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The Role of ERP-system in Strategies for Synergy Capture

A case study in SCA Packaging

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Fredrik Berntsen
Herman Leife

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Institute of Economic Research
Department of Informatics
School of Economics and Management
Lund University
Box 7080
SE-220 07 LUND/ Sweden

Tel +46 46 222 78 24
Fax +46 46 222 44 37
E-mail: Elsbeth.Andersson@fek.lu.se

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Summary

Title: The Role of ERP-systems in Strategies for Synergy Capture
A case study in SCA Packaging

Authors: Fredrik Berntsen & Herman Leife

Tutors: Thomas Kalling & John Gibe

Problems: A driving force for change in business is the availability of enterprise resource planning systems (ERP-systems). They have a great impact on companies, not only because they constitute exceptionally large investments, but also because they hold the promise of integrating companies more closely, hence, they should be important in the pursuit of synergy.

In SCA Packaging, the landscape of information systems is very fragmented and therefore costly to maintain and causes anti-synergies within the company. SCA Packaging has recently decided to introduce a common ERP-system, and is therefore interesting to study.

Purpose: The purpose of the project is to explain the role of ERP-systems in strategy for capturing synergy.

Method: We have studied contemporary strategy and built a single case study around the decision to introduce a common ERP-system in SCA Packaging.

Conclusions: A common ERP-system is considered to be a prerequisite for capturing cross business synergies within SCA Packaging. However, the main obstacle for realising the cross business synergies is in the non-standardised processes and product codes within the company. Potential cross business synergies were not the reason behind the decision to buy a common ERP-system, but had a significant effect on the choice of system. The main reasons for introducing a new system were rather problems with existing fragmented and outdated information systems. The most important synergies in general, seem to be vertical integration synergies and synergies related to the IT-function itself.

Key words: Enterprise Resource Planning System, ERP, Synergy, Information Systems.

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1 Introduction

1.1 Background

Synergy is one of the main motivations for the existence of multi national companies (MNC). Synergy capture is possible in a number of different business activities.

A driving force for change in business is the availability of enterprise resource planning systems (ERP-systems). They have a great impact on companies, not only because they constitute exceptionally large investments, but also because they hold the promise of integrating companies more closely, and hence, they should be important in the pursuit of synergy.

1.2 Problem

It is very costly to maintain several different computer systems within a company.[1] Examples of direct costs that will rise with the number of different systems used are costs for storing redundant data, translate and possibly manually transfer data from one system to another, build interfaces between systems, and update software code.[2]

In addition to the direct costs, there are indirect costs, and they are even more important. The indirect costs are e.g. related to the lack of customer responsiveness due to the failure of production scheduling systems to communicate with sales and ordering systems, or that management is forced to make decisions based on instinct rather than on understanding of customer and product profitability, because of the failure of sales and marketing systems to communicate with financial reporting systems.[3]

[1] Davenport, Thomas H. (1998), p. 123.
[2] Ibid.
[3] Ibid.

"To put it bluntly: if a company's systems are fragmented, its business is fragmented."[4]

A solution to this problem is to implement a common ERP-system in the company. According to Davenport, this will streamline a company's data flows, and provide management with direct access to real-time operation information. Research shows that ERP-systems have led to dramatic gains in productivity and speed in many companies.[5]

We think that the data-handling power of ERP-systems can provide companies with an opportunity to realise synergies. Because synergies are more likely to be of strategic significance in a multinational corporation, and also because the amount of data available for optimising in that kind of company is vast and cumbersome to handle, ERP-systems should provide the most benefits in multinational companies. Several of the direct and indirect costs mentioned above are likely to be more noticeable in larger companies, and are in a way a form of anti-synergies. The fact that many corporations use ERP-systems to improve internal efficiency is already known,[6] but more exactly how information systems are perceived to support synergy capture, and how important that perception is for IT-investment decisions seems not to have been studied thoroughly. We therefore want to find out how managers believe ERP-system can help to provide opportunities to capture synergies, and also how important common ERP-systems are in this respect. These questions are important because they are related to why the huge costs of ERP-systems are accepted.

There are different theories about how to capture synergies, and these theories are in many ways contradicting in that they have different perspectives on how and when synergy can be captured, and what the impediments for capturing synergy are. In this thesis we have included different perspectives, and will compare and evaluate them to learn more on when the different views are useful. The first, more traditional perspective we have incorporated views obstacles for capturing synergy from a top-down perspective, i.e. synergies are identified in higher levels of organisations and problems appear in lower levels. This view is represented by Porter[7]. We have also incorporated another view by Cambell and Goold[8]. They represent another approach, putting more emphasis on weighing the advantages and the problems involved in trying to capture synergy and argue for a more refined involvement from top management. Eisenhardt and Galunic[9] build on the ideas of Cambell and Goold, and can be said to move even further away from the top-down perspective, as they argue

[4] Davenport, Thomas H. (1998), p. 123.
[5] Ibid. p. 124.
[6] Schary, P.B. & Skjøtt-Larsen, T. (2001), p. 302.
[7] Porter (1985)
[8] Cambell, A & Goold, M (1998a)
[9] Eisenhardt, K & Zbaracki, M (2000)

that more collaboration might not always lead to more synergy, and that initiatives to capture synergy should be bottom up. According to their view, the only way to make synergies work is if initiatives are based on the self-interest from individual business units.

The relation between IT and strategy is a common subject in literature about strategy. The Strategic Alignment Model presented by Henderson and Venkatraman represents a commonly accepted assumption saying that IT and Strategy should be aligned, and suggests different aspects of the relation that are important for this. However, there has been some controversy about the concept of strategic alignment. An example is the argument proposed by Ciborra[10], saying that there is a trade-off between alignment and flexibility, and that flexibility should be considered more when designing information systems. Ciborra also questions the notion that knowledge of the concept will automatically result in strategic alignment. The problem lies in how to achieve the desired level of alignment, either by specifying standards top-down, or letting individual units develop solutions more based on their own needs.

We will investigate how an ERP-system is perceived in relation to capturing synergies. We expect that the following two hypothesises will help guide the investigation. They constitute two important general questions related to the purpose of this thesis.

- Our first hypothesis is that managers consider a common ERP-system to be a prerequisite for realising synergy within a decentralised company.

- Our second hypothesis is that synergy is important as motivation for managers when making the decision to acquire ERP-systems.

The second hypothesis does in a way represent a reversed causality in relation to our purpose in that it is about how synergy affects the decision to acquire a common ERP-system. The reason why it is important is that if ERP-systems are important for strategy for synergy capture, it follows that synergy should be an important factor as motivation for acquiring an ERP-system.

1.3 Purpose

The aim of the thesis is to explain the role of ERP-systems in strategy for capturing synergy.

[10] Ciborra, Claudio, U. (2000)

1.4 Disposition

This section shows the structure of this thesis. It gives an introduction to each chapter, and the rationale for its inclusion in the thesis.

Chapter 1: Introduction

This chapter introduces the background to the thesis, i.e. puts it into its theoretical as well as its practical context. The problem statement introduces the reader to the questions that motivates the purpose of the thesis.

Chapter 2: Methodology

Describes the methods used. The chapter explains the reasons for choosing single case study as research method, and how the questions of validity and reliability are handled.

Chapter 3: Theory

The theories that form the theoretical framework are described here, as well as how they are put together and why they are relevant. The chapter ends with a list of effects on opportunities and impediments predicted by the framework from introducing a common ERP-system on strategy for capturing synergy.

Chapter 4: Empirical Findings

The empirical findings from the survey are presented here. The chapter starts with a short description of the case company. It then continues with a description of the current information systems landscape in the company, and a description of its current thinking on information systems, including a list of the most important issues. In an effort to further illuminate strategic thinking concerning information systems and ERP-systems, the business case for a major ERP-project is described.

Chapter 5: Analysis

This chapter has three main parts. The first one concentrates on analysing the IT-strategy of the case company. The second analyses strategies for synergy capture. The third, and most important part is the analysis of how well the theoretical framework lived up to the intentions, and what should be done to improve it.

Chapter 6: Conclusions

This chapter summarise the findings in the study, and highlight the most important findings. It also suggest where and how to perform further research.

1.5 Empirical Case

During the last decade, SCA Packaging (the company is further described in the empirical chapter) has acquired a lot of companies. Between year 1997 and 2000, acquisitions of more than MSEK 13 000 were made[11] and in year 2002, acquisitions for MSEK 1 821 were made.[12] This together with a philosophy that in the past largely has been based on decentralised management has lead to a very fragmented information system environment. At the moment, SCA Packaging tries to find ways to introduce a more general ERP-system across the organisation. We will investigate the role of ERP-systems in strategy for capturing synergy, by building a case study around the decision in SCA Packaging for introducing the new ERP-system. We will try to find out if synergy is a major factor in pursuing a general ERP-system, what synergies are expected from the new system, and what synergies that may be captured.

A previous attempt to introduce an ERP-system in SCA Packaging resulted in a semi-proprietary system, based on the CBS (Corrugated Business System). CBS is currently running in 26 SCA Packaging sites. CBS is important in the study, because it is in many ways a major alternative for SCA Packaging to introduce a more general ERP-system. CBS will be discussed in the case, as it is a major reference system for the people of SCA Packaging.

At present, there is a new attempt at implementing a new general ERP-system in SCA Packaging. In 2004, SAP R/3 will be deployed in Denmark, with the intention of having only one general ERP-system in all Danish sites. Even though that project is still in its early stages, it is important for a number of reasons. It is a pilot-project, and the outcome will have significant impact on SCA Packaging future strategy. The final decision for a common ERP-system will be made based on the pilot in Denmark. If the pilot turns out well, reaching its objectives, SAP will be considered to be the common ERP-system for SCA Packaging. Therefore the business case for the Danish SAP-project is an important unit of study.

The case study will be built from three main perspectives:

1. *General management, i.e. the corporate head-office*

2. *Managers in the operations.*

3. *The business-case for implementing SAP in Denmark.*

[11] ERP Systems in SCA Packaging, a changing Landscape.
[12] www.sca.com/pdf/2002ENG.pdf

The reason for the first perspective to be used is that ERP-systems are on general management's agenda. ERP-systems constitute a considerable investment, and have a significant impact on a company. The second perspective is important, because we think these managers will look differently at synergy than do general management. They have detailed knowledge of operations, and will be the ones using the systems. The third perspective represents the managers in Denmark who designed the business-case for the pilot. This perspective will reveal a lot of the thinking in SCA Packaging on ERP-systems. There are two reasons for this. The first one is that general management has approved the project as a pilot, which means it represents their current strategy for ERP-systems, or at least an important option for a strategy, being standardisation of ERP-systems. The second reason is, and that is also the reason why general management approved the pilot in Denmark, that the organisation in Denmark contains most of the different major businesses in SCA Packaging, and therefore will be representative of all of SCA Packaging.

We believe the case study will improve understanding of the role of ERP-systems in capturing synergy in general. It will also give a glimpse of the decision-process in SCA Packaging, and should be a useful document for reflection and learning within the company.

2 Methodology

2.1 Choice of Research Method

We are interested in the role of ERP-systems in strategy for capturing synergy. To find out more about this, we have chosen to make a case study. Yin defines a case study as an empirical inquiry that investigates a contemporary phenomenon within its real-life context when the boundaries between phenomenon and context are not clearly evident, and in which multiple sources of evidence are used.[13] In a similar way, Eisenhardt describe the case study research strategy as having focus on the understanding of dynamics present in single settings.[14] To find out about the role of ERP-systems in strategy for capturing synergy, it is suitable to do just this. We focus on understanding the dynamics in a single setting, i.e. strategy in one company. Capturing synergy is largely a contemporary activity, or, to use Eisenhardts[15] word, dynamic. We will be investigating a phenomenon in a real life context, and we think that we will need to gather evidence from multiple sources in order to get an aspect-rich picture in our study. A negative aspect of doing a case study to fulfil the purpose is that statistical generalisations of the result are not possible to do.

To study a strategic decision will most probably mean to study something that has been going on for several years. A relevant choice of method for data collection would probably be observation, which gives a close relation between to the studied object, but that is not an option if a historical process were to be studied. Observation is also a very demanding method, as it would take considerable time, which has been a limited resource in this project. We therefore agree with Mintzberg et al saying that: *"The best trace of decision processes remains in the minds of the people who carried it out"* [16].

[13] Yin, Robert (1984), p. 23.
[14] Eisenhardt, Kathleen, M. (2002), p. 534
[15] Ibid.
[16] Mintzberg, H., Raisinghani, D., and Theoret, A. (1976), p. 248.

Doing just a survey could be another possible method to fulfil the purpose. But with a survey we had not fully exploited the whole spectrum of access channels available to us in SCA Packaging through the Paper and Packaging Research Program.

Our study can be described as mainly qualitative according to some criteria:[17]

- We want to get as good coverage as possible on the qualitative variation, i.e. to collect different perspectives.

- We want to have rich information on few units of study, i.e. the decision-process for implementing a common ERP-system and the employees' thoughts about synergies and how to capture them.

- We are interested in differences in the views of employees at different positions within the company.

- We used, in part, unstructured interviews.

- We have collected information in close proximity to real life events studied, i.e. we talk to the people involved, and visit them in their workplaces.

- We look at how things interact and how they are structured.

- We aim to describe and to understand.

When doing a qualitative study it is important with flexibility,[18] and therefore the approach is done in a way that has made it possibility to change the study during the way. For example concerning the possibility to ask new kind of questions when we have found new interesting fields or question, within the studied subject, during the way of the case study. We think this approach is important because our knowledge and understanding of the subject will increase during the case study. We have also been flexible and changed questions when we have realised that they have not been optimal for the studied subject or when employees have misunderstood our questions.

[17] Holme, I.M., Solvang, B.K. (1997), p. 78.
[18] Ibid. p. 80.

2.2 Motivation for Single-Case Design

We believe that our choice of case study represents a critical case[19] that can test the theories in our framework and either confirm, challenge or extend it. The reason why we regard our case study as a critical case is because we know that SCA Packaging recently decided to go for a common ERP-system.
A single case study can be used to determine whether the framework is correct, or if it is even possible to extend it, or if we will find contradicting empirical findings.

It can also be argued that our study represents a rare or unique event[20], because the decision to implement a common ERP-system is likely to happen only once in every organisation. To fulfil our research aim; to find out what role an ERP-system has in the strategy for capturing synergies, we point our attention to the global nature of the decision process, from which follows a holistic design[21] of the study.

2.3 The Working Process

This section is about how we have worked and strived for fulfilling the aim of our master thesis, i.e. explaining the role of ERP-systems in strategies for synergy capture.

2.3.1 Creating a Theoretical Framework

In the beginning we studied existing theories about strategy in general, synergy, supply chain management, decision processes, and information systems. We also studied the different between strategy process and strategy content. The theories was selected because we found them either direct relevant for the studied subject, or indirect relevant, i.e. they increasing the understanding of the core subject and put it in a context. When we had studied theories and learned more about the subject, we created a preliminary theoretical frame of reference. In the theoretical frame of reference we made some hypotheses, deduced from existing theories.

> *"Only if you are forced to state some propositions will you move in the right direction"*[22]

[19] Yin, Robert (1984), p. 42.
[20] Ibid. pp. 40-41.
[21] Ibid. p. 43.
[22] Ibid. p. 22.

2.3.2 Data Collection

To fulfil our purpose, we have interviewed managers and employees in SCA Packaging in order to get their thoughts of synergies and the possibility to exploit synergies with an ERP-system. The decision-process for implementing the ERP-system in Denmark has also been a major question.

As a major method of data collection, we used semi-structured interviews with employees in SCA Packaging. This is because they allow for the capture of facts, opinions and the respondents own insights.[23] This is important, as the study is concerned with strategy, and strategy is crafted in the minds of people, e.g. general managers, managers in the operations, and so on. It is also important because the study was a learning experience. During the study, we as researchers learned about the situation as we got a richer and richer picture.

As we got more understanding about relationships and important issues, we refined our tactics for data gathering, and we followed up new leads. We also got better understanding of what the different interviewees work consisted of, and what kind of input they could give, thereby making better use of them. Also the fact that we visited some plants increased our understanding of the business and gave us new inputs to our ongoing case study and master thesis.

More focused interviews were used as well as they are a natural way to access busy people. It means that the interviews have been done in e.g. one hour, and have been quite structured to make sure that we covered the important aspects.

Except from interviews, we have gathered an extensive amount of company internal documents. The documentation has been gathered with the help of SCA Packaging's employees. The documents are of different quality, and have been used for different purposes. A lot of it just provided us with understanding, and some of it was used directly as a source to write the case. The information has been both qualitative and quantitative, the quantitative information mainly being presentations from meetings that has had special significance for the case study. Quantitative data has also been available, e.g. what systems are used in different places etc.

2.3.3 The Analysis

First we made an empirical analysis where we interpreted our empirical findings by using the theory. This empirical analysis was made to get a better picture of ERP-systems role in strategies for synergy capture in general, and for SCA Packaging

[23] Yin, Robert (1984), p. 83.

especially. By doing the empirical analysis we also had the possibility to find areas not covered by our framework.

Finally we linked the data to the propositions by doing *pattern matching*[24] between our theoretical framework and our empirical findings. The pattern matching was done to evaluate our framework and see if new theories could be created by analytic generalisation.

2.4 Validity

Validity is about how valid the collected information is and thereby how valid the conclusions can be. In qualitative studies the investigators usually have a closer relation to the studied object and it is therefore easier to get valid information.[25]

2.4.1 Construct Validity

To reach high validity, we have tried to cover the two steps for testing construct validity:[26]

1. Select the specific types of changes that are to be studied (in relation to the original objectives of the study).

2. Demonstrate that the selected measures of these changes do indeed reflect the specific types of change that have been selected.

For our study, this means:

(1) Studying what managers and employees believe is the role of ERP-system in strategy for capturing synergies. In particular, this includes the decision in SCA Packaging to go for a common ERP-system.

(2) Executives and employees involved in the decision process are interviewed, and documents they have written are studied, providing qualitative data. Employees at different positions in the organisation are also interviewed to provide us with qualitative information about possible synergies and obstacles for capturing them.

[24] Yin, Robert (2003), pp. 26-27.
[25] Holme, I.M., Solvang, B.K. (1997), p. 94.
[26] Yin, Robert (2003), p. 35-36.

Our main tactics to increase construct validity have been to get multiple sources of evidence by studying the subject from three perspectives:

1. We have interviewed executives and general management involved in the decision making process.

2. We have interviewed individuals potentially used by decision makers for reference, e.g. experts and managers outside general management.

3. We have relied on internal documentation, such as documentation from internal meetings, specifications of systems, evaluation reports, public material, written business cases etc.

2.4.2 Internal Validity

Internal validity is a concern for causal or explanatory case studies, in which the researchers try to determine whether an event is a consequence of another event or if a third event may have a significant impact.[27] For us it is therefore important to consider if there are other reasons of implementing a common ERP-system than we anticipate at the outset of the study.

To reach high internal validity in a case study it is important to consider that most events cannot be directly observed and instead have to be studied by making interviews and reading documents.[28] The researchers then have to make interferences to get a picture over situations and events. In striving for making as correct explanations as possible we have both considered and discussed rival explanations with each other.

