergies.

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## APPENDICES

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- A. Literature Base, Project Work
- B. Literature Search #1
- C. Appraised Literature
- D. Literature Search #2
- E. Literature Master's Thesis
- F. Company Presentation 1
- G. Company Presentation 2
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- I. Interview Objectives, Value Chain Perspective
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- P. Research Journal
- Q. Brainstorming Ideas
- R. Preliminary Overview of Case Visits
- S. Case study Protocol
- T. Literature Business Synergy
- U. Roles and Responsibilities Matrix (RASCI)
- V. Risk Assessment Matrix (RAM)

## Appendix A: Literature Base, Project Work

Årstall	Forfatter	Tittel	Kommentar
1965	Ansoff	Corporate strategy: business policy for growth and expansion	How business units can create synergy, talks about four different types of synergies
1974	Davis et al.	Critical factors in worldwide purchasing	
1978	E. Raymond Corey	Should companies centralize procurement? More and more companies say the answer is yes.	Sier noe om supplier-customer relations og hvilke faktorer som bestemmer om det skal kjøpes centrally eller decentrally. Ingen kildeliste i artikkelen, mulig den er i boka den ble kopiert fra på biblioteket.
1983	Peter Kraljic	Purchasing must become Supply management	Hovedfokus på sourcing-decision, portfolio-perspective (alltid en interessant diskusjon, men trolig fortsatt ikke så relevant for vår oppgave). Ingen kildeliste i artikkelen å snowballe.
1985	Cooper	Industrial firm's new product strategies	
1994	Ellram and Carr	Strategic purchasing: a history and review of the literature	
1994	Vizjak	Exploiting your synergy potential: promoting collaboration between business units	Synergy creation between business units
1996	Carter and Narasimhan	Is purchasing really strategic?	

1996	Juga	Organizing for network synergy in logistics	Examines synergy potentials in logistics network organizations.
1997	Ulli Arnold	Purchasing Consortia as a Strategic Weapon for Highly Decentralized Multi-Divisional Companies. Findings from Four Case Studies.	Kan brukes dersom vi skal se nærmere på "samarbeidet" mellom P&T i Stavanger og C&P i Kristiansund, da den handler om cooperation between different units in an MNC.MEN, bør kanskje tas inn i kapitlet "Purchasing Synergy" i større grad enn prosjektoppgaven gjorde. Ingen relevante engelske artikler i referanselisten.
1998	Goold and Campbell	Desperately seeking synergy	
1998	Krumm et al.	Managing key resources and capabilities: pinpointing the added value of corporate real estate management	
1998	Ensign	Interrelationships and horizontal strategy to achieve synergy and competitive advantage in the diversified firm	
1999	Ulli Arnold	Organization of global sourcing: ways towards an optimal degree of centralization	I "5.Three ideal types of the empirically evaluated global sourcing strategies" snakkes om economies of scale og economies of scope, her kan vi ta inn noe i hjulelementet Organizational structure om vi vil. Ingen relevante artikler i referanselisten.



2000	Goold and Campbell	Taking stock of synergy: a framework for assessing linkages between businesses	Business synergy
2000	Faes et al.	The pursuit of global purchasing synergy	Process of achieving global purchasing synergy and specific managerial guidelines. Focus on process issues in the implementation. Snowballet en mulig relevant artikel.
2000a	Rozemeijer	Creating corporate advantage in purchasing	
2000b	Rozemeijer	How to manage corporate purchasing synergy in a decentralized company? Towards design rules for managing and organizing purchasing synergy in decentralized companies	
2001	Lasker et al.	Partnership synergy: a practical framework for studying and strengthening the collaborative advantage	Synergy creation in partnerships
2003	Matthyssens et al.	The process of global purchasing: Critical success factors and supplier impact	Critical success factors in the Initiation and implementation of global purchasing (inward/import internationalization). Ingen relevante artikler å snowballe.
2003	Mol	Purchasing's strategic relevance	Deals with why purchasing is strategic
2003	Rozemeijer et al.	Creating corporate advantage through purchasing: toward a contingency model	
PhD	Rozemeijer	Creating corporate advantage in purchasing	

2004	Ketchen and Giunipero	The intersection of strategic management and supply chain management	
2005	van Weele	Purchasing and supply chain management	
2007	Smart & Dudas	Developing a decision-making framework for implementing purchasing synergy: a case study	Developing purchasing synergies by focusing on item bundling
2007	Benecke et al.	Towards a substantive theory of synergy	
2007	Rozemeijer	Creating corporate advantage through purchasing	
2008	Cousins et al.	Strategic supply management: principles, theories and practice	Strategic Supply Wheel for studying purchasing in corporations
2008	Hartmann et al.	Organisational design implications of global sourcing: a multiple case study analysis on the application of control mechanisms	Focus on control mechanisms in organizational design within global sourcing context. Ingen relevante artikler å snowballe.
2009	Devos et al.	How do mergers create value? A comparison of taxes, market power and efficiency improvements as explanations	Synergy creation though mergers
2009a	Trautmann et al.	Global sourcing in integrated network structures: The case of hybrid purchasing organizations	Purchasing portfolio models for capturing synergies in purchasing. Allerede snowballet mye fra denne artikkelen, derfor ingen flere relevante.

2009b	Trautmann et al.	Integration in the global sourcing organization - an information processing perspective	Item level purchasing synergies. All three forms of synergies important.
2011	Glock	Purchasing organization and design: a literature review	
2011	Monczka et al.	Purchasing and supply chain management	
2012	Lysons and Farrington	Purchasing and supply chain management	

## Appendix B: Literature Search #1

Tema	Søkeord	Database	Årstall	Forfatter	Tittel	Hentet fra/Link	Main findings
Buyer-supplier			1982	IMP Group	An interaction approach	Bedrel-fag høst 2011	
Buyer-supplier			1995	Håkansson and Snehota	Relationships in business	Innkjøpsfag vår 2012 + Bedrel-fag høst 2011	
Buyer-supplier			1999	Araujo, Dubois and Gadde	Managing Interfaces with Suppliers	Fordypningsfag innkjøp høst 2012	
Buyer-supplier	IMP Group 1982 An interaction model. Bok fra Bed-rel	Google Scholar	1996	Turnbull et al	Interactions, relationships and networks in business markets: an evolving perspective	<a href="http://search.proquest.com/docview/222021497?accountid=12870">http://search.proquest.com/docview/222021497?accountid=12870</a>	This paper reviews the research work and conceptual development of the International Marketing and Purchasing (IMP) group into the nature of buyer-seller relationships which has evolved during the past 20 years.

Buyer-supplier	Snowballing Rozemeijer	Google Scholar		Van Weele, Rozemeijer	the role of power in partnership relationships: an empirical investigation of current body of knowledge	<a href="http://www.ipsera.com/assets/documents/294_weele.PDF">http://www.ipsera.com/assets/documents/294_weele.PDF</a>	
Buyer-supplier	Snowballing Rozemeijer	Google Scholar	2004	Chen et al.	Strategic purchasing, supply management, and firm performance	<a href="http://www.sciencedirect.com/science/article/pii/S0272696304000798">http://www.sciencedirect.com/science/article/pii/S0272696304000798</a>	
Alignment /corporate coherence , buyer-supplier	Snowballing Rozemeijer	Google Scholar	1995	Watts et al.	Linking purchasing to corporate competitive strategy	<a href="http://search.proquest.com/docview/235196605/fulltextPDF/13C154A2D002B9174A4/4?accountid=12870">http://search.proquest.com/docview/235196605/fulltextPDF/13C154A2D002B9174A4/4?accountid=12870</a>	

Corporate coherence	snowballing Rozemeije	Google Scholar	1994	Teece et al.	Understanding corporate coherence: theory and evidence	<a href="http://www.sciencedirect.com/science/article/pii/0167268194900949#">http://www.sciencedirect.com/science/article/pii/0167268194900949#</a>	Ikke direkte relevant. Corporate coherence er her definert som relatedness among the firm's lines of business, whether if they share certain common technological and market characteristics.
Purchasing performance measurement system	Frame agreement + purchasing	Science Direct	2011	Pohl & Forstl	Achieving purchasing competence through purchasing performance measurement system design—A multiple-case study analysis	<a href="http://www.sciencedirect.com/science/article/pii/S1478409211000185">http://www.sciencedirect.com/science/article/pii/S1478409211000185</a>	Kan kanskje brukes på hjulelementet om performance measurement (mulig noen synergieffekter)
Synergy	Snowballing Rozemeije	Google Scholar	1987	Gruca et al.	Exploiting synergy for competitive advantage	<a href="http://www.sciencedirect.com/science/article/pii/S0024630197000393#">http://www.sciencedirect.com/science/article/pii/S0024630197000393#</a>	

Synergy	Snowballing fra Rozemeijer	Google Scholar	1993	Davis and Thomas	Direct estimation of synergy	<a href="http://www.jstor.org/stable/2633029">http://www.jstor.org/stable/2633029</a>	
Synergy	Business synergy	BIBSYS	1998	Goold and Campbell	Synergy : why links between business units often fail and how to make them work	Bok bestilt	
Synergy	Snowballing fra Faes et al.		2000	Eisenhardt & Galunic	At last a way to make synergies work	Ikke funnet på nett foreløpig, ligger i word-doc som vedlegg fra Kristins mail	
Synergy	Snowballing fra Smart & Dudas	Google Scholar	1988	Mahajan & Wind	Business synergy does not always pay off	<a href="http://www.sciencedirect.com/science/article/pii/0024630188900593">http://www.sciencedirect.com/science/article/pii/0024630188900593</a>	Synergi gir ikke automatisk økt profitt. Kan gi en kritisk vinkling på oppgaven vår.
Compliance	purchasing contract compliance	Google Scholar	2006	Governatori et al	Compliance checking between business processes and business contracts	<a href="http://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&amp;arnumber=4031210">http://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&amp;arnumber=4031210</a>	NB: her kan vi kanskje snowballe fra- vet ikke helt om selve artikkelen er superrelevant, men det er inne på temaet.

Compliance	compliance	Science Direct: Journal of purchasing and supply management	2011	Karjalainen & van Raaij	An empirical test of contributing factors to different forms of maverick buying	<a href="http://www.sciencedirect.com/science/article/pii/S1478409211000331">http://www.sciencedirect.com/science/article/pii/S1478409211000331</a>	Teori på den 3. innkjøper, hvorfor dette skjer og hva man kan gjøre for å forhindre det
Compliance	Snowballing fra Karjalainen & van Raaij 2011	Science Direct	2009	Karjalainen et al.	Non-Compliant Work Behaviour in Purchasing: An Exploration of Reasons Behind Maverick Buying	<a href="http://link.springer.com/article/10.1007%2Fs10551-008-9768-2">http://link.springer.com/article/10.1007%2Fs10551-008-9768-2</a>	Conceptual literature review on the topic of non-compliant work behaviour (maverick buying)
Compliance	Snowballing Karjalainen et al. (2009)	Google Scholar	2007	Angeles & Nath	Business-to-Business E-Procurement: Success Factors and Challenges to Implementation	<a href="http://www.emeraldinsight.com/journals.htm?articleid=1597965&amp;show=abstract">http://www.emeraldinsight.com/journals.htm?articleid=1597965&amp;show=abstract</a>	Maverick buying



Compliance/internal integration/buyer-supplier relationships	frame agreement + purchasing	Science Direct	2012	Ellegaard & Koch	The effects of low internal integration between purchasing and operations on suppliers' resource mobilization	<a href="http://www.sciencedirect.com/science/article/pii/S1478409212000283">http://www.sciencedirect.com/science/article/pii/S1478409212000283</a>	Importance of internal integration between purchasing and operations on mobilization of supplier resources
Internal-client relationships	compliance	Science Direct: Journal of purchasing and supply management	2005	Lonsdale & Watson	The internal client relationship, demand management and value for money: A conceptual model	<a href="http://www.sciencedirect.com/science/article/pii/S1478409205000932">http://www.sciencedirect.com/science/article/pii/S1478409205000932</a>	Examines the cross-functional nature of the purchasing process, challenge with respect to fragmentation of spend
Purchasing	professionalizing purchasing in organizations	Science Direct	1990	Pearson & Gritzmacher	Integrating purchasing into strategic management	<a href="http://www.sciencedirect.com/science/article/pii/002463019090057B#">http://www.sciencedirect.com/science/article/pii/002463019090057B#</a>	Litt mer om hvorfor innkjøp er viktig

Research Methods	Snowballing fra flere artikler (Faes, Matthyssens)	Science Direct	1989	Eisenhardt	Building theories from case study research	<a href="http://www.jstor.org/stable/10.2307/258557">http://www.jstor.org/stable/10.2307/258557</a>	Virker som denne er en klassiker når det gjelder case study research
Research Methods	Snowballing fra Trautmann et al. 2009b	Google Scholar	2007	Dubois & Araujo	Case Research in Purchasing and Supply Management: Opportunities and challenges	<a href="http://www.sciencedirect.com/science/article/pii/S1478409207001069">http://www.sciencedirect.com/science/article/pii/S1478409207001069</a>	Presenterer regler for hvordan gjøre case study research

