The Contract Winning Process

A Guide for Small Development Companies

David Loughnane
Henrik Oskarsson

School of Engineering
Blekinge Institute of Technology
Box 520
SE – 372 25 Ronneby
Sweden
This thesis is submitted to the School of Engineering at Blekinge Institute of Technology in partial fulfilment of the requirements for the degree of Master of Science in Software Engineering, specialisation management. The thesis is equivalent to 2 x 20 weeks of full time studies.

**Contact Information:**

Authors:

Henrik Oskarsson  
E-mail: henrik.oskarsson@zeta.telenordia.se

David Loughnane  
E-mail: davylough@hotmail.com

University advisor(s):

Conny Johansson  
School of Engineering  
E-mail: conny.johansson@bth.se

School of Engineering  
Blekinge Institute of Technology  
Box 520  
SE – 372 25 Ronneby  
Sweden  
Internet : www.bth.se/tek  
Phone : +46 457 38 50 00  
Fax : + 46 457 271 25
In order to survive in today’s business world it is necessary to win contracts. If companies fail to do this then their existence is threatened. Therefore, the manner in which companies conduct their contract winning activities become of paramount importance. Much focus in software engineering research and academic literature centres around the post-contract winning activities, such as project planning, costing and scheduling. The emphasis on the contract winning process, though not neglected, is quite small in comparison. There exists a need for more research in this interesting area and this thesis aims to partly address this need. Consequently, the main focus of this research is the contract winning process. The approach used to investigate this area consisted of a theoretical study followed by an empirical study, where eight small development companies were interviewed. The findings show that a uniform formal process does not exist for winning and negotiating contracts. As a result of these findings, from both the theoretical and empirical studies, a contract winning process model for small development companies was formulated. The proposed model consists of five sequential stages with recommended activities for each stage. The model is intended for small software engineering development companies but because the model is generic it could also be used by non-software companies.

Keywords: contract, process, management, follow-up.
ACKNOWLEDGEMENTS

We would like to sincerely thank the companies that participated in this study. We appreciate the time and effort that they invested in the research and realise that without their efforts this study would most likely not be the quality it is today. We extend our gratitude to all of these companies.

ABB I-R Waterjet Systems AB, Mats Sandgren
Björklidens Materialaffär, Eva Johansson
D&K Engineering, Aiden Murtagh
Flaggfabriken Tellus, Anna Lindberg
Flux Software Engineering, Young Fogelström
Kordab AB, Bengt Persson
Soft Network Jägmodata AB, Andreas Paulsson
Visimind AB, Krzysztof Gajdamowicz

We would also like to thank our advisor Conny Johansson, School of Engineering, Blekinge Institute of Technology. His feedback, direction and advice during the course of this thesis is very much appreciated.
# CONTENTS

## ABSTRACT

## ACKNOWLEDGEMENTS

## CONTENTS

## INTRODUCTION

1.1 **BACKGROUND** ____________________________________________ 6
1.2 **STRUCTURE** ____________________________________________ 7
1.3 **SCOPE OF THE THESIS** ___________________________________ 8
1.4 **RESEARCH QUESTIONS** ________________________________ 8
1.5 **SUMMARY** ____________________________________________ 9

## METHODOLOGY

2.1 **THEORETICAL STUDY** ____________________________________ 10
2.2 **EMPIRICAL STUDY** ______________________________________ 10
2.2.1 **COMPANIES** ________________________________________ 10
2.2.2 **COMPANY CRITERIA** ________________________________ 11
2.2.3 **PERSONNEL** _______________________________________ 12
2.3 **RESEARCH METHOD - SURVEY** ____________________________ 12
2.3.1 **MOTIVATION FOR USING A SURVEY** ___________________ 12
2.3.2 **DOCUMENTATION OF INTERVIEWS** _______________________ 13
2.4 **CLASSIFICATION AND ANALYSIS** __________________________ 14
2.4.1 **SURVEY ANALYSIS** ________________________________ 14
2.4.2 **THEORETICAL LINK** _________________________________ 14
2.5 **SUMMARY** ____________________________________________ 14

## THEORETICAL STUDY

3.1 **DEFINITIONS** __________________________________________ 15
3.1.1 **PROCESS** __________________________________________ 15
3.1.2 **PROJECT** __________________________________________ 16
3.1.3 **CONTRACT** ________________________________________ 16
3.1.4 **CUSTOMER** _________________________________________ 16
3.1.5 **CONTRACTOR** ______________________________________ 17
3.1.6 **TOOLS** ____________________________________________ 17
3.1.7 **FOLLOW-UP** ________________________________________ 17
3.2 **THE CONTRACT** ________________________________________ 17
3.2.1 **HISTORICAL EVOLVEMENT** ____________________________ 18
3.2.2 **PROJECT AND CONTRACT NECESSITY** ____________________ 18
Table and Figure Listing

Table 3.1: Quality Dimensions of Goods. [Klefsjö/Bergman, 2003] .................................................. 22
Table 3.2: Quality Dimensions of Services. [Klefsjö/Bergman, 2003] .................................................. 22
Table 3.3: Negotiation Representation [Marsh, 2001] ....................................................................... 38
Table Appendix B.1: Nr of employees and time of establishment in software industry .................. 88
Table Appendix B.2: Involved persons, establishment of processes and interviewee in software industry ................................................................. 88
Table Appendix B.3: The use of processes in software industry ......................................................... 89
Table Appendix B.4: Type of contracts in software industry .............................................................. 91
Table Appendix B.5: Nr of employees and time of establishment in non-software industry .......... 95
Table Appendix B.6: Involved persons, establishment of processes and interviewee in non-software industry .................................................................................. 95
Table Appendix B.7: The use of processes in non-software industry .................................................. 96
Table Appendix B.8: Type of contracts in non-software industry ...................................................... 98
Table Appendix C.1: Summary of Process Models ............................................................................ 102
Table Appendix C.2: Summary of Tools .......................................................................................... 103
Table Appendix C.3: Summary of Design ....................................................................................... 103
Table Appendix C.4: Summary of Types of Contracts ................................................................. 104
Table Appendix C.5: Summary of Negotiation .............................................................................. 104
Table Appendix C.6: Summary of Follow-up ............................................................................... 105
Table Appendix C.7: Summary of Areas for Improvement ............................................................... 106

Figure 3.1: Granfors Gradual Forming of Contract [Granfors, 1989] ................................................ 33
Figure 3.2: The Traditional Model for the Formation of Contracts through Negotiations. [Nystan-Haarala, 1998] ...................................................... 34
Figure 3.3: Warsta and Seppanen’s Tentative Model [Warsta/Seppanen, 2000] ............................ 35
Figure 6.1: Recommended Contract Winning Process Model ...................................................... 69
1 INTRODUCTION

The main purpose of this chapter is to introduce the research that is carried out in this thesis. This research centres around the contract winning and negotiation process. The aim of the thesis is to investigate, theoretically and empirically, current activities in the field and based on these results, formulate a set of guidelines for small development companies to follow. This chapter also contains the structure of the thesis, highlighting its three major sections. In addition the scope of the work has been defined and this along with the research questions provide the working framework for the thesis.