2.4.3 External Validity

We have tried to generalise the results of our case study to theory rather than to other case studies or to some larger universe. This is, according to Yin the way single case studies should be generalised. This means that we are doing analytical generalisation, as opposed to statistical generalisation. An analytical generalisation does not automatic mean that a new theory has been created. If our theory can be said to hold, other studies in the same settings, i.e. similar unit of analysis, must be done with results that replicate our results.[29] If our studies are replicated in a situation, relevant for our theory, and the same result does not occur, the theory must be rejected.

[27] Yin, Robert (2003), p. 37.
[28] Ibid. p. 36.
[29] Ibid. p. 37.

2.5 Reliability

Reliability is about how reliable the collected information is and consequently how reliable the conclusions can be. When doing a case study it is important to do it in such a way that another researcher doing the same case study should arrive at the same result.[30] To reach high reliability, we have strive for making a well-described approach and documented our procedure in a case study protocol. This has also been useful for structuring the work and making sure we work in the right direction.

To increase the reliability we have also practised *triangulation*[31] throughout the case study. First we have uses multiple sources of evidence when collecting data, e.g. interviews and documents, which is *data triangulation*[32]. The data triangulation has also increased our construct validity. We have also continuously discussed our approach, and interpretation of data, with each other to minimise errors and make our master thesis as non-biased as possible, i.e. *investigator triangulation*[33]. When analysing the empirical findings we have finally tried to use two theoretical perspectives (Porter versus Eisenhardt), i.e. *theory triangulation*[34].

Crosschecking of empirical findings has also been done to increase the reliability in our case study, i.e. we have usually discussed the same issues with individuals within the same level of the organisation and between executives and managers in the plants. We have also crosschecked information between employees and documents. The crosschecking has been done to get as reliable information as possible, and to avoid the effects of misunderstandings when interviewing people.

According to Holme and Solvang, reliability is not as important to consider in qualitative studies as it is in quantitative studies[35]. The main reason for this is because the main purpose with qualitative studies is to increase the understanding of a particular case and not to focus on highly statistical representative results.[36]

[30] Yin, Robert (2003), p. 37.
[31] Ibid. pp. 97-99.
[32] Ibid. p. 98.
[33] Ibid.
[34] Yin, Robert (2003), p. 99.
[35] Holme, I.M., Solvang, B.K. (1997), p. 94.
[36] Ibid.

3 Theory

Strategy can be defined in many ways, depending on in the context the concept is to be used in. Henderson and Venkatraman express that[37]:

> *"We view strategy as involving both **formulation** (decisions pertaining to competitive, product-market choices) and **implementation** (choices that pertain to the structure and capabilities of the firm to execute its product-market choices)."*

We will use this definition of strategy because we need both those parts. We will investigate formulation of strategy when we find out about strategy for capturing synergy, and implementation when we look at the role of ERP-systems for capturing synergy.

3.1 Introduction; Theoretical Frame of Reference

To be able to understand the role of ERP-systems in strategies for synergy capture, and analyse how synergies are affecting the decision process as well as how ERP-systems can support synergy capture, we need some theoretical tools. The theoretical tools used include existing theories about synergy and theory on information technology strategies in business. We have also included supporting theory that we think will improve and refine our main theory by strengthening the aspects most relevant for our purpose. The result is a matching toolbox of theories where the individual tools each have specific purposes as well as strengthening the total functionality of the toolbox. Below follows brief descriptions of why the tools are included and how they are going to be used.

Chapter 3.2: We will use two perspectives in our framework, strategy process and strategy content. We believe using both of these perspectives will make our framework less idealised, and thereby provide a more valuable and true understanding of the corresponding reality.

Chapter 3.3: Theory on decision processes is included as well because it helps to explain the nature of synergies, e.g. it increases understanding of the obstacles for

[37] Henderson, J. C. & Venkatraman, N. (1993), p.472

capturing synergy, and that is the main reason for including it in this thesis. Decision process theory could also help increase understanding of the effects on the power-structure that introduction of an ERP-system would have in a company, and what the consequences of those effects would be. However that perspective represents a major research project and would require a more comprehensive treatment of decision theory, hence is left for a future thesis.

Chapter 3.4: The first part of the theory includes a chapter about information technology strategies. This will put the more specific information system we are interested in, namely ERP-systems, into context. We have also included theory on strategic alignment. The reason for including the strategic alignment model is that it can provide understanding of the dynamics of introducing an ERP-system to reach some purpose, e.g. to realize synergies. In our framework, it represents the interface between strategy and information systems. We have also included some arguments against the concept of strategic alignment, to make sure we use it with care.

Chapter 3.5: The chapter about synergies defines what synergy is as well as different types of synergies. By having different categories of synergy available, we make sure to analyse the whole spectrum of synergies. Different categories make it easier to do a structured analysis, as well as an opportunity to find out if some synergies are more related to ERP-systems than others. Theories about synergies also help us with identifying obstacles for capturing synergies or disadvantages that could follow from the pursuit of synergy, which may make it undesirable to always try to capture potential synergies.

Chapter 3.6: Theory on supply chain management is used because one of ERP-systems main purposes is to support the supply chain, and an important field where some synergies may be found is within the supply chain. We expect the supply chain theory to be a strong support for the synergy theory, as well as the IT-theory. The fact that supply chains, and in particular global supply chains, consists of many processes or sub-processes, theory about modularity is included because it explains interfaces between processes as well as how to link systems and product-parts to each other in an effective way. Theory about modularity is, in other words, included to improve understanding of what is needed for ERP-systems to support synergy capture.

Chapter 3.7: The theoretical foundation on which this thesis is built is summarised in this section. By putting the included theoretical areas together in this chapter, they become a framework that can explain the role of ERP-systems in strategy for synergy capture. This section is a description of this role, in the form of a list of the expected effects on opportunities and impediments for synergy capture resulting from introducing an ERP-system. The list is deducted from our theoretical foundation described in this chapter.

3.2 Strategy Process vs. Strategy Content

Strategy process will let us use two dimensions for analysis in our research. Strategy process research is concerned with how strategies are shaped, validated and implemented within companies, and also how strategies must change to meet changes in the requirements from its environment.[38] Strategy content research on the other hand is about what features make a company successful e.g. what market positions are favourable, but not how to reach them.

In this thesis the strategy content perspective is represented as we consider e.g. synergy capture or achieving strategic alignment as desirable concepts, i.e. what to do, not how to do it. However, when we look at the ERP-system as a way to capture synergies, i.e. we regard synergies as a goal; we are looking at strategy process because we try to find out how to reach the goal. The same is true e.g. for strategic alignment, i.e. the aim is known and the discussion about how to get it is strategy process. In addition to that, strategy for capturing synergy as well as major issues for ERP-systems will often include decisions that have a significant impact on a lot of people in the company, and then strategy process becomes important. Some important concepts and models that will have an impact on strategy process and that should increase understanding of the role of ERP-systems in strategy for capturing synergy are explained in the chapter about decision theory.

The fundamental questions for strategy process research are:[39]

1. What are the relationships between a firm's administrative systems and decision processes, and its competitive and/or resource positions?

2. How does a firm achieve and maintain effectiveness in the above relationships?

3. How does it modify its administrative systems and decision processes both in response to environmental changes and through its own proactive actions?

The first question is relevant because an ERP-system is a resource that can be seen as an important part of the administrative systems, and an important support in the decision processes. The second question is also directly related to ERP-systems, in that they should support effectiveness. The third question is relevant because the implementation of an ERP-system could be an answer to this question.

[38] Chakravarthy & Doz (1992),
[39] Ibid.

3.3 Decision Theory

We use a definition of decision and decision process from Mintzberg et al, which defines:

> *"[A decision as] specific commitment to action (usually a commitment of resources) and a decision process as a set of actions and dynamic factors that begins with the identification of a stimulus for action and ends with the specific commitment to action"* [40]

We will look at some important decisions, and in part a decision-process. We analyse the decisions using our theory on synergy. Our goal is to find out how ERP-systems appear in the minds of managers when it comes to the possibility to capture synergies. The advantage of this approach is that it is focused on the relation between ERP-systems and synergy, and on strategic decisions. Our hypothesis is that synergy is important as motivation for managers when making the decision to acquire a new ERP-system. However, it should be kept in mind that our investigation is only a piece of the puzzle that explains why companies accept the huge costs of ERP-systems, i.e. we do not expect synergy capture to be the only motivation for implementing an ERP-system, even if we expect it has a significant impact on the decision to do so.

The decision process can be highly variable, and to make a complete map of it would be a very difficult task indeed. As we are interested especially in the relation between ERP-systems and synergy in the minds of managers, it will be sufficient to describe strategic decisions individually, and not analyse the process of how they are related to the decision-process itself. The case will therefore be a simplification of the decision-process that represents in a holistic way the decision to introduce a new ERP-system in SCA Packaging. This means that we will not analyse the decisions of individual managers, but rather extrapolate the decisions made by the organisation.

The reasons for including theory of decision-processes in this thesis include both direct and indirect ones. A direct reason to do it is to provide context to the major strategic decision that introduction of a new ERP-system represents. The models included below should be able to give at least partial explanations for decisions made. An indirect reason is that the organisation of an ERP-system has an impact on the power structure in the company, i.e. the availability of information and so on, and will therefore probably be an important factor affecting how other decisions can be made in the future. Also, it can explain some issues that have to do with how the implementation of the new ERP-system will be performed.

[40] Mintzberg, Raisinghani & Theoret (1976), p. 246.

3.3.1 Model of Rational Choice

The rational model is based on the assumption that people have a purpose for their actions.[41] The model states that people in decision-situations will have known objectives, and that they from these objectives are able to evaluate the outcomes of different choices.[42] A person that is going to make a decision will collect the information needed to decide what set of choices is available. The person will then, after evaluating the choices, decide what action to take.

The rational model has been criticised for being unrealistic, and different researchers have raised different objections. A summary of cognitive limitations that have been suggested are:

> *"Goals are unclear and shift over time. People often search for information and alternatives haphazardly and opportunistically. Analysis of alternatives may be limited and decisions often reflect the use of standard operating procedures rather than systematic analysis.*[43]*"*

Other objections to the rational model have to do with the associated simplifying assumption of a causal or linear decision process. Even if the critics may accept the individual pieces of the rational model, they suggest various ways in which decision makers rearrange and repeat the different phases in the model.[44]

3.3.2 Model of Bounded Rationality

Another concept is bounded rationality. The model of bounded rationality acknowledges that the individual decision maker for different reasons will not always act rationally. This can be because of cognitive limitations or because of different social mechanisms such as consensus seeking, or because of time restraints etc.[45]

3.3.3 Political Model

The key assumption of the political model is that people in organisations have competing interests even if they share some common goals.[46] These conflicts arise from different bets on the shape of the future, biases induced by position within the organisation, and clashes in personal ambitions and interests, and the outcome will be a resultant of bargaining among the players (Essence of Decision: Explaining the

[41] Eisenhardt & Zbaracki (1992)
[42] Ibid.
[43] Ibid.
[44] Ibid.
[45] Ibid.
[46] Ibid.

Cuban Missile Crisis. Little, Brown, Boston MA, Allison, G. T. 1971 in Eisenhardt & Zbaracki, 1992).

The political model does, in contrast to the model of bounded rationality, consider people to be individually rational, but not rational as a group.[47] A feature of the political model is that powerful people will often get what they want. Another is that people will sometimes resort to political tactics, i.e. to form coalitions or to use information to become more powerful.[48]

3.3.4 Garbage Can Model

This model is widely known, and is different from the other two described here in that it acknowledges chance as an important factor. According to the garbage can model, decisions are the result of four "streams":[49]

1. *Choice opportunities*, which are occasions calling for decisions.

2. *Solutions*, which are answers looking for problems.

3. *Participants*, which are the people that participate, but that have busy schedules and might walk in and out of the process.

4. *Problems*, which are the concerns of people both inside and outside the organisation.

It is when there is a meet between streams that a decision can happen. When it happens is in this model largely a random event. The garbage can model can be a useful model, but is less empirically robust than the previous models. In addition to that, it becomes less valid if the time frames are short.[50]

3.4 Information Technology in Business

3.4.1 Information Technology Strategies

Information technology has evolved from being an administration support to a more strategic role within organisations.[51]

[47] Eisenhardt & Zbaracki (1992)
[48] Ibid.
[49] Ibid.
[50] Ibid.
[51] Henderson, J. C. & Venkatraman, N. (1993), p. 4.

The value of information technology investments is more difficult to measure than other types of investments. Compared to other technical investments within the traditional industry, investments in information technology are also harder to link to accounting measures. Instead, the large potential with information technology is to capture intangible values such as improved customer service, increased strategic flexibility and the possibility to introduce new products faster to the market.[52] Information technology can be said to be a general-purpose technology. Other general-purpose technologies, like the telephone, or the electric motor have historically led to dramatic productivity improvements. However, they do this mainly by facilitating complementary innovations. According to Brynjolfsson and Lorin, the value of investing in information technology is:

> *"...a significant component of the value of information technology is its ability to enable complementary organizational investments such as business processes and work practices"* [53]

This is what then leads to productivity increases by reducing costs, improving quality of output etc. It usually takes years before this kind of intangible values can become transformed into increased profitability.[54]

Information technology can help companies to achieve competitive advantages by providing new ways to outperform rivals through lowering costs or enhancing differentiation. IT may also be used to build barriers to entry, switching costs, and sometimes completely change the basis for competition. Finally, IT can also be used for creating entirely new businesses.[55]

Extending the traditional definition of organisational capabilities to companies' IT functions, companies' IT capabilities are defined as its ability to mobilise and deploy IT-based resources and capabilities.[56] On the basis of Grant's classification of resources[57], resources based on IT can be classified in the following way:[58]

- The tangible resource comprising the physical IT infrastructure components.
- The human IT resources comprising the technical and managerial IT skills.

[52] Bharadwaj, A. & Konsynski, B. R. (1997), p. 1.
[53] Brynjolfsson, E. & Lorin, M. (2000) p. 24.
[54] Ibid.
[55] Porter, Michael E. (1985)
[56] Bharadwaj, Anandhi S. (2000), p. 3.
[57] Grant, Robert M. (1996), pp. 111-118.
[58] Bharadwaj, Anandhi S. (2000), pp. 3-6.

- The intangible IT-enabled resources such as knowledge assets, customer orientation, and synergy.

This thesis focus is on synergy, and synergy is also mentioned in the third point above. To consider synergy to be an intangible resource can be compared with viewing it as a capability that stem from combinations of resources. To look at it in this ways is similar to saying that synergy is the result of using tangible and human IT-resources efficiently.

Due to the fact that information systems can be bought on the market and many companies are using the same systems, some argue that physical IT systems are unlikely to serve as sources of competitive advantage.[59] On the other hand, even if the software is a commodity, IT systems are more than just its parts and if the information system is implemented within a corporation and integrated with the company's functions, the system may help in gaining synergy benefits.[60] This thesis will not directly go into whether ERP-systems role in synergy capture will be something that lead to sustainable competitive advantage, even if that analysis could be an interesting next step.

Ross et al say that it is important to build a strong IT capability by having a strong IT staff with a well-working partnership between IT and business people.[61] This is in accordance with the reasoning on the combination of tangible and human resources above. To successfully implement IT and build integrated systems, it is important with experience, and the most successful IT implementers actually are the ones that have implemented similar systems before.[62] The risk linked to technological and market uncertainty is also usually reduced after a first mover has been able to implement a system successfully.[63]

3.4.2 Strategic Alignment Model

To identify and show the need of integration, the strategic alignment model[64] can be used (Figure 3.1). This model deals with both the capabilities of IT as business support, and as a part of the business strategy. These capabilities are important since IT has become more important as part of strategic advantage for companies.

[59] Mata, F.J., Fuerst, W.L. & Barney, J.B. (1995), p. 491.
[60] Bharadwaj, Anandhi S. (2000), p. 4.
[61] Ross, J.W., Beath, C.M. & Goodhue, D.L. (1996), p. 31.
[62] Bharadwaj, Anandhi S. (2000), p. 4.
[63] Mata, F.J., Fuerst, W.L. & Barney, J.B. (1995), p. 496.
[64] Henderson, J.C. & Venkatraman, N. (1993), p. 8.

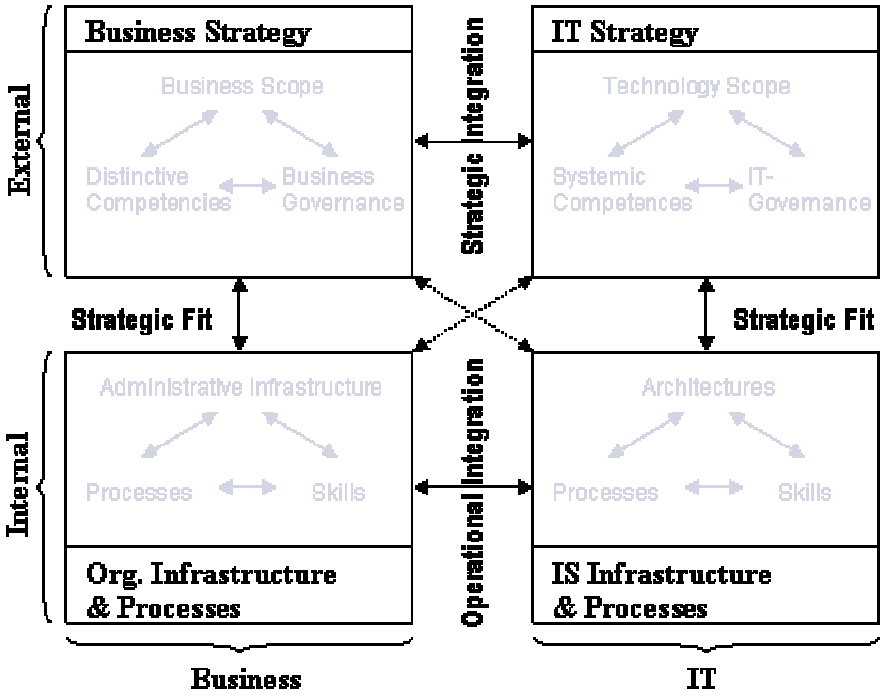

Figure 3.1. *Strategic Alignment Model*[65] *(modified).*

The strategic alignment model is quite comprehensive, and therefore we have shadowed some parts that are less important for our purpose. It is a conceptual model to begin with, primarily to be used for providing insights as opposed to suggesting actions. We will use it in this way, and the insights into the relation between IT and business that can be provided from the simplified model should be sufficient for this thesis, even if some of the models original explanation-power will be lost.

To begin with, the model provides four different domains of strategic choice that will help to put our thesis into context: Business strategy, IT Strategy, Organisational Infrastructure & Process, and Information Systems Infrastructure and Processes. The next benefit of the strategic alignment model is that it specifies two types of integration between IT and business. The first one is strategic integration, and it is about the how IT can shape and support business strategy. The second one is operational integration, and it is about how the IT-function can deliver the functions demanded by the organisation.