TOTAL: 24

### Appendix C: Appraised Literature

Tema	Søkeord	Database	År stall	Forfatter	Tittel	Hentet fra/Link	Main findings
Buyer-supplier			1995	Håkansson and Snehota	Relationships in business	Innkjøpsfag vår 2012 + Bedrel-fag høst 2011	
Buyer-supplier			1999	Araujo, Dubois and Gadde	Managing Interfaces with Suppliers	Fordypningsfag innkjøp høst 2012	
Buyer-supplier	Snowballing Rozemeijer	Google Scholar		Van Weele, Rozemeijer	the role of power in partnership relationships: an empirical investigation of current body of knowledge	<a href="http://www.ipsera.com/assets/documents/294_weele.PDF">http://www.ipsera.com/assets/documents/294_weele.PDF</a>	
Importance of purchasing + Buyer-supplier	Snowballing Rozemeijer	Google Scholar	2004	Chen et al.	Strategic purchasing, supply management, and firm performance	<a href="http://www.sciencedirect.com/science/article/pii/S0272696304000798">http://www.sciencedirect.com/science/article/pii/S0272696304000798</a>	
Compliance/	frame agreement	Science Direct	2012	Ellegaard & Koch	The effects of low internal integration	<a href="http://www.sciencedirect.com/science/article/p">http://www.sciencedirect.com/science/article/p</a>	Importance of internal integration between

internal integration/buyer-supplier relationships	+ purchasing				between purchasing and operations on suppliers' resource mobilization	ii/S1478409212000283	purchasing and operations on mobilization of supplier resources
Purchasing	snowballing Rozemeije	Google Scholar	1995	Watts et al.	Linking purchasing to corporate competitive strategy	<a href="http://search.proquest.com/docview/235196605/fulltextPDF/13C154A2D002B9174A4/4?accountid=12870">http://search.proquest.com/docview/235196605/fulltextPDF/13C154A2D002B9174A4/4?accountid=12870</a>	
Purchasing performance measurement system	frame agreement + purchasing	Science Direct	2011	Pohl & Forstl	Achieving purchasing competence through purchasing performance measurement system design—A multiple-case study analysis	<a href="http://www.sciencedirect.com/science/article/pii/S1478409211000185">http://www.sciencedirect.com/science/article/pii/S1478409211000185</a>	Kan kanskje brukes på hjulelementet om performance measurement (mulig noen synergieffekter)
Purchasing maturity	professionalizing purchasing in organization	Science Direct	1990	Pearson & Gritzmacher	Integrating purchasing into strategic management	<a href="http://www.sciencedirect.com/science/article/pii/002463019090057B#">http://www.sciencedirect.com/science/article/pii/002463019090057B#</a>	Litt mer om hvorfor innkjøper viktig

	ns						
synergy	snowballing Rozemeije	Google Scholar	1987	Gruca et al.	Exploiting synergy for competitive advantage	<a href="http://www.sciencedirect.com/science/article/pii/S0024630197000393">http://www.sciencedirect.com/science/article/pii/S0024630197000393</a> #	
Synergy	business synergy	BIBSYS	1998	Goold and Campbell	Synergy : why links between business units often fail and how to make them work	Bok lest av Bing	
Synergy	Snowballing fra Faes et al.	Harvard Business Review	2000	Eisenhardt & Galunic	At last a way to make synergies work	Ikke funnet på nett foreløpig, ligger i word-doc som vedlegg fra Kristins mail	
Synergy	Snowballing fra Smart & Dudas	Google Scholar	1988	Mahajan & Wind	Business synergy does not always pay off	<a href="http://www.sciencedirect.com/science/article/pii/0024630188900593">http://www.sciencedirect.com/science/article/pii/0024630188900593</a>	Synergi gir ikke automatisk økt profitt. Kan gi en kritisk vinkling på oppgaven vår.
Compliance	compliance	Science Direct: Journal of purchasing and supply management	2011	Karjalainen & van Raaij	An empirical test of contributing factors to different forms of maverick buying	<a href="http://www.sciencedirect.com/science/article/pii/S1478409211000331">http://www.sciencedirect.com/science/article/pii/S1478409211000331</a>	Teori på den 3. innkjøper, hvorfor dette skjer og hva man kan gjøre for å forhindre det

		nt					
Compliance	Snowballing fra Karjalainen & van Raaij 2011	Science Direct	2009	Karjalainen et al.	Non-Compliant Work Behaviour in Purchasing: An Exploration of Reasons Behind Maverick Buying	<a href="http://link.springer.com/article/10.1007%2Fs10551-008-9768-2">http://link.springer.com/article/10.1007%2Fs10551-008-9768-2</a>	Conceptual literature review on the topic of non-compliant work behaviour (maverick buying)
Compliance	Snowballing Karjalainen et al. (2009)	Google Scholar	2007	Angeles & Nath	Business-to-Business E-Procurement: Success Factors and Challenges to Implementation	<a href="http://www.emeraldinsight.com/journals.htm?articleid=1597965&amp;show=abstract">http://www.emeraldinsight.com/journals.htm?articleid=1597965&amp;show=abstract</a>	Maverick buying
Internal-client relationships	compliance	Science Direct: Journal of purchasing and supply management	2005	Lonsdale & Watson	The internal client relationship, demand management and value for money: A conceptual model	<a href="http://www.sciencedirect.com/science/article/pii/S1478409205000932">http://www.sciencedirect.com/science/article/pii/S1478409205000932</a>	Examines the cross-functional nature of the purchasing process, challenge with respect to fragmentation of spend

TOTAL: 16

## Appendix D: Literature Search #2

Tema	Søkeord	Database	Årstall	Forfatter	Tittel	Hentet fra/Link	Main findings
Organizational buying	organizational buying	Google Scholar, science direct	1996	Johnston and Lewin	Organizational buying behaviour: toward an integrative framework	<a href="http://www.sciencedirect.com/science/article/pii/0148296394000778#">http://www.sciencedirect.com/science/article/pii/0148296394000778#</a>	Analyserer og summerer siste 25 års forskning på dette temaet
Organizational buying	Organizational buying	Google Scholar, JSTOR	1972	Webster and Wind	A general model for understanding organizational buying behaviour	<a href="http://www.jstor.org/stable/10.2307/1250972">http://www.jstor.org/stable/10.2307/1250972</a>	En av de tidligste modellene på dette temaet
Organizational buying	Fra Godfrey	ScienceDirect	1982	Reve and Johansen	Organizational buying in the offshore oil industry	<a href="http://www.sciencedirect.com/science/article/pii/0019850182900177#">http://www.sciencedirect.com/science/article/pii/0019850182900177#</a>	Eneste artikkel relatert til oljeindustrien, til bruk i oljekapitlet
Organizational buying	Organizational buying + sheth	Science direct	1997	Sheth, Sharma	Supplier relationships: Emerging issues and challenges	<a href="http://www.sciencedirect.com/science/article/pii/S0019850196001538">http://www.sciencedirect.com/science/article/pii/S0019850196001538</a>	

Organizational buying	Organizational buying + sheth	ScienceDirect	2009	Sheth et al	Why integrating purchasing with marketing is both inevitable and beneficial	<a href="http://www.sciencedirect.com/science/article/pii/S0019850109001321#">http://www.sciencedirect.com/science/article/pii/S0019850109001321#</a>	Sier at organizational buying er viktig for purchasing - kan benyttes i argumentasjonen vår for hvorfor vi har det med
Organizational buying	Organizational buying + sheth	Google scholar	2010	Wind, Thomas	Organizational Buying Behavior in an Interdependent World	<a href="http://www.tandfonline.com/doi/pdf/10.1080/12297119.2010.9730184">http://www.tandfonline.com/doi/pdf/10.1080/12297119.2010.9730184</a>	
Cost/benefit analysis	Cost/benefit	Google Scholar	2011	Karjalainen	Estimating the cost effects of purchasing centralization - empirical evidence from framework agreements in the public sector	<a href="http://www.sciencedirect.com/science/article/pii/S1478409210000658">http://www.sciencedirect.com/science/article/pii/S1478409210000658</a>	Til cost/benefit hjulelementet




### Appendix E: Literature Master's Thesis

Årstall	Forfatter	Tittel	Key Words (search engine)	Kommentar
1967	Robinson et al	Industrial buying and creative marketing	Snowballing Johnston and Lewin (Google Scholar)	En av de tidligste modellene på dette temaet
1972	Webster and Wind	A general model for understanding organizational buying behavior	Organizational buying (JStore)	En av de tidligste modellene på dette temaet
1973	Sheth	A model for industrial buying behavior	Snowballing Johnston and Lewin (Google Scholar)	En av de tidligste modellene på dette temaet
1988	Mahajan and Wind	Business synergy does not always pay off	Snowballing Smart and Dudas (Google Scholar)	Å skape synergi er ikke alltid lønnsomt
1990	Clarke and Brennan	Building synergy in the diversified business	Synergy (Google Scholar)	Addresses the problems of diversification
1990	Person and Gritzmacher	Integrating purchasing into strategic management	Professionalizing purchasing in organizations (Science Direct)	Litt mer om hvorfor innkjøp er viktig
1995	Watts et al.	Linking purchasing to corporate competitive strategy	Snowballing Rozemeijer (Google Scholar)	Focus: develop a framework for aligning corporate and supply strategy
1996	Johnston and Lewin	Organizational buying behavior: toward and integrative framework	Organizational buying (Science Direct)	Analyserer og summerer siste 25 års forskning på dette temaet

1996	van Weele and Rozemeijer	Revolution in purchasing: building competitive power through proactive purchasing	Rozemeijer (BIBSYS)	
1997	Gruca et al.	Exploiting synergy for competitive advantage	Snowballing Rozemeijer (Google Scholar)	Uses results from empirical studies → is there potential for creating synergy and a competitive advantage
1998	Campbell and Gold	Synergy: Why links between business units often fail and how to make them work.	Business synergy (BIBSYS)	
2000	Eisenhardt and Galunic	Coevolving: at last a way to make synergies work	Snowbaling Faes et al. (Google Scholar)	Companies that achieve synergies uses the coevolving process
2007	Angeles and Nath	Business-to-Business E-Procurement: Success Factors and Challenges to Implementation	Snowballing Karjalainen et al. (2009) (Google Scholar)	
2009	Karjalainen et al.	Non-compliant work behavior in purchasing: an exploration of reasons behind maverick buying	Snowballing Karjalainen & van Raaij (2011) (Science Direct)	Conceptual literature review on the topic of non-compliant work behavior (maverick buying)

2009	Sheth et al.	Why integrating purchasing with marketing is both inevitable and beneficial	Organizational buying behavior + Sheth (Science Direct)	Sier at organizational buying er viktig for purchasing - kan benyttes i argumentasjonen vår for hvorfor vi har det med
2010	van Weele	Purchasing and supply chain management.	Purchasing (BIBSYS)	
2011	Karjalainen	Estimating the cost effects of purchasing centralization – empirical evidence from framework agreements in the public sector		Cost/benefit, purchasing synergy
2011	Karjalainen and van Raaij	An empirical test of contributing factors to different forms of maverick buying	Compliance (Science Direct)	Teori på den 3. innkjøper, hvorfor dette skjer og hva man kan gjøre for å forhindre det
2011	Pohl and Förstl	Achieving purchasing competence through purchasing performance measurement system design – a multiple case study analysis	Frame agreement + purchasing (Science Direct)	Kan kanskje brukes på hjulelementet om performance measurement (mulig noen synergieffekter)
<b>19</b>				

## Appendix F: Company Presentation #1



**STRATEGIC PURCHASING AND SUPPLY MANAGEMENT**

TITLE:  
PURCHASING SYNERGY

SUBTITLE:  
A CASE STUDY IN THE NORWEGIAN OIL INDUSTRY

Therese Krogh, Kristin Merethe Berge and Bing Zhao  
25.-26.02.2013



NTNU  
Norwegian University of  
Science and Technology

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### PURPOSE

1. Study literature on purchasing synergy and make a theoretical framework
2. In-depth case study of Upstream Norske Shell, using the theoretical framework to:
  - a. Examine how today's practice should be according to company procedures
  - b. Examine how today's practice actually is

## WHAT IS "PURCHASING SYNERGY" AND WHY IS IT IMPORTANT?

### WHAT

- $2 + 2 = 5$
- Economies of scale
- Economies of information and learning
- Economies of process

### WHY

An often desired goal in corporate strategy to achieve corporate cost reduction and competitive advantage.

### HOW IS IT RELATED TO SHELL

Why are certain purchasing synergies realized and others not, and what are the implications for Upstream Norske Shell?

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## SHELL'S PURCHASING PROCESS

A typical purchasing process:

a set of stages aimed at achieving an output, including all the steps that the organization must complete to do a purchase.



- Does an overview of the purchasing process exist?
- How many subprocesses are there?
- How does each subprocess function?
- How are the subprocesses related to each other?
- Who are the people involved?
- What is the role of each?

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## CMCP + RTP



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## Appendix G: Company Presentation #2



**STRATEGIC PURCHASING AND SUPPLY  
MANAGEMENT**

TITLE:  
PURCHASING SYNERGY

SUBTITLE:  
A CASE STUDY IN THE NORWEGIAN OIL INDUSTRY

Therese Krogh, Kristin Merethe Berge and Bing Zhao  
20.-21.03.2013



NTNU  
Norwegian University of  
Science and Technology

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### PURPOSE

1. Study literature on purchasing synergy and make a theoretical framework
2. In-depth case study of Upstream Norske Shell, using the theoretical framework to:
  - a. Examine how today's practice should be according to company procedures
  - b. Examine how today's practice actually is

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## WHAT IS PURCHASING?



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## WHAT IS "PURCHASING SYNERGY" AND WHY IS IT IMPORTANT?

### WHAT

- $2 + 2 = 5$
- Economies of scale
- Economies of information and learning
- Economies of process

### WHY

An often desired goal in corporate strategy to achieve corporate cost reduction and competitive advantage.

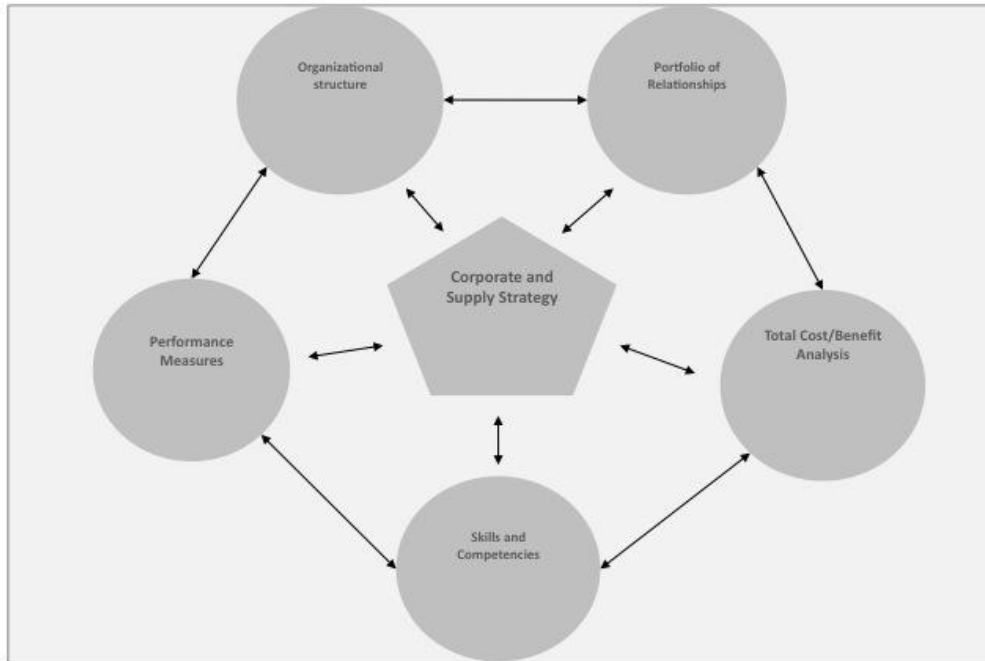
### HOW IS IT RELATED TO SHELL

Why are certain purchasing synergies realized and others not, and what are the implications for Upstream Norske Shell?

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## EMPIRICAL DATA GATHERING



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## Appendix H: Company Presentation #3



**STRATEGIC PURCHASING AND SUPPLY  
MANAGEMENT**

TITLE:  
PURCHASING SYNERGY

SUBTITLE:  
A CASE STUDY IN THE NORWEGIAN OIL INDUSTRY

Therese Krogh, Kristin Merethe Berge and Bing Zhao  
17.-18.04.2013



NTNU  
Norwegian University of  
Science and Technology

Copyright of COMPANY NAME

### PURPOSE

1. Study literature on purchasing synergy and make a theoretical framework
2. In-depth case study of Upstream Norske Shell, using the theoretical framework to:
  - a. Examine how today's practice should be according to company procedures
  - b. Examine how today's practice actually is

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## WHAT IS PURCHASING?