1.1 Background

A simplified definition of a project is that it is a task to be carried out within a certain time schedule resulting in a defined reward. Given this broad definition, it can clearly be argued that a project can be practically any undertaken task from mowing the lawn to the construction of a pyramid. Thereby projects, although not defined as projects, have been used for a long period of time. Contracts can be seen in a similar light; a contract being a formulation of the agreement between parties involved in a project. They too have long since been used to formalise such agreements. The first discovered documentation of a contract dates back to Mesopotamia, 2250 BC [Byrne-Halcyn, 2002]. At this time contracts were used to regulate merchandising and trade. However, contracts have since then evolved into complicated legal documents that set the rights and constraints between parties in any form of business. This evolution has seen contracts become more and more specified, containing a more complicated legal language and are to a larger extent defined by the customer as opposed to the contractor (supplier). This has forced many contractors to use legal advisors to formulate and negotiate their contracts. This action is necessary since a contract can, if not being carefully considered, become a liability to the contractor. In her work Virginia Sutcliffe claims that it has come to the point where sometimes it can be more dangerous to sign a contract than to work without one. [Sutcliffe, 1999]

Christopher Zant states that approximately 80% of today’s business transactions consist of contract negotiations. [Zant, 2002] This is clearly a high figure and illustrates the necessity for companies to allocate a sufficient amount of time to this
activity. The contracting process is repetitive in many regards and it is the authors’ belief that companies can save a significant amount of time if the contracting process could be managed in a more efficient manor. This fact is further highlighted in the empirical work of this thesis where most of the companies interviewed thought that their contract management process could be improved. However, since it worked adequately and the time it would take to develop and implement a new process seemed too problematic, very few alterations were made to existing processes. Today, it appears that in both education and industry most emphasis is placed on post contract activities such as project planning, cost estimation and scheduling. There seems to be a gap in the emphasis that is placed on the software contract winning process, one that is surely a very important area for the success of any project. This process and the way it is handled can give a project a solid foundation or undermine it before it even starts. As a result of these observations and our knowledge and experience of software engineering practices we have identified a need for formal processes in the area of contract winning and negotiation. By using formalised processes companies can formulate contracts based on previous experiences. This means that no important factors are neglected and that previous experiences are reused.

This thesis aims to explore and investigate current practices in contract winning and negotiation and to provide recommendations for future use and research. Research has shown that the majority of development companies are small in nature. [Sallinen, 2004] Therefore, in our study, we have chosen to focus on small development companies in both the software and non-software industries.

1.2 Structure

The thesis is divided into three major parts; theory, empirical and results. However, for completeness of the thesis, additional chapters have been included to define the scope, methodology, recommendations and conclusions. The full structure is as follows:

- **Introduction**
  Introduces the thesis, the study to be performed and sets the scope of the thesis.

- **Methodology**
  Describes the empirical part of the study and outlines the survey techniques used as well as the criteria for the participating companies.

- **Theoretical Study**
  Investigates the theoretical field of the contract winning process. The chapter presents the state of the art research in the contract winning process and is subdivided into four major parts, the contract, the process, involvement of the managers and the follow-up process. The definitions used throughout the thesis are also defined in this section.
• **Empirical Study**
  Discusses the empirical part of the thesis. Here, the interviews for each type of industry are analysed and the results are compared and contrasted. This section is divided into a number of phases that correspond to those outlined in the questionnaire that was used during the survey.

• **Discussion**
  Draws parallels between the theoretical and the empirical parts of the research. This section is structured in the same way as the theoretical part for a simplified comparison.

• **Recommendations**
  Presents the recommendations arising from the research outlining best practices in the contract winning process. The recommendations are based on both theoretical and empirical research. The intention is that the section could be used as a set of guidelines for small development companies to follow in order to improve their contract winning process.

• **Conclusions**
  The thesis concludes by outlining the interesting findings presented in the study. It also answers the research questions that are outlined in the introduction, presents possible areas for future research and discusses our conclusions on the study.

### 1.3 Scope of the Thesis

The thesis investigates the processes that are used by software and non-software development companies to win and negotiate their contracts. From the findings of the theoretical research and the empirical study of eight companies, three industrial and five software, an analysis was carried out. With the aid of the analysis a set of recommendations and guidelines shall be formulated to assist small development companies in the contract winning process.

The empirical study, presented in the thesis, was analysed from the software engineering perspective. An emphasis is placed on the processes and activities involved in the contract winning process and also on how problematic areas are being tackled and solved. The reports intended audience includes small development companies who have identified problems in their contract management processes and professionals, researchers and students interested in the contract management and process improvement areas. Additionally, we believe that the study could provide a sufficient background for all those interested in the process areas leading to a project.

### 1.4 Research Questions

The research questions chosen to set the directions for this thesis are as follows:

1. Do small development companies use a uniform process to win contracts?
2. Are there any similarities/differences between the contract winning process used in small software development companies and small non-software development companies?

3. Could a general contract winning process be formulated?

4. What follow-up procedures are used, if any, to improve the contract winning process?

1.5 Summary

Winning contracts is vital for all development companies. If such companies do not win contracts then they run the risk of extinction and this is not the business objective of any company. With this in mind the need for and benefits of a formal contract winning process become apparent. The importance that companies place on this need and the processes that they use form the basis for the investigation carried out in this thesis. The thesis itself is divided into three main parts; theoretical, empirical and results. These along with supporting chapters form the working framework of the thesis. The aim of the research is to investigate the contract winning processes used by both software and non-software companies and from the results formulate a recommended process model and set of guidelines.
2 METHODOLOGY

This chapter describes the methodology used in this research thesis. This is important because it defines how the research was planned and conducted. This methodology applies to both the theoretical and empirical parts of the research.

2.1 Theoretical Study

In this thesis the theoretical study focuses on researching the area of contracting processes through the use of relevant sources of information. These sources are mainly in the form of published literature, either books, journals or conference papers. These sources are in many cases available through databases and other repositories. The findings of the literature review are presented in chapter three.

2.2 Empirical Study

The empirical study is carried out using the survey technique. This is supported by the use of questionnaires and interviews. Further details regarding the survey are presented in the following sections and contain information on the survey objects, the research method and the documentation and analysis of the interviews.

2.2.1 Companies

In order to draw trustworthy results from the empirical study it is important to clearly define and use similar companies. This similarity lies in the companies size and development profile. In our research we have decided to focus on small or medium sized companies in both the software and industrial (also termed non-software) development sectors.
2.2.2 Company Criteria

The target group of our study is companies that comply with the criteria we have established. As previously stated the emphasis in this thesis is on small sized companies. Because the interpretation of such companies may vary, depending on the country or continent in question, it is important to outline how these companies are recognised in the context of this research. Therefore, we decided to concentrate on companies whose employee’s number between 3-60. We choose to measure company size in terms of number of employees rather than profitability and yearly turnover because the latter measures are more focused on the market and success of the company. By focusing on the number of employees in the companies we believe that this allows for more accurate comparisons between the chosen companies. The decision to have a range of company employees between 3-60 was partially driven by the size of the companies who participated in the study. The smallest being 3 employees and the largest being 58. The upper limit became 60 because of the need to keep the number of employees sufficiently small so that the companies remained comparable.

The companies that are used as objects for the case study shall be termed development companies. This means that the company shall be involved in each step that brings a product to the market place or alternatively the company may be involved in upgrading existing products. Since producing and upgrading a new product contain the same steps both can be categorised as development. In broad terms these steps are; design, construction and marketing. [What Is]

In this research both software and industrial development companies are used in the empirical study. Software companies are chosen because our education is in the Software Engineering field and therefore it is our expectation that our research can help to improve existing processes used by companies to win and negotiate contracts. Industrial companies are used as objects in this research because these industries are more mature and consequently are perhaps more likely to have a process for winning and negotiating contracts. We also choose industrial type companies to compare and contrast their contract winning processes with those of software companies. These comparisons shall point to similarities and differences that exist between both types of companies and may allow software companies to learn from the more mature industrial companies. By using both types of companies we intend to achieve a balanced view of the processes that are used to win and negotiate contracts.

Since the focus of the thesis is on contracts and the contract winning process another important criteria is that the companies are with some regularity concerned with contractual agreements.

2.2.2.1 Industrial (Non-Software)

The companies of an industrial development nature shall be those that can be classified in the areas of manufacturing, construction, medical or other similar activities. These companies shall either construct or produce new products.
2.2.2 Software
The companies of a software development nature shall be those within the software engineering field that produce software or upgrade existing products.

2.2.3 Personnel

In order to obtain trust-worthy results from the interviews it is very important to interview the relevant person at each company. Therefore, certain criteria for the selection of the interviewee have been formulated.