We will be able to use the perspectives of this simplified version of the strategic alignment model in our theoretical framework as can help to understand the dynamics of introducing a new system, i.e. we will be able to say something about how managers in a company will reason. The different perspectives of the model should support understanding of the role of ERP-systems in strategy for capturing synergy.

[65] Ibid.

The strategic alignment model points out four different perspectives that can be used to support thinking about how IT play a role in the organisation. The perspectives are not supposed to be exclusive of one another, but rather they should be used together, to provide a more aspect rich view on how to manage a harmonised relation between business strategy and IT. The two first perspectives have their starting point in the top-left part of the model, i.e. they have business strategy as a driving force. The following two start in the top-right part of the model, i.e. they have IT-strategy as a driving force. The perspectives from Henderson and Venkatraman[66] are summarised below:

Strategy execution alignment perspective. Top management formulate the business strategy. Then, information systems management implement effective information systems infrastructure that will support the business strategy. This means that the information systems management is responsible for the IT-strategy. This alignment perspective represents a traditional, hierarchical view of strategic management.

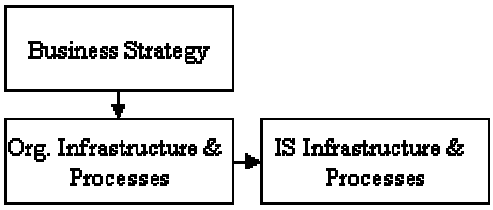

Figure 3.2. *Strategy execution alignment perspective*

Technology Transformation alignment perspective. Top management provide a *technology vision*, i.e. they are responsible for deciding how technology should support the business strategy. Then information systems management will implement the technology vision. In this case information systems management is not responsible for the IT-strategy, but for the implementation and organisation of the technology. This alignment perspective contrasts the first one in that it is not constrained by having the current organisational design as given.

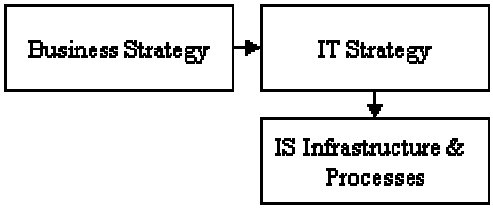

Figure 3.3. *Technology transformation alignment perspective*

[66] Henderson, J.C. & Venkatraman, N. (1993), pp. 9-12.

Competitive potential alignment perspective. When new possibilities become apparent in the IT-strategy field, the role of top management is to be a *business visionary*, i.e. they should articulate how the new possibilities, e.g. new competencies or functionality, will impact business strategy. The role of the information systems management in this perspective is to identify and interpret the trends in the IT-environment and help top management understand the potential opportunities and threats from the IT-perspective. This alignment perspective aims at identifying the best set of strategic options for business strategy, and then, in accordance to those, point to how to change the organisation.

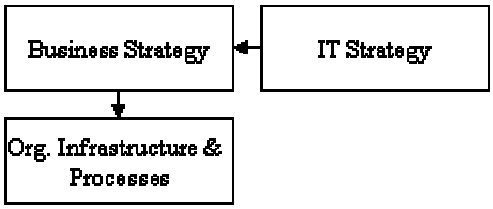

Figure 3.4. *Competitive potential alignment perspective*

Service level alignment perspective. In this perspective, the role of top management is to allocate scarce resources. The information systems management has in this perspective a role of *executive leadership*, responsible for building a world class IT service organisation, i.e. information systems infrastructure with processes to match it. The business strategy in this perspective has an indirect role, with customer demand for IT services as a proxy. This alignment perspective can be said to be necessary, but not sufficient, when making sure IT is used in an effective way.

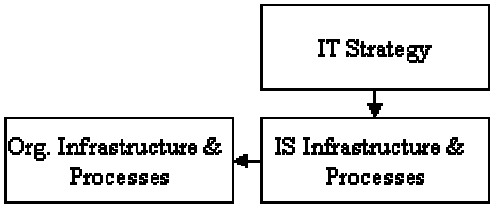

Figure 3.5. *Service level alignment perspective*

The issue of alignment surely is an important concept that can point to the major issues in the interface between strategy and IT. The alignment perspectives are useful in thinking about the role of IT in organisational transformation.[67] However, there can be some arguments raised against strategic alignment of information systems, or at least some things that should be kept in mind when pursuing alignment. A question

[67] Henderson, J.C. & Venkatraman, N. (1993), p. 8. 14.

raised by Ciborra[68] is one of whether there is a trade-off between alignment and flexibility. It certainly seems to be a relevant question, considering the high costs associated with implementing or changing information systems. A particularly comprehensive kind of information system, namely ERP-systems will be treated in the following chapter. It will be argued that ERP-systems might introduce rigidities into the organisation; hence the relevance of the question of the above mentioned trade-off.

Another related issue is how to execute the strategy, i.e. how to make sure that the information systems in the company become strategically aligned. This issue is a strategic process issue[69] and it is not entirely uncontroversial. Ciborra opposes the general representation of strategic alignment in management literature, which he feels dismisses the intricacies of real life, and the empirical suggestions that strategy and technology for one reason or another usually are drifting apart.[70] In reality he argues, achieving strategic alignment is not easy, and for managers to be aware that they should align their organisations is not enough. He offers no clear solution on this, but rather points out the problems that should be considered. Basically Ciborra suggest that it might be futile to try and take full control over infrastructure in the company using theoretical approaches that are oversimplified from the start, as the strategic alignment model are according to him, and that it might be better to just make sure to be aware of the limitations of managing the infrastructure[71].

3.4.3 Enterprise Resource Planning Systems

> *"...information technology on a global scale compresses time and space and permits the duplication and sharing of scarce corporate expertise. Such capabilities provide firms with an opportunity to leverage advantages in both market size and geographical scope, while they simultaneously provide the means to respond rapidly to the unique requirements of national markets."* [72]

The quotation above represents a lot of what is wanted from an information system, and can also be applied to a large extent to expectations from ERP-systems. ERP-systems were the first kind of software for managing supply chain information[73]. Except from supply chain information, ERP-systems also handle financial, accounting, human resource, and customer information[74]. Modern ERP-systems are module based, where the modules are process oriented rather than oriented toward particular function areas. Examples of modules are accounting, financial, payments,

[68] Ciborra, Claudio, U. (2000), p. 21
[69] Strategic process is discussed in chapter 3.2.
[70] Ciborra, Claudio, U. (2000), p. 27
[71] Ibid. pp. 39-40
[72] Blake, I. & Jarvenpaa, S.L. (1991), p. 33
[73] Schary, P.B. & Skjøtt-Larsen, T. (2001), p. 301.

human resource, inventory and order processing. Data from operations within the ERP-system are stored in databases, which can later be used for reporting and analysing.

Large organisations usually get the greatest advantages of ERP-systems, because they are designed to solve the problem with fragmentation of information in large enterprises[75]. There are also lighter versions of ERP-systems on the market designed for small enterprises.

Examples of ERP-systems are Baan, J.D. Edvards Oracle, Peoplesoft and SAP, of which SAP is the most widely used system.

Motives for implementing common ERP-systems

The companies that have the biggest advantages from using common ERP-systems have usually installed them for strategic and organisational reasons, while less successful users have decided to install their ERP-systems based on technical criteria alone.[76] Also if the management loose focus from the business problems, and instead are focusing on the enablers such as new accounting and financial measures or IT, it may result in disappointments with ERP-system initiatives.[77] These two views illustrate that it is necessary to take a broad and careful look at the motivation for implementing an ERP-system. It is in other words very possible to implement a lot of functionality with potential benefits, but in reality that would not add any value to the business.

Having many different computer systems leads to very high costs because of multiple support organisations and programming communication links between systems. Indirect costs caused by bad communication between for example sales and ordering systems and production-planning systems, is also a reason why multiple systems may be expensive.[78] ERP-systems can be a solution to these problems, in that they are constructed to be a single, comprehensive system to cover a whole enterprise. The idea is that a lot of more specialised systems can be replaced by one single application. Because of the size of the task to implement an ERP-system they are usually hard and time consuming to implement. The total cost of implementing an ERP-system is often 7 – 20 times as high as the cost of the system itself.[79]

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[74] Davenport, Thomas H. (1998): p. 121.
[75] Schary, P.B. & Skjøtt-Larsen, T. (2001), p. 301
[76] Davenport, Thomas H. (1998), p. 128.
[77] Kopczak, L.R. & Johnson, M.E. (2003), p. 28.
[78] Davenport, Thomas H. (1998), p. 123.
[79] Schary, P.B. & Skjøtt-Larsen, T. (2001), p. 301.

Rigidities

The complexity of ERP-systems can affect the firms' corporate strategy in a direct way by prescribing certain business logics. As an example, the business processes may have to be adjusted to fit the ERP-system. This is because of the complexity and the cost involved, and it is often easier to change the organisation to fit the ERP-system, than adjust the system to fit the organisation. As a consequence of this, many firms see the implementation of an ERP-system as an opportunity to improve and standardise processes and to get more central control over the company.[80] As well as increased central control, ERP-systems also allow more people in the organisation to access more, and more updated information.[81] Because business often must be modified to fit the ERP-system, Davenport argues that many companies will get the same kind of processes and as a result it will be even harder to gain competitive advantages.[82] There is as well a risk that these systems introduce unwanted rigidities in organisations, because there is a risk of lock-in once implemented due to e.g. due to the high cost, or the high investment in organisational change often involved in implementation. The company might then be prevented from reacting to seize future unplanned business redesign options.[83] This negative consequence of implementing an ERP-system is similar to Williamssons argument, saying that a company should manage a portfolio of options to allow room for opportunism and to reposition.[84]

3.5 Synergy

The word *synergy* comes from the Greek word *synergos*, which could be translated as "working together." In Business usage, synergy is usually defined as the "2 + 2 = 5" effect to explain the fact that corporations seek product-market postures with a combined performance that is greater than the sum of its parts.[85] Synergy can also be seen as one of four components of strategy, together with *product market scope*, *growth vector* and *competitive advantage*.[86]

> "*Capturing cross-business synergies is at the heart of corporate strategy*"[87]

Competitive cost reduction and differentiation advantages associated with synergies are usually harder to imitate because they have been achieved under circumstances

[80] Schary, P.B. & Skjøtt-Larsen, T. (2001), p. 302.
[81] Ibid.
[82] Davenport, Thomas H. (1998), p. 125.
[83] Ciborra, Claudio, U. (2000), p. 21
[84] Williamson, P. (1999), p.
[85] Ansoff, H. Igor (1965), p. 75.
[86] Ibid. p. 112.
[87] Eisenhardt, K.M. & Galunic, D.C. (2000), p. 91.

that are usually unique for the company, such as company specific resources and skills.[88]

Synergies have a close relation to diversification. Companies that are seeking synergies, usually focus on growing in related business, which is the same as related diversification. Unrelated diversification usually occurs when companies are seeking capital by growing into unrelated and more profitable businesses.[89]

3.5.1 Categorisation of Synergies

Synergies can be divided into different categories depending on how the synergies are captured. One early categorisation was made by Ansoff, who classified the four following categories of synergies:[90]

- *Sales Synergy*. Occur under the right circumstances when products of the company use common distribution channels, sales administration, or warehousing. Common advertising and past reputation can also have a multiple payoff, and a sales force that offers a complete line of products or services is usually more productive.

- *Operating Synergy*. A result of higher utilisation of facilities and personnel, shared overhead costs and the possibilities of common purchasing.

- *Investment Synergy*. Can be a result of common machines, shared plants, and common stocks of raw material.

- *Management Synergy*. May occur when a new venture has the same kind of organisational, strategic, and/or operating problems as the old business.

The first three of these categories are related to the value chain and the fourth is about the managements understanding of the businesses. Other persons have later redefined these categories, for example Bharadwaj, Varadajan and Fahy who divided synergies into categories based on the following ways of synergy capture:[91]

- Reduce costs by sharing activities between businesses.

- Increase revenues by cross-selling to customers of different businesses in the firm's portfolio.

[88] Bharadwaj, G. B., Varadarajan, R. & Fahy, J. (1993), p. 89.
[89] Kalling, Thomas (1999b), p. 10.
[90] Ansoff, H. Igor (1965), p. 79.
[91] Bharadwaj, G. B., Varadarajan, R. & Fahy, J. (1993), p. 89.

- Share knowledge and skills.

A third way of defining business synergies have been made by Goold and Campbell who have found that most synergies can take one of the following six forms:[92]

- *Shared Know-How*
- *Coordinated Strategies*
- *Shared Tangible Resources*
- *Vertical Integration*
- *Pooled Negotiating Power*
- *Combined Business Creation*

These six categories will be further explained in the six chapters with the same names as the categories. In these chapters we have also tried to incorporate, or at least relate, the earlier definitions of categories made by Ansoff and Bharadwaj et al. Notice that real life synergies cannot perfectly be divided into sub-groups and for example sharing an R&D department could be seen as both *shared tangible resources* and *shared know-how*.

The benefits expected if the six types of synergies can be captured, are lower costs, reduced duplication, more customer loyalty, higher prices, new products and services, and new business opportunities.[93]

Shared know-how

Sharing knowledge or skills between units within a firm could be an important way of capturing synergies. Pooling units' insights together and focusing on a particular field, such as a special process, a function or a geographical area is a way of achieving this.[94] The know-how that is shared may be explicit, i.e. written in manuals and other documents, but can also be tacit. Sharing tacit knowledge can be done by exposing/introducing people with different ways of getting things done to each other.[95]

[92] Goold, M. & Cambell, A. (1998a), p 133.
[93] Goold, M. & Cambell, A. (1998b), p 3
[94] Goold, M & Cambell, A. (1998a), p 133.
[95] Ibid. p 133.

Companies that share core competences and strategic resources may gain greater advantages than companies concentrated on market relatedness and on gaining economies of scope.[96] The fact that many firms put a lot of energy on leveraging core competences and sharing best practice shows the importance of synergies by shared know-how.[97]

When strategic assets for different reasons cannot be shared or transferred between two business units, the knowledge gained in the process of building and maintaining a strategic asset can sometimes still be used in other business units.[98] One important part of synergy capture in shared knowledge is the management's knowledge about the logic of the business.

Coordinated strategies

Sometimes it can be an advantage for a firm to align the strategies for some of its business units.[99] By dividing the market between the units, the firm will eliminate or at least reduce the risk of harmful competition among the units. Another benefit of coordinated strategies is that the firm's different business units may answer with a coordinated response when a similar competitor launches an attack.[100]

Even if coordinated strategies for a firm could be an important way to capture synergies, it is not easy to find a good balance between the more centralised structure that is necessary, and the benefits of business unit autonomy. We will get back to this in part 3.4.2 capturing synergies.

Shared tangible resources

Companies often justify merger and acquisition of related business, by pointing to the synergies that can be captured by sharing physical assets and resources such as production facilities and research and development departments.[101]

Related diversified companies can gain greater advantages compared with non-diversified or unrelated diversified companies by sharing activities. Physical interrelations are about sharing activities, such as transports, technology, and sales channels among business units. This kind of sharing of activities may reduce costs by increased volumes and therefore increased possibilities of economics of scale and learning.[102] Firms with units that share activities may as well avoid duplicated

[96] Markides, C.C. & Williamson, P.J. (1994), p. 149.
[97] Goold, M & Cambell, A. (1998a), p 133.
[98] Markides, C.C. & Williamson, P.J. (1994), p. 156.
[99] Goold, M & Cambell, A. (1998a), p 133.
[100] Ibid.
[101] Ibid.
[102] Porter, Michael E. (1985), p. 324.

efforts.[103] By sharing production capacity, companies are also less affected by temporary breakdowns and stops in single factories.

Capturing synergies by cross selling is in many ways similar to synergies that are achieved by shared activities, and is therefore further explained in this chapter. Cross-selling means that a company is striving for economies of scope by adding new products or services to their portfolio and then try to sell them through their existing sales network with less added cost than it would cost for a new company to market an equal product.[104] Trying to capture synergies by cross selling is usual among multi business companies.

Vertical integration

Vertical integration is about coordinating the units within the supply chain. By coordinate the flow of products or services, inventory costs are usually reduced, the product development time could decrease, capacity utilisation increase, and the market access could become better.[105]

Especially process industries such as forest- and petrochemical industries may gain large benefits from capturing synergies by vertical integration.[106]

Pooled negotiating power

If the business units within a firm combine their purchase they can gain an increased power over their suppliers and thereby either reduce costs or/and improve the quality of the goods to be purchased. This kind of synergy can also be achieved by negotiating jointly with customers, and even when negotiating with governments and universities.[107]

Combined business creation

Today, many companies are looking beyond traditional boundaries in their search for efficiency and competitiveness. New cooperative arrangements based on information technology have resulted in strategic alliances, vertical integration, and new business partnerships.[108] Creation of a new business within a corporation can be done by using know-how from different units, as well as using activities from different units, i.e. creating internal joint ventures.[109] Because of the importance, in the business world of today, of regeneration and growth, this kind of synergy is regarded as very important

[103] Goold, M & Cambell, A. (1998), p 133.
[104] Bharadwaj, G. B., Varadarajan, R. & Fahy, J. (1993), p. 89.
[105] Goold, M & Cambell, A. (1998a), p. 133.
[106] Ibid.
[107] Ibid.
[108] Bharadwaj, A. & Konsynski, B. R. (1997), p. 4.
[109] Goold, M & Cambell, A. (1998a), p. 133.

for many businesses.[110] This kind of synergy can also be regarded as a combination of the previous five forms.

3.5.2 Capturing Synergies

Obstacles for synergy capture

Even when potential synergies are identified, they are not always captured. The reason why synergies are not always captured is because many of organisational factors work against them. There are also functional coordination obstacles but they are usually easier to overcome. The most common sources of obstacles for capturing synergies are according to Porter:[111]

- *Asymmetric Benefits*. Some business usually resist increased interrelationship because the benefits seems to be asymmetric.

- *Loss of Autonomy and Control*. For personal reasons, unit managers often prefer to be independent and therefore resist more centralisation. Other reasons why business units may dislike increased interrelations are the fear for damaged customer relations, inability to "fire" sister units, conflicts in shared activities, and unfair blame for poor performance.

- *Biased Incentive Systems*. Incentive systems can be contradictive for increased interrelationship if they only measure business unit performance, and not contributions to sister units.

- *Differing Business Unit Circumstances*. Heterogeneous units with big differences in organisational structure and culture, or businesses with strong unit identities, are usually hard to incorporate into one company with strong interrelations.

- *Interrelationship and Equity*. Interrelationship may result in conflicts, which may underpin the motivation for managers, because interrelationships can yield differing benefits to the involved business units. As an example, some managers may complain that they are carrying other business units.

These kinds of impediments all work against the shared activities between the business units value chains. It is extra hard to capture synergies and gain good internal relations in organisations with a lot of small business units, especially if the

[110] Ibid.

organisation has grown by acquisition. Other negative circumstances for increased interrelationship and synergy capture are strong culture related to decentralisation, or if the company have no experience in attempting to pursue an interrelationship earlier, or have tried to relate different business units but failed.[112] Porter's obstacles can be said to have a top-down perspective on the problems to realize synergies, i.e. that synergy potential can best be identified from a higher organisational level, and the problems arise in lower levels of the organisation.