Copyright of COMPANY NAME

## WHAT IS "PURCHASING SYNERGY" AND WHY IS IT IMPORTANT?

### WHAT

- $2 + 2 = 5$
- Economies of scale
- Economies of information and learning
- Economies of process

### WHY

An often desired goal in corporate strategy to achieve corporate cost reduction and competitive advantage.

### HOW IS IT RELATED TO SHELL

Why are certain purchasing synergies realized and others not, and what are the implications for Upstream Norske Shell?

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## Appendix I: Interview Objectives, Value Chain Perspective

### Category Management and Contracting Process

- C&P
- Contract Manager
- Contract Owner, Holder, Specialist, User



### Requisition-to-Pay Process:

- Discipline Responsible Draugen/Ormen Lange
- Discipline Responsible Råket (Delivery Team)
- Stock: (C&P)
- Non-stock: (Delivery Team)
- The third procurer
- Local suppliers



## Appendix J: Agenda Case Visit #1

Tentativ plan Formål besøk1 Kristiansund

Tur 1	Studentplan	Hva	Hvem	Når og hvor (25-26 februar)
	<p>Avreise båt/buss fra Trondheim kvelden før</p> <p>Overnatting en natt</p> <p><u>Formål:</u> oppstartsbesøk for å få hel oversikt over alle prosesser og personer som inngår i innkjøpsverdikjeden deres:</p> <ul style="list-style-type: none"> <li>- Innføring i alle prosesser og personer som spiller en rolle i alt innkjøps- og kontraktsrelatert arbeid i Kristiansund, på Draugen og Ormen Lange</li> <li>- Oversikt over aktuelle lokale leverandører som intervjuobjekter</li> <li>- Viktigste strategiendringer og ny organisasjonsstruktur</li> </ul> <p>Hjemreise båt/buss samme dag</p>	<p>C&amp;P –prosesser</p> <p>RTP –Prosesser</p> <p>MatrMgm –Prosesser</p> <p>Kontraktsholder/bruker</p> <p>SAP prosessen</p>	<p>Manager CP UI Norway, Business Improvement Lead, Contract Manager, Inventory Disposal Analyst, Purchase Coordinator, SAP expert</p>	<p>25/2:</p> <p>Avreise Trondheim ca. 08 ?</p> <p>12-14: C&amp;P Lead</p> <p>14-15: RTP, Purchase Coordinators</p> <p>15-16: Materiell/ Inventory Analysts</p> <p style="text-align: center;">Møterom D-222 booket kl. 12-16.</p> <p>26/2:</p> <p>08-12: SAP expert</p> <p>12-14: Kontraktspartner</p> <p>14-15: Oppsummering/plan videre</p>

## Appendix K: Interview Questions Case Visit #1

### C&P Lead

- Hvilke prosesser er C&P involvert i?
- Hvordan fungerer prosessene på en detaljert måte?
- Hvordan henger disse prosessene sammen med andre underprosesser? Hvordan fungerer interaksjonene? (eks. RtP)
- Hva er hovedansvarsområdene til C&P?
- Hva er arbeidsoppgavene til hver enkelte i C&P?

### Purchase Coordinators

- Hvordan er RtP- prosessen forskjellig for stock og non-stock?
- Hvordan henger RtP-prosessen sammen med CMCP-prosessen og evt andre underprosesser?
- Hvordan fungerer prosessen på en detaljert måte?
- Hvilke personer er involvert i prosessen?
- Hva er arbeidsoppgavene til hver enkelte?

### Inventory Analysts

- List opp alle deres arbeidsoppgaver
- Deres oppgaver relatert til innkjøp (vise figur)
- Hvilke prosesser er dere involvert i? (CMCP, RtP...)
- Hvordan er RtP- prosessen forskjellig for stock og non-stock?
- Hvordan fungerer prosessen på en detaljert måte?
- Hvilke personer er involvert i prosessen?
- Har dere et flytskjema dere kan snakke oss gjennom?

### SAP expert

- Hvordan skal/blir SAP brukt i organisasjonen som verktøy?
- Blir SAP brukt ulikt av de forskjellige avdelingene i Shell?
- Hvor stor andel av innkjøpene er knyttet til en kontrakt?
- Hvor mange kontrakter har dere innenfor hver av de tre typene (strategisk, taktisk, operasjonell)
- Hvilke produktkategorier finnes? Hvor stor andel av innkjøpene ligger under hver kategori?
- Er det noen kategorier som skiller seg ut (slik at vi kan bruke det som mini-case)?
- Hvilke prestasjonsmålinger har dere? Finnes dette i SAP? Hvordan fungerer prestasjonsmålingene.
- SAP-kompetanse. Oppleverer dere at noen som burde kunne SAP, ikke kan det

### Contract management

- Er dette en egen underprosess?
- Hvordan henger denne prosessen sammen med CMCP og RtP?
- Hvilke roller inngår?
- Hvilke oppgaver innebærer rollene?
- Hvem har disse rollene?

## Appendix L: Agenda Case Visit #2

Dato	Tidspunkt	Møterom	Rolle
Onsdag 20. mars	12.00- 14.00	<b>B362</b>	Inventory Analyst Production  Inventory Disposals Analyst
	14.30- 16.00	<b>B362</b>	Senior Buyer Sourcing Procurement EU NL/UK/Nordics
Torsdag 21.mars	08.00- 09.30	<b>D225</b>	Engineer - E&M Delivery Mech. Ormen L.  E&M Delivery Engineer
	09.30- 10.30	<b>D225</b>	Contract Specialist CP UI Operated Norway
	11.30- 12.00		
	12.00- 13.30	<b>D222</b>	
	13.30- 15.00	<b>A202</b>	Contract Specialist CP UI Operated Norway
	15.00- 16.00	<b>A202</b>	Category Lead CP UI Operated NL

## Appendix M: Interview Questions Case Visit #2

### Spørsmål onsdag 20.mars

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#### Inventory Analyst/Disposal Coordinators (2 timer):

- Intros spørsmål
  - Hvor lenge har du jobbet i Shell? Hva gjorde du før?
  - Hvilken stilling har du i selskapet i dag?
  - Hva er dine arbeidsoppgaver?
  - Hvem rapporterer du til? Hvem rapporterer til deg?
- Hvilke deler av disse arbeidsoppgavene har direkte/indirekte betydning for jobben dere gjør i anskaffelsesprosessen for stock-material?
- Hvem samarbeider/interagerer dere med, forholder deg til? Hva består samarbeidet deres med C&P av? Hvordan går dere fram hvis dere vil ha en ny kontrakt (eksempel)? Hvordan kunne vært annerledes?
- Hvordan kan samarbeidet mellom dere og businessen karakteriseres? Hvordan interagerer dere? Hvem initierer møter/kontakt?
- Kan dere beskrive kulturen i C&P? (kommunikasjon, belønningssystem etc.) Kulturelle forskjeller mellom de ulike divisjonene på Råket. Forskjellene i kulturen fra C&P og andre avdelinger.
- Hvilket syn (rolle, status) har dere på innkjøp som del av organisasjonen og hvordan oppfatter dere at resten av organisasjonen ser på innkjøp?
- Er det en utfordring å ikke ha teknisk bakgrunn? Er det viktig at innkjøperne har høy teknisk kompetanse? På hvilken måte? Opplever dere utfordringer med at dere mangler teknisk kompetanse? På hvilken måte, hvor stort er hinderet? Er dette typisk for innkjøp i en driftsorganisasjon, evt andre ting som karakteriserer en slik organisasjon ift innkjøp?
- Har dere vært med på lean-prosjekt tilknyttet stock-innkjøpsprosess? Hva lærte dere av det, hva sitter dere igjen med?
- Hvor ser dere størst potensial for synergier (stordriftsfordeler, læring&informasjon, prosess)?
- Hvis dere fikk gjøre de endringene dere ville ift å forbedre anskaffelsesprosessen deres i stock, hva ville det vært? Hvor er det størst forbedringspotensial?



- Er det noen andre enn dere som har klarering i SAP til å lage en AO eller PO? Er det et problem at andre i organisasjonen gjør innkjøp, dvs setter opp en AO eller PO?

### **Senior Buyer Sourcing (1 t 30 min):**

- Introspørsmål:
  - Hvor lenge har du jobbet i Shell? Hva gjorde du før?
  - Hvilken stilling har du i selskapet i dag?
  - Hva er dine arbeidsoppgaver? Hva er de viktigste?
  - Hvem rapporterer du til? Hvem rapporterer til deg?
  - Hvem samarbeider/interagere du med, forholder deg til? Hvordan er samhandlingen mellom deg og kontraktsbrukere/innkjøperne?
- Hva skiller de operasjonelle kontraktene fra strategiske/taktiske ift å jobbe (dette de opp, kjøpe fra de, etterarbeid) med dem?
- Hvor mange operasjonelle kontrakter har dere ca?
- Hvem flagger inn behov for nye operasjonelle kontrakter, til hvem? Og hva skjer da, prosessen fra det flagges inn til det er opprettet en kontrakt? (Deler av CMCP-prosessen?)
- Er det viktig at du har teknisk kompetanse? På hvilken måte? Opplever du utfordringer med situasjoner hvor du mangler teknisk kompetanse? På hvilken måte, hvor stort er hinderet?
- Er det noen andre enn dere som har klarering i SAP til å lage en AO eller PO? Er det et problem at andre i organisasjonen gjør innkjøp, dvs setter opp en AO eller PO?
- Gjør du noen cost/benefit analyse i arbeidet med kontraktene? Hva er kriteriene?
- Er det stordriftsfordeler å hente i de operasjonelle kontraktene? På hvilken måte?
- Hvilke produktkategorier har dere delt opp innkjøpene i? Og hvor stor andel av innkjøpene ligger under hver kategori?
- Finnes det KPI'er/prestasjonsmålinger som du er eier av/ansvarlig for i oppfølgingen av jobben bruken med de operasjonelle kontraktene?
- Kan du fortelle oss om praksisen med generiske innkjøp? Fordeler/ulemper med operasjonelle kontrakter versus å kjøpe stand-alone utenfor kontrakter, evt andre fordeler/ulemper?
- Hvilket syn (rolle, status) har du på innkjøp som del av organisasjonen og hvordan oppfatter du at resten av organisasjonen ser på innkjøp?

- Kan du beskrive kulturen i C&P? (kommunikasjon, belønningssystem etc.) Kulturelle forskjeller mellom de ulike divisjonene på Råket. Forskjellene i kulturen fra C&P og andre avdelinger.
- Hva er det som gjør innkjøp i en driftsorganisasjon annerledes enn andre organisasjoner? Noen spesifikke karakteristikk du kan framheve?
- Har det vært gjort et lean-prosjekt på bruk av operasjonelle kontrakter?
- Hvis du fikk gjøre en endring, hva ville det hovedsakelig vært? Hvor ser du størst forbedringspotensiale ift innkjøp og kontrakter fra ditt perspektiv?

### Spørsmål torsdag 21.mars

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#### E&M Delivery Engineers (Ormen Lange Land Plant) (1,5 time)

- Introspørsmål
- Hva er en AO:
  - Hvordan opprette?
  - Hvorfor?
  - Vanskelighetsgrad (tid, kompleksitet, kompetansekrav ift teknisk/innkjøp/SAP, hvilke snarveier tas)?
  - Hvem? Kan alle gjøre det?
- Hvordan henger ArbeidsOrdren sammen med innkjøpsprosessen? Hvordan påvirker jobben du gjør som teknisk ansvarlig for AO innkjøpsprosessen til Kristiansund/Draugen/Nyhamna?
- Samarbeider du med innkjøperne/C&P? På hvilken måte? Hvordan fungerer samarbeidet mellom innkjøperne og de teknisk ansvarlige i Delivery Team?
- Hvor viktig er det for den som legger inn en AO å ha teknisk forståelse? Kunne noen av innkjøperne ha gjort dette?
- Hvor viktig er det for innkjøperne som godkjenner/klarerer/lager PO å ha teknisk forståelse? Kunne du ha gjort denne jobben?
- Hva er fordelene/ulempene med at innkjøperne Mette&Marit sitter i Delivery Team?
- Bruker du å kjøpe inn generisk? Hvorfor/hvorfor ikke? Hvorfor tas slike snarveier?
- Har dere vært med på lean-prosjekt tilknyttet deres rolle som første ledd i innkjøpsprosessen?

- Hvor vil du si det finnes størst potensial for forbedring i jobben med å legge inn en AO?
- Er det noen andre enn dere som har klarering i SAP til å lage en AO eller PO? Er det et problem at andre i organisasjonen gjør innkjøp, dvs setter opp en AO eller PO?
- Hvilket syn (rolle, status) har du på innkjøp som del av organisasjonen og hvordan oppfatter dere at resten av organisasjonen ser på innkjøp?
- Kan du beskrive kulturen i Delivery Teamet? (kommunikasjon, belønningssystem etc.) Kulturelle forskjeller mellom de ulike divisjonene på Råket. Forskjellene i kulturen fra C&P og andre avdelinger.
- Hva er det som gjør innkjøp i en driftsorganisasjon annerledes enn andre organisasjoner? Noen spesifikke karakteristikk du kan framheve?
- Har det vært gjort et lean-prosjekt på AO-arbeidet?
- Hvis du fikk gjøre en endring, hva ville det hovedsakelig vært? Hvor ser du størst forbedringspotensiale ift innkjøp og kontrakter fra ditt perspektiv?

### **Contract Specialist 2 and 3 (1,5 timer):**

- Introsjønsmål
  - Hvor lenge har du jobbet i Shell? Hva gjorde du før?
  - Hvilken stilling har du i selskapet i dag? Rollen både som CMCP-ansvarlig og CS.
  - Hva er dine arbeidsoppgaver?
  - Hvem rapporterer du til? Hvem rapporterer til deg?
- Kan du snakke oss gjennom CMCP-prosessen, evt gi oss en skriftlig, detaljert beskrivelse av denne? Oppfølging: cost/benefit analyse, hvordan jobbes det med det.
- Hvordan bør alle som er involvert i CMCP-prosessen være plassert i organisasjonsstrukturen sett fra ditt perspektiv? Er det fordel at Mette og Marit sitter i Delivery Team? Burde alle innkjøperne være samlet i C&P?
- Er innkjøperne (Mette, Marit, Hilde, Unni) underlagt CMCP-prosessen?
- Hvilke faktorer er det som veier tyngst i opprettelsen av kontraktene, de tekniske aspektene eller markedsprinsipper (fri konkurranse etc)?
- Er det viktig at du har teknisk kompetanse? På hvilken måte? Opplever du utfordringer med situasjoner hvor du mangler teknisk kompetanse? På hvilken måte, hvor stort er hinderet?