Ideally the interviewee shall be the appointed company responsible for contracts and contract negotiation. If such a person does not exist or cannot be contacted then the interviewee shall be very familiar with the company as this allows for a greater insight into how the company handles the contract winning and negotiation process. Such a person could be a manager who has the authority to make final decisions on signing contracts.

Since the questionnaire and the thesis focus are closely related to the overall business strategy an interviewee that is, at least, somewhat familiar with the overall company strategy is more likely to give us a more comprehensive result. With this in mind it is preferable to interview a person in a management position, though this is not an absolute necessity.

All of the above possible interviewees are preferable to a newly appointed employee who, most likely, could not provide enough information about their company’s processes and how these processes have evolved.

2.3 Research Method - Survey

There are a number of varying ways in which research can be conducted. In this section some of these are outlined and the reasons why a survey was chosen as the preferred research method are explained. Some of the limitations of survey and questionnaire use are also highlighted and the details of the method used to document the interviews are given.

2.3.1 Motivation for Using a Survey

As stated, there are a number of methods that can be used when carrying out research. In his work Dawson [Dawson, 2000:12] outlines action research, experiments, case studies and surveys as four of the most common methods. In this thesis the survey method is used because it facilitates gathering of large amounts of information in an efficient manner. We believe that this is the best way to analyse and draw conclusions on the contract winning and negotiation process. The survey is carried out through the use of interviews accompanied by questionnaires as a means to gather information.

In our experience one of the advantages of carrying out interviews are that they allow one to get the company perspective on how they perform a certain activity. Much can
be learned by talking to the company personnel as inevitably the answers to pre-defined questions give rise to further questions which in turn can lead to more detailed information on an activity. The answers received from the interviews allow us to make inferences about the overall process that companies use in order to win and negotiate contracts. This advantage is also highlighted by Yin [Yin, 1994:80] when he states that one of the strengths of the interview is that it is insightful and provides the interviewees with casual interpretations of events. Another advantage of the interview is that it can be focused on the subject and linked to this is our observation that the human interaction provides more scope for gathering the needed information. This can be achieved through additional questions to clarify answers and by paraphrasing the interviewee’s answers. Yin also points to the fact that interviews can focus on the topic as being advantageous [Yin, 1994:80].

However, there are limitations when using interviews and we have also taken these into consideration. One possible weakness is that the interviewee may give inaccurate answers because they did not understand the question or because they did not recall the answer to the question correctly. In order to address these possible problem areas we constructed a questionnaire that had a natural flow from one question to the next and we also made the language easy to understand. We looked at the pitfalls pointed out by Yin [Yin, 1994:81] regarding the structure of questions and avoided the use of double questions, i.e. two questions in one, normally linked by the words “and” / “or”. To tackle the problem of incorrect recall we forwarded the questionnaire to the interviewee in advance so that they could familiarise themselves with the questions and think about the answers. This approach allowed the interviewee to prepare the correct information when we interviewed them and reduced the risk of poor recall. The questionnaire was designed after we had undertaken a literature review of the contracting process as this allowed for a better understanding of the area and facilitated formulation of a questionnaire that covered all relevant aspects of the process. The questionnaire was intentionally broken into five parts in order to give a structure and plan to the interviews. The questionnaire along with the motivation behind each question is presented in Appendix A.

2.3.2 Documentation of Interviews

The empirical study was performed over a period of two months using a one-hour interview. During each interview notes on the answers were taken and after completion all results were documented. The documented result of each interview was sent to the interviewee to review for correctness and changes were made if necessary. This ensures that the documented answers are correct, eliminates any bias that could exist and provides trust-worthy information for analysis. The results of each question were combined and documented in readiness for analysis. This was carried out for both the software and industrial development companies and allowed for individual analysis of both. The results of the interview are presented in Appendix B.
2.4 Classification and Analysis

This section explains the method used to analyse the results of the interviews. The criteria for determining the relative strengths of the answers are defined and the method for linking the empirical and the theoretical investigations is illustrated.

2.4.1 Survey Analysis

Having carried out the interviews and documented the results it becomes possible to analyse these results. For some of the questions where a definitive answer is given, for example question three, the answer can be easily classified and analysed. In other questions, where variations in different company practices exist, the analysis is more complex. In such questions we look for trends or preferred tendencies in the companies answers. When the answers given are similar these similarities are noted and their degree of significance is based on their rate of occurrence. If a similar answer is given by four or more companies (>50%) then we deem this to be a general finding and see such a finding as having significant value in terms of observations and recommendations on the contract winning process. In questions where answers are similar in more than 50% of companies the findings are seen as more significant and this significance increases accordingly up to 100%. On the other-hand where answers are similar in less than 50% of companies the findings are seen as less significant and the level of significance decreases accordingly.

2.4.2 Theoretical Link

Having analysed the results of the empirical study the findings are compared and contrasted with the theoretical study. This seeks to investigate the correlation that exists between both. This link forms the basis for the discussion that takes place in chapter five.

2.5 Summary

Research contributes significantly to future activities and is important because it facilitates the development and improvement of existing ideas. In order for there to be substance and quality behind research it is important that it is conducted in a structured and methodical manner. In this thesis the methodology used comprises of a theoretical study, where state of the art research in the subject area is presented and analysed, and an empirical study where a survey of small development companies was carried out. The survey was conducted through interviews and a designed questionnaire. The recommendations are derived from an examination and analysis of both the theoretical and empirical studies.
This chapter presents the contract winning process and its associated activities and attributes from a theoretical perspective. This representation has been primarily achieved through a literature review. The chapter begins by defining the common terms that are used throughout the thesis. This is necessary in order to avoid confusion over their use and understanding. Next, the contract and its relevant characteristics are outlined. This is followed by a review of contract management tools. The contracting process is central to this chapter and a number of contracting processes are analysed and explained. The management roles and responsibilities in the contracting process are next outlined before the follow-up process and its important characteristics are highlighted.

3.1 Definitions

During the evolution of this thesis it was established that many of the notations used are open to interpretation. Therefore, in order to fully understand the research carried out it is important to make clear definitions of these expressions. Following are the definitions of these commonly used notations.

3.1.1 Process

A rather general process definition given by Sommerville [Sommerville, 1995], a well-known author within the field of Software Engineering, is used throughout this thesis work. He defines the process as,

“\textit{a set of activities and associated results which produce a product}”.

This definition along with the definition provided by ISO/IEC,

“\textit{a set of interrelated activities, which transforms inputs into outputs}” [ISO/IEC 12207:1995]
have been chosen as the definition of a process used in this study. This is because they are simple and unambiguous and correlate well with the authors’ definition and experience of a process. Whenever the notation formal process is mentioned in the thesis, we have defined it as a documented process widely used in the organisation.

3.1.2 Project

A project is based on a number of factors that together defines it. In this thesis, when the word project is used, it is also applicable to domains outside of the software engineering field and is therefore used as a general notation. The points used to define a project are based on those presented by S. Eklund [Eklund, 2002:14] in his definition of a project as well as points given by J. Nicholas [Nicholas, 2001:04]. Both of the references are directed towards a general project definition. This is in accordance with our study where the software and non-software industries are studied. The points presented below conform to the authors’ opinions about the content and definition of a project.

1) a project is a onetime event [Eklund, 2002:14; Nicholas, 2001:04]
2) a project is created towards a specific goal and has a clear scope and focus [Eklund, 2002:14; Nicholas, 2001:04]
3) a project is limited by time and range [Eklund, 2002:14]
4) a project is constructed from a temporary organisation across the organisation [Eklund, 2002:14; Nicholas, 2001:04]
5) a project is dedicated to a limited set of resources [Eklund, 2002:14]
6) a project is planned according to time, resources and costs [Eklund, 2002:14]
7) a project is controlled by a process [Nicholas, 2001:04]
8) a project is in contact with unfamiliar areas such as new technology and therefore is influenced to some extent by risk and uncertainty. [Nicholas, 2001:04]

3.1.3 Contract

The definition of contract has been chosen from the ISO/IEC standard:

“A binding agreement between two parties, especially enforceable by law, or a similar internal agreement wholly within the organisation, for the supply of software service or for the supply, development, production, operation, or maintenance of a software product.” [ISO/IEC 12207:1995]

This definition has been chosen for its full coverage and applicability to this study.