Managerial biases as additional obstacles for synergy capture

Other ways of defining obstacles for synergy capture have been made since Porter's definitions. For example by Goold and Cambell who have identified the following four managerial biases to explain why synergy capture fails:[113]

- *Synergy Bias.* Many executives justify their existence by the possibility of achieving synergies, which sometimes results in unwise decisions and investments in their way of desperately seeking synergies.

- *Parenting Bias.* Sometimes executives underestimate the unit managers and think that they have to be forced to cooperate to capture synergies and thereby decrease the motivation in the business units or force them to work for something that is not worth the costs.

- *Skills Bias.* Executives may lack sufficient knowledge about operations and personal relationships and therefore try to go for synergies that are impossible to realise. The lack of skill among the management may also result in insufficient work when trying to capture synergies.

- *Upside Bias.* When going for synergies, executives often underestimate negative effects of organisational changes and other things that have to be changed to achieve synergies. Organisational change can of course also result in unexpected positive effects on employee moral etc.

Goold and Cambell also suggest that problems in capturing synergy are not only the ones identified from a general management perspective suggested by Porter. When Porter put focus on "rational" problems in the value chain, Goold and Cambell incorporate biases that could be explained better using psychology, or the models of bounded rationality and the political model discussed above.

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[111] Porter, Michael E. (1985), p. 383.
[112] Ibid. p. 393.
[113] Goold, M & Campbell, A. (1998a), pp. 132-136.

To successfully capture synergies it is important to improve internal relationships, and to do that horizontal structures with horizontal systems are important mechanisms.[114] Many companies have strived for this by changing the organisation and employ cross-business managers or setting up cross-business teams with the task to develop key account plans, coordinate product development and to spread best practice among the business units.[115] Further, complex bonus systems have been developed to increase the incentives for sharing customers, knowledge etc (compare with Porter's *Biased Incentive Systems* above). All these efforts often do not lead to synergy capture at all, or at least the effects are not long lasting. In some cases the efforts are even contradictory and result in damaged customer relationships, damaged brands and eroding moral among the employees.[116]

To capture synergies it is necessary to look at synergies in a new way. Rather than assuming that synergies exists and have to be captured, corporate executives need to take a more balanced or even sceptical view at synergies and evaluate possible synergies. By doing so, corporate management can increase their chance not to make large investments in synergy program that are unlikely to succeed.[117] These questions are discussed in part 3.4.3.

A contrasting view on obstacles for synergy capture

Another step away from the more traditional view is taken by Eisenhardt and Galunic.[118] They have expressed that there are important considerations when trying to capture synergies between business-units, which are seldom thought of, because they are counterintuitive.[119] Although synergies are realised through collaboration, the collaboration is often not based on sound business thinking, and hence doesn't give the benefits intended. Also they argue, more collaboration does not necessarily mean more synergy! The essence of this is that different business units should decide by themselves when to work together, and that they should be rewarded based on individual performance rather than collaboration.[120] They call this coevolving.

The corporate managers' concern should be to provide the context for collaboration, and then let the collaboration emerge from the business units. In addition to that, they should also let different business-units compete among each other.[121] This is in contrast with a more traditional view, that internal competition will lead to waste of resources, prevent teamwork and cannibalise existing businesses. What corporate

[114] Porter, Michael E. (1985)
[115] Goold, M & Campbell, A. (1998a), p. 132.
[116] Ibid.
[117] Ibid.
[118] Eisenhardt K.M. & Galunic, C.D. (2000)
[119] Ibid.
[120] Ibid.
[121] Ibid.

managers should not do is to take the lead in going after synergies. They will, according to Eisenhardt and Galunic, overestimate benefits and underestimate costs of collaboration, and go after non-existing synergies, because they don't have the right understanding of the details of the businesses.

The managers of business-units in coevolving companies can then as frequently as they like, from their own perspectives respectively, create new links between their business units. Because the business units only create links when they themselves have something to gain, only links that provide win-win situations will emerge. There is a risk that some links that could lead to synergies for the corporation as a whole are not exploited because of this, but that the ones that are exploited, i.e. the win-win collaborations usually create a larger "synergistic pie" for the corporation anyway.[122]

> *"If Business-unit managers choose not to cooperate in a synergy initiative, they usually have good reasons"*[123]

In conclusion, Eisenhardt and Galunic distinguish between effective and ineffective collaboration, and suggest that the way to get only the former is to rely on mechanisms based on self-interest. This will work because it is simple, because the unit-managers will be able to concentrate on winning in their own market, and because other forms of collaboration will lead to confusing, mixed incentives that will de-motivate people. The suggested form of collaboration will hence be based on market realities to a great extent, and thereby lead to realised synergies.

To succeed with a more decentralised way, based on self-interest, of synergy capture, one important role for the corporate management is to identify where potential synergies within the organisation may be found and size the price of capturing the synergies.[124]

3.5.3 Identifying and Sizing the Price of Synergies

For the management of one business unit within a big corporation it is hard or even impossible to know what is going on in all the other units. The corporate executives or the management for a particular area therefore have an important role in facilitating the information flow between the business units and inform about possible best practice within the organisation.[125] Introducing managers to one another is another important task for corporate managers.

[122] Eisenhardt K.M. & Galunic, C.D. (2000)
[123] Goold, M & Campbell, A. (1998a), p. 134.
[124] Ibid. pp. 132-137.
[125] Ibid. p. 140.

If the potential synergies then seems be commercially interesting, business unit managers will usually cooperate without involvement from corporate executives.[126] Sometimes it is necessary with involvement of executives to capture synergies. When this is necessary and when it is not depends on the organisation and is further explained in figure 3.6.

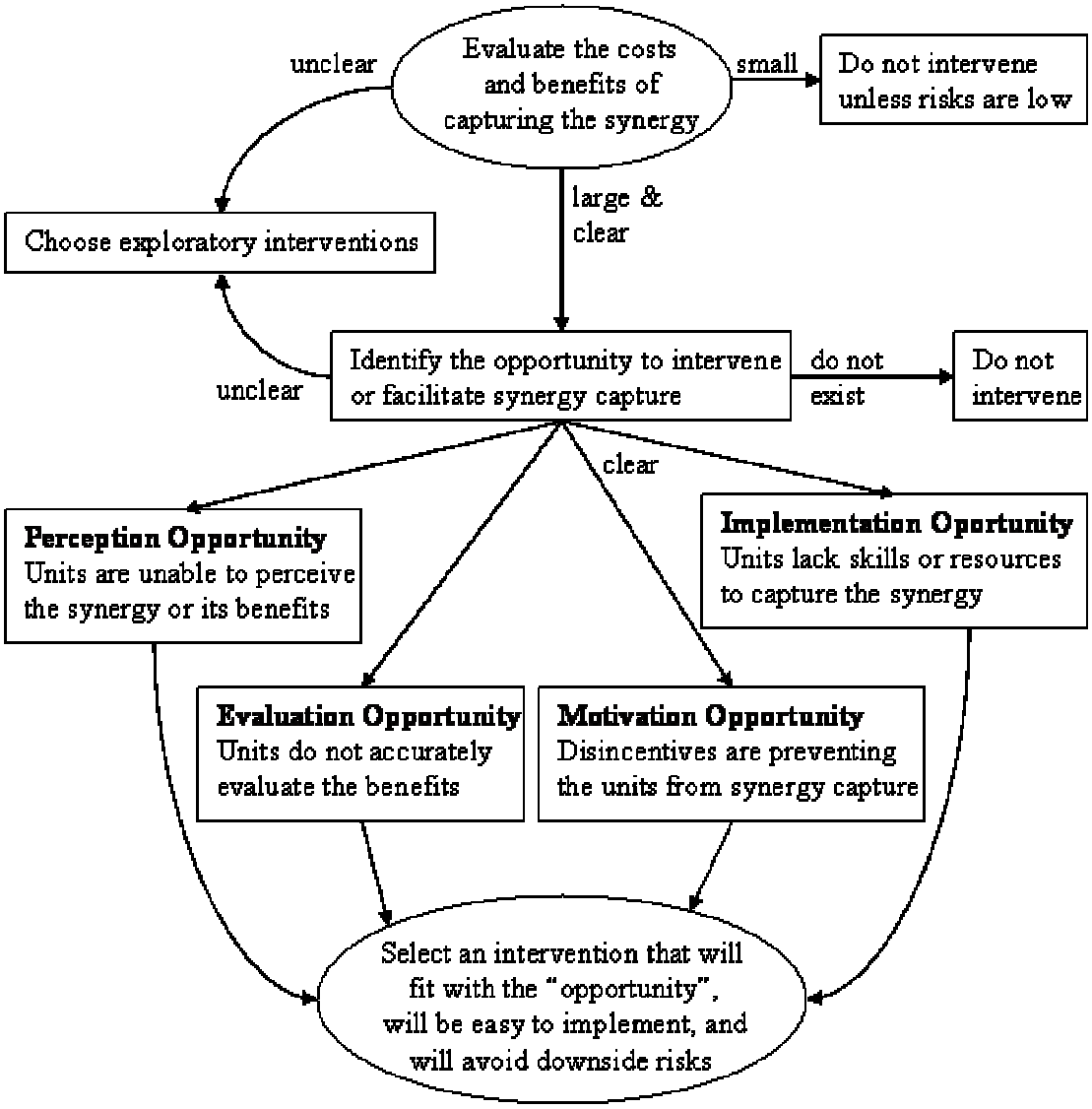

Figure 3.6. *A modified version of "A Disciplined Approach to Synergy",* [127] *which is supposed to be a guide for people at corporate level.*

Synergy programs often have a broad focus with vague formulations, such as "sharing best practice" or "coordinating customer relationships", which sounds good but are hard to put into action. To increase the possibilities of successful synergy capture it is

[126] Ibid. p. 139.

therefore important that the real objectives are clarified and the benefits of potential synergies are investigated. Executives should try to be as precise as possible about the synergies that could be interesting to work for and how much that could be won by doing so (in this process financial analysis can be useful).[128]

3.6 Supply Chain Management

The supply chain, which is an evolution of Michel Porter's value chain concept, is the entire set of activities involving the organisation and other resources to produce and deliver the product to the final customer. Supply chain management could be described as an integrative approach to manage the total flow of a distribution channel from the supplier to the ultimate user.[129] The meaning of a distribution channel in this case is the suppliers, manufacturers, distributors and customers, connected by a common process. Another definition of the supply chain management, more related to information is:[130]

> *"Supply Chain Management is an operations approach to procurement. It requires all participants of the supply chain to be properly informed. With Supply Chain Management, the linkage and information flow between various members of the supply chain are critical to overall performance."*

3.6.1 The Components of the Supply Chain

A supply chain consists of three major components; activities, organisations and processes.[131] This chain is linked to the corporate environment, which determines the strategic objectives for the supply chain.[132] Management of the supply chain is about coordinating and integrating the physical flow, from purchase to distribution of finished goods, as well as the related flow of information.[133]A complementary picture of the supply chain is when you regard the supply chain as five different, but integrated, operating processes. These five operating processes are:[134]

- *Product.* Product design determines production processes. It also determines logistics requirement for transports, inventory and time for delivery.

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[127] Goold, M & Campbell, A. (1998a), p. 142.
[128] Ibid. p. 137.
[129] Schary, P. B. & Skjøtt-Larsen, T. (2001), p. 25.
[130] Bectel, C & Jayaram, J. (1997), p. 17.
[131] Schary, P. B. & Skjøtt-Larsen, T. (2001), p. 31.
[132] Ibid.
[133] Coyle, J.J., Bardi, E.J. & Langley, C.J. (1996), p. 9.
[134] Schary, P. B. & Skjøtt-Larsen, T. (2001), p. 35.

- *Production.* Production and related processes add value to product flow. How production takes place also influence inventory, transport and time to delivery.

- *Procurement.* Procurement or purchasing links stages of manufacturing together. In effect, purchasing departments become "managers of outside production".

- *Distribution.* This provides the link between production and the market. It influences logistics through market requirements for service and efficiency.

- *Demand management.* This includes several related activities related to the market: forecasting, customer order processing, market condition and sales support activities.

The primary task is to integrate each stage into a large system, even if individual organisations at each stage still manage resources, set objectives and pursue individual objectives. Coordination of different processes is also very important. Making market demand and customer orders becoming visible throughout the supply chain could partly do this.[135] The concept of the supply chain is more than just coordination and managing inventories and flows; it has the potential for strategy to be valued by customers because it makes their own supply chain more efficient and profitable.[136]

3.6.2 The Supply Chain from a Strategic Point of View

To manage the movement of material and the transformation of raw material into products, as well as managing the transportation of the products to the customer, information about the process is essential. Driven by information, the supply chain is becoming oriented toward knowledge, and therefore managing information becomes a crucial part of the process.[137] Partly because of that and the fact that competition of today is based more on capabilities than assets, the supply chain is becoming the core of corporate operations. As a result, strategy in the supply chain becomes an important issue, especially concerning capabilities linked to decisions based on knowledge.[138] To make improvement it is therefore important to gain new knowledge by learning. But managing the learning process requires organisational changes, which is difficult because it is necessary with "the four unnatural acts":[139]

[135] Schary, P.B. & Skjøtt-Larsen, T. (2001), p. 35.
[136] Ibid. p. 36.
[137] Ibid. p. 275.
[138] Ibid.
[139] Schary, P.B. & Skjot-Larsen, T. (2001), p. 275

- *Sharing thoughts*
- *Using ideas of others*
- *Collaborating*
- *Improving*

These unnatural acts become even harder to attain across organisational boundaries, even if it just concerns technical solutions that should be transferred to another part of the organisation.[140] Even if it is hard to achieve the four unnatural acts within an organisation, it is still worth to strive for it, because supply chains that overcome the problems will gain strategic advantages.[141] Concerning strategies for the supply chain, they can be divided into four different groups related to different approaches:[142]

- *Functional chain awareness*, emphasising the span of functional activities within the supply chain.
- *Linkage and logistics*, establishing the role of logistics operations as the connector between activities.
- *An information orientation*, underscoring the role of information in enabling the supply chain to coordinate activities.
- *Integration*, stressing the need to manage the supply chain to act as a single unified process.

The most important element in supply chain strategy is information technology.[143] Information technology enables localised production networks for manufacturing supply chains. Especially for organisations consisting of multiple business units, centralised computer systems are important when trying to capture synergies in various modes.[144] Even if information technology is important for the supply chain, information technology systems such as ERP-systems also have the disadvantage that they are standardised and force the organisation to adapt operations and processes to the system. As a consequence of that the organisations may loose some opportunities to develop unique processes and gain competitive advantages.[145]

[140] Ibid.
[141] Ibid.
[142] Bectel, C & Jayaram, J. (1997), pp. 16-18.
[143] Schary, P. B. & Skjøtt-Larsen, T. (2001), p. 437.
[144] Hannon, David (2003), p. 61.
[145] Schary, P. B. & Skjøtt-Larsen, T. (2001), p. 437.

3.6.3 Modularity

Modularity is basically a way for the organisation to improve the strategic flexibility by improving the adaptability, and flexibility in development, of its products and process architecture.[146] The benefits of modularity are not only gained in product strategies. Modular thinking also can be used with successes for creating more flexible organisations, improving management of the supply chain, facilitate outsourcing and improve organisational learning.[147]

Modular product architecture

All products, including process products, services, and hardware as well as software, consist of functional parts.[148] With a modular thinking the interface between the parts are well defined, which enable a faster and more flexible product development. A company, which products are modular, can also focus on improving critical parts of the product and if the interfaces are well defined they can then use the new parts together with the old ones without having to change the old parts. A good example of a modular product is the desktop computer.[149] Without having specified interfaces, the redesign of one part may result in an extensive redesign of other connected parts.

Specifying standard components and performance classifications for an entire industry may also create significant positive effects for all the companies that cooperate in adopting standard components.[150] In a business world were more and more firms become electronic connected to each other, the benefits of using standard modular design and standard components have increased because:[151]

- To support commercial transactions, it is a big benefit to use standard information about products etc.

- By using standard software it becomes easier to connect to and work with other firms.

- Standard modular architecture for products and processes are necessary to get a framework for defining, allocating and coordinating the activities to be performed and thereby achieve true interoperability within complex wired supply chains.

[146] Sanchez, Ron (2002a), p. 1.
[147] Ibid.
[148] Ibid.
[149] Sanchez, Ron (2002b), pp. 9-10.
[150] Lorange, P & Contractor, F.J. (2002), pp. 665-666.
[151] Ibid. pp. 676-677.

One disadvantage with modular product architecture may be sub-optimal performance of individual products within a product line.[152]

Modular process architecture

Modular processes can be seen as a higher level of modular production, where modular products and modular product groups are the first levels.[153] A modular process is composed of sub processes or well-interacted activities with well-defined interfaces (the interaction between the activities are well defined). When configuring global, or just complex supply chains, it is extra important to create well-defined interfaces between the activities within the process or supply chain.[154] Well defined interfaces enable different version of each activity to be changed within the overarching process, which can be an advantage when some parts of the process is to be outsourced or when you want an alternative internal unit to perform a part of the process. Hence, modularising processes makes it easier to change the processes and consequently modularising a process can lead to increased flexibility in the production.[155]

Introducing modular thinking and modular architectures for products and processes makes it necessary for executives to be more directly involved in the process of designing products as well as in the process of designing the organisation.[156]

3.7 Theoretical Frame of Reference

We have stated that the aim of this thesis is to explain the role of ERP-systems in strategy for capturing synergy. This chapter ends with an application of the framework that summarise our theory and explain the role of ERP-systems on strategy for capturing synergy by showing the expected effects on impediments and opportunities. The effects have been deducted from the theory provided in this chapter in the ways described in the introduction to the chapter.

[152] Schary, P. B. & Skjøtt-Larsen, T. (2001), p. 157.
[153] Schary, P. B. & Skjøtt-Larsen, T. (2001), p. 156.
[154] Sanchez, Ron (2002a), p. 2.
[155] Schary, P. B. & Skjøtt-Larsen, T. (2001), p. 156.
[156] Sanchez, Ron (1996), p. 137.

EFFECTS ON OPPORTUNITIES:

Shared Know-How

- Manuals and documents instantly available to all.
- Sharing of best practice simplified through transparency of performance data.
- IT-people can share experience, training and learn from each others experience. Successful IT-implementers are the ones who have implemented similar systems before.

Coordinated Strategies

- Dividing markets is simplified by having a common customer database, e.g. preventing customers from shopping around.
- Coordinated approach to meet threats enabled by aggregated company wide information.

Shared Tangible Resources

- Shared ownership of ERP-system itself gives benefits in negotiation of price etc.
- Shared ownership of ERP-system leads to fewer systems, decreasing number of system to maintain, and thereby cost.
- Common information enables sharing of sales channels and cross selling, through shared service centre or e-business.
- IT-people and expertise can be shared across organisation.
- Enables sharing of production capacity by easy transfer and re-calculation of orders.