- Hvordan følger dere CMCP-prosessen i virkeligheten, hvor er det størst avvik fra prosedyrene? Fordeler/ulemper med dette?
- Hvem samarbeider/interagere du med, forholder deg til mest i jobbhverdagen din?
- Finnes det KPI'er/prestasjonsmålinger som du er eier av/ansvarlig for i oppfølgingen av jobben bruken med de operasjonelle kontraktene?
- Er det noen andre enn dere som har klarering i SAP til å lage en AO eller PO? Er det et problem at andre i organisasjonen gjør innkjøp, dvs setter opp en AO eller PO?
- Kan du beskrive kulturen i C&P? (kommunikasjon, belønningssystem etc.) Kulturelle forskjeller mellom de ulike divisjonene på Råket. Forskjellene i kulturen fra C&P og andre avdelinger.
- Hvilket syn (rolle, status) har du på innkjøp som del av organisasjonen og hvordan oppfatter du at resten av organisasjonen ser på innkjøp?
- Hva er det som gjør innkjøp i en driftsorganisasjon annerledes enn andre organisasjoner?
- Har det vært gjort et lean-prosjekt på CMCP-prosessen?
- Hvis du fikk gjøre en endring, hva ville det hovedsakelig vært? Hvor ser du størst forbedringspotensiale ift innkjøp og kontrakter fra ditt perspektiv?

### **Sap expert (1,5 timer):**

- Introspørsmål
  - Hvor lenge har du jobbet i Shell? Hva gjorde du før?
  - Hvilken stilling har du i selskapet i dag?
  - Hva er dine arbeidsoppgaver?
  - Hvem rapporterer du til? Hvem rapporterer til deg?
  - Hvem samarbeider/interagere du med, forholder deg til?
- Verifisere vår forståelse av RtP-prosessen (+ noen ekstra ledd) SE UNDER
- Tanker om generiske innkjøp. Hvordan unngå det? 75 % generisk på Draugen i dag, 20 % tidligere, hva har endret seg?
- Spm ift teknisk. Er de som legger inn AO bevisste på deres rolle som initiator av alt innkjøp? Kan de bevisstgjøres mer? På hvilken måte?
- Er det noen andre enn dere som har klarering i SAP til å lage en AO eller PO? Er det et problem at andre i organisasjonen gjør innkjøp, dvs setter opp en AO eller PO?

- Hvilket syn (rolle, status) har du på innkjøp som del av organisasjonen og hvordan oppfatter du at resten av organisasjonen ser på innkjøp?
- Hva er det som gjør innkjøp i en driftsorganisasjon annerledes enn andre organisasjoner?
- Hvor er det mest potensiale for forbedringer i Delivery Team ift deres jobb med AO, sett fra ditt perspektiv?
- Har du vært med på et lean-prosjekt?
- Gjennomgang av dataene vi vil, både fra sist møte og generell innkjøpsdata.

Slik vi forstår prosessen:

1. Anleggsoperatør finner feil, legges inn en notifikasjon (info om feilen + risikovurdering/viktighetsrangering)
2. Notifikasjonsmøte: gjennomgang av notifikasjonen, risikovurdering, godkjenning og deadline blir satt. For å endre deadline må notifikasjonen avviksbehandles, hvem gjør det, hvorfor og hva er konsekvensen?
3. Arbeidsordre: separat dokument som tar for seg økonomiske ressurser og deler. Planleggeren i Delivery Teamet søke etter utstyr som trengs til jobben, timeantall for jobben må estimeres, datofrist/original ROS-dato må settes. Er deadline på notifikasjonen den samme som på AO'en? Original ROS er den opprinnelige som settes opp i AO'en. Latest ROS-dato, siste oppdaterte dato etter at planleggeren har flyttet rundt på datoen. Hva er forskjell på planlegger og scheduler? utfordring å sette realistisk, original ROS-dato. Datoen settes ofte kun for å få delene, uten at jobben helt konkret er planlagt. Alt er fastsatt i AO'en, innkjøperen kan ikke endre noe på denne, kun bruke den som et utgangspunkt. Hvordan estimeres den økonomiske summen av det som skal kjøpes inn, velges ikke leverandørene etterpå?
4. Purchase Requisition (lages automatisk og sendes til innkjøperen for alle under 10 K dollar alt over må godkjennes av en overordnet før den går til innkjøperen)
5. Purchase Order (utenom kontrakt for 250 K NOK eller mer så må C&P godkjenne for å ha kontroll på de store summene)
6. Schedulerens rolle her? Scheduler flytter jobben. Hva tar scheduleren tak i? AO'en? Han/hun har vel ikke noe med
7. Jobb utføres.

## **Enterprise Framework Agreement Implementation (1 time):**

- Introspørsmål
  - Hvor lenge har du jobbet i Shell? Hva gjorde du før?
  - Hvilken stilling har du i selskapet i dag?
  - Hva er dine arbeidsoppgaver?
  - Hvem rapporterer du til? Hvem rapporterer til deg?
  - Hvem samarbeider/interagere du med, forholder deg til?
- Hva karakteriserer globale rammeavtaler?
- Hvor mange globale rammeavtaler benytter Kristiansund/Draugen/Nyhamna seg av, og hvordan er disse fordelt på strategiske/taktiske/operasjonelle kontrakter?
- Hvilke faktorer blir lagt til grunn (TCO, cost-benefit analyser) for å velge hvorvidt globale/lokale kontrakter skal benyttes?
- På hvilken måte kan Kristiansund bryte ned globale rammeavtaler ift at dere i Norge må forholde dere til norske lover og regler? Hvor viktig er det å ivareta lokale interesser - goodwill, norske lover?
- Hvilke synergieffekter er forbundet med bruk av globale rammeavtaler, feks stordriftsfordeler? Hva er ulempene med å ikke bruke de eller modifisere kontraktene?
- Hvor vil du si Kristiansund/Draugen/Nyhamna har størst potensiale for forbedring i bruk av globale rammeavtaler? (arbeidsmetode, roller, underprosesser, etc)
- Finnes det KPI'er/prestasjonsmålinger som du er eier av/ansvarlig for i oppfølgingen av jobben bruken med de operasjonelle kontraktene?

## Appendix N: Agenda Case Visit #3

Dato	Tidspunkt	Møterom	Rolle
<b>Onsdag 17.april</b>	08.20-08.30	<b>D311</b>	YTT møte
	08.30-09.00	<b>D318</b>	Morgenmøte Draugen D318
	09.00-09.30	<b>D317</b>	Morgenmøte Ormen Lange D317
	09.30-11.00	<b>D2</b>	Observasjon Delivery Team D2
	11.00-11.30		Lunsj
	11.30-12.30	<b>D2</b>	Observasjon Delivery Team D2
	12.00-13.00	<b>D320</b>	RtP Analyst
	13.00-14.30	<b>D320</b>	Inspection Team leader Norway
	14.30-15.30	<b>D320</b>	Manager CP UI Norway
	15.30-16.00	<b>D320</b>	BI Lead Norway
<b>Torsdag 18. april</b>	08.00-09.00	<b>D225</b>	Contract Specialist CP UI Operated Norway
	09.00-10.00	<b>D317</b>	Morgenmøte Ormen Lange D317
	10.00-11.00	<b>D225</b>	Contract Specialist CP UI Operated Norway
	11.00-11.30		
	11.30-12.00	<b>D225</b>	Delivery Team lead
	12.00-13.30	<b>D225</b>	Engineer - E & M Delivery (C&A)
	13.30-14.00	<b>D225</b>	
	14.00-15.00	<b>D225</b>	Contract Manager
	15.00-16.00		Delta på ukentlig torsdagsmøte mellom Inventory Analysts og Delivery Teamet

## Appendix O: Interview Questions Case Visit #3

### Spørsmål onsdag 17.april

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#### Kl. 12-13: RtP Analyst Implementation

- Introspørsmål
  - Hvilken stilling har du i selskapet i dag?
  - Hvor lenge har du jobbet i Shell? Hva gjorde du før?
  - Hva er dine arbeidsoppgaver?
  - Hvem rapporterer du til? Hvem rapporterer til deg? Hvem samarbeider du mest med i din jobbhverdag?
- Hvor i RtP-prosessen er det mest å hente ift optimalisere dagens prosess i Kristiansund/mest forbedringspotensial? Hvilke kriterier optimaliseres/effektiviseres prosessen etter?
- Jobber du med operational excellence ut i fra bestemte strategier og prosedyrer?
- Hvor compliant er organisasjonen ift RtP-prosessen? Er det et problem at de som har en rolle i RtP-prosessen avviker fra standard prosedyrer/prosesser? Finnes det SAP-data på dette?
- Hvordan måler dere om RtP-prosessen fungerer som den skal? Hva vet du om generiske innkjøp knyttet til RtP-prosessen?
- Hva er fordelene med PO-automatisering? Hva betyr det for innkjøperne Mette og Marit i Delivery Team? Hva betyr det for innkjøperne Hilde og Unni i Inventory? Gjort noen form for cost/benefit analyse i forkant av innføringen. Hva er effekten av PO-automatisering?
- Hvordan bør alle som er involvert i RtP-prosessen være plassert i organisasjonsstrukturen sett fra ditt perspektiv? Er det fordel at Mette og Marit sitter i Delivery Team? Burde alle innkjøperne være samlet i C&P?
- Talldata: innkjøp per år (kroner og antall), antall produktkategorier, andel innkjøp under hver kategori, contract leakage, antall fakturaer som kommer inn bakveien, antall leverandører, antall POer iløpet 2012, ...



### **KI13-1430: Contract Holder**

- PP-presentasjon.
- Intros spørsmål
  - Hvilken stilling har du i selskapet i dag?
  - Hvor lenge har du jobbet i Shell? Hva gjorde du før?
  - Hva er dine arbeidsoppgaver?
  - Hvem rapporterer du til? Hvem rapporterer til deg? Hvem samarbeider du mest med i din jobbhverdag?
- Hva betyr det å være Contract Holder (i alle steg i CMCP-prosessen, pre- og post-award)? Hvor stor andel av arbeidstiden bruker du på å være Contract Holder versus andre arbeidsoppgaver?
- Hvordan skal kontraktsstyring fungere i prinsippet i henhold til prosedyrer og strategier?
- Hva er ditt syn på kontraktsstyring i praksis i dag? Forbedringspotensiale?
- Hva er effekten av koordineringsjobben du gjør som Contract Holder? (mtp synergier)
- Hvilke faste møter deltar du på relatert til Contract Holder-stillingen? (leverandører, C&P, Delivery Team etc.)
- Hvor mange kontrakter er du Contract Holder for?
- Hvor ser du størst forbedringspotensial knyttet til Contract Holder rollen?
- Ser du på deg selv som en del av kontrakt- og innkjøp (C&P)? På hvilken måte?
- Finnes det KPI'er/prestasjonsmålinger som du er eier av/ansvarlig for i oppfølgingen av jobben bruken med de operasjonelle kontraktene?
- Hvilket syn (rolle, status) har du på innkjøp som del av organisasjonen og hvordan oppfatter du at resten av organisasjonen ser på innkjøp?

### **KI1430-1530: C&P Lead**

- Vise han vår beskrivelse av han. Har han noen kommentarer?
- Hva er dine arbeidsoppgaver som C&P Lead? Hvordan er tiden fordelt mellom å fungere i rollen som Contract Specialist og å være C&P Lead?
- Hvem samarbeider/forholder du deg til mest i din daglige jobb?
- Hvilke produktkategorier har dere delt opp innkjøpene/kontraktene i? Og hvor stor andel av innkjøpene ligger under hver kategori?
- Hvilke synergier (economies of scale, economies of informationa and learning, economies of process) er det mulig å hente gjennom din rolle?

- Har C&P noen faste møter internt eller med Delivery Team som du leder?
- Hva er ditt syn på om kontrakt/innkjøpsstrategien på Råket er i tråd med global kontrakt/innkjøpsstrategi i Shell? Eksempler på forskjeller og likheter?
- Hva er ditt ansvar med EFA implementering? Hvordan jobber du med dette?
- I hvilke deler av ditt arbeid bruker du cost/benefit-analyser?
- Kan du med egne ord beskrive kulturen i C&P? Hva skiller kulturen i C&P fra andre avdelinger på Råket?
- Finnes det KPI'er/prestasjonsmålinger som du er eier av/ansvarlig for?
- Hvilket fokus er det på faglig utvikling/opplæring i C&P og for innkjøperne (Mette, Marit, Unni, Hilde)?
- Hvis du fikk gjøre en endring relatert til ditt arbeid som kan skape synergi, hva ville det hovedsakelig vært? Hvor ser du størst forbedringspotensiale ift innkjøp og kontrakt fra ditt perspektiv?
- Er det viktig at du har teknisk kompetanse? På hvilken måte? Opplever du utfordringer med situasjoner hvor du mangler teknisk kompetanse? På hvilken måte, hvor stort er hinderet?

#### **K116-->: Business Improvement Lead**

- Info matrisestrukturen, for å kunne beskrive dette godt i case beskrivelsen.
- Globale standardprosedyrer som Upstream Norske Shell må forholde seg til.
- SAP som verktøy, dokumenter som kort forteller om dette?
- Organisasjonsendringer, få mer lokalt styring. Et enkelt dokument på dette?

#### **Spørsmål torsdag 18.april**

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#### **K18-9: Contract Specialist 2**

- Hva var de viktigste du og Terje lærte gjennom lean-prosjektet? Er dette overførbart til andre deler av innkjøpsprosessen? Noe som konkret har blitt gjort i etterkant?
- Hvilket syn (rolle, status) har dere på innkjøp som del av organisasjonen og hvordan oppfatter dere at resten av organisasjonen ser på innkjøp?
- Hvilke synergier (economies of scale, economies of informationa and learning, economies of process) er det mulig å hente gjennom din rolle?