Whenever the contract winning process is mentioned in the thesis it has been defined, by the authors, as the process involving all the activities from the initial contact with the customer until the final follow-up of the customer and contract.

3.1.4 Customer

This is the party with whom the contractor makes a contractual agreement. The definition used throughout this thesis is from the ISO/IEC standard:
“An organisation that acquires or procures a system, software product or software service from a customer (supplier).” [ISO/IEC 12207:1995]

3.1.5 Contractor

The contractor or supplier is defined as:

“The organisation that enters into a contract with the acquirer (customer) for the supply of a system, software product or software service under the terms of the contract.” [ISO/IEC 12207:1995]

3.1.6 Tools

A general definition of a tool is taken as:

“An application program, often one that creates, manipulates, modifies, or analyses other programs.” [Dictionary.com]

3.1.7 Follow-up

The notation follow-up is frequently used in this study, a definition has therefore been outlined in order to unify the meaning of the word follow-up.

A dictionary online explained follow-up as: [Dictionary.com]

1) "The act or an instance of following up, as to further an end or review new developments” and

2) "An article or a report giving further information on a previously reported item of news."

Both of these provide a description of the terminology that conforms with the authors’ views of the notation follow-up.

Follow-up, as a stage in the contract winning process, is initiated as soon as the contract has been signed. The follow-up is therefore initiated at the same time as the execution of the contract and terminated after the final evaluation of the contract execution.

3.2 The Contract

The contract is an important artefact and in this section of the thesis its important features are outlined. This includes a description of the various different types of contracts that exist, the design features of a typical contract and the motivational factors involved in using a contract.
3.2.1 Historical Evolvement

The birth of contracts goes back to ancient times. According to Byrne-Halczyn [Byrne-Halczyn, 2002] the first dated documentation of contract writing goes back to Mesopotamia 2250 BC. From this time documentation has been found indicating that regulations and agreements were actively used. During 2250 BC the legal system and their contracts mostly concerned the trade of merchandise. [Byrne-Halczyn, 2002] The regulations were fairly simple and mainly consisted of directions rather than regulations. An example is the event where merchandise was traded for money. The deals were regulated so that all necessary steps were properly performed and so that a proper receipt was given to the customer corresponding to the amount of money that were spent.

The evolution continues throughout history with the evolvement of more and more advanced systems for contracting laws. It has evolved from the Mesopotamian to the 1780 BC Hammurabi retaliation system, eye-for-an-eye, to Moses’ Ten Commandments, to the advanced contracts we have in modern time. [Byrne-Halczyn, 2002]

The contracts of today started with a heavy evolution in the 1980's where it is said that the good common sense contracts started to be used. [Byrne-Halczyn, 2002] The companies started to see the practical use and importance of the contracts and began to train their personnel in the area of contracting. During this time, databases also evolved and were used to store past contracts in order to avoid reformulation of similar contracts. [Byrne-Halczyn, 2002] This especially applied to the legal terms and conditions that in most cases did not differ between the contracts. Although many variations have been used over the years of contracting, the main point still remains; a contract is a binding agreement. [Byrne-Halczyn, 2002]

Today contracts are said to make up as much as 80% of all business transactions. [Zant/Schlosberg, 2002] This fact along with the evolution into very complex and legally complicated documents makes it an important area for any company to manage in an efficient way. [Zant/Schlosberg, 2002] Many contracts have now evolved to the point when they require an expert in contract formulation to be able to interpret their content and avoid being bound by a dangerous contract. Increased and tougher specifications are now being formulated in the contracts in order to write off all potentially dangerous factors for the companies. Virginia Sutcliffe [Sutcliffe, 1999] states that it sometimes can be more dangerous to have a contract, not fully understood, than it is to have no contract at all.

Many businesses negotiate and undertake potentially dangerous contracts. This occurs because very few have a system for effectively and safely managing them. [Zant/Schlosberg, 2002]

3.2.2 Project and Contract Necessity

In an ideal world there would most likely be no need for written contracts. In such a situation there would be perfect trust between the contractor and the customer and they both would fully understand the content of the contract that they under-take.
However, in the vast majority of business dealings this is not the case and therefore the necessity for written contracts becomes evident. There are two parties involved in the contract process, the contractor and the customer, and each have their own reasons for wanting to have a formal written contract. The following two sections look at this issue from the perspective of both the contractor and the customer. The reasons identified in both are not mutually exclusive to one or the other party and it may be that some of the reasons presented are relevant to both the contractor and the customer. For example, quality is presented as a reason for the customer to undertake a contract but this could also be a reason for a contractor to engage in the contract.

### 3.2.2.1 Contractors Perspective

As stated, the underlying foundations for undertaking a contract consist of a number of factors. In this section some of the reasons why a contractor undertakes a contractual agreement are identified. Sometimes the obvious reason of making a profit as the most important factor is reduced and other reasons become important. This is especially true when during negotiations a longer perspective is considered. [Unt, 1995:125] The reasons that are presented are based on the authors experiences as well as references to literature.

- Profit
- Goodwill
- Reputation
- Market-share

**Profit**
The term profit and profitability have undergone an evolution when it comes to how companies relate to profit. Before this evolution the term profit was seen in a shorter perspective and as a clear measurement of how prosperous a company was. [Andersson, 1985:36] The main emphasis for a company was to make as large a profit as possible. However, this has changed. Nowadays, the goal is more directed towards earning a profit in order to ensure the prosperity of the company in the future and ensuring that the employees can remain in the company. [Andersson, 1985:36] Therefore, the measurement of profit and the success of a company have gone from a shorter to a longer perspective. Now it is more directed towards remaining as a competitive force in the market in the future than to make as high a profit as possible in the shorter term.

When it comes to reasons for undertaking a contract and profit this is also related to a longer perspective where the future relations and communications with the customer might be more important than the profitability of the actual contract. Therefore, the profit might even be forsaken in favour of goodwill, reputation and future relations with the customer. Additionally, different customers provide less profit than others do. [Shapiro et. al, 1991] This further adds to the factor for future relations and collaborations as opposed to short-term profit. This must be related to the gap for solidity already in the company. A company that is new in the market might not have the solidity to forsake the profit and thereby also find it more difficult to compete against larger companies bids for the same contract.
Goodwill & Reputation
Since the profit has changed into a longer perspective it has also become more closely related to goodwill and reputation. In the process of building up a strong market position these factors have therefore increased in importance.

Goodwill can be considered as a favour service. This service works, for example, in the following way:

“If I help you today, tomorrow you might help me with something else.”
[Davenport/Prusak, 1998]

Davenport and Prusak, active in the knowledge management area and the authors of “Working Knowledge”, use the factors of reputation and goodwill in their research concerning knowledge markets. The similarities are apparent and are easy to draw parallels to, since it involves the same problems and solutions in knowledge markets as in business relations. The problem with favours is that they must reach a balance between the deliverer (contractor) and the receiver (customer). [Davenport/Prusak, 1998] If this is not apparent the reason for one party to do a favour is greatly reduced since the other party has very little to pay back with in the future. Sharing and helping each other is not something that is only beneficial because a company has little time and interest in performing actions that are not beneficial to their overall company strategy.

This is where reputation becomes important. In the event of an uneven balance between the deliverer and receiver of a favour, reputation may be a way to bridge this gap. When a favour or goodwill is summoned, the reputation of the deliverer is likely to be increased and could therefore act as a form of payment. [Davenport/Prusak, 1998] This can even be a reason why a goodwill favour is performed, even if it does not directly address the overall strategy and in the short term gives no benefits. Studies, as discussed by Brainov and Sandholm, show that reputation and trust are identified as capital assets and for that reason can be treated as a resource. The study shows that companies invest financial capital in reputation on the market as well as sacrificing reputation in favour of financial capital. [Brainov/Sandholm, 1999]

Trust
When developing business relations trust is an important factor.