Vertical Integration

- Integration of value chain will allow optimisation, and increased utilisation of machines.
- Decrease in security stock levels.
- Common information enables sharing and optimisation of transports between sites.

Pooled Negotiating Power

- Available common information allows combined purchase, leading to better prices.

Combined Business Creation

- *Not directly supported by common ERP-system.*

EFFECTS ON IMPEDIMENTS:

OBSTACLES:

Asymmetric Benefits

Not affected.

Loss of Autonomy and Control.

A common ERP-system will move power upwards in the hierarchy. A common ERP-system makes the loss of power evident and permanent. Resistance is expected from unit managers.

Biased Incentive Systems

The success of any synergy capture following the introduction of a common ERP-system depends on appropriate incentive systems being in place.

Differing Business Unit Circumstances

Not affected.

Interrelationship and Equity

Negotiating between units become more straightforward with increased transparency of benefits.

MANAGERIAL BIASES:

Synergy Bias

Synergy capture as motivation for implementing common ERP-system is likely to be overly optimistic.

Parenting Bias

If general management force cooperation programs, e.g. a common ERP-system, for synergy capture onto business units they might loose motivation working for something not perceived to be worth the costs.

Skills Bias

Managers' insufficient knowledge of operations causes bad synergy initiatives. Knowledge of operation is improved by common ERP-system, thereby reducing skills bias.

Upside Bias

In introducing a common ERP-system, positive effects of achieving synergies carry more weight than do negative side-effects.

4 Empirical Findings

This chapter presents our empirical findings. To give a good picture of the role of ERP-systems in strategy for capturing synergy within the case company, we have had to make some choices of what to describe. The first part of this chapter, 4.1, is a very brief introduction to the company. In part 4.2, the current information systems landscape is described, to give a background to the strategies for information systems in the company. The following part, 4.3, describes major issues related to information systems in SCA Packaging, and will provide understanding of why the company wants a common ERP-system. In part 4.4, the business case for introducing a common ERP-system for the Danish part of SCA Packaging is summarised. The Danish business case represent an important pilot study for SCA Packaging as a whole, and in many ways represent the frontline of the thinking on information systems strategy within the company. This means that this is where the most detailed as well as the most updated information of the strategy is to be found.

4.1 SCA Packaging

SCA Packaging, with head office in Zaventem, Brussels, is one of SCA's (Svenska Cellulosa Aktiebolaget) four business groups, of which the others are Hygiene, Forests Products and North America. SCA is listed on the Stockholm exchange as well as on the London stock exchange and had in year 2002 a turnover of MSEK 88.046 and over 43.000 employees located in 40 countries. The turnover for SCA Packaging was the same year MSEK 30.549 (35 % of SCA's total turnover) and the number of employees was in average 20.718.[157] The SCA Packaging group consists of containerboard and corrugated, which is the biggest business and organised in five divisions (see figure 4.1). The five divisions are then organised in profit centres, which often consists of only one factory.

[157] www.sca.com/pdf/2002ENG.pdf

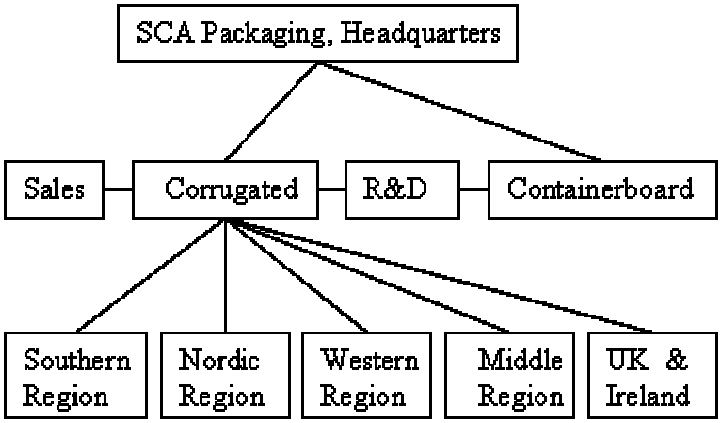

Figure 4.1. *Organisation chart over SCA Packaging.*[158]

SCA packaging provides packaging solutions for a broad variation of customers and needs, from stackable product display trays and point-of-sale boxes for fast moving consumer goods, to high quality printings for luxury goods, to brown boxes for industrial equipments. All boxes are made of corrugated board that are made of either wood-fibres from SCA's forests in Sweden or recycled paper. Of SCA Packaging's customer, about 70 percent are local, 30% are national, pan-European or global.[159]

During the last years, SCA Packaging has grown through acquisitions and just in the end of the 90's, more exactly between year 1997 and 2000, acquisitions of more than MSEK 13 000 were made. Today SCA Packaging consists of about 260 plants, located in 30 countries, with a total capacity of producing 4 900 million square meter of corrugated, and 2.7 million tons of containerboard, per year.[160]

The strategy for SCA Packaging is to continue to grow by acquisitions, as well as by organic growth, and also diversify into more profitable areas such as services linked to packaging. The strategy is formulated as follows:

> *"SCA shall be the leading supplier of complete packaging solutions and shall sell a function rather than a product. In addition to manufacturing high-quality packaging, this entails offering complete logistics and service solutions.*[161]*"*

[158] www.scapackaging.com
[159] Renders, Rob Jan, interview.
[160] www.scapackaging.com
[161] http://www.sca.com/pdf/2002ENG.pdf

4.2 Current Information Systems Landscape

SCA Packaging has a very complex business application infrastructure. One reason for the fragmented IS-landscape is SCA Packaging's history of acquisitions. The different parts of SCA Packaging that has been acquired all have their own unique background, with systems developed to fit their individual needs. The information systems are not only fragmented with respect to different locations, even within many plants the information system consists of different systems for different functions, such as sales, manufacturing, logistics, accounting, human relations and procurement. A few plants even run different systems for the same function. To link all these systems together, SCA Packaging has made a lot of individually developed interfaces between the systems. At present, great effort are done to maintain and make all the fragmented systems communicate.

Examples of systems that are used within SCA Packaging's information systems are; ANAEL, Artios, AS/400, ASTR, CBS, EXACT, IBM modulplan, Kiwi, KOM, Legacy, Lion dialogue, Maximo, MHU, MPI, Papsystem, PCTopp, SAS, SAP, SISA, Tip.com, UHH, Win Pale+, XAL, and Zadig. Some of these systems are even implemented in different versions. For example SCA Packaging's bespoken system CBS (Corrugated Business System) is implemented in nine versions, because of plant management's different wishes.

A lot of the business applications are based on old, and in many cases unstable or unsupported platforms. One reason for the existence of such obviously outdated platforms is the fact that many of the acquired factories had, in the minds of their owners, been for sale for some time. Therefore, they had no interest in making long-term investments, and hence postponed investments in information systems.

In addition to that, the acquired units have also been able to develop their systems in their own way, even after the acquisitions. This has not been seen as a strange thing, since SCA Packaging has for a long time considered decentralised responsibility and autonomy to be part of the company strategy. The fact that SCA Packaging is a global decentralised company with several newly acquired subsidiaries means that a variation of business cultures exists within the company, including variations in views of information systems.

Even if information systems are fragmented within SCA packaging, there exist common IT strategies for SCA Packaging. There is also a corporate IT manager, as well as an IT-department at the head office in Brussels.

4.3 Going for a common ERP-system

SCA Packaging has started to experience a need for a more harmonised approach when it comes to their ERP-systems. This chapter will discuss the main rational behind the decision to go for a common ERP-system based on SAP. This is done by discussing problems that have been identified with the current situation, and that, according to employees in SCA Packaging will be helped by introducing the new standard system. Even more general issues that can be relevant concerning ERP-systems and synergy capture are discussed, as well as factors against a common ERP-system. Concerning the background for introducing a common ERP-system, The Director of Business Support and ICT, Dr Nick Meissner, says:

> *"That business model I think has changed quite substantially since Jan Åström has taken the role as president of SCA, and since Rob Jan Renders has responsibility as president of Packaging Business Group. There has been a clear change and move in the company strategies towards a more aligned and harmonised uniform standardised efficient cross-regional approach, so a lot less autonomy is obviously now devolved to the profit-centres than in the past"*
>
> - Dr Nick Meissner

4.3.1 Problem with Legacy Systems

There are, as mentioned above, a number of different business applications within SCA Packaging. This is a result of the many acquisitions that SCA Packaging have experienced during the last decade, and The CBS Implementation and Support Manager, Martin Jones, stats:

> *"We are continuing buying new companies and we are continuing buying new legacy systems […] so, its very complex and very costly to maintain, and obviously requires excessive maintenance to keep running and communicating within between."*
>
> - Martin Jones

Reasons for the number of legacy applications are also related to the fact that the applications are difficult to phase out because business processes rely on them.

When implementing new systems, such as for example Cart or Smart that are e-business applications within SCA Packaging, or other new systems, a significant part of the cost comes from interfacing with legacy systems:

"We find actually, that currently, the cost of implementing systems, 50% of the cost of the implementation is just interfacing with legacy systems, so it's actually a huge cost for us"

- Martin Jones

For example, there has been a pilot project with a very large customer on a web-based collaboration solution including contracts, call-offs, self-billing, delivery and so on. When the customer then wants the solution to become their standard way for buying packaging throughout Europe, SCA Packaging has to implement it all over their organisation.

"So although the front end looks probably the same to them, what we have to do behind, when we implement, is effectively run 33 different projects instead of one."

- Martin Jones

According to Sales Manager Mr Alain Vanderstraeten it is often a benefit if the customer uses the same information system as SCA Packaging.

4.3.2 Postponed Investments

As mentioned before, many of the companies that have been acquired have had owners that have planned to sell and therefore did not do any investments in new information systems during the last years they owned the companies. The maintenance that has been done on these systems is often done with small resources and is often temporary solutions. The Head of Finance and IT in Denmark, Carl Johan Krogh, call this "*bush mechanics philosophy*". He by this means that many of the acquired companies have old information systems and are in need of new ones.

4.3.3 The Problem of Consolidation

A growing concern among general management has been to get access to better financial and other information from the units. The main problem is that it is difficult to extract this information from the various systems in the organisation. According to President Rob Jan Renders, a new general ERP-system would make it possible to get a better overview of the company, as well as to earlier and better identify and analyse market trends, like e.g. the fact that SCA Packaging customers move to lower cost countries. Dr Meissner agrees that a new system could give consolidated figures with much better accuracy:

"We will be able to measure and monitor the trends much better, so it will give us the ability to do the management job, I think, faster, and have less bullshit around the figures"

- Dr Nick Meissner

4.3.4 Maintenance Costs

Because of the number of different systems, each requiring their own expertise, the cost of maintaining all the systems is very high. Local variation is a problem because it makes sharing of maintenance people hard. Another main reason for high maintenance costs is the number of interfaces required to connect all different systems to each other. Maintaining interfaces is estimated to stand for 50% of total maintenance costs.[162]

4.3.5 Local Variations in the Solutions

Two main reasons are stated to cause local variation. The first is that the systems get, as in the example of the CBS, implemented differently at each site to begin with. This is because each plant or unit has their own requirements that they want satisfied, based on their local variation of work processes etc. This problem is widely known in the SCA Packaging management, and the reason is considered to be the traditional decentralised culture with autonomous plants.

The second reason is visualised by Business Improvement Manager Dirk De Ridder:

"Information systems are drifting in all directions"

- Dirk De Ridder

This means that it is possible that the systems become more and more diverse with time. According to Mr De Ridder there has been a problem in the past with what he calls "*access applications*". These are applications designed locally to make it possible to extract information in a desired way, often involving different spreadsheet applications like e.g. MS Excel. Usually the desired way represents how it was done before implementation of a new system, e.g. the CBS. These applications often cause problems because they might disrupt or slow down other systems.

Local variation in the solutions causes indirect problems as well, in addition to maintenance costs and access applications. According to Vice President Finance, Gunnar Haglund, the costs of training people that for some reason move from one plant to another plant becomes higher than if only one system was used.

[162] SCA Packaging Proposal and Recommendation for a Nation wide ERP

4.3.6 Diverging Standards

A problem when it comes to communication within SCA Packaging is that there is different labelling for the same products. Specifications for products that have the same label or product code may in some cases differ as well between plants.

According to Mr De Ridder, this is a problem both for the communication between the systems and for the communication between people. Sometimes it results in complains concerning the specifications or the quality of the products, when an order has been interchanged and produced by another plant. This can happen even if the order was delivered correctly according to the specifications. The reason is then that different units within SCA Packaging can fulfil the requirements in different ways. For example, there can be different ways to do the composition of the board, i.e. to meet requirements on e.g. weight and strength by using different combinations of fluting and liner. An illustrating example of this is that within the same system, i.e. the CBS, the code for boardgrades is different in each of the plants in Brussels, Buggenhaut and Gent. The Customer Service Manager in Gent, Mr Hedwig Vanpoucke, suggests that this is a question where the head office could be the judge and decide on a standard.

4.3.7 Inventing the Wheel Over and Over Again

When new systems have been implemented in SCA Packaging, for different reasons previous experience has not been taken full advantage of. For example, the modules FI, CO and MM of SAP where implemented in the United Kingdom before the year 2000, mainly because they had an accounting system that would not make it through the year 2000. According to Dr Meissner, the reason for choosing SAP in this case was that there were already many SAP activities within the SCA Group. The implementation took more time and more cost than was expected, but it was finished and they could get through the year 2000. Then, another implementation of SAP was done in a group of German companies, and this time it was a needed update from SAP R/2 to SAP R/3.

> *"So, there was a second implementation made, and that also cost more money and took more time than expected, and I think, there was a general perception, both in the UK and in Germany they both needed to be done. They avoided problems, but didn't give too much benefit. Ehm, and at that stage, I think the company here, the head office here started thinking are we doing the things sensibly? We do first one in one country, and then we do it all over again in another country, and when we now look, we got two different solutions, so it's not very efficient. At that stage it was decided that we wanted to develop a common template."*
>
> – Dr Nick Meissner

An example of the advantages of implementing a standardised solution is an e-business application with Nestle´.

> *"...at least all the CBS-plants will almost just be a plug and play, so, and we are getting synergies out of having a pseudo-common platform that is running in 26 plants. So it does reduce some of our un-synergies in a sense."*
>
> - Martin Jones

The advantages mentioned are available for the plants running CBS, because they are the most common. In this case, the new solution does not have to be completely re-engineered for every plant. However, the benefits would be greater if the hosting ERP-system, i.e. in this case CBS, would be more standardised than it is. Also, for all other plants running different systems, the work done for implementing the new application will still consist of a lot of doing the same thing over and over.

4.3.8 Availability of Information

An important benefit expected from running an ERP-system is the fact that ERP-systems enable sales employees to give a price when a customer calls. If sales employees cannot give a price immediately, and have to call back, the customers are much more likely to bargain. The possibility to give a price immediately, already exist for plants using CBS.

A problem with CBS, mentioned by IT-Supervisor Mr Gaby Van Den Berge, who is responsible for IT in Gent, is that the system generates reports in real-time, and that it takes a lot of time to generate the reports. This has the effect that people who need reports spend a lot of time waiting. In their previous system, the reports were generated in batch-runs over night, and therefore instantly available, however not as up to date.

4.3.9 Cooperation between Plants

According to the Vice President for Finance and IT, Gunnar Haglund, a large synergy to be captured is if you can transfer a good way of working from one plant to another plant where they are not as good. He does however mention that there might be a problem because IT-employees prefer their own solutions. Plant Manager Mr Philippe Van der Auwermeulen follow a similar line of reasoning and think that it is important to standardise processes to make them more effective and minimise errors, as well as improve cooperation between departments. According to Mr Renders, SCA Packaging has so far been bad at implementing best practices among their plants and mills.

Even if there seem to be a big potential to increase cooperation, it does not mean that cooperation does not occur. For example if Gent receive E-Flute orders, they are sent to Brussels because there is no technology for producing E-flute in Gent. Big orders could also sometimes be shared if there is not enough capacity in Gent. According to Mr Vanpoucke, who is also responsible for supply chain questions, orders can be shared between plants by sending e-mail, but the information might have to be interpreted manually which requires some skill. Even according to IS-Business Program Manager Mr Lars Jeppesen it is hard to move orders from one plant to another plant, because many tools are local.

4.3.10 Customers

Many plants have had their customers since the time before SCA Packaging acquired the plants, and therefore they still have customers outside their own regions. This is because a particular plant has relations with a customer, and neither the customer nor the SCA Packaging plant wants to end the relation. Mr Alain Vanderstraeten also mention a less rational reason, if not so common, when a customer prefer not to deal with SCA Packaging employees of a certain nationality, and choose to buy from another more distant SCA Packaging plant. According to Mr Vanderstraeten there are also technical reasons to continue selling to customers outside their own region, i.e. due to the differences in what qualities and products are possible to produce in different factories. Within Belgium e.g., transport distances are not a big problem and 98% of the customers are located within an area of 300 km.

> *"Corrugated doesn't travel more than about 250 km, if you try and do more than that it's a dead duck. It just doesn't pay its way, it's too voluminous. So that's why we have our plants all over the place because they need to be close to their end users, but it also means that a lot of the activity and a lot of the relationships and the business is done locally."*
>
> – Dr Nick Meissner

4.3.11 Sales

According to Mr Renders, a big part of the plants' sales and purchases are internal transactions within SCA Packaging and this is therefore an important area of potential improvements.

Today most plants have their own sales force, even if it according to Mr Vanderstraeten would be possible to have only one sales force for Belgium or perhaps even Benelux. This is a common line of thought in management. Dr Meissner who has observed that more customers want to do their purchases centrally says that SCA Packaging must respond to this in some way. He says that it is becoming less obvious that having localised sales-responsibilities is the right way to go forward.

4.3.12 Centralisation versus Decentralisation

Acquisitions have resulted in many companies that are still today, in many ways, managed as local companies. According to Mr Renders, many plant managers do not have an overall perspective and therefore do not see the need of a company wide ERP-system. According to Mr Renders, a company-wide ERP-system can support synergy capture because it will then be easier to standardise processes and thereby implement best practice in all plants. However one manager expresses that it remains to be seen if top management is strong enough to impose standard workflows.

According to Mr Renders it is important to change the view of profit within the organisation, because now some factories refuse to take less profitable orders of e.g. brown boxes, from some customers, even if it might be necessary for receiving more profitable orders from that customer somewhere else. According to Mr Haglund the customers become more international and want to make central purchases and then it is not good to act as local companies. Mr Haglund says that from being a man who has believed in decentralisation he has partly changed his mind because of new technology that gives new opportunities. He says that the decentralised view might not have been wrong historically but that things have changed. He believes that processes might be different in different places, but not too different, and he does not see any important reason why a common ERP-system could not be used, because it should be possible to act as a local company for local customers anyway.

According to Mr De Ridder, standardisations of processes increase the possibility to capture synergies and he also think that centralised information systems are good, partly because then you have all knowledge in one place even if some local variations are desirable. He says the downside is the fact that you cannot make fast decisions because it takes some time to figure out what is best for the company as a whole. There are also obstacles, such as for example that it is hard to centralise IT-support if not everyone speaks English.