- Kan du med egne ord beskrive kulturen i C&P? Hva skiller kulturen i C&P fra andre avdelinger på Råket?
- Leverandørkontakt: hvordan vil du karakterisere kontakten med leverandører? (grad av samarbeid, mest fokus på prisforhandlinger, hvem tar initiativ til kontakt, hyppighet?)
- Finnes det utfordringer innad i C&P knyttet til ulike prioriteringer siden mange jobber med ulike fokusområder? På hvilken måte?
- Hvilket fokus er det på faglig utvikling/opplæring i C&P og for innkjøperne (Mette, Marit, Unni, Hilde)?
- Hva er ditt syn på om kontrakt/innkjøpsstrategien på Råket er i tråd med global kontrakt/innkjøpsstrategi i Shell? Eksempler på forskjeller og likheter?
- Hvis du fikk gjøre en endring relatert til ditt arbeid som kan skape synergi, hva ville det hovedsakelig vært? Hvor ser du størst forbedringspotensiale ift innkjøp og kontrakt fra ditt perspektiv?
- Er det viktig å ha et Total Cost of Ownership-perspektiv i CMCP-prosessen?
- Kan vi sende deg case beskrivelsen av CMCP-prosessen?
- *CMCP-prosessen:*
  - *Key outcomes av Business needs: Hva er Terms of Reference og Stakeholder Engagement and Communication Plan?*
  - *Kan du utdype hvilke cost-benefit analyser du gjør i din rolle? Hva gjør du i steget Supply Chain Cost Modelling?*
  - *Er det viktig å ha et Total Cost of Ownership-perspektiv i CMCP-prosessen?*
  - *Steg Sourcing and Award: Hva betyr Sourcing package?*
  - *Leverandørkontakt: hvordan vil du karakterisere kontakten med leverandører? (grad av samarbeid, mest fokus på prisforhandlinger, hvem tar initiativ til kontakt, hyppighet?)*
  - *Hvordan følger dere CMCP-prosessen i virkeligheten, hvor er det størst avvik fra prosedyrene? Fordeler/ulempes med dette?*

## KI10-11: Contract Specialist 1

- Introspørsmål
  - Hvilken stilling har du i selskapet i dag? Rollen både som CMCP-ansvarlig og CS.
  - Hvor lenge har du jobbet i Shell? Hva gjorde du før?
  - Hva er dine arbeidsoppgaver?
  - Hvem rapporterer du til? Hvem rapporterer til deg?
  - Hvem samarbeider du mest med i din jobbhverdag?
- CMCP-prosessen:
  - Key outcomes av Business needs: Hva er Terms of Reference og Stakeholder Engagement and Communication Plan?
  - Kan du utdype hvilke cost-benefit analyser du gjør i din rolle? Hva gjør du i steget Supply Chain Cost Modelling?
  - Er det viktig å ha et Total Cost of Ownership-perspektiv i CMCP-prosessen?
  - Steg Sourcing and Award: Hva betyr Sourcing package?
  - Leverandørkontakt: hvordan vil du karakterisere kontakten med leverandører? (grad av samarbeid, mest fokus på prisforhandlinger, hvem tar initiativ til kontakt, hyppighet?)
  - Hvordan følger dere CMCP-prosessen i virkeligheten, hvor er det størst avvik fra prosedyrene? Fordeler/ulempene med dette?
- Hvordan bør alle som er involvert i CMCP-prosessen være plassert i organisasjonsstrukturen sett fra ditt perspektiv? Er det fordel at Mette og Marit sitter i Delivery Team? Burde alle innkjøperne være samlet i C&P?
- Er innkjøperne (Mette, Marit, Hilde, Unni) underlagt CMCP-prosessen? På hvilken måte?
- Finnes det KPI'er/prestasjonsmålinger som du er eier av/ansvarlig for i oppfølgingen av jobben bruken med de operasjonelle kontraktene?
- Hvilke synergier (economies of scale, economies of information and learning, economies of process) er det mulig å hente gjennom din rolle?
  - Kan du med egne ord beskrive kulturen i C&P? Hva skiller kulturen i C&P fra andre avdelinger på Råket?
  - Finnes det utfordringer innad i C&P knyttet til ulike prioriteringer siden mange jobber med ulike fokusområder? På hvilken måte?

- Hvilket fokus er det på faglig utvikling/opplæring i C&P og for innkjøperne (Mette, Marit, Unni, Hilde)?
- Hva er ditt syn på om kontrakt/innkjøpsstrategien på Råket er i tråd med global kontrakt/innkjøpsstrategi i Shell? Eksempler på forskjeller og likheter?
- Hvis du fikk gjøre en endring relatert til ditt arbeid som kan skape synergi, hva ville det hovedsakelig vært? Hvor ser du størst forbedringspotensiale ift innkjøp og kontrakt fra ditt perspektiv?
- Hvilket syn (rolle, status) har du på innkjøp som del av organisasjonen og hvordan oppfatter du at resten av organisasjonen ser på innkjøp?

### **Kl.11.30-12: Delivery Team Lead**

- Intros spørsmål
  - Hvilken stilling har du i selskapet i dag?
  - Hva er dine arbeidsoppgaver?
  - Hvem samarbeider du mest med i din jobbhverdag?
  - Bekrefte/avkrefte orgstruktur, vise teksten vår.
- Delivery Team: formål, visjon, ansvarsområder?
- Du eier Generic Materials og Required on Site: hvordan jobber med disse KPI'ene?
- Kan du fortelle oss fordelene og ulempene med praksisen med generiske innkjøp?
- På hvilken måte er Delivery Teamet en del av innkjøp?
- Hva har Delivery ingeniørene kontakt med leverandørene på? Hva er fordelene/ulempene?
- Har de som jobber på Draugen og Ormen Lange tilgang til å legge inn arbeidsorderer? Gjør de det noen ganger uten at de skal gjøre det? Hva er konsekvensene av det?
- Ok at vi sender deg en mail med spørsmål samt teksten som beskriver deg?

### **Kl12-1330: E&M Delivery Engineer Draugen**

- PP-presentasjon.
- Intros spørsmål
  - Hvilken stilling har du i selskapet i dag?
  - Hvor lenge har du jobbet i Shell? Hva gjorde du før?
  - Hva er dine arbeidsoppgaver?
  - Hvem rapporterer du til? Hvem rapporterer til deg?
- Arbeidsordre:

- Er det forskjell på å lage en AO for Draugen kontra Ormen Lange?
  - Hvilken kompetanse kreves for å lage en AO? I hvilken grad mener du at du trenger teknisk kompetanse, innkjøpskompetanse, SAP-kompetanse, TCO-perspektiv?
  - Er det noen andre enn dere i Delivery Team som har klarering i SAP til å lage en AO? Er det et problem at andre i organisasjonen initierer innkjøp, dvs setter opp en AO? Kan noen av de som jobber fast ute på Draugen legge inn AO'er som medfører innkjøp uten at dere har vært innom det?
  - Hvordan henger ArbeidsOrdren sammen med innkjøpsprosessen? Hvordan påvirker jobben du gjør som teknisk ansvarlig for AO innkjøpsprosessen til Kristiansund/Draugen/Nyhamna?
- Bruker du å kjøpe inn generisk? Hvorfor/hvorfor ikke?
  - Samarbeider du med innkjøperne/C&P (mette, marit, anne irene, hilde osv)? På hvilken måte? Hvordan fungerer samarbeidet mellom innkjøperne og de teknisk ansvarlige i Delivery Team? Rapporterer dere inn behov for nye kontrakter, til hvem?
  - Hva er fordelene/ulempene med at innkjøperne Mette&Marit sitter i Delivery Team?
  - Har du kontakt med leverandører? Hvis ja, hvordan vil du karakterisere kontakten med leverandører? (grad av samarbeid, mest fokus på prisforhandlinger, hvem tar initiativ til kontakt, hyppighet?)
  - Hvilket syn (rolle, status) har du på innkjøp som del av organisasjonen og hvordan oppfatter dere at resten av organisasjonen ser på innkjøp?
  - Kan du med egne ord beskrive kulturen i Delivery Team? Hva skiller kulturen i Delivery Teamet fra andre avdelinger på Råket?
  - Hvor ser du størst forbedringspotensiale ift jobben med AO'er sett fra ditt perspektiv? Hvis du fikk gjøre en endring, hva ville det hovedsakelig vært?

#### **Kl.14-15: Contract Manager**

- Hva er den grunnleggende forskjellen på pre-award og post-award contract management?! Hva består pre-award av? Er post-award det samme som det sjette steget i CMCP-prosessen?
- Hvilke synergier (economies of scale, economies of information and learning, economies of process) er det mulig å hente gjennom din rolle? Hvilke av dine arbeidsoppgaver går ut på å skape synergier? Hva er effekten av koordineringsjobben du gjør?

- Er det en utfordring med ansvar for så mange arbeidsoppgaver? Hvilke prioriteringer gjør du ift tidsbruk/viktighet på hver oppgave?
- Har du noen faste møter med C&P og/eller med Delivery Team som du leder?
- Hvem har du mest interaksjon med i din daglige jobb?
- Samarbeid med leverandørene, sett fra hans perspektiv? Ut fra at vi vet at både ingeniørene, innkjøperne, og kontrakt snakker med leverandørene Hva er ditt syn på om kontrakt/innkjøpsstrategien/contract management på Råket er i tråd med global kontrakt/innkjøpsstrateg/contract management i i Shell? Eksempler på forskjeller og likheter?
- I hvilke deler av ditt arbeid bruker du cost/benefit-analyser?
- Er det stordriftsfordeler å hente i kontraktene? På hvilken måte? Kan du med egne ord beskrive kulturen i C&P og i Delivery Teamet? Kan du si noe om hva som skiller kulturen i de ulike avdelingene?
- Finnes det KPI'er/prestasjonsmålinger som du er eier av/ansvarlig for?
- Er det noe fokus på faglig utvikling/opplæring i Contract Management?
- Hvis du fikk gjøre en endring relatert til ditt arbeid som kan skape synergi, hva ville det hovedsakelig vært? Hvor ser du størst forbedringspotensiale ift innkjøp og kontrakt fra ditt perspektiv?

## Appendix P: Research Journal

<b>Måned:</b>	Januar				
<b>Loggfører:</b>	Therese				
<b>Dato</b>	<b>Sted</b>	<b>Tid</b>	<b>Hensikt</b>	<b>Beskrivelse</b>	<b>Til neste gang</b>
04.01.2013	Skype	kl12	Første planleggingsmøte masteroppgaven	Gjennomgang av tanker til masteren samt laget et dokument med kort plan + alternativer for innhold i oppgave og sendte det til Shell	
08.01.2013	Gløs	kl12-13	Evaluering prosjektoppgave + gå gjennom plan-dokumentet vårt for å være i stand til å lage en tittel, undertittel og problembeskrivelse	Kort tilbakemelding på prosjektoppgaven, Shell er fornøyd med innsatsen vår. Scope blir fortsatt Kristiansund, men alle deler av "verdikjeden" til innkjøp blir nå tatt med. Tid og mulighet til å intervju alle som har en rolle i innkjøp, bedre med intervjuer enn spørreundersøkelse når vi har det alternativet. Leverandører kan vi også få tilgang til.	Ha laget tittel, undertittel og problembeskrivelse, budsjett, detaljert intervjuplan etc. + tenke gjennom interne evalueringspunkter.
11.01.2013	Gløs, E204	kl11-1230	Intern evaluering (person, prosess, produkt)	Ga tilbakemelding til hverandre på person (2 positive og 1 negativ). Rakk så vidt å begynne på produkt og prosess.	
11.01.2013	Gløs	kl1230-13	Veiledermøte1 med Luitzen	Diskusjon masterkontrakt: tittel, undertittel, problembeskrivelse	Lage et utkast og sende til Luitzen, han gir tilbakemelding innen mandag



14.01.2013	Telefon			Therese kontakter instituttet angående masterkontrakten. Vi får ikke levert innen fristen den 15.jan, avtaler å levere innen torsdag 17.jan.	
16.01.2013	NiT	kl12	Bing signerer kontraktene		
17.01.2013	Gløs	kl13	Signere og levere masterkontrakter til instituttet	Therese og Kristin møter Luitzen for signering og leverer kontraktene på instituttet. Therese sender samarbeidskontrakten til Shell (underskrevet av Therese, Bing, Kristing og Luitzen)	
23.01.2013			Vi fikk A!!!:)		
24.01.2013	Biblioteket i byen	kl10-14	Evaluering prosjektoppgave + oppstart masterjobbing	Gjennomgang av siste evalueringspunkter på prosess og produkt. Diskusjon på hvor arbeidet med masteren egentlig skal begynne. Blir enige om at alle må lese prosjektoppgaven nøye, samt alle må lese seg opp på metode.	Lese prosjektoppgaven nøye hver for oss, fokus på hva som kan gjøres annerledes i masteren.
28.01.2013	Gløs	kl1515-1615	Veiledermøte 2 med Luitzen	Evalueringsmøte prosjektoppgaven. Agenda:(1) Kartlegging av gjensidige forventninger til veiledningen, (2) evaluering prosjektoppgaven med hensikt å finne ut hvordan vi skal begynne på masteroppgaven	Therese, Bing og Kristin lager forslag til PS og RQs + grov disposisjon for oppgaven + begynner med litteratursøk.

31.01.2013	Gløs, Hangaren	kl10-15	Oppstartsmøte master	(1) Gjennomgang tanker etter å ha lest prosjektoppgaven, (2) Therese noterer ting vi blir enige om i google doc Plan&Evaluering, (3) Diskusjon PS og RQs (4) Diskusjon "verdikjede". Lager et første utkast budsjett + aktuelle datoer for å besøke Shell.	Therese skal snakke med Rolf ang budsjettet
31.01.2013		kvelden	Therese ringer Rolf, forteller om budsjett på 25 000 kr og formål med første besøk. Det er ok så lenge vi har en god plan bak forbruket		
<p><b>OPPSUMMERENDE REFLEKSJON</b></p> <p>Største utfordring har vært å vite hvordan vi i det hele tatt skal starte å jobbe med masteroppgaven. Det tok lang tid før vi fikk tilbakemelding på prosjektoppgaven og derfor har vi ikke sett stor hensikt i å begynne ordentlig med jobbingen med masteren før vi har fått all nødvendig tilbakemelding på prosjektoppgaven.</p>					

<b>Måned:</b>	Februar				
<b>Loggfører:</b>	Therese				
<b>Dato</b>	<b>Sted</b>	<b>Tid</b>	<b>Hensikt</b>	<b>Beskrivelse</b>	<b>Til neste gang</b>
<b>01.02.2013</b>	Biblioteket i byen	kl10-13	Lage detaljert intervjuplan med tilhørende budsjett	Gikk gjennom alle personer vi vil snakke med og satte opp 5 turer med detaljert plan for hvem vi skal snakke med når. Hierarkisk rekkefølge, hvor besøk 1 er svært avgjørende for å skaffe oss et overordnet bildet over hele innkjøpsprosessen fra A til Å. Sendte mail til Shell med 4 vedlegg (illustrasjon verdikjede, illustrasjon teoretisk rammeverk, plan formål hvert besøk og excel-ark med alternative dager og tilhørende budsjett for reise og opphold.	Alle skal lese seg opp på metode, spesielt litteraturinnhenting: Bryman, tidligere masteroppgaver, Yin
<b>04.02.2013</b>	NiT	kl1030-1100	Gå gjennom plan med Rolf og Terje	Agenda: (1) Kort presentasjon formålet med masteroppgaven; tema, studere praksis som den skal være og som den er, rollen til Shell som case-bedrift. (2) Kort presentasjon av rammeverket vårt. (3) Gjennomgang/diskusjon av detaljert plan for formål med alle fem besøk.	Shell skal gi tilbakemelding innen uke6 på hvilken dato som passer for første besøk. De skal forberede seg godt fram til denne dagen, slik at det blir lettere for oss å forstå alle brikkene av prosessen og bedre kan gå inn og intervju hver enkelt.