“Trust is a way to deal with the uncertainties of the future”.
[Brainov/Sandholm, 1999]

With the use of trust as a factor in negotiations and contracts, costs for monitoring the other side of the contract are reduced by the amount of trust involved between the parties. According to R Dobing, [Dobing, 1993:32] all parties involved in transactions need to start by building up a mutual trust in order to develop their relationship. He further argues that this development can take two different forms. Firstly, the long-term incremental process and secondly, the factor-based process which deals with the subjective view from the opposing relation.
The incremental process is gradually increasing over time as the relations between the customer and the contractor evolve. The process can also be speeded up by the amount of risks that are involved. [Dobing, 1993:31] If both parties manage the increased risk taking then trust evolves accordingly. However, it can take a considerable amount of time to build up trust but it can also rapidly decrease if one party acts in an unpredictable manner or fails to fulfil the terms of the signed agreement. This is a potential danger and needs to be taken into account when a contract is being signed.

The factor-based trust building deals with the subjective opinion that exists between two parties. The factors involved are those that are subjective in nature. These factors include such aspects as the personal relations to the customer in terms of similarities in background, education, mutual interests etc. [Dobing, 1993:33] This is also supported by Marsh who considers it an important factor when constructing the negotiation team. [Marsh, 2001]

During the first contact it is therefore important to act competently and try to give a positive impression. This creates a good basis for the longer incremental trust process as well as simplifying the factor-based trust building process of relating to each other. This is also something that is closely related to building reputation. [Brainov/Sandholm, 1999]

**Market-Share**

In a longer perspective it is important for a company to keep their place in the market and preferably extend it. This perspective involves the use of all of the factors such as trust, reputation, goodwill and profitability as discussed in the previous sections. In order to do this it might be the case that profit, as discussed above, is forsaken in favour of outmanoeuvring the competing forces in the market. This can also be a self-awarding mechanism, because when a company gains more market-shares they naturally become a stronger name in the market and subsequently may have more power in future negotiations. [Johnson/Scholes, 1999:221] Being a strong actor in the market also simplifies the building of trust with the customer since it enhances the reputation of a company. This is something that can be considered a subtask, as besides getting a certain amount of profit for the company the reputation in the market place is also maintained. [Andersson, 1985:36] The profit when issuing a contract is thereby seen in a longer perspective rather than maximising short-term profit.

One way to maintain the company status in the market, according to the authors’ experience, is to enter new markets or areas for the product. However, it is equally important to maintain and keep the existing customer. The cost ratio for keeping an existing customer as opposed to initiate relations with a new one is said to be 1:3. [Brown, 2000:xii] One possible way to achieve retention of the customers is to issue a longer-term contract. By this approach the customer is bound to the company for a set period of time, thereby ensuring a steady income during that time for the company. Contractors may even encourage customers to sign longer-term contracts by awarding them discounts or additional services.
3.2.2.2 Customers Perspective

There are several reasons why a customer decides to engage in a contract with a contractor. In his work Band [Band, 1994] proposes a number of criteria that are involved in a customer deciding to undertake a contract. Following are a selection of these:

- Quality
- Service
- Cost & Time

Quality

Perhaps one of the most important deciding factors for customers when they enter into a contract is the quality of the product or service they will purchase. The contractor awareness of quality in the more mature industries, such as manufacturing and construction, has existed for some time. [Klefsjö/Bergman, 2003]. The concept of quality in the software industry is less mature since the industry as a whole is relatively new. The quality principles that apply in the software industry have evolved from the more mature industries. This fact is illustrated by the adaptation of the ISO TickIT quality standard [TickIT, 2000] for software companies from the ISO 9000 quality standards. The basis of the latter lay in manufacturing type industries. In their work Klefsjö and Bergman outlines a number of quality dimensions of both goods and services. [Klefsjö/Bergman, 2003]. Consideration of these dimensions can help the customer when undertaking a contract. These quality dimensions are illustrated in tables 3.1 and 3.2.

<table>
<thead>
<tr>
<th>Quality Dimension</th>
<th>Goods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reliability</td>
<td>Regularity and seriousness of problem occurrence.</td>
</tr>
<tr>
<td>Performance</td>
<td>Speed, capacity and consistency of delivery.</td>
</tr>
<tr>
<td>Maintainability</td>
<td>Ease of locating and repairing faults.</td>
</tr>
<tr>
<td>Appearance</td>
<td>The design and aesthetics of the goods.</td>
</tr>
<tr>
<td>Flawlessness</td>
<td>The product shall be error free at purchase.</td>
</tr>
</tbody>
</table>

Table 3.1: Quality Dimensions of Goods. [Klefsjö/Bergman, 2003]

<table>
<thead>
<tr>
<th>Quality Dimension</th>
<th>Services</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reliability</td>
<td>Consistency of performance and delivering correctly.</td>
</tr>
<tr>
<td>Credibility</td>
<td>Trust of the contractor.</td>
</tr>
<tr>
<td>Access</td>
<td>Ease of access when needed.</td>
</tr>
<tr>
<td>Communication</td>
<td>The willingness and ability to communicate effectively</td>
</tr>
<tr>
<td>Responsiveness</td>
<td>Ability and speed to help and answer queries</td>
</tr>
<tr>
<td>Courtesy</td>
<td>The contractor's behaviour; goodwill and politeness.</td>
</tr>
</tbody>
</table>

Table 3.2: Quality Dimensions of Services. [Klefsjö/Bergman, 2003]

Deutsch and Willis [Deutsch and Willis, 1988:14] also point to quality dimensions. They use the term “ilities” of software quality to describe software quality factors that shall be considered by the customer. They mention fifteen such factors and a
number of these correlates with the dimensions outlined by Klefsvö and Bergman. For example, reliability is explained by Deutsch and Willis as the regularity of software failure while maintainability asks the question how easy the software is to repair.

**Service**

The service provided to the customer by the contractor is also an important consideration when making a decision on whether to enter into a contract. In their article Hunt and Jones [Hunt/Jones, 1998] point to the fact that customers increasingly seek competitive advantage as well as high quality products and services as fundamental requirements for participation in a contract. The importance of service has been recognised by the customer and is not seen as an extra cost but rather a standard part of the overall product. This view is further backed up by Page [Page, 1996] when he states that,

*‘Product and service quality now serve as a foundation to a working agreement, not as an extra service that adds cost’.*

Clearly there are certain expectations on the customers part as regards service and in many cases they will either decline a contract offer or seek assurances about the service conditions as stated by the contractor. Either way, the responsibility of providing the expected customer service lies with the contractor and they should endeavour to provide this. Failure to do so may greatly reduce the quantity of their contracts.

A further analysis of service leads to a discussion on the relationship that exists between the contractor and the customer after the purchase of the product or service. Levitt [Levitt, 1991] proposes that the relationship intensifies after the purchase and influences the future transactions of the customer. Thus, in order to positively affect the customer the contractor shall endeavour to provide a high quality service. The importance of a good relationship with the customer is also highlighted by Brown [Brown 2000:xx] as part of a Customer Relationship Management strategy. This too influences the service provided by the contractor and affects the customers decision on whether to enter into a contract or not.

**Cost & Time**

The cost of a product or service being sold by a contractor is a factor that the customer uses to decide whether they will purchase the item or not. Price and cost has always been and will continue to be a motivation for purchase. In literature much attention is paid to budgets and project costing and this illustrates the significance of product and service cost. [Nicholas, 2001; Lock, 2000]

Additionally, the length of time it will take the contractor to deliver the product or service is another factor for customers to consider. The length of time is largely determined by the size and scope of the project. The amount of resources at the contractors disposal also influences the length of time it can take to deliver the product and / or service. [Nicholas, 2001]. Of course the customer cannot exclusively consider the time it takes for a contractor to deliver a product. If they did this then the cost and quality of the product would be compromised. Clearly then, it is
necessary to balance all the factors mentioned above in order to acquire a product that best fits the needs and capabilities of the customer.