According to Mr De Ridder, an implementation of a standard ERP-system does not automatically lead to standard processes because the systems can be used in a bit different ways. Mr De Ridder also see a problem in the Managers understanding of these problems and thinks that plant managers might not have sufficient knowledge about ERP-systems, i.e. what they can do and what they can not do. Mr Haglund also talk about this, and say that it is important that top management know how different systems support processes and functions. By doing that, top management will also be better at marketing new systems internally, which is very important in convincing people that the solution chosen is the best solution.

According to Mr De Ridder it for example sounds like a really good idea to have a centralised call-centre that can handle all IT-support, but the problem is that the employees in SCA Packaging do not understand the same languages, and to maintain a call-centre that knows all languages is not easy.

"The devil is in the details."

– Dirk De Ridder

This means that however good the intentions, what looks really good on paper might reveal a lot of problems when implemented in real life. This is something that is also mentioned by Mr Van der Auwermeulen. He talks about this problem in relation to the thought of centralising the sales function.

According to Mr Ridder, there are differences in factories views on how things should be done. Some like centralising and some do not. Mr Renders says something that is important to remember in the context, that even if a common ERP-system is implemented throughout the whole organisation, SCA Packaging will still be mainly a decentralised company.

4.4 The Danish Business Case[163]

4.4.1 Introduction

The Danish business case was constructed to argue for a common ERP-system for all Danish SCA Packaging operations. From the viewpoint of SCA Packaging, it is a pilot for implementing a common ERP-system for the entire SCA Packaging, and therefore, the Danish solution must incorporate requirements that are valid as much as possible for all of SCA Packaging. However, an important aspect of the pilot is that it is a business driven project. SCA Packaging general management considers this very important, because they want to avoid the risk of it becoming an IT-project. This is in agreement with the thinking of the Danish organisation, as they consider an upgrade of the current information infrastructure essential. It is worth mentioning as well that the Danish organisation will pay for the system, which should ensure that the project is done in a business-driven fashion.

This section will discuss the main issues of the Danish business case, mainly from the perspective of the Danish organisation. However, the perspective of the rest of SCA

[163] *No absolute numbers are included, e.g. the size of savings etc. However, the relationships and relative importance of savings and benefits are included. This protects SCA Packaging but will not have significant negative effect on our analysis.*

Packaging will be discussed as well when appropriate, since some of the requirements of the business case depend on the fact that it is a pilot as well as a "divisional" project.

4.4.2 Background

Today, the situation of the information systems in the Danish operations is problematic. It will have to be upgraded in one way or another because it cannot support the business requirements in its current form. Most development and investment in information systems has been on hold since 1999, and as a consequence of that, the information systems are not up to date with the current business requirements.

Different parts of the Danish organisation are experiencing problems with their system, and are engaged in activities that can be called fire fighting. Errors in existing systems, inadequate and insufficient support, and dependency on programmers for old non-documented or obsolete systems are common problems.[164]

For example, SCA Packaging has recently made three major acquisitions in Denmark. The acquired companies were Danapak, Danisco Pack, and Soren Berggren, and they were put up for sale in 1997, 1998 and 2000. Since then, no major changes or updates have been made in the information systems, which made sense from the viewpoint of the sellers.

4.4.3 Reasons for Change

The argumentation in the Danish business case is based on business issues and financial issues. There can be said to be two main motivations for changing the system. The first one is that the current systems are obsolete, inadequate, or have errors, basically for reasons mentioned on the previous paragraphs. The second one is that the cost of maintaining the current information systems is very large. These two motivations does not say anything about what solution should be chosen, only that something has to be done, and that there will be considerable cost involved even if nothing is done. The business case in turn argues for the implementation of a specific ERP-system to be implemented all over Denmark as a solution to these problems, but also argues that there are a lot of other benefits from that solution.

In addition to the economic, more tangible argumentation of the business case, there are more intangible ones as well. These might be considered to be of a more strategic nature, i.e. they are about how the business should be run in the future. With one

[164] SCA Packaging Denmark Proposal and Recommendation for a Nation wide ERP system

single platform it will be possible to act as one company with one interface toward the customers. Thereby SCA Packaging hopes to utilise its unique position (40%-50% market share) and become the only company in Denmark with the possibility to offer the wide range of packaging products that are made within the company.

4.4.4 Approval Process

This section describes the approval process in brief for the business case for introducing a common ERP-system in Denmark. It is presented in the perspective of the relation between the Danish organisation and the SCA Packaging head office. The process for approval within the head office, or the working process in Denmark is only discussed in some detail.

Background

At first glance, using the CBS for a common ERP-system in Denmark seems a possible solution, especially because it is an ERP-system already in use in SCA Packaging. However, according to Mr Jones the CBS does not really handle businesses other than corrugated very well. Therefore it was not really appropriate as a general solution for all of the Danish business divisions, including e.g. EPS, folded cartons, and traded goods and so on.

> *"...it is a very corrugated packaging specific application. So, if you've like, we have almost, I mean we haven't got them all, but, about as many synergies as you can get out from a corrugated plant..."*
>
> - Martin Jones

> *"...nowadays, as you can probably see by the acquisitions we have made, I mean we are buying display plants, we are buying EPS plants, we have got this paper foam products, and a whole host of complementary products, and I think that we are now looking at the total packaging market. We are not just looking at the corrugated market. Ehm, so if we were to stay with CBS, that would inhibit us from having, you know, one face to a customer, that just wants one interface with you to order all his range of packaging products."*
>
> - Martin Jones

First round – presenting the idea

The first initiative for introducing a common ERP-system in Denmark was taken by Head of Finance & IT, Mr Karl Johan Krogh, of SCA Packaging in Denmark. The initiative was presented for general management in April of 2002 in the form of a five page memo named "*Current Situation – Why change?*" which expressed the wish for a nationwide ERP-system in Denmark.

The proposal was received by general management with moderate enthusiasm. The first business case included a suggestion to buy SAP, but it was not considered to justify the high costs involved. The Danes were asked to go back and come up with another solution, which would at least cost less money.

Second round – Microsoft Axapta

The Danes then worked out another business case, and the new solution was based on a lighter ERP-solution, Microsoft Axapta. The new solution was cheaper and would be good enough for Denmark. The problem with it was that now, general management started to realise they liked the business case better, and in the light of the new suggested solution they changed their mind somewhat. They realised that if they went the way of Microsoft Axapta they would not be able to get potential synergies that would potentially come from SAP. These potential synergies would come from e.g. communication possibility between Denmark Corrugated and a large containerboard mill using SAP, and there would be no synergies with sister companies in SCA Hygiene, etc. The outcome of the general management hesitation was that Microsoft Axapta would probably be a bit cheaper, but did not have the potential of becoming standard in all of SCA Packaging.

Third round – SAP

Then, there was a new iteration. External consultancy firms were engaged and a thorough new business case was developed. This section is based on that business case, which was approved by general management in June of 2003. The arrangement made, based on the new business case, is that the project will be performed as a Danish project, even if regional involvement is important to make sure that the solution developed will be applicable to other business in SCA Packaging. One of the prerequisites for the project is that the Danish organisation will pay for it. This is part of the strategy for making sure that it is a business driven project, and not a technology driven one.

From the perspective of the Danish organisation, the goal of the project is to have a nationwide ERP-system that will meet their needs. From the perspective of general management, the project is a pilot for their ambition to have a standard ERP-system in all of SCA Packaging. It is a known fact that some of the operations in other regions are having systems that are getting old as well, and therefore there is an anticipated need for a new solution. To prevent having to do everything over again somewhere else, the ambition is to produce a system in Denmark that lives up to the requirements of other regions as well. An important reason for using the Danish organisation for a pilot study is that it has a wide variety of different kinds of operations. Because of that, it will be a good representative of a large part of the rest of SCA Packaging, thereby producing a system that covers a large part of their needs.

After 2006, when the project in Denmark has been completed the solution will be "marketed" to the rest of the organisation. Presently, there is no intention to force the new solution on anyone. The hope of general management is that the benefits of the new systems will be obvious, and that the operations will ask for it when the time comes. However, there is also a policy within SCA Packaging at the moment saying that no IS-investment should be made that does not clearly pay-off before the time of completing the SAP-pilot.

In November of 2003 there was a kick-off meeting, for the SAP pilot, at the head office in Zaventem, with regional representatives from all regions. Present were the managing directors, together with several general managers of finance and sales directors of the regions. This representation shows the importance of the project, and the purpose is to get a high level of commitment, as well as to avoid a work shop based process involving representatives from more than 200 factories.

4.4.5 Executing the Project

The implementation of SAP in the Danish organisation will be done in three major phases to make sure that the resources available are sufficient.

The first phase includes the development of templates, which will be finished in March of 2003. A learning from the creation of requirements for the CBS is that involving a lot of people means that it will take a long time, and that a lot of people will be disappointed in the end. The intention is to avoid having a lot of people involved in this project, and that the people involved are from a high organisational level. The fact that the Danish people are doing most of the work themselves is considered to make sure that developing the templates will be a faster process, and the problem of not getting everyone's input is not thought to be very important in the end. In the first phase, following the completion of the templates, Emballageservice and the Danish Headquarters will start using the system in June and the Industry Division in October of 2004. The Food Division and Kartonnage (Plant 1) will introduce the new systems between September 2004 and April 2005. Flamingo, Display Plant and Kartonnage (plant 2) will do it between May 2005 and March 2006.

4.4.6 Main Benefits

The expected benefits of the introduction of a nationwide ERP-system in Denmark are of two kinds. There are intangible and tangible benefits. The intangible benefits include things that are hard to quantify, and therefore they have not been included when doing the calculations for the business case. The business case argues that these benefits are important, and that they should be considered additional benefits to keep in mind when reading the business case even if they are hard to put in numbers. Significant intangible benefits exist in areas like business re-engineering, creating an

e-business platform, having a common business model, supporting the SCA corporate identity, reduction of business risk and so on.

The benefits that are expected from introducing a nationwide ERP-system are divided into horizontal integration benefits and vertical integration benefits. Horizontal integration benefits mean that the benefits come from improving the relationship between different business-units, and vertical integration benefits come from improving the value chain in a particular plant. In the business case, the vertical integration benefits constitute 70% of the total quantified benefits, and horizontal integration benefits 30%. It is argued that the reason for the horizontal benefits to be low compared to the vertical is that they by nature are hard to estimate.

The quantified benefits are distributed over different categories, of which the two dominant ones are contribution ratio improvements and labour cost savings. 43% of all identified benefits are contribution ratio improvements, and 36% are labour cost savings.

Below are the top 10 benefit-potentials listed in the business case, and the percentage of the total estimated benefits they contribute. For every benefit there is an explanation of how the benefit will be realised, and it is also stated if the benefit is horizontal or vertical in its nature.

Post cost calculation (25%)

Improved post cost calculation is the most important vertical integration benefit, and means that the average contribution ratio can be raised. It represents a share of 36% of the vertical integration benefits. Post cost calculation today has poor traceability of the actual costs. With an improved post cost calculation better pricing would be possible, and non profitable products could be removed. Examples of costs that can be reduced are cost for set-up, runtime, overtime and waste.

Synergy sales (15%)

Synergy in sales is the larges horizontal integration benefit by far. It represents 48% of the total horizontal integration benefits. Today there is no shared customer database, and no bonus systems that support cross sales. The estimated benefits in this case will come from improvements in service, e.g. the possibility to provide a total packaging solution, i.e. to market the whole spectrum of different packaging solutions available in the Danish organisation. There will be a possibility to get higher prices as well as increased volumes. There will hopefully also be cost savings because preparation time for sales is considered to decrease.

Sales forecast (12%)

Sales forecast represent 17% of the total vertical integration benefits, and is the second largest in that category. Currently this work is done in a manual process, i.e. to break down sales forecast and order pool into raw materials and resources in production. The improvements will come from a better accuracy and decision support in the resource planning area, i.e. the planning of raw materials and staff. It is also expected that further sales opportunities can be identified. The improvements in sales forecast will mainly be manifested in saving on labour costs, cost for overtime and other production costs.

Reporting – management information (8%)

This vertical integration benefit represents 12% of its category. The management information is now based on old habits, and not on shared rules for reporting. The reporting is also done manually, and is very limited. The potential here lies in rationalising, harmonising and automating the reporting, and thereby reduce workloads and save money. An ERP-system could produce relevant and useful information on all organisational levels.

Capacity utilisation across divisions (8%)

This benefit is the second larges horizontal integration benefit. Its share of the total estimated horizontal integration benefits is 26%. By sharing capacity across divisions, costs can be saved even if there might be some additional transport costs. Presently, moving orders between divisions is a manual process, and obstacles include different product styles, machine capabilities and tools. The new ERP-system will automate the transfer of orders between plants, and reduce costs for overtime, runtime, setup time and waste.

Purchase system and purchase information (6%)

This is the third largest horizontal benefit corresponding to 20% of the total horizontal integration benefits. Presently, purchase ordering is done manually, and purchase information is maintained locally. There is no overview over the purchase volume. With the new system, it should be possible to get quick access to the total volumes, and therefore negotiation will be better. In addition to that the maintenance of purchase information will be simplified. The savings will come from reducing man-hours and from getting better prices.

4.5 Summary

This chapter has presented the empirical findings of our study. The data has been gathered in the way we described in the methodology chapter of this thesis. The

intention has been to present the findings in a way so that it can, at this stage, be as objective as possible. To present an objective case is of course impossible, but we have not used our theoretical framework to analyse the findings in this chapter. That has been left for the next chapter. However, because we want to find out about contemporary strategy, and because we have used the three perspectives decided upon in chapter 1.5, the data that the case is built on represents an analysis already, because it represents the analysis of the business situation made by management in SCA Packaging, on which their strategy is based. This is of course not a problem because the thesis is about the role of ERP-systems in strategy for capturing synergy, and the case study examines this role in SCA Packaging in particular.

5 Analysis

This chapter includes two main parts. The first part is an empirical analysis of the case, 5.1 and 5.2, and the second part, 5.3, is an evaluation of the theoretical framework proposed in this thesis.

The empirical analysis is structured in accordance with the theoretical framework, where the empirical findings are analysed using the tools provided by the framework.

The evaluation of the theoretical framework is performed as a step-by-step comparison between the empirical findings, and the predictions of the framework, i.e. pattern matching.

5.1 IT-Strategy

Concerning IT and its relation to strategy in SCA Packaging during the last decade, it seems like the top management first developed the business strategy and decided how to organise the production. Then, the IT managers and IT employees had to develop an IT strategy and implement an information system that was integrated with the over all strategy and supported the operations. This corresponds to the process in which the requirements for the CBS were developed. In respect of the *strategic alignment model* and the related theory, SCA Packaging can be said to have been a company where *Strategy execution* has been the dominating alignment perspective.

With the new strategy, which is represented by the pilot in Denmark, SCA Packaging is changing. Now the overall strategy is developed by the top management and then the IT managers, in cooperation with top management, have developed an IT-strategy and selected an information system that is supposed to support the over-all strategy. Finally, the operational processes will have to be adjusted to a certain extent to be integrated with the information system. According to the *strategic alignment model,* SCA Packaging has changed toward a *technology transformation* perspective. This change in perspective indicates an intention of SCA Packaging to increase the emphasis on new information technology, and on realising synergies.

Managers within SCA Packaging have decided that the Danish business case should be business driven, to prevent the ERP-implementation from becoming an IT-project, and to make sure it can be economically motivated. The reasons for changing the system are motivated by business-logic, such as avoiding risk, and saving on maintenance cost. However, an important reason for having a single system, as well as the choice of vendor, is pursuit of cross business synergies. SCA Packaging consider this logic to increase the chance of success, which is in accordance with the theory chapter saying that companies that implement ERP-systems for strategic reasons are usually more successful with their implementation than companies that implement ERP-systems on technical criteria alone.

A common ERP-system may, according to some managers, result in increased lead time, seen from a plant perspective, for decisions concerning changes in the information system or related working processes, because of the approval process that has to be done to change the common system. This contradicts our theory that argue that IT will leverage advantages of market size and geographical scope, and at the same time enable rapid responses to local changes in market requirements. Empirical findings does however support that SCA Packaging expect advantages of market size and scope to be better utilized with a common ERP-system.

5.2 Synergy Capture

In this chapter we have analysed our empirical findings on the role of ERP-systems in strategy for capturing synergy on the basis of our theoretical frame of reference. We have structured the analysis by using the structure of the six categories of synergies.

5.2.1 Shared Know-How

Within the management of SCA Packaging, the introduction of the new ERP-system is considered an opportunity to share knowledge about different processes and introduce best practice. But according to one manager at SCA Packaging it is not going to be easy to standardise processes within SCA Packaging and it is important to consider that just implementing an ERP-system do not lead to standardised processes. He says the main problem when trying to standardise processes is the company culture, e.g. a history of local autonomy.

We have not found evidence that SCA Packaging think that the implementation itself will lead to shared know-how. They do however view the implementation of a common ERP-system as an opportunity to implement more standardised processes, and run a best practice program in parallel. Our findings in SCA Packaging does not

support theory suggesting it is possible to use the implementation of a new system as a catalyst for introducing change.

According to Mr Haglund, employees within SCA Packaging, and especially IT-employees, tend to prefer their own solutions and therefore it is hard to share knowledge even if it is still worth striving for shared knowledge and implementing best practice. To implement best practice, it is necessary to share thoughts and using ideas of others. This verifies theory in the supply chain section saying that sharing thoughts and using ideas of others in an appropriate way is hard because it is considered as the *unnatural acts*.

Some people within SCA Packaging are also talking about the fact that what sounds good is not always possible to realise or that there might be negative consequences of some decisions from the top management. This could be caused by *skills bias.* But it is also possible that there is a general scepticism toward top management decisions, which according to the theory about synergy capture, could be the fact that business unit managers often prefer to be independent and therefore resist more centralisation, which Porter refers to as *loss of autonomy and control.*

According to the theory about shared know-how, focusing on a particular area or field is preferable to successfully capture synergies by shared knowledge. Therefore SCA Packaging's strategy to start with an implementation in Denmark and wait with changing the production system, will improve the possibilities to succeed with getting synergies by shared know-how. In addition to the focusing on the geographic area of Denmark there seem to be a particular focus on how to support the supply chain. Another manager points out this area too.

SCA Packaging has acknowledged that it is a problem that learning from earlier implementations of information systems applications is not taken advantage of. Implementing a common ERP-system will make implementations of different systems more similar to each other, and thereby synergies in shared know-how should be enabled in the future. This will take advantage of the fact that successful implementers are the ones who have implemented similar systems before.

5.2.2 Coordinated Strategies

It is generally thought among general management in SCA Packaging that an enterprise-wide ERP-system will give better consolidated data, from all the plants, which will support decisions and make it easier to develop common strategies for the whole company and thereby synergies by coordinated strategies may be gained.