05.02.2013	S Rom 322F	kl10-14	PS, RQs, mail til Luitzen&God frey, litteratur	(1) Satt opp forslag til problemstilling og forskningsspørsmål. (2) Satt opp en grov disposisjon. (3) Snakket gjennom innhenting av litteratur (kriterier, temaer) og fordelte arbeidsoppgaver for første fase litteratur. Opprettet et google doc for å samle all litteratur i, i henhold til valgte kriterier	Therese: research journal jan/feb, snowballe 4 tidligere artikler, søke buyer/supplier+Håkansson&Sneh ota, synergiartikler, purchasing synergi artikler. Kristin: Rozemeijer bok + artikler, synergi-artikler, purchasing synergi artikler. Bing: snowballe 6 tidligere artikler søke etter synergiartikler og purchasing synergi artikler, søke på compliance
07.02.2013	Gløs	kl11-12	Veiledermøte 3 med Luitzen og Godfrey	Agenda: (1) PS og RQs. (2) Disposisjon med fokus på litteratur og introduksjon. (3) Informere de på avtalene med Shell. Fikk noe input på PS og RQ om hvilke endringer som kan gjøres, må avvente og se hvilken retning empirien tar før vi gjør endringer her. OK disposisjon, tanken om å ha med mer i introduksjonen støttes men det må nødvendigvis ikke være mye mer. De ga oss noen tips til hva vi skal søke på av litteratur (contract compliance etc). De har ikke mye mer å tilføre annet enn at vi tar kontakt med dem når vi har funnet en retning på litteraturen samt vært på første møte hos Shell.	Formål med neste veiledermøte må være å diskutere vår tilnærming til litteratur-kapitlet og bli enige på dette.

<b>11.02.2013</b>	S Rom 322B	kl1015- 1500	Gå gjennom artiklene som er funnet gjennom søk, alle presenterer hvert sitt arbeid	Agenda: (1) Presentasjon og diskusjon av litteraturen hver enkelt har søkt på og funnet. Mye bra her. (2) Fordeling av videre lesing av artiklene.	Alle leser alle artikler. Hver enkelt har hovedansvar for 8-9 artikler som den ansvarlige skal lese grundig for å finne ut hvordan denne litteraturen kan brukes i masteroppgaven. Funnene skal presenteres og diskuteres på neste møte, hver enkelt bestemmer hvordan notater man tar. Det viktigste er at det blir en god diskusjon og at vi på neste møte kan bestemme hvordan vi helt konkret skal bruke stoffet videre.
<b>19.02.2013</b>	S Rom 322F	kl1215- 17	Presentasjon av hver enkelts arbeid med litteraturen, diskusjon og komme opp med konkret bruk av funnene.	Diskusjon artikkel for artikkel, relevans for oppgaven vår og på hvilken måte den kan brukes. Alle veldig enige om alle artiklenes relevans. Fordelte oppgaver videre basert på kritikalitet, men må avvente hvor mye av det som kan gjøres når ift hva vi får ut av besøket hos Shell.	Arbeidsoppgaver til neste gang: Therese: Purchasing, Kristin: metode, Bing: Synergy. Ikke satt noen frist, da vi må avvente Shell-besøket.

<b>21.02.2013</b>	H Rom M68B	kl1015-14	Forberede Shell-besøk	Agenda: (1) Laget presentasjon av masteroppgaven vår for å vise til alle vi skal intervju. (2) Tenkte gjennom spørsmål til hver enkelt av intervjuobjektene, slik at vi kan styre møtene dersom det blir behov for det. Viktig at vi er bevisste på hva vi vil ha utav dem for å skape vår helhetsforståelse.	Sørge for å være mentalt forberedt!
<b>25.02.2013</b>	Kristiansund	kl1215-1500	Besøk 1: få oversikt over verdikjeden	kl8-1130: Båt Trondheim-Kristiansund. Kl12-14: Lunsj + møte med Jens Arne. Kl14-15: Møte med Mette og Marit. Kl.15-16: Møte med Unni og Hilde. Kl.16-17: Møte med Rolf.	Sove og bli uthvilt
<b>26.02.2013</b>	Kristiansund	kl815-1500	Besøk 1: få oversikt over verdikjeden	Kl.8-12: Møte med Ian + lunsj. Kl.12-14: Møte med Terje. Kl.1430-15: Avslutning med Rolf. Kl.1630-20: Båt Kristiansund-Trondheim.	Sove og bli uthvilt
<b>27.02.2013</b>	H Rom M68A	kl10.15-1700	Debrief besøk 1 Shell	Agenda: (1) gjennomgang/diskusjon av viktigste bidrag fra hvert enkelt intervju. (2) sender mail til Luitzen med status + ønske om litteratur-input + ønske om møte neste uke for å snakke gjennom litteratur og struktur case beskrivelse. NB: merk at vi allerede her er inne i systematic combining process. Vi begynte å lese oss opp på litteratur vi tenkte var relevant, men etter første besøk fikk vi ny forståelse for innkjøpsprosessen i Shell og nye tanker om hvilken litteratur vi bør inkludere, som feks organizational buying behaviour, purchasing in the oil industry, wheel elements.	Til mandag 4.mars skal alle gjøre hver sin oppgave på litteratur. Kristin skal skrive metode om søkeprosessen. Therese skal lage en grundig disposisjon til Purchasing-kapitlet. Bing skal lage en grundig disposisjon til Synergy-kapitlet.

<b>Måned:</b>	<b>Mars</b>				
<b>Loggfører:</b>	<b>Kristin</b>				
<b>Dato</b>	<b>Sted</b>	<b>Tid</b>	<b>Hensikt</b>	<b>Beskrivelse</b>	<b>Til neste gang</b>
<b>04.03.2013</b>	S Rom 922	kl1915- 1700	(1) Diskutere litteratur-oppgavene til hver enkelt. Bli enige om struktur slik at det er klart til å skrives. (2) Diskutere neste besøk hos Shell, lage en plan og sende mail til Rolf om det slik at datoer kan fastsettes.	Diskuterte hver enkeltes utkast (Kristin:metode, Bing:Synenrgy, Therese:Purchasing). Therese hadde funnet litt litteratur om oljeindustrien. Godfrey hadde også anbefalt oss noen artikler. Bestemte oss for å ha med et eget kapittel om oljeindustrien i Norge. Therese hadde også funnet artikler på temaet Organizational Buying Behavior. Ble enige om at dette temaet og bør inkluderes i oppgaven. Laget en oversikt over hvem i Shell vi ønsker å snakke med, bestemte scope. Ble enige om å ikke ta med leverandørene som en del scopet. Dette på grunn av kompleksiteten internt i Shell og begrenset tid og ressurser. Sendte mail til Shell med ønske om å få til et nytt besøk før påske.	Kristin: Fortsette på metode. Bing: Skrive synergy. Therese: Skrive Purchasing
<b>11.03.2013</b>	Gløs	kl1215- 14		se to hakk nedenfor	

<b>11.03.2013</b>	Gløs	kl1400	Veiledermøte 4 med Luitzen og Godfrey	Agenda: (1) struktur case-beskrivelse (2) struktur litteraturkapittel (3) nytt kapittel om oljeindustrien (4) Update shell	(1) Fikk tilbakemelding på strukturen til case-beskrivelse. Vi ønsker å strukturere utifra prosessene til Shell istedenfor utifra de ulike intervjuene. Da får vi presentert selskapet på en mer helhetlig måte. Vi unngår også at enkeltpersoner kan bli gjenkjent. (2) Vi foreslå å ha med organizational buying. God ide! Utfordring å få dette med i vårt rammeverk. (3) Teori om oljeindustrien kan være i introduksjonen eller som et eget kapittel etter metode. Vi ser ann hva vi velger utifra mengden teori vi finner.
<b>11.03.2013</b>	Gløs	kl15-->	Gå gjennom tekstene som er skrevet og lest gjennom til i dag.	Alle hadde lest hverandres tekster til i dag. Gikk gjennom tekstene og ga tilbakemelding. De er nå klar til å ferdigstilles. Therese sendte mail til Shell og fikk bekreftet at vi kunne komme på besøk neste uke (20. og 21. mars). Vi laget en oversikt over hvem vi ønsket å intervju, og hvor lenge vi ønsket å intervju hver enkelt.	Kristin: Skrive ferdig metode. Begynne på organizational buying. Bing: Skrive ferdig synergy. Søke etter ny litteratur. Therese: Skrive ferdig purchasing. Begynne på process combination. Tidsfrist: Onsdag 13. mars klokken 18:00
<b>14.03.2013</b>	Hjemme		Forberede spørsmål til intervjuobjekter Shell hver for oss	Lese gjennom tekstene til hverandre slik at man kan gi tilbakemelding på hverandres arbeid i morgen	



15.03.2013	S-Rom 922	kl1915- 16	Forberede besøk 2 Shell	<p>Gikk gjennom tekstene hver enkelt hadde skrevet og kom med tilbakemelding. Diskuterte teorien om 'organizational buying behavior' sin plass i oppgaven. Ble enig om at den skal være en del av purchasing-kapittelet. Gjorde tre store fremsteg: (1) Purchasing synergy management artiklene må korreleres med de tre type synergiene i purchasing synergy. Dette må gjøres etter at alt annet er korrelert i henholdsvis purchasing synergy og purchasing synergy management (2) Innenfor hvert element trenger vi et rammeverk/mer struktur, det får vi ved å korrelere mer fra Purchasing-teksten (3) Towards conceptual framework har to underkapitler, et hvor hjulet presenteres, et annet hvor hjulet+de tre typene for synergy presenteres. Ellers formulerte vi spørsmål til neste case-besøk: (1) generelle spørsmål som skal stilles til alle, (2) spesifikke spørsmål relatert til hver enkelt.</p>	<p>Therese: process combination, skrive ferdig purchasing, renskrive spørsmålene. Kristin: starte på organizational buying behavior, skrive ferdig metodedelen. Bing: starte på/omskrive purchasing synergy og purchasing synergy management, skrive ferdig synergy. Frist: 23. eller 24. mars - avventer litt med å bestemme. Til mandag: alle skal ha lest gjennom spørsmålene vi har laget til besøket innen mandag. Til Luitzen: spørre ang hvordan ta stilling til definisjoner + introdusere valgene vi har tatt ift teori. Bing og Kristin: lage kildeliste med link før påske</p>
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<b>18.03.2013</b>	S Rom 322B	kl1915- 15		Gikk gjennom spørsmålene til besøket en gang til. Endret på rekkefølgen hos noen av intervjuobjektene, samt at vi la til noen spørsmål. Therese hadde mailkontakt med Silje i Shell angående å få fylt opp tiden vi er der med intervjuer. Fikk beskjed av Silje at vi kunne intervjuere Ian; spørsmål til dette intervjuet måtte dermed lages. Vi gikk gjennom intervjunotatene våre fra sist gang vi intervjuet Ian. Dette var lurt da det dukket opp noen uklarheter vedrørende stegene i innkjøpsprosessen. Snakket oss gjennom prosessen slik vi forstod den, og vil bruke det for å bekrefte/avkrefte med Ian.	
<b>20.03.2013</b>	Kristiansund	kl12-16	Besøk 2	Bil til Kristiansund. 12-14: Hilde; 14:30-16:00 Anne Irene Sollid	Sove og bli uthvilt
<b>21.03.2013</b>	Kristiansund	kl18-16	Besøk 2	8-9.30: Roger Nilsen og Roger Nerland; 12-13.30: Ian Wiik; 13.30-15: Elisabeth Sivertsen og Kjetil Flemmen; 15-16: Jan Martin Haug	Sove og bli uthvilt

22.03.2013	S Rom 322 F	kl1015-15	Debrief besøk 2 Shell	Diskuterte hovedpunktene fra hvert intervju og hvilke observasjoner vi hadde gjort. Skrev notater i google docs Påskeplan. Tegnet innkjøpsprosessen til Shell på A3-ark; CMCP, RtP og sammenhengen mellom disse, og plasserte de ulike personene vi har intervjuet frem til nå inn der de hører hjemme i prosessen. Laget en oversikt over hva som gjenstår av arbeid med masteroppgaven i google doc Påskeplan samt skrev en oppdatert disposisjon av oppgaven. Ønsker å besøke Shell en siste gang i uke 16, onsdag og torsdag. Dette besøket skal inkludere både observasjoner og intervjuer. Før dette besøket må case-beskrivelsen og litteraturkapittelet være skrevet ferdig utkast på.	Kristin: fortsette på 'literature search' og 'empirical data gathering' --> ferdig til 25. mars. Begynne på kapitlet om oljeindustrien og skrive ferdig organizational buying i påska. Bing: skrive videre på 'purchasing synergy management og 'purchasing synergy' i påska. Therese: ferdigstille purchasing og begynne på maverick buying i påska; sende mail til Rolf 25. mars om at vi ønsker å besøke Shell i uke 16.
23.03.2013	Hos Kristin	kl12:00	Gi tilbakemelding på teksten om "organizational buying behavior". Diskutere hvordan resten av litteraturkapitlet og case-beskrivelsen skal struktureres	Ga tilbakemeldinger på teksten "organizational buying" og "literature search & empirical". Vi må finne ut hvordan vi skal bruke organizational buying teorien i oppgaven. Er det noen spesifikke temaer innenfor dette området vi ønsker å vektlegge? Bing presenterte sitt forslag til hvordan litteraturdelen purchasing synergy og purchasing synergy management kan struktureres. Diskuterte dette. Bing ble utnevnt som prosjektkoordinator for denne delen. Ble enige om at vi må legge inn et ekstra gir rett etter påske, slik at teori og case-beskrivelse er ferdig innen vårt neste og siste besøk hos Shell.	se: 22.03.2013 + Alle skal ha tenkt ut en mulig disposisjon til case-beskrivelsen i påsken - være klart før neste møtet 01.04.2013

<b>Måned:</b>	April				
<b>Loggfører:</b>	Kristin/Therese				
<b>Dato</b>	<b>Sted</b>	<b>Tid</b>	<b>Hensikt</b>	<b>Beskrivelse</b>	<b>Til neste gang</b>
<b>01.04.2013</b>	NiT	kl1000-1330	Status + oppstart etter påske	Gjennomgang av hva hver enkelt har gjort i påska. Therese: skrevet ferdig Purchasing inkl maverick buying, mailet med Rolf+Silje+JensArne/Lisbeth. Kristin: transkribert alle intervjuer fra lydfil, startet på oljekapitlet. Bing: kommet litt i gang på PS&PSM. Diskusjon av hva som er de viktigste prioriteringene de neste to ukene. Enige om å ha skype-møte hver kveld kl21, med frister for tekstproduksjon til kl1930 hver dag. Enige om disposisjon for case-beskrivelsen. Kristin og Therese starter å skrive på de mest kritiske delene, Bing fortsetter på litteraturen.	Therese: skrive utkast process view+finne aktuelle artikler fra purchasing til PS&PSM+maile med shell+siste gjennomgang av Purchasing. Bing: skrive utkast på PS&PSM, fordele arbeidsoppgaver til Therese+Kristin om det er nødvendig. Kristin: skrive functional view+orgbuyingbeh.
<b>02.04.2013</b>	skype	kl21-22	Oppdatering på PS+PSM + evt annet	Kort oppdatering på hva hver enkelt har gjort til nå. Gjennomgang av teksten til Bing på PS og PSM.	Basert på PS+PSM skal Therese gå gjennom aktuelle artikler fra Purchasing og Kristin ta en avgjørelse på artikler til OBB og se gjennom dem i realisjon til synergi.