3.2.3 Contract Types

According to Nicholas [Nicholas, 2001:564-566] there are three types of contracts, namely; fixed-price, cost-plus and incentive. However, in the Encyclopedia of Software Engineering and other sources two types are outlined, they are fixed-price and cost-reimbursable [Wiley, 2004; Lock, 2000:142]. The cost-reimbursable type contract as mentioned by Wiley corresponds to the cost-plus type of contract that Nicholas refers to. In the Encyclopedia of Software Engineering the incentive type contract is discussed as part of both the fixed-price and the cost-reimbursable type contracts. Clearly then it contains features of both fixed-price and cost-plus/cost-reimbursable and its application in both type of contracts will be outlined. It is important to note that the type of contract that is used by a company depends largely on the type of project that is under discussion.

3.2.3.1 Fixed-Price

The Firm Fixed-Price (FFP) contract is the most basic form of the fixed-price contract. This is when the price paid by the customer for the project is agreed and fixed at the out-set. When the product or service is delivered then the customer pays this agreed price. [Wiley, 2004]

The Fixed-Price with Economic Price Adjustment (FPEPA) is a type of fixed-price contract but it includes a clause that protects the customer and the contractor from unpredictable economic fluctuations in material and labour costs. [Wiley, 2004]

The Fixed-Price Redetermination (FPR) is a fixed-price contract that facilitates the movement of unpredictable risks from the contractor to the customer after the initial price has been negotiated. This type of contract may be used when it is difficult to make accurate cost estimations due to incomplete or unsure product requirements. The contract price may be adjusted based upon factors agreed in the contract negotiation. [Wiley, 2004; Nicholas, 2001:564]

The fixed-price contract can be particularly beneficial to the customer because they can put the project out to tender, receive bids and decide on the best offer. However, there are dangers for the company (contractor) because there is a chance that they can over-estimate the cost of the project and in so doing loose out to a competitor. Alternatively, they might under-estimate the cost and possibly face the risk of running the project with little or no profit. Clearly there are a number of considerations when working with a fixed-price contract. [Nicholas, 2001:564]

3.2.3.2 Cost-Plus/Cost Reimbursable Contracts

The Cost and Cost Sharing (CS) contracts are the first type of contracts in this category. In a cost contract it is only the contractor’s allowable costs that are
reimbursed. In the cost-sharing contract the contractor and the customer make an agreement on the how costs will be shared. These type of contracts are most commonly used for joint developments where both the contractor and the customer share risk and at the end of the contract share profits or losses. [Wiley, 2004]

The **Cost Plus Fixed Fee** (CPFF) type contract is where the contractor’s allowable costs are reimbursed and also a fixed fee is paid by the customer. Such contracts are usually used in research and development where the costs are difficult to predict and there is a desire to share risk. [Wiley, 2004; Nicholas, 2001:565]

The **Cost Plus Award Fee** (CPAF) is based upon performance criteria that are difficult to quantify, for example, the product quality. Along with the base fee paid to the contractor awards amounts are also given and are based on the subjective evaluation of the specified performance criteria. [Wiley, 2004]

According to Nicholas [Nicholas, 2001:565] in such contracts the customer pays the costs incurred during the project and for the services of the contractor. The costs incurred will escalate as the project time increases and this is a risk that the customer must be willing to take. Depending on the type of contract then the risk of these increased costs can vary. For example, in a building project that requires a regular supply of oil there is a large dependency on having these supplies available. If an oil crisis develops and oil supplies are scarce then this will negatively affect the customer as the project may stop completely or the costs to supply the oil will increase greatly. These are risks that the customer may encounter and therefore they must take decisions on what to do in such situations.

### 3.2.3.3 Incentive Contracts

This contract contains features of the Fixed-Price and Cost-Plus type contracts. Costs are also covered by the customer but the amount is determined by a cost sharing ratio. If the expected cost of the contract is exceeded then the contractor will have to pay the amount specified in the cost-sharing ratio. This will be a percentage of the exceeded amount. If however the expected cost is not reached then the contractor will make a saving corresponding to the amount agreed in the cost saving ratio. This scheme encourages the contractor to keep costs as low as possible and this has a clear benefit for the customer. Two variations of incentive type contracts are the fixed-price incentive and the cost plus incentive fee contracts. [Nicholas, 2001:566-567; Wiley, 2004]

The **Fixed-Price Incentive** (FPI) contract is a fixed-price contract in which the price paid by the customer can vary. This acts as a motivation for the contractor as increased performance can lead to more profits. The incentive aims to increase productivity and to reduce costs. [Nicholas, 2001:566-567; Wiley, 2004]

The **Cost Plus Incentive Fee** (CPIF) is similar to the fixed-price incentive contract as it uses fees to motivate the contractor to control costs. During negotiations a target cost, target fee, a ceiling price and an adjustment formula are set. Based on these values maximum and minimum fees are determined and are in turn compared to performance goals. [Nicholas, 2001:566-567; Wiley, 2004]
3.2.3.4 Contract Types: Industry Preferences

Clearly there are a number of different contract types that can be used by contractors and customers. Empirical studies have been carried out in different industries to ascertain if there are trends in the choice of contract types. According to Bajari and Tadelis [Bajari/Tadelis, 2001] there is quite an amount of standardisation in the contracts used in the construction industry in the United States. Indeed, standard contracts have been drafted by the American Institute of Architects (AIA) and the Associated General Contractors (AGC) which are commonly used by companies in that industry. The most commonly used contracts in the construction industry are cost-plus and fixed-price. [Bartholomew, 1998; Clough/Sears, 1994] Cost-plus contracts are normally negotiated between the customer and the contractor while the fixed-price contracts are usually won through submission and acceptance of an offer. This is similar to bidding on a tender put out by a customer. Cost-plus contracts may sometimes contain cost incentives, though this is not very frequent. Such contracts can reward or penalise contractors for having project costs below or above pre-defined cost levels. In their research Ashley and Workman [Ashley/Workman, 1986] found that approximately 12% of companies used contracts with cost incentives. Of those who used cost incentives the majority were based on time to complete a project rather than on the costs involved.

Research has also been carried out in relation to the types of contracts used in the software industry. Banerjee and Duflo [Banerjee/Duflo, 2000] studied this topic in the Indian software industry. They conclude that there is a tendency for older companies to be involved in cost-plus contracts compared to their younger counterparts. They see maturity as being a measure of reputation and believe that a contractor reputation influences the type of contract they negotiate. They also observe that companies that are older and those that are ISO-certified undertake larger and more complicated projects compared to younger and non-ISO companies. Bajari and Tadelis [Bajari/Tadelis, 2001] state that software projects that are small and not very complex are most likely to use a fixed-price contract. They also reason that young and/or small companies tend to compete more aggressively for contracts in order to prove themselves in the market place. In cases where projects are large and complex the design is often not fully specified and this will result in a cost-plus type contract.

3.2.4 Contract Design

In the section about the historical evolution of contracts (3.2.1) it is stated that contracts have evolved to the point when it is potentially more dangerous to sign a contract than not to have one at all. This illustrates the complexity that contract formulation potentially contains. With this in mind it is useful to outline the main elements of a contract. These should help companies to formulate contracts in a way that is suitable to their business.
Sutcliffe [Sutcliffe, 1999] states that a contract should contain at least the following elements:

- **Limits of liability**: This details the responsibilities of the contractor. It is important for the contractor to clearly outline the areas and situations that they are liable for. This means that contractors must differentiate between their responsibilities and those of the customer. This is done in order to avoid potential conflicts where the customer may try to apportion responsibility to the contractor for errors in the product/contract.

- **Scope of work**: This clearly outlines what the contractor shall do. This may include design, development, installation, support and maintenance of a product. It is important to outline all the relevant details in relation to what is and is not included in the work scope. This can avoid future conflicts regarding the inclusion or otherwise of certain features in the product.