The fact that a lot of the plants have been acquired and still have many customers outside their own region is an important synergy potential, because the products have a low value compared to volume and are therefore expensive to transport. Dividing the market between the plants could consequently reduce the cost of transportation and thereby capture synergies. Dividing the market between plants could not directly be supported by a new ERP-system. But with a common ERP-system standardised specifications and then shared sales can be possible. The coordination following that means a possibility to prevent harmful competition. A common ERP-system in this situation give the possibility to have a common customer data base, and thereby prevent customers from "shopping around" and look for the best price among SCA Packaging's plants in the nearby geographical area. Standardisation could be done by working toward modularisation of products and processes. The discussion concerning benefits of standardisation and how standardisation can support synergy capture is further developed in the chapter about vertical integration.

To solve the problem concerning that some plants refuse less profitable orders from big customers, even if necessary to get more profitable orders to other plants, a common ERP-system may give a better picture of the total solution and partly solve this problem. However, to solve this problem it is probably necessary with increased interrelationships, which could result in conflicts if the involved units yield different benefits (Porter's *Interrelationship and Equity*). The fact that most plants within SCA Packaging are profit-centres, make this problem even harder to solve because the profit-centre culture become represent *Biased Incentive Systems* in this case. But according to the theories about *coevolving* it might be possible to solve the problem concerning refused orders, and capturing synergies without changing the profit-centres or introduce complex bonus systems. To make the units aware of the problem it could be possible for the management at SCA Packaging to make an *exploratory intervention* and point out the possibilities for the units. Then the plant managers can solve the problem by themselves by for example sharing the profit that is gained from the less- and more profitable orders. If the units or unit managers decide not to cooperate, they usually have good reasons for that according to the theory about coevolving. However, the role of an ERP-system in this synergy capture is only by facilitating information sharing, and it does not help the real problem, which is in the *biased incentive systems*.

5.2.3 Shared Tangible Resources

Today most plants have their own sales force, which is expensive. According to some employees in SCA Packaging it would be possible to have more centralised sales forces, and it could even be desirable because more and more customers are doing central purchases. But according to some employees, a more centralised sales force may lead to worse customer relations. SCA Packaging can gain important synergy

effects if they change to a more central sales force, e.g. by providing total packaging solutions by marketing the whole spectrum of different packaging solutions, as planed in Denmark. According to the Danish business case there is no shared customer database today, which is desirable for having a central sales function. A common ERP-system can support change toward more central sales, because it provides a platform for accessing information from several plants. Marketing a wider range of products through an existing sales channel, as in this case, is the same as trying to capture synergies in diversification by cross selling.

According to some employees in SCA Packaging all information about the products are not standardised. The non standard information is an obstacle for building a common customer database and using an ERP-system, so it is important to overcome this problem and standardise information if synergies, by shared tangible resources, should be captured.

According to Mr Van der Auwermeulen it is not so common that orders are shared or swapped between the factories, and if an order is produced in another plant within Belgium the order have to be interpreted manually in some extent according to Mr Vanpoucke. Also in Denmark, transferring orders between plants is a manual process. The fact that a common ERP-system facilitates order transfer and thereby increases the possibility to share production capacity and gain synergies by shared resources, are already considered in Denmark. And there is no reason why it should not be possible to gain the same benefits of sharing production capacity within the rest of SCA Packaging either.

According to Mr Jones, making an e-business solution for a customer means that SCA Packaging has to run a different project for each interface involved in the solution. By having one common ERP-system an important synergy is to be captured by reducing duplicated efforts.

In SCA Packaging today, there are a lot of different systems that need maintenance and within the organisation it is already considered to be a problem that all different systems require their own expertise. This makes it difficult to share maintenance employees. Maintaining all interfaces between the different systems is estimated to stand for about half the cost for maintenance. Even developing new interfaces between IT systems is a large expense for SCA Packaging. Consequently there seems to be a big synergy potential to implement a common ERP-system, instead of using a lot of different information systems. The benefits are probably increased possibilities to share knowledge about the systems and a possibility to reduce the number of man-hours spent on maintenance. Concerning maintenance employees it must at least be possible to share some experts, even if a complete centralisation of IT support is probably not possible because of different language and long distances. Even if there

is a big synergy potential in implementing a common ERP-system, it is important to consider that ERP-systems are not cheap and the total cost for the implementation might be up to 20 times as expensive as the system itself.

5.2.4 Vertical Integration

Today the information systems within SCA Packaging are fragmented, which complicate communication and integration according to many employees. According to the theory, process industries such as forest industries may gain large benefits from capturing synergies by vertical integration, and Mr Renders think that there is a big potential of improvement concerning internal sales. Therefore, this chapter will be further developed, and this by referring to the five *operating processes* of the supply chain.

Product

The product-design determines production processes. To facilitate integration and thereby the possibility to capture synergy within SCA Packaging, there is a need of more standardised products according to many employees and mangers. The problem with different standards between, or even within, regions can be helped by standardising interfaces between containerboard and corrugated. Standardisation of products and the system of product codes, in line with the theory chapter about *modularity,* can be significant for facilitating synergy capture within SCA Packaging. ERP-systems do not directly support modularity, but the implementation of ERP-systems force organisations to change and standardise processes. Therefore a standardisation of products, interfaces and codes can be supported indirect by an ERP-system. All these things that are needed for successful synergy capture is according to *upside bias* in the chapter synergy capture, easy to forget.

Production

The information systems today often have a production module from a separate supplier of software, and according to some employees there are often problems with the interfaces between the different software within the information system. It is also a problem that different plants use different methods to reach the requirements, which results in complaints about quality. Mr Van der Auwermeulen has also identified a potential in better integration between different functions within the plants. With a harmonised ERP-system, the production process can be better integrated with procurement and logistics and therefore capture synergies between departments. Benefits from a new ERP-system cannot be added for plants using CBS, as that system is strong in this area. Standard production processes will also increase the possibility to use capacity from other plants when desirable, which is already explained in the chapter about shared tangible resources.

The problems that are caused by different production processes can be solved by implementing standard *modular architecture* for processes, which according to the theory chapter about modularity is necessary for getting "*a framework for defining, allocating and coordinating the activities to be performed and thereby achieve true interoperability within complex wired supply chains*". Implementing a common ERP-system could indirectly facilitate modularisation of the process architecture, because the implementing is an opportunity to change processes and the way things are done.

Procurement

As mentioned in the chapter about the Danish business case, purchasing in Denmark is done manually and we have not found this to be an exception within SCA Packaging. Procurement, and especially internal purchases, can be done more effective with a common ERP-system, and in Denmark it is already considered that a common ERP-system will reduce manual work for purchasing. Because SCA Packaging has a lot of internal purchase, a well-implemented ERP-system will also support significant synergy capture, by better integration of the different units.

Using ERP-system as support for purchase will also facilitate central purchases, which can increase negotiating power, and thereby lower cost of purchased goods. This is further explained in the chapter *pooled negotiating power*.

Distribution

Supported with an ERP-system, distribution will be more integrated and work more efficiently with production, as well as the customer, and thereby capture synergies between departments within SCA Packaging. Transportation costs should also decrease according to the arguments in the chapter *coordinated strategies.*

Demand management

As mentioned in the chapter about the Danish business case, forecasts and braking down the order pool into the needs of raw materials and resources in production are today done manually. With a well-managed ERP-system, figures from the whole organisation can be aggregated and a lot of the job can be done automatically. But according to Mr De Ridder, it can be a problem if everyone does not use the system correctly. With an ERP-system, the possibility to do forecasting and customer order processing at a more central level will increase, and thereby gain synergy effect, assumed that the systems are used correctly at the plants.

5.2.5 Pooled Negotiating Power

According to the chapter about the Danish business case, a better overview of the purchases will make it possible for SCA Packaging to negotiate more effectively. A common ERP-system both gives a better overview of the total purchases and also

increases the possibility to centralise purchases. Hence a common ERP-system will support synergy capture because if larger quantities are purchased it will according to the theories in the synergy chapter improve the possibilities to increase the negotiating power.

Saving from having a more common purchasing approach is among the top ten benefits mentioned in the Danish business case. In addition to the increased negotiation power expected, there are significant expected savings in man-hours from having more of a shared service-centre approach.

More and more customers want to do their purchases more central, and SCA Packaging has production plants all over Europe. Because a common ERP-system will make it easier to act as one company toward the customers, it is possible to increase the bargaining power toward big customers, according to the theory chapter about synergy, and consequently also capture synergies by pooled negotiating power in sales.

5.2.6 Combined Business Creation

A part of SCA Packaging's strategy is diversification by offering complete logistics and service solutions. If it is possible to develop complete logistics solutions by using internal knowledge and that can be done cheaper than a logistic company can do, SCA Packaging gains synergy effects by combined business creation. But we do not see any general possibilities how an ERP-system could support this kind of synergy capture.

5.2.7 Summary

Out of the six kinds of synergies we have related to introducing a common ERP-system, the benefits of *vertical integration* between different processes and units within SCA Packaging's and SCA's supply chain is one of the two most important synergies. Introducing a new system to get this particular synergy is however less important for the plants currently using CBS, because vertical integration is strong in that system and it seems to be no controversy in SCA Packaging that most of the possible vertical synergies using that system are already realised. The second important synergy is synergy within IT, i.e. shared IT expertise and no interfaces to maintain between different systems, which are a part of *shared tangible resources*.

The empirical analysis also shows that many synergies cannot perfectly be matched to one of the six kinds of categories. Instead many potential synergies are to be found in the area between two categories, or more exactly within two or more of the six categories. For example can synergies in procurement be related to both vertical integration and pooled negotiating power. Even synergy within IT is more than just a

part of the *category shared tangible resources*, because it may be possible to get a better price when buying the same information system to many plants and thereby gets synergy by *pooled negotiating power*.

The fact that SCA Packaging is a decentralised company with a wide variety of cultures makes standardisation of processes a major challenge. On the positive side is the fact that the SAP implementation in Denmark is mainly based on strategic reasons, instead of mainly technical reasons, which according to the theory is important for successfully implementing an ERP-system.

5.3 Evaluating the Theoretical Framework

This chapter compare how the theoretical framework developed in this thesis has proved to be consistent with our empirical findings, i.e. pattern matching. The aim of this analysis is to judge the validity of the theoretical framework; find out what parts are supported and what parts are not. Finally, possible extensions to the framework are discussed.

The structure follows the structure of the framework, with each point in the framework in italics, followed by a discussion of its validity.

5.3.1 Effects on Opportunities

Shared Know-How

- *Manuals and documents instantly available to all.*

We have no evidence for or against this point, because this issue was overseen and did not surface in the study. A good idea is to study this point in an extended study.

- *Sharing of best practice simplified through transparency of performance data.*

SCA Packaging does use the implementation of a common ERP-system as an opportunity to improve the best practice program. There are great expectations on the improved transparency that will come from the new system.

- *IT-people can share experience, training and learn from each other's experience. Successful IT-implementers are the ones who have implemented similar systems before.*

The third point has also been proven in our findings. SCA Packaging does consider the sharing of knowledge within the IT-function to be a reason for implementing a new system, because it is part of the cost savings expected. SCA packaging has also

considered the possibility to avoid inventing the wheel over and over again, and instead learn from earlier implementations.

Coordinated Strategies

- *Dividing market is simplified by having common customer database, e.g. preventing customers from shopping around.*

We have found that this explanation is valid as motivation for acquiring a common ERP-system, even if it is not a strong reason.

- *Coordinated approach to meet threats enabled by aggregated company wide information.*

Being able to monitor trends better, and showing one face to the customers, is considered important for SCA Packaging in Denmark to meet the threat of German competition. That acknowledges the validity of this point.

Shared Tangible Resources

- *Shared ownership of ERP-system itself should give benefits in negotiation price etc.*

SCA Packaging has negotiated an option to buy additional systems if the pilot is a success at "lowest possible price". It means that they will have to pay less to use the system per site, than they would have had to pay if all sites negotiated independently. This is in line with this point.

- *Shared ownership of ERP-system leads to fewer systems, decreasing number of system to maintain, and thereby cost.*

The fact that having many systems is very expensive is obvious. Whether a single ERP-system really will be cheaper is not. Within SCA Packaging, maintaining and developing interfaces between all systems are considered to stand for 50% of total maintenance costs.

- *Common information enables sharing of sales-channels and cross selling, through shared service centre or e-business.*

This is considered to be a main benefit in Denmark. Having one IT system in SCA Packaging facilitate the possibilities to have cross-regional e-business solutions.

- *IT-people and expertise can be shared across organisation.*

SCA Packaging has identified this as a cost saver. Also, shared IT-people have the advantage of lowering risk. However, SCA packaging does not think it is possible have only one central support function, because of all different languages within the organisation.

- *Enables sharing of production capacity by easy transfer and re-calculation of orders.*

Today, the few orders that are transferred between the plants in SCA Packaging are interpreted manually, which is not necessary in the same extent with a common ERP-system.

Vertical Integration

- *Integration of value chain will allow optimisation, and increased utilisation of machines.*

We have not identified any evidence for or against this.

- *Decrease in security stock levels.*

We have found that SCA Packaging have a lot of internal purchases. We know that from the introduction of CBS, there were savings made in this area. The same should be true for any ERP-system implemented in SCA Packaging.

- *Common information enables sharing and optimisation of transports between sites.*

We know this is an issue that SCA Packaging thinks will be improved by a new system. However, they do not think there is very large potential for this.

Pooled Negotiating Power

- *Available common information allows combined purchase, leading to better prices.*

One of the ten top benefits cited for the Danish business case come from combined purchasing, so there is agreement between theory and empirical findings.

Combined Business Creation

- *Not directly supported by common ERP-system.*

We have not found any evidence against this.

5.3.2 Effects on Impediments

OBSTACLES:

Asymmetric Benefits

Not affected

No evidence found.

Loss of Autonomy and Control

A common ERP-system will move power upwards in the hierarchy. A common ERP-system makes the loss of power evident and permanent. Resistance is expected from unit managers.

We have found some expectations for resistance against a common ERP-system. The limited resistance that is expected is based on the prerequisite that sites will not be forced to change their systems. More resistance is expected in case of a more prescriptive approach. Concerning the power-structure we have just found that the top management expect to get better aggregated figures, thereby increase control.

Biased Incentive Systems

The success of any synergy capture following the introduction of a common ERP-system depends on appropriate incentive systems being in place.

We have found evidence of this, and several different sources point to the incentive systems and the profit-centre culture as the main problem for realising synergy in SCA Packaging.

Differing Business Unit Circumstances

Not affected

No supporting or contradicting evidence found.

Interrelationship and Equity

Negotiating between units become more straightforward with increased transparency of benefits.

The case study provided no answer on this statement.

MANAGERIAL BIASES:

Synergy Bias

Synergy capture as motivation for implementing common ERP-system is likely to be overly optimistic.

We have found that top management within SCA Packaging usually make a moderate estimation concerning the synergy potential before acquisitions. In the business case for Denmark, very few horizontal synergies have been taken into calculation due to insecure numbers. This contradicts this point.

Parenting Bias

If general management force cooperation programs, e.g. a common ERP-system, for synergy capture onto business units they might loose motivation working for something not perceived to be worth the costs.

We have made empirical findings that do not support this statement. For example one employee who suggests that top management should take initiative to standardise information, which according to him would facilitate cooperation between the plants.

Skills Bias

Managers' insufficient knowledge of operations causes bad synergy initiatives. Knowledge of operation is improved by common ERP-system, thereby reducing skills bias.

There are very few synergy initiatives in SCA Packaging. When buying a company e.g. the synergy effects are almost insignificant as a general motivation. Regarding the Danish business case, general management acknowledges limited knowledge in some areas, e.g. if the ERP-systems will really fit the smaller sites.

Upside Bias

In introducing a common ERP-system, positive effects of achieving synergies carry more weight than do negative side effects.

Supporting this is a statement by a top-manager that once a decision has been taken, there has to be no hesitation on what is the best solution, because then people will be careful not to do things that may not be the best thing. This points to a natural bias being present, or at least when presenting projects in the organisation.

5.3.3 Extending the Framework

The framework has shown to be quite good at predicting how an ERP-system affects the strategy for capturing synergy. The main problem with the analysis is that it does not directly answer the question of how important synergy is in buying a new ERP-system. We had stated this questions in the first chapter of this thesis in the form of a hypothesis; "*synergy is important as motivation for managers when making the decision to acquire ERP-systems*". To answer this question in a better way, we suggest adding a dimension; comparing synergy to other reasons for getting a new system. However, we do suggest keeping some categorisation of synergies, as they have varied weight.

We have found a significant difference in the case study between horizontal and vertical synergies. This distinction was not expected from using the framework. It would probably be valuable to introduce this distinction into an extended framework, because it has the power to explain why some synergies are more important as motivation for implementing a common ERP-system, and that such a system will affect different synergies in different ways.

We have tried to capture the role of ERP-systems in strategy for capturing synergy in SCA Packaging. In an attempt to find important aspects not covered by our

framework, we have used semi-structured interviews with some open-ended questions during our study. In spite of this, we have not found significant indications that some aspects of synergy capture related to ERP-systems are missing. However, we have found out that the role of ERP-systems in strategy for capturing synergy is less important than we initially had anticipated, at least in SCA Packaging. We have found out though, that in the choice of what specific ERP-system to acquire, synergy potentials play an important part. We would extend the framework by introducing the concept of *installed base*[165]. We have concluded during our study that the installed base, i.e. the current ERP-systems of SCA Packaging sister companies, as well as the current ERP-systems of the customers, have had an impact on the choice of vendor.

We have also found out that the interfaces in the information systems are a very important factor, and that standardised interfaces show a large potential for saving costs. The possibility to have more standardised interfaces is directly related to using a system with a dominating installed base. This is true for interfacing with customers as well, and therefore their existing systems are important for the same reason.

Another aspect to the choice of ERP-system we have found is that the system must be able to handle a wide variety of different operations, or it cannot be implemented all over, hence, it will not be a candidate system. In the case of SCA Packaging and the Danish business case, this was evident, which was not predicted by the framework.

The pattern matching we have done between our framework and our empirical findings have further results in findings that can be added to the framework. Concerning the possibilities to capture synergies by *shared tangible resources* we have found an obstacle in our empirical study, not considered in the framework. The obstacle not considered in the framework are all different languages in SCA packaging, which makes it hard to centralise e.g. IT support to one place.

Empirical findings that contradict the framework have also been found, such as the management in SCA Packaging do not seem to overestimate the benefits of synergy, which according to the theory about *synergy bias* is very common. Another finding is that according to the framework an obstacle for synergy capture is *parenting bias*. This may be true, but during our case study we have also made empirical findings saying that some employee in SCA Packaging want top management to take control over standardisation of codes, which would support synergy capture. This is consequently a subject where people in the organisation want top management to be more involved in.

[165] Schilling, M. (1999)

We have also found that many employees regard the many profit-centres as an obstacle for synergy capture. However we have not found any more specified evidence concerning the many profit-centres as an obstacle for synergy capture, and thereby we cannot say if it is an actual obstacle or if it is just considered to be a problem. In chapter 6 we have suggested how this could to be studied further.

We have also found that some points in our framework are more important than other points concerning the possibility to capture synergies with an ERP-system. This difference in level of importance was not possible to predict from the existing theory. If it were possible to make a framework that predicted how important different synergies are, it would also be possible to predict how important synergies are when acquiring an ERP-system.