<b>03.04.2013</b>	skype	kl21-2230	1) gjennomgang tekst functional view 2) gjennomgang tekst process view 3)gjennomgang tekst PS+PSM		Bing: skrive intro til PSM + lese korreleringsartikler. Therese: lese korreleringsartikler. Kristin: lese korreleringsartikler. Fulle ut korreleringstabellen hver for oss til diskusjon.
<b>05.04.2013</b>	S Rom 322F	kl1415-1700	(1) Lese tekst Bing PSM (2) Gjennomgang hver enkelts korrelering conceptual framework	Ble enige om hjul-korrelerings matrisen. Logikken i PSM-introen står alle inne for. La en plan for videre skriving, hvor Therese tar hovedansvar for CaseDescription og Bing fortsetter med hovedansvar på PS&PSM, mens Kristin bidrar på begge tekster samt har ansvar for oljekapitlet.	Bing: skrive ferdig intro PSM+diskusjon elementer (hjulet&key issues not covered). Therese: case decription+Purchasing+process view. Kristin: nytt utkast functional view+ferdigstille org.buying+diskusjon elementer+oil chapter.
<b>08.04.2013</b>	Skype	kl21-2230	Oppdatere hverandre på jobbingen	Therese gikk gjennom status for Case beskrivelsen. Kristin er ferdig med hjulelementene, går gjennom teksten når hele literature-delen er ferdig som utkast. Diskusjon av intro PSM og key issues not covered-teksten. Enige om at alle må bidra for å korrelere hjulet mot synergitypene. Starter med det etter skype-møtet imorgen.	Kristin: skrive CMCP-prosessen. Bing: tenke ut disposisjon til korrelering hjul+synergitypene og skrive ferdig tidligere tekster som inkludere kommentarer fra felles gjennomganger. Therese: fortsette å skrive på case beskrivelsen.

<b>10.04.2013</b>	Skype	k11230-13	Diskusjon matrise for å korrelere hjulet med de tre typene for synergi, basert på forslaget til Bing	Update fra alle. Therese: Case beskrivelsen tar tid. Går gjennom alle notater fra alle besøk for å sikre at vi har med all infoen som vi har fått og at vi ikke spør om noe vi allerede vet på neste besøk. Bing: all tekst for synergi-litteraturen er samlet i ett dokument, alle utkast foruten hjulanalysen skrevet av Kristin er revidert en eller flere ganger, nå gjenstår siste del som er Towards a Coneptual Framework. KRISTIN: kommet langt på CMCP, sender til Therese når den er ferdig fra hennes side.	Til neste gang: alle får 2 hjulelementer å krysse mot de tre typene synergier. Skal diskuteres på møtet imorgen. Om det blir tid utenom det, fortsett på andre arbeidsoppaver. Viktig å lese hele synergy literature utkastet lagt ut av Bing for å få full oversikt.
<b>11.04.2013</b>	1115-1700	S Rom 322 F	Diskusjon korrelering hjul mot de tre typene synergi	Diskusjon korrelering, enige om hvilke causes og hvilke kryss som skal være der ut fra jobben hver enkelt har gjort. Utfordring oppdaget: def av PS snakker om mellom to business units, dette må løses ved å ta med en ny kolonne i PS-tabellen og krysse av for hvilken artikkel som ser på 1) mellom ro units 2) i en unit 3) ikke tar stilling til det	Til neste gang.KRISTIN: gå gjennom tabell s34 prosjekt, lage en ny kolonne med SCOPE, samt inkludere med artiklene karjalainen09/11+davies+goold&campbell samt starte på diskusjon findings and correlation av cause-synergy matrix. THERESE: case. BING: Reinventing the Wheel.
<b>12.04.2013</b>					
<b>13.04.2013</b>					
<b>14.04.2013</b>			Frist utkast case beskrivelse + litteraturkapittel		

<b>15.04.2013</b>	Morgenen alene. Felles: kl1500-1830	Nit	Lese case beskrivelsen, skrive ned spørsmål. Møtes og diskutere spm	Kort om case. Fokus på spørsmål til intervjuene.	
<b>16.04.2013</b>	kl915-1300 + Avreise bil kl18000 til Krsund	VE245	Møtes og diskutere ferdig spm	Lage spørsmål til alle intervjuene.	
<b>17.04.2013</b>	Krsund	8-16	Besøk#3	Observasjon + 3 intervjuer	
<b>18.04.2013</b>	Krsund	8-16	Besøk#3	6 intervjuer + observasjon	
<b>19.04.2013</b>	S Rom 322B	kl1430-1730	Debrief Besøk#3 Shell	Snakket gjennom hovedpunktene fra hvert enkelt intervju og skrev punkter på hver person. Diskuterte plan videre for å opprettholde mål om å bli helt ferdige med case og litteratur i april	BING: frist på litteratur til søndag 21. THERESE: frist på case til onsdag 24. KRISTIN: diverse tekster, ulike frister. Alt skrevet ned i google doc Besøk#3 Shell Debrief
<b>21.04.2013</b>			Bing Legge ut tekst litteratur		Therese og Kristin leser gjennom litteraturen og kommenterer
<b>22.04.2013</b>		midnatt	Alle leser litteraturteksten og kommenterer		
<b>23.04.2013</b>	S Rom 322F	kl830-1200	Gjennomgang/tilbakemelding tekst litteratur	Gjennomgang side for side. Kun på innhold og store linjer. Alle språkfeil og andre detaljkommentarer sendes på mail til Bing	

<b>24.04.2013</b>		kl18/mi dnatt	Therese legge ut tekst case/Bing legge ut tekst litteratur		Bing og Kristin lese tekst case og kommentere/Therese og Kristin lese tekst litteratur og kommentere
<b>25.04.2013</b>	S Rom 322F	kl1115-	Gjennomgang/tilb akemelding tekst case		
<b>27.04.2013</b>			Skrivedag		
<b>28.04.2013</b>			Skrivedag		
<b>29.04.2013</b>			Skrivedag		
<b>30.04.2013</b>			Skrivedag		



<b>Måned:</b>	Mai				
<b>Loggfører:</b>	Therese				
<b>Dato</b>	<b>Sted</b>	<b>Tid</b>	<b>Hensikt</b>	<b>Beskrivelse</b>	<b>Til neste gang</b>
01.05.2013			Skrivedag. Ferdigstille Literature Review + Case Description		
02.05.2013			Skrivedag	Mail med tekst sendt til Luitzen og Godfrey	
03.05.2013			Skrivedag		
04.05.2013	NiT	1015-->	Oppstart Analyse (på forhånd har hver enkelt forberedt seg grundig)		
05.05.2013			Skrivedag		
06.05.2013			Skrivedag		
07.05.2013			Skrivedag		
08.05.2013			Skrivedag + legge ut tekst innen kl1800		Lese alle sine utkast
09.05.2013	NiT	10-18	Diskutere alle utkastene	Gjennomgang av alle utkast. 1) kristin-oil chapter, business context, performance measures, cost/benefit. 2) Bing-corporate coherence, purchasing maturity 3) Therese- orgstructure, portfolio	Skrive nye, ferdige utkast, samt brainstorme linker + Therese starte på Metode og Bing skrive ferdig Introduction
10.05.2013			Skrivedag		
11.05.2013			Skrivedag		

<b>12.05.2013</b>			Skrivedag		
<b>13.05.2013</b>			Skrivedag		
<b>14.05.2013</b>	Gløs	11-19	Diskutere alle utkastene samt brainstorme linker		Skrive ferdig analyser + første utkast link-analyser
<b>15.05.2013</b>	Gløs	1300	Veiledermøte 5 med Luitzen og Godfrey	1) Literature review 2)Case 3) Tips til analyse	Liste over endringer som bør gjøres basert på tilbakemeldingene fra veiledere samt forsette på analyseoppgavene allerede satt opp
<b>16.05.2013</b>			Skrivedag		
<b>17.05.2013</b>	FRI				
<b>18.05.2013</b>			Skrivedag		
<b>19.05.2013</b>			Skrivedag		
<b>20.05.2013</b>			Skrivedag		
<b>21.05.2013</b>	Gløs	1215-16	Diskutere link-analyser + Challenges and recommendations		
<b>22.05.2013</b>			skrivedag		
<b>23.05.2013</b>			skrivedag		
<b>24.05.2013</b>			skrivedag		
<b>25.05.2013</b>	Skype	11-13	Brainstorme challenges and recommendations på nytt		
<b>26.05.2013</b>	NiT	10-16	Diskutere Limitations		

<b>27.05.2013</b>	S Rom 822	9-15	Diskutere Discussion and Conclusion		
<b>28.05.2013</b>			Skrivedag		
<b>29.05.2013</b>	Gløs	k113	Veiledermøte 6 med Luitzen and Godfrey	Diskutere analysen	
<b>30.05.2013</b>			Skrivedag		
<b>31.05.2013</b>			Skrivedag		

<b>Måned:</b>	Juni				
<b>Loggfører:</b>	Therese				
<b>Dato</b>	Sted	Tid	Hensikt	Beskrivelse	Til neste gang
<b>01.06.2013</b>			Skrivedag		
<b>02.06.2013</b>			Skrivedag		Utkast RQ3+4
<b>03.06.2013</b>	Skype	11-13	Diskutere utkast		
<b>04.06.2013</b>			Skrivedag		
<b>05.06.2013</b>			Skrivedag		
<b>06.06.2013</b>	R 59	1015- 18	Felles jobbedag		
<b>07.06.2013</b>			Felles jobbedag		
<b>08.06.2013</b>			Felles jobbedag		
<b>09.06.2013</b>			Felles jobbedag		
<b>10.06.2013</b>			Felles jobbedag		
<b>11.06.2013</b>	FRIST				

## Appendix Q: Brainstorming of Ideas

### Tidsplan

<b>11.januar</b>	Utfylling av masterkontrakt i DAIM som blant annet inkluderer: Tittel på oppgaven Problembeskrivelse Kontrakt Shell/institutt/oss (akkurat som den i prosjektoppgaven)
Februar	Innhenting info Shell
Mars	Innhenting info Shell
April	Analyse
Mai	Analyse/Ferdigstilling
<b>11.juni</b>	Innlevering masteroppgave

### Språk

Oppgaven skrives på engelsk.

### Metode

- Primært et case studie, kan inkludere:
  - spørreundersøkelse
  - intervjuer
  - observasjon
  - eksperiment

### Tanker/Ideer til case studie

- Internasjonalt perspektiv:  
Inkludere noe C&P globalt? Linjeleder til Jens Arne sitter i Europa, få med deres perspektiv om hvordan de tenker om jobben som skal gjøres i Kristiansund, alle retningslinjene etc. Det meste av synergi-litteraturen tar for seg MNC's og corporate/business perspektivet, derfor er det stor motivasjon for oss å få med noe internasjonalt ettersom Shell er så globale, men med hovedfokus på Kristiansund (Råket, Draugen, Ormen).
- Utvide scope Kristiansund:
  - Flere personer inn i scopet vårt i Kristiansund som Contract management gjengen, resten av C&P, tekniske disipliner etc.
  - Trekke inn suppliers, forstå hvordan de oppfatter shell som kunde (inter-relations)?
  - Spørreundersøkelse alle som er borti innkjøp på Draugen, Ormen og i Kristiansund?
  - Tilgang til mer SAP-data

- Ny organisasjonstruktur Shell:  
Inkludere dette i vårt studie, blir C&P sin rolle endret? Hva innebærer organisasjonsendringene for C&P internasjonalt og deres rolle ovenfor C&P Kristiansund?
- Interaksjon C&P Kristiansund med C&P Stavanger, noe å se på her?
- Simulere en implementering, få Kristiansund til å utføre noen enkle oppgaver for å teste noe med synergier (eks at C&P and non-stock skal ha mer møter)?

### **Innhold oppgave**

- Ta utgangspunkt i "dagens situasjon" som skissert i prosjektoppgaven og supplere/utvide med ny informasjon basert på nytt scope
- Fokus på anbefalinger i masteroppgaven, problemstilling samt innhenting av data rettet mot dette. Bruke vårt anbefalte Purchasing Synergy Supply Wheel i oppgaven ift implementeringsforslag.

## Appendix R: Preliminary Overview of Case Visits

<p><b>Tur 1</b></p> <p><b>Possible Dates:</b>  <b>11.02-</b>  <b>12.02</b>  <b>or</b>  <b>20.02</b>  <b>21.02</b></p>	<p>Avreise båt/buss fra Trondheim kvelden før</p> <p>Overnatting en natt</p> <p><u>Formål:</u> oppstartsbesøk for å få hel oversikt over alle prosesser og personer som inngår i innkjøpsverdikjeden deres:</p> <ul style="list-style-type: none"> <li>- Innføring i alle prosesser og personer som spiller en rolle i alt innkjøps- og kontraktsrelatert arbeid i Kristiansund, på Draugen og Ormen Lange</li> <li>- Oversikt over aktuelle lokale leverandører som intervjuobjekter</li> <li>- Viktigste strategiendringer og ny organisasjonsstruktur</li> </ul> <p>Hjemreise båt/buss samme dag</p>
<p><b>Tur 2</b></p> <p><b>Possible Dates:</b>  <b>25.02</b>  <b>26.02</b>  <b>27.02</b>  <b>28.02</b>  <b>01.03</b></p>	<p>Avreise båt/buss fra Trondheim kvelden før</p> <p>Overnatting to netter</p> <p><u>Formål:</u> intervjue/observere alle i C&amp;P for å kartlegge synergier mellom dem og leverandører, dem og øvrige personer i organisasjonen som har med innkjøp å gjøre, og dem imellom.</p> <p>Dag1:</p> <ul style="list-style-type: none"> <li>- 5 personer</li> </ul> <p>Dag2:</p> <ul style="list-style-type: none"> <li>- 5 personer</li> </ul> <p>Hjemreise båt/buss dag 2</p>
<p><b>Tur 3</b></p> <p><b>Possible Dates:</b>  <b>11.03</b>  <b>12.03</b>  <b>13.03</b>  <b>21.03</b>  <b>22.03</b></p>	<p>Avreise båt/buss fra Trondheim kvelden før</p> <p>Overnatting to netter (alternativt dra to enkeltdager i forskjellige uker)</p> <p><u>Formål:</u> intervju/observere Contract Management</p> <p>Dag1:</p> <ul style="list-style-type: none"> <li>- Innføring ved Terje</li> <li>- Contract owners, holders, specialists, users</li> </ul> <p>Dag 2:</p> <ul style="list-style-type: none"> <li>- Contract owners, holders, specialists, users</li> </ul> <p>Hjemreise båt/buss dag 2</p>

<b>Tur 4</b>	Avreise båt/buss fra Trondheim kvelden før
<b>Possible</b>	Overnatting to netter
<b>Dates:</b>	
<b>08.04</b>	<u>Formål:</u> intervju/observere Delivery Team (Mette, Marit, Discipline
<b>09.04</b>	Responsibles) + "den tredje innkjøperen" (hvem er dette på Draugen, Ormen
<b>10.04</b>	Lange, Råket? Discipline Responsibles?) OG leverandører
<b>11.04</b>	Dag1:
<b>12.04</b>	- Delivery Team + "tredje innkjøper"
	Dag2:
	- Leverandører
	Hjemreise båt/buss dag2
<b>Tur 5</b>	Avreise båt/buss fra Trondheim kvelden før
<b>Possible</b>	Overnatting en/to netter
<b>Dates:</b>	
<b>22.04</b>	<u>Formål:</u> felles gruppeøvelse/intervju/observasjon med x antall ansatte fra de
<b>23.04</b>	ulike gruppene som jobber med innkjøp (de som utgjør alle brikkene i
<b>24.04</b>	innkjøpssystemet), for å skape diskusjon og forståelse
<b>25.04</b>	Dag 1:
<b>26.04</b>	- Gruppedag
	Dag 2:
	- (Åpen)
	Hjemreise båt/buss dag 2

## Appendix S: Case Study Protocol

### A. Overview of the Case Study Project

1. **Title:** Purchasing Synergy
2. **Subtitle:** A Case Study in the Norwegian Oil Industry
3. **Description of the case study:**

Purchasing synergy is still a relatively unexplored field in purchasing research, offering a great potential for new theoretical and empirical contributions. The context of today's globalized and fiercely competitive marketplace makes the importance of purchasing synergies seem more obvious than ever. This is the main motivation for this study.