- **Time frame**: This shall clearly state when the contract/project shall begin and conclude. It may also outline intermediate time frames, such as preliminary product releases. By stating the time frames involved it allows the contractor to plan the project and helps the customer to prepare for the products roll-out.

- **Payment schedule**: This shall document the type of contract that the contractor and the customer agree upon. It shall also include information on when payments shall be made and how much these payments shall be.

The first two points mentioned above are also outlined by Byrne-Halczyn [Byrne-Halczyn, 2002] when referring to the terms and conditions of the contract acceptance. Here it also states that in order for a contract to be valid it must be communicated and unconditional.

According to Nicholas [Nicholas, 2001] time scheduling and cost estimation are part of an overall project plan. Therefore, it is necessary that these elements are also in the contract agreement.

### 3.2.5 Motivation for the use of a Contract

When it comes to the motivation why a contract between two parties should be issued several important factors are addressed. First of all, as stated by V. Sutcliffe it is an artefact acting as an agreement, preferably signed, that constitutes a mutual understanding of the undertaken task. [Sutcliffe, 1999] The contract is intended to reduce the confusion that might be invoked between two parties in terms of the responsibilities and the project scope of work. Kontio et al. also discusses the contract as an “manifestation of commitments”. [Kontio et al., 1998:498] The contract is thereby used as a legal agreement outlining the intention to collaborate as well as the responsibilities assigned to each party in the contract. Since the contract is a legal agreement it can also be used to solve a potential conflict of interest. As Zant and Schlosberg state in their work, the contracts are there to ensure security for the future as well as to provide for the future market value with contracting strategic
business partners. [Zant/Schlosberg, 2002:88] Even the most prominent and market leading companies do not have all their needed knowledge within the organisation. Initiating partnering and networking in order to fill these gaps is thus important. [Warsta/Seppanen, 2000:240] Contracts are important in these aspects since it provides legal security and clearly manifests the intention of the collaboration.

However, this brings us to a significant problem of how to write a contract, making sure that every party understands the contract in an unambiguous way. V. Sutcliffe, claims that it sometimes can be worse to have a contract than not to have one when undertaking a project. [Sutcliffe, 1999] According to her, contracts have evolved to the point where they contain so much sophisticated language that it is hard to interpret and understand them fully. If a contract lacks information it may be more of a burden than a documented freedom with responsibilities and privileges. The problem with contracts being hard to understand is also supported by C. Zant and C. Schlosberg. [Zant/Schlosberg, 2002] They claim that contracts have become extremely complex and often contain a very complicated legal language that define a large number of terms and conditions about the description of the agreement. Consequently, contracts have come to the point where they are difficult to understand. Therefore it has become very important that personnel such as the company CEO and / or Project Manager are able to write and interpret contracts.

### 3.3 Contract Management Tools

There appears to be a growing realisation that contract management tools are becoming used more and more in a multitude of today’s industries. This fact is acknowledged by Bray [Bray, 2004] who also points to two reasons to explain why this is happening. First of all, there is a move towards increasingly complex contracts as customers and contractors enter into longer and more detailed agreements. Secondly, the contract management technology has improved and now software is providing its users with more options. In their research Morrison and Dunbrack [Morrison/Dunbrack, 1994] also observe that suppliers of contract management solutions are experiencing a large growth. According to the same authors contract management solutions provide functionality such as: [Morrison/Dunbrack, 1994]

- Maintenance of a contract database containing terms and conditions
- Calculation of expected reimbursements and contractual allowances
- Contracts modelling
- Cost reporting
- Auditing of bills and payments

Other sources, [Informationweek.com, 2002] cite contract management tools as helpful in the following activities:

- Creation of contracts from orders and orders from contracts
- Analysis of contracts won and lost
- Identification of top customers
- Analysis of contract renewals
According to Bray the need for a contract management system is driven by the fact that standard office software tools are not designed for sharing of information important to contract agreements. One user is quoted as saying the such tools are unable to ‘measure operational and financial performance against agreed upon contracts.” [Bray, 2004]

One of the main advantages of contract management software is that it can track all of the agreements in an organisation. These include confidentiality agreements, collaboration information and advertisement expenditure. The software can also allow all resources involved in the project access to up to date versions of contracts as well as highlighting changes between versions. A good contract management system can also assign roles and responsibilities throughout the organisation, notifying people whenever the part of the contract relevant to their work needs to be looked at or modified. [Bray, 2004]

3.4 Process Thinking & The Contracting Process

This section of the report focuses on process thinking and presents three contracting process models that are present in literature. The emphasis that quality standards and software process improvement frameworks place on contracting are also outlined. In addition, the benefits of process thinking are highlighted.

3.4.1 Motivation For Using a Formal Process

The definition of a process has been outlined in section 3.1.1. But why should companies use processes? Zahran [Zahran, 1998] points out that task oriented thinking has failed in the business world of today. This is mainly because of the speed with which change takes place. There are other supporters of process thinking. Harrington [Harrington, 1991] points to the fact that organisations and their managers should begin to focus on the processes that control customer interfaces and stop focussing on organisational structure. Hammer and Champy [Hammer/Champy, 1993] discuss the fact that quite a few organisations focus on tasks, jobs and structures but not on processes. They see this as a weakness but also believe that there is a move towards process thinking. Watts Humphreys, one of the pioneers of process management principles in software engineering, has emphasised the importance of processes in many of his publications. [Humphrey, 1989] Indeed his involvement in the development of the Software Capability Maturity Model illustrates the importance he places on process thinking in software development. [SEI, 2004]

3.4.1.1 Three Aspects of the Process

Zahran states that a process has three aspects. [Zahran, 1998:6] First of all the process must be defined. This is normally done in the form of a document, which specifies the contents of the process. These contents may be activities, procedures, methods or any other notation used by an organisation to describe their work. The second aspect is process learning. This is the act of transferring knowledge about the
process to the people who shall perform the actions of the process. The third aspect is 
the process result. This shows the products or services produced as a result of the 
execution of the process activities.

Clearly it is important to pay attention to all three aspects. In so doing it enables the 
process to be effective and worthwhile. In order to achieve this the process should be 
internalised and institutionalised. [Zahran, 1998:7; Mathiassen et al., 2002: 33]

Internalisation occurs when a process is performed naturally by a person. This 
implies that a person can perform a task by using their internal or tacit knowledge. 
An example could be the process used by a person to go and watch a movie. They go 
through a sequence of activities, such as driving to the movie theatre, buying their 
tickets, watching the movie and then driving home. Thus, internalisation is 
concerned with processes being carried out on an individual level. [Zahran, 1998:7; 
Davenport/Prusak, 2000]

Institutionalisation is concerned with establishing processes from an organisational 
perspective. Typically, processes in organisations involve a group of people and by 
institutionalising processes it makes it possible for people to effectively carry out 
their tasks and in the process work towards a common organisational goal. [Zahran, 
1998:7; Mathiassen et al., 2002: 33] This point is further illustrated by Paulk et al.’s 
[Paulk, 1994] definition of institutionalisation as;

‘The building of an infrastructure and culture that supports methods, practices, and 
procedures so that they are the ongoing way of doing business, even after those who 
originally defined them are gone.”

In order for institutionalisation to occur it is necessary that it is supported by top 
management. This means that the necessary resources, in terms of people and 
financial support, are provided. An environment of continuous process improvement 
shall also be fostered within the organisation. [Zahran, 1998]

3.4.1.2 Benefits of Using a Process

The benefits of using process thinking have been well documented. The benefits may 
be seen by the organisation as a whole and also by the individuals who are active in 
carrying out the documented processes. Zahran points to this fact when discussing 
the alignment between individuals actions and the common group goals. [Zahran, 
1998] Also important is the fact that process thinking allows repetition of previous 
success leading to consistency and ultimately better quality products. [Sommerville, 
2001:543]

From a business perspective process focus helps management to identify specific 
areas for improvement and investment. Also, according to Zahran the focus on 
process thinking plays a role in better communication and interactions amongst team 
members. [Zahran, 1998]. This fact is also noted by Sommerville, in what he refers 
to as “people quality”. [Sommerville, 2001:561]
3.4.2 Contracts and Software Process Improvement Frameworks

The importance of process thinking and its benefits have just been outlined. In the following sub-section three software process improvement frameworks; ISO TickIT, CMMI and SPICE, are analysed from a contracting perspective. The guidelines proposed by these frameworks are examined and this further highlights the importance of process thinking in the contracting activity.