6 Conclusions

This chapter will discuss our main findings, as well as validity and suggestions for further studies.

6.1 Major Findings

At the outset of the study we made two hypothesises to guide our thinking during the study. We found evidence saying that a common ERP-system is considered to be a prerequisite for capturing cross business synergies within SCA Packaging. However, the main obstacle for realising the cross business synergies is in the non-standardised processes and product codes within the company.

The second hypothesis is about synergy being important as motivation for managers when making the decision to acquire ERP-systems. We have found evidence pointing both in favour of this and opposing it. In our case study we found opposing arguments in that the business case for Denmark did not rely on synergies when arguing for a new system. The main motivation for changing systems was the cost of maintaining the old systems and the business risks associated with them. However, we will conclude that even so, the potential synergies of the new system were the key factor when the decision to use a particular vendor was taken.

We found that ERP-systems are perceived to support synergy capture in many ways within our categories of shared know-how, coordinated strategies, shared tangible resources, vertical integration and pooled negotiating power. But capturing synergies by combined business creation within a corporation is not supported by an ERP-system. Concerning the importance of the synergies, the synergies considered most affected by the introduction of a common ERP-system are:

- Synergy related to *vertical integration*, at least in factories not using CBS
- Synergy in the IT-function
- Synergy in sales, i.e. to have a “common face to the customer”

We had expected that synergy in shared tangible resources would be important for exchanging orders and utilising capacity better. Sharing of production capacity seems to be related to future strategy rather than contemporary strategy in our case material, i.e. it is not considered to be crucial at the moment. We suspect that this is because of specific characteristics of the industry, and that the possibility to transfer orders between plants and share production capacity is a more important benefit for companies that have full order stocks (or less overcapacity in the industry) and produce products that are not very costly to transport. The most important synergy in shared tangible resources is instead within the IT-function, at least in SCA Packaging.

We have also found a significant difference in the case study between horizontal and vertical synergies. This was not predicted by our theory, but it is interesting because it provides a dimension that can improve understanding of ERP-systems role in strategy for capturing synergy.

6.2 Improved Theoretical Frame of Reference

This section shows the updated framework (see next page). The text in italics shows differences in effects on opportunities and impediments that are predicted by the new framework. In general, the predictions of the framework were somewhat more accurate for the opportunities than for the impediments. It is important to notice that some of the changes or discoveries are of a more general nature, e.g. the addition of the installed base concept to the framework. Another more general idea that is added to the framework is the concept of horizontal and vertical synergies that help explain differences in importance of ERP-systems for different types of synergies. The figure shows the opportunities and impediments in the updated framework and represents ideas from the original framework that have not been judged invalid, and our suggestions and additions based on our empirical study.

EFFECTS ON OPPORTUNITIES:

Shared Know-How

- Manuals and documents instantly available to all.
- Sharing of best practice simplified through transparency of performance data.
- IT-people can share experience, training and learn from each others experience. Successful IT-implementers are the ones who have implemented similar systems before.

Coordinated Strategies

- Dividing markets is simplified by having a common customer database, e.g. preventing customers from shopping around.
- Coordinated approach to meet threats enabled by aggregated company wide information.

Shared Tangible Resources

- Shared ownership of ERP-system itself gives benefits in negotiation of price etc.
- Shared ownership of ERP-system leads to fewer systems, decreasing number of system to maintain, and thereby cost.
- Common information enables sharing of sales channels and cross selling, through shared service centre or e-business.
- IT-people and expertise can be shared across organisation.
- Enables sharing of production capacity by easy transfer and re-calculation of orders.

Vertical Integration

- Integration of value chain will allow optimisation, and increased utilisation of machines.
- Decrease in security stock levels.
- Common information enables sharing and optimisation of transports between sites.

Pooled Negotiating Power

- Available common information allows combined purchase, leading to better prices.

EFFECTS ON IMPEDIMENTS:

OBSTACLES:

Loss of Autonomy and Control.

A common ERP-system will move power upwards in the hierarchy. A common ERP-system makes the loss of power evident and permanent. Resistance is expected from unit managers.

Biased Incentive Systems

The success of any synergy capture following the introduction of a common ERP-system depends on appropriate incentive systems being in place.

Differing Business Unit Circumstances

If not everyone speaks the same language, it is not possible to centralise support functions.

Interrelationship and Equity

Negotiating between units become more straightforward with increased transparency of benefits.

MANAGERIAL BIASES:

Synergy Bias

Synergy capture as motivation for implementing common ERP-system is likely to be overly optimistic.

Contradicting findings:

Because horizontal synergies are hard to measure, they might be intentionally underestimated in the planning stage, thereby providing weak goals for managers in the implementing.

Parenting Bias

If general management force cooperation programs, e.g. a common ERP-system, for synergy capture onto business units they might loose motivation working for something not perceived to be worth the costs.

Contradicting findings:

Sometimes the top management have to force standardisation of e.g. products and information. Otherwise even small obstacles for co-operation between the plants and thereby synergy capture might be too hard to overcome for managers on unit-level.

Skills Bias

Managers' insufficient knowledge of operations causes bad synergy initiatives. Knowledge of operation is improved by common ERP-system, thereby reducing skills bias.

Upside Bias

In introducing a common ERP-system, positive effects of achieving synergies carry more weight than do negative side-effects.

6.3 Validity of the Findings

This section will discuss the value of those findings in a more general context.

We have argued that managers in SCA Packaging do believe a common ERP-system can be good in capturing synergy. The three synergies identified in the case study to be the most important are unlikely to be the same ones in different industries, and in different companies. However, we do believe that when taking the specifics of the industry into account, e.g. that it has a high degree of vertical integration and that vertical integration synergies were important, the framework has a good explanatory power. The problem is that it our case, it was not good at predicting what synergies were important. E.g. we expected capacity sharing to be more important than it turned out to be. This is most probably attributed to the fact that the framework does not explicitly take the specifics of the industry into account.

The finding that synergy in the IT-function itself is important is not surprising. We think this is quite self-evident when looking at the sheer cost of an ERP-system, and the finding is likely to be true for all companies that consider a common ERP-system, and that currently run fragmented solutions. It is also likely that this is true for other information systems as well, and not only ERP-systems.

We concluded that in the choice of vendor, synergy had a great impact. There is no reason for this not to be true for other companies in the position of acquiring an ERP-system.

The framework has not been successful in predicting other important reasons for having a common ERP-solution within a company. The aim of the thesis was to find out the relation to strategy for synergy capture, and the framework has been more successful there. A problem is that we cannot say if synergy capture is really a major reason for acquiring an ERP-system, i.e. the reversed causality, if we do not know what other factors are important in the matter.

A manager using the framework will, even if his company is different from our case company, be able to use the framework to analyse his situation. If he uses the framework together with his own knowledge of the company, he should be able to make better decisions, as he will have a more structured picture of the situation, e.g. what synergies are really important for the company, and how much potential there is in those synergies.

The thesis has increased understanding of the role of ERP-systems in strategy for capturing synergy. It does however not give any guidance on how an ERP-system will in reality support synergy capture. This and other non-resolved issues are stated in the following section.

6.4 Further Research

During this study, and particularly during the analysis part, we have found a lot of issues that would be interesting to study further. The most interesting topics we would like to suggest further study in are presented below.

On the subject of how important our research really is, we would like to find out more about other reasons and rationales for accepting the costs of ERP-systems. We have found evidence that the increased possibility for central control, i.e. the improvement of the information provided to the head office is an important factor. Because we were not looking for this specifically, our evidence here is not very strong, and would require further research. We expect there to be a lot of interesting reasons for implementing common ERP-systems that have not been thoroughly investigated here, including e.g. how the power structure change and what the consequences of that are. In short we would suggest a study that investigate other forces for implementing ERP-systems, as well as synergy issues.

This study has been on the role of ERP-systems in strategy for capturing synergy. An obvious suggestion for further research is to replicate this study to find out if the same results appear again. It would also be important to study how the implementation of a common ERP-system affects the opportunities and obstacles for capturing synergy for real, i.e. to do a study of how the expected synergies really were affected by an actual implementation. This could be possible to do in SCA Packaging in Denmark, when the new system has been rolled out in 2006 or after that. It would probably be a good idea however, to try and get some quantitative data in this matter, and we would suggest surveying several companies that has implemented ERP-systems. Quantitative data that would be interesting are e.g. to what degree expected cost-savings have been realised. We have suggested e.g. that it is likely that synergies in the IT-function are important as motivation for implementing common systems, and they should be fairly easy to measure.

SCA Packaging seems to implement a common ERP-system as a part of its intentions to become more centralised. We suspect ERP-systems both increase the possibilities to centralise the power, as well as increase the possibility to cooperate within the supply chain with less involvement of senior management. Hence, it would be interesting to further study the role of implemented ERP-systems in this respect. This

question have a very close relation to the question concerning the tension between the different views on how synergy should be captured, i.e. if it should be “top-down” or “bottom-up”. An ERP-system seems to make both of the approaches more likely to succeed because a common ERP-system will give top management better control and understanding of the operations, hence, they will be better at identifying synergy potential, and at judging risks and obstacles.

References

Literature

Ansoff, H. Igor (1965): Corporate Strategy: an analytic approach to business policy for growth and expansion, McGrow-Hill, New York, USA

Bechtel, Christian & Jayaram, Jayanth (1997): *Supply Chain Management, A strategic Perspective,* The International Journal of Logistics Management, Volume 8, No. 1, 15-34.

Bharadwaj, Anandhi S. (2000): *A Resource-Based Perspective on Information Technology Capabilities and Firm Performance: An Empirical Investigation*, MIS Quarterly (March)

Bharadwaj, Anandhi & Konsynski, Benn R. (1997): *Capturing the intangibles.* Information Week, 22nd of September.

Bharadwaj, Anandhi & Konsynski, Benn R. (1999): *Information Technology Effects on Firm Performance.* Management Science, Volume 45, Issue 7, 1008-1024

Bharadwaj, Sundar G., Varadarajan, Rajan P. & Fahy, John (1993): *Sustainable Competitive Advantage in Service Industries: A Conceptual Model and Propositions*. Journal of Marketing, Volume 57 (October) 83-99

Brynjolfsson, Erik & Lorin, Hitt (1997): *Paradox lost? Firm-level evidence on the returns to information systems spending.* System Siences, Volume 3, 257-266

Brynjolfsson, Erik & Lorin, Hitt (2000): *Beyond Computation: Information Technology, Organizational Transformation and Business Performance*. The Journal of Economic Perspectives, Vol. 14, No. 4. (Autumn, 2000), pp. 23-48.

Cambell, Andrew & Goold, Michael (1998a): *Desperately seeking Synergy*, Harvard Business Review (September) 131-143

Cambell, Andrew & Goold, Michael (1998b): *Why links between business units often fail and how to make them work*, Capstone Publishing Limited, United Kingdom.

Ciborra, C.U. (1996): *The Platform Organization: Recombining Strategies, Structures, and Surprises*, Organization Science 7(2), 103-118

Ciborra, C.U. (2000): *From Control to Drift*. Oxford University Press.

Coyle, John J., Bardi, Edward J. & Langley, C. John (1992): *The Management of Business Logistics,* West Publishing Company, USA.

Davenport, Thomas H. (1998): *Putting the Enterprise into the Enterprise System.* Harvard Business Review (July-August) 121-131

Eisenhardt, Kathleen M. (1989): *Building Theories from Case Study Research.* The Academy of Management Review, Volume 14, Issue 4 (October) 532-550

Eisenhardt, Kathleen M. & Galunic, D. Charles (2000): *At Last, a Way to Make Synergies Work.* Harvard Business Review, January, 91-101.

Eisenhardt, Kathleen M. & Zbaracki, Mark J. (1992): *Strategic Decision Making*, Strategic Management Journal, Vol. 13, Special Issue: Fundamental Themes in Strategy Process Research. (Winter, 1992), pp. 17-37.

Grant, R. M. (1991): *The Resource-Based Theory of Competitive Advantage*. California Management Review 33(3), 114-135.

Grant, R. M. (1996): *Toward a Knowledge Based Theory of the Firm.* Strategic Management Journal 17 (Winter Special Edition) 109-122.

Grant, Robert M. (1998): *Contemporary Strategy Analysis,* Blackwell Publishers Inc. Cornwall, Great Britain.

Hannon, David (2003): *The Happy Marriage between Process and Technology*. Purchasing, May. 61-62.

Henderson, John. C. & Venkatraman, N. (1993): *Strategic alignment: Leveraging information technology for transforming organizations*, *IBM Systems Journal*, Volume 32, No 1, 4-16.

Holme, Magne H. & Solvang, B. K. (1997): *Forskningsmetodik,* Studentlitteratur, Lund.

Ives, Blake & Jarvenpaa, Sirkka L. (1991): *Applications of Global Information Technology: Key Issues for Management*. MIS Quarterly, Vol. 15, No. 1, pp. 33-49.

Kalling, Thomas (1999a): *Gaining Competitive Advantage through Information Technology.* PhD Thesis, Institute of Economic Research, Lund Business Press, Lund.

Kalling, Thomas (1999b): *Tre perspektiv på relationer mellan affärer i diversifierade företag*, Uppsats, Institute of Economic Research, Lund Business Press, Lund.

Kopczak, L.R. & Johnson, M.E. (2003): *The Supply-Chain Management Effect*, MIT Sloan Management Review, Spring, 27-34.

Lorange, Peter & Contractor, Farok J. (2002): *Cooperative Strategies and Alliances,* Pergamon Press.

Markides, C.C. & Williamson, P.J. (1994): *Related diversification, core competences and corporate performance.* Strategic Management Journal, 149-166

Mata, Francisco J., Fuerst, William L., Barney, Jay B. (1995): *Information Technology and Sustained Competitive Advantage: A Resource-Based Analysis.* MIS Quarterly (December) 487-505.

McClellan, Michael (2003): *Outside-The-Box-Manufacturing*. Optimize, March, 47-52.

Mintzberg, H., Raisinghani, D., and Theoret, A. (1976): *The Structure of "Unstructured" Decision Processes*. Administrative Science Quarterly, Vol. 21 No. 2, 246-275

Morrison, Matthew J. & James, Andrew D. (2001): *The Role of Dedicated Integration Teams in the Post-Merger Management Technology*. Management of Engineering and Technology, Volume 1, 12-13

Norton, David P. (2002): *Creating Strategic Alignment and Readiness for IT*, Harvard Business Review (September).

Porter, M. E. & Millar, V. E. (1985): *How information gives you competitive advantage.* Harvard Business Review (July-August), 149-160.

Porter, Michael E. (1985): *Competitive Advantage,* Free Press, New York, USA

Ross, Jeanne & Well, Peter (2002): *Six IT Decisions Your IT People Shouldn't Make, Harvard Business Review,* November*,* 85-91

Sanchez, Ron (1996): *Strategic Product Creation: Managing New Interactions of Technology, Markets, and Organizations.* European Management Journal, Volume 14, No. 2, 121-138.

Sanchez, Ron (2002a): *Designing Strategic Flexibility into Your Products and Processes, Perspectives for Managers,* IMD International Institute for Management Development, No. 88, 1-4

Sanchez, Ron (2002b): *Using Modularity to Manage the Interaction of Technical and Industrial Design.* Design Management Journal, Academic Review, 2(1), 8-19.

Schary, Philip B. & Skjøtt-Larsen, Tage (2001): *Managing the Global Supply Chain,* Copenhagen Business Press, Copenhagen, Denmark

Schilling, Melissa (1999): *Winning the Standards Race: Building Installed Base and theAvailability of Complementary Goods,* European Management Journal, Vol. 17, No.3, 265-274

Venkatraman, N. (1997): *Beyond Outsourcing: Managing IT Resources as Value Center*, Sloan Management Review/Spring1997, 51-64.

Yin, Robert (1984): *Case study research: design and methods*, SAGE Publications Beverly Hills, USA

Yin, Robert (2003): *Case study research: design and methods, Third edition,* SAGE Publications, California, USA.

Weill, P. & Broadbent, M. (1998): *Leveraging the New Infrastructure: How Market Leaders Capitalize on information*, Harvard Business School Press, Boston, USA

Interviews

De Ridder, Dirk, Business Improvement Manager, SCA Packaging Gent, Belgium, the 14th of December 2003.

Haglund, Gunnar, Vice President Finance, SCA Packaging, Brussels, Belgium, the15th of December 2003.

Jeppesen, Lars, IS-Business Program Manager, SCA Packaging, Grenaa, Denmark, the15th of December 2003.

Jones, Martin, CBS Implementation and Support Manager, SCA Packaging, Brussels, Belgium, 28th of November 2003.

Krogh, Karl Johan, Head of Finance & IT (Direktør, Økonomi og IS/IT), SCA Packaging, Denmark, the 15th of December 2003.

Meissner, Nick, Director of Business Support and ICT, SCA Packaging, Brussels, Belgium, 27th of November 2003.

Renders, Rob Jan, President, SCA Packaging, Brussels, Belgium, the 11th of December 2003.

Van den Berghe, Gaby, IT Supervisor, SCA Packaging, Gent, Belgium, the 16th of December 2003.

Van der Auwermeulen, Philippe, General Manager, SCA Packaging, Brussels, Belgium, 17th of December 2003.

Vanpoucke, Hedwig, Customer Service Manager, including responsibility for SCM, SCA Packaging, Gent, Belgium, the 16th of December 2003.

Venderstraeten, Alain, Sales Manager, SCA Packaging, Brussels, Belgium, the 17th of December 2003.

Documents

ERP systems in SCA Packaging, a changing Landscape, Power Point, the 8th of October 2003.

Current Situation – Why Change?, Paper from IS meeting in Gothenburg, the 10th of April 2002.

SCA Packaging Business Reference Group, Kick Off Meeting, Power Point, the 26th of November 2003

SCA Packaging Denmark, Proposal and Recommendation for a Nation wide ERP system, the 16th of June.

Electronic references

www.sca.com

www.scapackaging.com

http://www.sca.com/pdf/2002ENG.pdf, 3rd of January 2004.

Reports from the Paper and Packaging Program

Year	No	Author	Title
2004	2	Fredrik Berntsen Herman Leife	The Role of ERP-system in Strategies for Synergy Capture – A case study in SCA Packaging
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2003	1	Niklas Hallberg	Cost Management and Pricing A case study of SCA Packaging Minden
2002	5	Gunilla Nordström	Complexity Seminar in Lund, November 4-5, 2002
2002	4	Thomas Kalling	The Business Model and the Resource Management Model: A Tool for strategic Management and Analysis
2002	3	Thomas Kalling	ERP Systems and the Strategic Management Processes that Lead to Competitive Advantage
2002	2	Magnus Berndtsson Jesper Lundén Thomas Nilsson	Enhancing Competitiveness through Supply Chain Management Capabilities
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2001	1	Allan T. Malm	The Paper and Packaging Industry in the Coming Decade Critical Issues for Managers and Research
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1997	2	Håkan Persson Carsten Jensen	Resursbaserad miljöstrategi Praktikfallet Södra Cell
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