In an attempt to contribute to the field of 'purchasing synergy', this master thesis will contain the following elements:

- 1) A thorough review of the existing literature, resulting in a theoretical framework.
- 2) A single case study of A/S Norske Shell in Kristiansund, describing today's purchasing organization in relation to 'purchasing synergy'.
- 3) An analysis of the case study using the framework, providing the basis for recommendations for Norske Shell and implications for researchers.
4. **Problem statement:** How are realized purchasing synergies and unrealized potentials explained?
5. **RQ1:**  
What is purchasing synergy and why is it important?
6. **RQ2:**  
What framework can be applied to identify and interpret realized purchasing synergies and unrealized synergy potentials?
7. **RQ3:**  
Which types of purchasing synergies are realized in Upstream Norske Shell and what purchasing synergy potentials are currently unrealized?
8. **RQ4**  
Why are certain purchasing synergies realized and others not and what are the implications for Upstream Norske Shell?

### B. Field Procedures

1. Places to visit: A/S Norske Shell in Kristiansund.
2. Interview employees related to the purchasing processes (Appendix I). Cover all responsibilities that take part in the purchasing process. Conduct semi-structured interviews.
3. Preliminary schedule and rationale for each visit to the case company (Appendix R)
4. Before visits: Make the interview questions. Revise them once before each case company visit as well.



### **C. Guide for the Case Study Report: Disposition**

1. Front page
2. Preface
3. Abstract
4. Table of contents
5. Introduction
6. Research Methodology
7. Literature Review
8. The Case: Upstream Norske Shell
9. Analysis
10. Discussion and Conclusion
  - a. Answer to problem statement and RQs
  - b. Contribution
  - c. Limitations
  - d. Implications for further research

## Appendix T: Literature Business Synergy

Author	Year	Title	Journal/Publisher/University	Main findings
Ansoff	1965	Corporate strategy: An analytic approach to business policy for growth and expansion	McGraw-Hill	Views synergy as one of the major components of a firm's product-market strategy
Mahajan and Wind	1988	Business synergy does not always pay off	Long Range Planning	There is no linear relationship between synergy and profitability
Clarke and Brennan	1990	Building synergy in the diversified business	Long Range Planning	Building synergy through analysis of relationships within a corporation through four portfolios - for products, resources, customers and technology
Vizjak	1994	Exploiting your synergy potential: promoting collaboration between business units	Long Range Planning	Proposes a systematic five step approach to synergy management: identify affinities, determine critical interrelationships and realize synergy potential
Juga	1996	Organizing for network synergy in logistics: A case study	International Journal of Physical Distribution & Logistics Management	Examines the potential of logistics network organization to deliver synergy benefits by simultaneously improving flexibility and coordination
Gruca et al.	1997	Exploiting synergy for competitive advantage	Long Range Planning	Explains how shared resources can lead to synergy and whether the synergy will lead to a sustained competitive advantage

Ensign	1998	Interrelationships and horizontal strategy to achieve synergy and competitive advantage in the diversified firm	Management Decision	Discusses how interrelationships can be developed for synergy and horizontal strategy as a way to achieve competitive advantage
Krumm et al.	1998	Managing key resources and capabilities: pinpointing the added value of corporate real estate management	Facilities	Describes an effort to identify products and services contributing to the added value of corporate real estate management to the bottom line of the corporation
Campbell and Goold	1998	Synergy: why links between businesses often fail and how to make them work	Oxford: Capstone	Explains why synergy initiatives often fail and how synergy potentials should be identified and captured
Goold and Campbell	1998	Desperately seeking synergy	Harvard Business Review	Explains why synergy initiatives often fail and how synergy potentials should be identified and captured
Goold and Campbell	2000	Taking stock of synergy: A framework for assessing linkages between businesses	Long Range Planning	Provides a framework for companies that wish to conduct an audit of how well their approach to synergy management is working
Eisenhardt and Galunic	2000	Coevolving: At last a way to make synergies work	Harvard Business Review	Synergy is realized through a corporate strategic process called coevolving, routinely changing the web of collaborative links
Benecke et al.	2007	Towards a substantive theory of synergy	SA Journal of Human Resource Management	Synergy is systemic and should be viewed in the context of processes

# Appendix U: Roles and Responsibilities Matrix (RASCI)

RASCI Matrix for CMCP Roles and Responsibilities (Group Recommendation)								
Legend:								
R= Responsible to do or get it done								
A= Accountable: must sign off on results								
S= Provides support to the responsible party								
C= Consulted on task and results; only as necessary								
I= Informed about tasks and results								
Chevron	Steps	Activities	Contract Owner	Contract Holder	Contract User	CP rep.	Global Category Manager	Key Outcomes
Business Needs	Establish Team	Establish clear roles and responsibilities	A	R	I	I	R	1.Terms of Reference 2.Stakeholder Engagement & Communication Plan 3.Spend analysis and demand forecast
		Appoint competent Company personnel to team	A	R	I	I	R	
	Establish Scope, Spend, Risk & Complexity	Understand the business requirements and ensure alignment with category objectives and KPIs	I	A	C	C	R	
		Define the need and scope for goods/services to be procured	I	A	C	C	R	
		Develop and communicate stakeholder engagement plan	I	C	I	R	A	
		Establish risk log to capture risk associated with category/contract	I	C	I	R	A	
		Gather spend data for category using Enterprise Resource Planning and/or Management Information System (i.e. Spend Analyser)	I	C	C	R	A	
		Identify any Export/Import Control Restrictions, Competition/Anti Trust Law concerns and other concerns in Red Thread	I	C	C	R	A	
	Determine Business Requirements	Forecast Business Demand	C	A	R	C	C	
		Challenge the assumed business requirements as appropriate	I	C	C	R	A	
Identify value improvement opportunities, delivery issues and risks		I	C	C	R	A		
Market Analysis	Understand Industry Structure	Assess the size and growth of the global market	I	I	I	R	A	1.Compilation of market analysis findings
		Break down the market by geography and key industries procuring these products/services	I	I	I	R	A	
		Identify and profile the major suppliers in the industry	I	C	C	R	A	
		Estimate the industry average cost structure	I	I	I	R	A	
	Identify and Profile Current and Potential Suppliers	List all suppliers that have the capability of meeting the Company's business requirements (including suppliers from emerging countries)	I	C	C	R	A	
		Create a profile for each supplier including products/services offered, regions/markets/customers served, market share and financial conditions	I	C	C	R	A	
	Analyse Market Conditions	Identify the key price drivers in the market	I	C	C	R	A	
		Evaluate future price trends	I	C	C	R	A	
		Analyse the market environment	I	C	C	R	A	
		Assess the Company's buyer power in the market	I	C	C	R	A	
Supply Chain Cost Modelling	Build Supply Chain Maps	Determine the scope of the as-is process to be mapped	I	C	C	R	A	1.Flowcharts of key activities and costs incurred in the supply chain from start through end of life 2.Total Cost of Ownership analysis 3.List of key cost and value drivers
		Build an activity map showing the cost elements incurred per activity	I	C	C	R	A	
	Build TCO model	Identify and estimate the relative magnitude of all costs incurred over the expected life of the product or service grouped by purchase price, acquisition costs, usage costs and end-of-life costs	I	C	C	R	A	
		Identify elements of cost at the supplier(s) level	I	C	C	R	A	
Develop List of Key Cost and Value Drivers	Identify and quantify the cost and value drivers that have the largest impact on TCO	I	C	C	R	A		
	Develop a list of factors that most significantly impact key cost drivers	I	C	C	R	A		
Strategy Selection	Finalise Strategy	Determine opportunities to influence the key cost drivers which will reduce cost and increase value	I	C	C	R	A	1.Category Strategy (for projects: CP strategy) 2.Contracting Strategy (for projects: CP Tactics and CP Plan)
		Verify business needs, market analysis and supply chain cost modelling and review opportunities for input into category strategy	C	C	C	R	A	
		Formulate potential sourcing strategies in alignment with category strategy	I	C	C	R	A	
	Develop Sourcing Tactics	Define reward & performance tracking mechanisms for category	I	R	C	C	A	
		Allocate risk and insurance between Company and supplier(s) according to Shell Group standards	I	C	C	R	A	
		Finalise and document the category strategy for endorsement by stakeholders	I	C	C	R	A	
		Define sourcing scope and boundaries	C	R	C	C	A	
	Confirm Suppliers	Determine the market approach and optimise eSourcing	I	C	C	R	A	
		Select contract type and build in reward & performance tracking mechanisms	I	C	C	R	A	
		Identify the Company resource requirements to manage contract	A	R	C	C	C	
Evaluate & Award Contract	Finalise and document the sourcing tactics for endorsement by stakeholders	I	C	C	R	A		
	Establish selection criteria to short-list suppliers and evaluation process for Sourcing & Award	I	C	C	R	A		
	Determine and validate supplier(s) capability to meet selection criteria	I	C	C	R	A		
	Select final supplier(s)	I	C	C	R	A		
Sourcing & Award	Develop Sourcing Package	Obtain approval for final supplier(s)	C	C	C	R	A	1.Sourcing Package 2.Approved Contract Award Recommendation 3.Letter of Award 4.Signed Contract 5.Transition Plan for Incoming and Outgoing suppliers (if required)
		Prepare sourcing package using model terms & conditions in line with approved Sourcing Strategy & Tactics	I	C	C	R	A	
	Manage Sourcing Process	Agree the structure and content of Sourcing Package with relevant stakeholders	C	C	C	R	A	
		Prepare the company estimate for comparison and benchmarking with suppliers' price submission	I	R	C	C	A	
		Issue Sourcing Package to short-listed suppliers using eRFx or conventional method	I	C	C	R	A	
		Establish and maintain a record for all incoming and outgoing correspondence with suppliers	I	I	I	R	A	
	Evaluate & Award Contract	Address suppliers clarification questions and provide written response to all suppliers	I	C	C	R	A	
		Manage the opening of submitted proposals	I	I	I	R	A	
		Conduct technical and commercial evaluation against agreed criteria	I	C	C	R	A	
		Negotiate with supplier(s) or conduct further bidding	I	C	C	R	A	
Execute Close Out & Feedback	Initiate Start Up	Select successful supplier(s) and obtain endorsement to award authority	I	C	C	R	A	
		Prepare Letters of Award and Regret	I	I	I	R	A	
		Convert the sourcing package into contract document(s) and review with stakeholders and Subject Matter Experts	I	I	I	R	A	
	Manage Performance & Relationship	Sign contract(s) by duly authorised proxy holder(s) of all parties to the contract	I	A	I	R	C	
		Retain sourcing documents and signed contract(s) in accordance with Group Records Management	I	A	I	R	C	
		Confirm business, contract objectives and tactics are aligned and understood by all stakeholders. Confirm assigned roles & responsibilities	A	R	C	S	I	
Contract Management	Initiate Start Up	Confirm and update the risk assessment and document mitigation	A	R	C	S	I	1.Contract Management Plan which includes risk and mitigation, HSSE provisions, KPIs, transition plan for incoming supplier 2.Business performance review report(s) 3.Contract close out report 4.Updated opportunity and learning log
		Update and confirm reward & performance tracking mechanisms	A	R	C	S	C	
		Prepare the post award Contract Management Plan	A	R	C	S	S	
	Manage Performance & Relationship	Review and update transition plan in place to move from pre to post award	A	R	C	S	I	
		Conduct internal and external kick off meeting addressing key contract management activities	S	A/R	C	S	C	
		Ensure delivery of business value at competitive TCO, execute incentives and apply reward when applicable	S	A/R	C	S	C	
Execute Close Out & Feedback	Implement and maintain the post award Contract Management Plan	C	A/R	C	S	C		
	Conduct Business Performance Review (BPR)	S	A/R	C	S	C		
	Ensure Contract Compliance	A	R	C	S	I		
Execute Close Out & Feedback	Manage scope changes, risk, business objectives, staff, contract documentation, variations/claims, and control expenditure	C	A/R	C	S	I		
	Verify Company is delivering on its commitments to the supplier	A	R	C	S	I		
	Execute and document close out	C	A	C	R	I		
Execute Close Out & Feedback	Evaluate and record supplier & Company performance	Evaluate and record supplier & Company performance	A	R	C	S	I	

## Appendix V: Risk Assessment Matrix (RAM)

RISK ASSESSMENT MATRIX (RAM)									
Severity	CONSEQUENCES				INCREASING LIKELIHOOD				
	People	Assets	Environment	Reputation	A	B	C	D	E
					never hear of in the industry	heard of in the industry	has happened in the Organisation or more than once per year in the industry	has happened at the Location or more than once per year in the Organisation	Has happened more than once per year at the Location
	no injury or health affect	No damage	no effect	no impact					
1	slight injury or health affect	slight damage	slight effect	slight impact					
2	minor injury or health affect	minor damage	minor effect	minor impact					
3	major injury or health affect	moderate damage	moderate effect	moderate impact					
4	PTD or up to 3 fatalities	major damage	major effect	major impact					
5	More than 3 fatalities	massive damage	massive effect	massive impact					