3.4.2.1 ISO TickIT Guide

The need for process focus is again outlined in the ISO TickIT Guide [TickIT, 2001] when it states that when documenting the quality management system good practices involve documenting processes and procedures to the appropriate level of detail.

As regards ISO standards and their relation to contracting there are some instances in these standards that are relevant. The TickIT Guide [TickIT, 2001:E10] discusses project management related objectives in terms of how the way a project is managed can affect customers. The key areas mentioned here are project planning, cost, time, communication and issue resolution. These are areas that should be considered by both contractors and customers in relation to contracts. Service Level Agreements (SLA’s) are often part of negotiated contracts in both software and non-software companies. According to the TickIT Guide these SLA’s are normally used to define “the nature and quality of the services to be provided.” In order to ensure that all SLA commitments are met the service provider should set quality objectives. [TickIT, 2001]

The supply process area of the TickIT Guide [TickIT, 2001:F6] covers two areas that are important in relation to contracts. First of all it gives guidelines on the preparation of a proposal for software systems, products and services. The recommendations are that companies should have procedures in place for preparation, review, approval and issue of proposals and contracts in an efficient way. This involves estimation of costs and resources, both physical and personnel, needed to achieve these results. The other area covers contract negotiation, agreement and maintenance. The recommendations include provision of guidelines for negotiation and agreement of contract terms and conditions, including costs and time scale. It is also advisable to maintain and store records of contract requirements and any changes that take place in these requirements. [TickIT, 2001:F6].

The TickIT Guide also provides guidelines for the provision of change in the contents of contracts. [TickIT, 2001:E23] As the changes can either add or reduce the contract value it is important that the change process includes information on price and time estimates.

3.4.2.2 CMMI

The Capability Maturity Model Integrated framework provides some guidelines in relation to contracts and their contents. [CMMI, 2001:141] In the section Supplier Agreement Management in Maturity Level 2, directives are given on the
documentation of the supplier agreement. This agreement constitutes a contract between two parties, namely the customer and the contractor. It is recommended that the agreement includes a statement of work, a specification, terms and conditions, list of deliverables, a schedule, a budget and a defined acceptance process. In order to ensure that these artefacts are present a set of activities are recommended. These activities include, though are not limited to, identification of personnel from the contractor and customer who are responsible for and who are authorised to make changes to the contract. Connected to this is the identification of how changes in requirements and contract details are determined, communicated and addressed. Once the details of the contract have been agreed upon then the project’s plans and commitments can be revised and changed to reflect the contract agreement. [CMMI, 2002]

3.4.2.3 SPICE

SPICE is an international project aimed at developing and supporting a standard for software process improvement assessment. [SPICE, 2004] In its section on customer-supplier it lists “Establish Contract” as one of the processes belonging to this category. The purpose of this process is the development of a contract “which clearly expresses the expectations, responsibilities, and liabilities of both the supplier and the customer.” [SPICE, 2004]

In this case the supplier has the same meaning as the contractor as outlined in the definitions section of this report. The two most relevant sections of the process are CUS.2.1 - Review Before Contract Finalization and CUS.2.2 - Negotiate Contract. [SPICE, 2004]. The most important details of both are outlined below:

CUS.2.1: Review Before Contract Finalization
The review includes the following: [SPICE, 2004]

- Scope of contract and requirements
- Possible contingencies or risks
- Alignment of the contract with the organisation’s strategic business plan
- Protection of proprietary information
- Capability to meet contractual requirements
- Responsibility for sub-contracted work.

CUS.2.2: Negotiate Contract
The contract shall include some of the following: [SPICE, 2004]

- Schedules for product delivery
- Terms of payment
- Customer’s acceptance criteria
- Procedures for handling:
  - changes in customer requirements
  - customer requests for process/product quality monitoring
  - problems detected by the customer
- Standards and procedures to be used
The standard also discusses the provision of interfaces to both subcontractors and independent agents in relation to contracts.

3.4.3 Contract Process Models

The area of winning and negotiating contracts is quite complex and can cover a number of disciplines in a company. Indeed Warsta and Seppanen state that the contract process includes three disciplines: software development, law and business. [Warsta/Seppanen, 2000] The former is included because their paper includes a case study on a software development company. This could instead be replaced by industrial or medical development depending on the industry domain. According to Williamson a further element can also be considered to influence the contracting process. This element deals with organisational issues. [Williamson, 1985]

A number of different contracting models exist in literature. The following subsections introduces three such models, outlining the processes and methods used in their execution.

3.4.3.1 Conventional Contracting Phase Model

This model was developed by Granfors [Granfors, 1989] and is shown in Figure 3.1.

1. Intention Phase
2. Negotiation Phase
3. Performance Phase

Letter of Intent ------------------------x----------------------------Main Document

2. Negotiation Phase

Figure 3.1: Granfors Gradual Forming of Contract [Granfors, 1989]

As can be seen from figure 3.1 the contracting phase model is divided into three distinct stages.

Intention Phase: The initial phase sees the contractors and the customers make contact with a view towards doing business together. Both parties will look at their suitability to each other in terms of products, services, costs and other factors outlined in sections 3.2.2.1 and 3.2.2.2. This stage usually concludes with a letter of intent. [Granfors, 1989] According to Nystan-Haarala, this letter “usually contains contractual duties without an obligation to fulfil the contract.” [Nystan-Haarala, 1998]

Negotiation Phase: In this stage the contract details are discussed and both parties evaluate the others capability to meet the terms of the agreement. They may look at each others financial status to determine if the business relationship can be successful. Other areas of interest for both parties may be the competence and intellectual knowledge that exists in their respective companies. [Granfors, 1989] This stage ends with the main contract document. [Warsta/Seppanen, 2000]
Performance Stage: The contract is fulfilled during this stage. This means that all the agreed duties and responsibilities are acted upon by both parties. [Granfors, 1989]

Warsta and Seppanen point out that this framework can be seen as a rough description for the contracting process. [Warsta/Seppanen, 2000] In many cases contractors begin to work on the project before the final contract is written because they may not have time to wait for finalisation of the contract. In particular, during the Intention and Negotiation phase there is much exchange of view and ideas on what the contract shall contain. This process eventually should lead to a situation where an agreement is reached on the contract details. These shall be acceptable for both business and software development perspectives.

3.4.3.2 The Traditional Model

This model presented by Nystan-Haarala is based on the traditional German doctrine and is illustrated in Figure 3.2. [Nystan-Haarala, 1998]

![Figure 3.2: The Traditional Model for the Formation of Contracts through Negotiations. [Nystan-Haarala, 1998]](image)

In this model the contracting process is split into two parts:

**Unbinding:** In this part there may be a number of unbinding contracts (UB) and written memoranda (WM). Some issues may be agreed upon but some may not and thus are left as open items for discussion and negotiation. Preliminary contracts are formed based upon the agreed items. [Nystan-Haarala, 1998]

**Binding:** There are a number of important artefacts to consider in this part of the model. First of all, there is the binding preliminary contract, which according to Nystan-Haarala “contains liability to conclude the final contract.” [Nystan-Haarala, 1998] The final contract makes the parties involved liable to perform the contents of the contract.
3.4.3.3 The Tentative Model

Warsta and Seppanen propose a tentative model based on the breakdown of software markets as proposed by Hoch et al. [Hoch, 1999] In their research they classify software markets are into three groups:

A. Software for the mass-market
B. Enterprise solutions software
C. Professional software services.

Warsta and Seppanen’s model (Figure 3.3) takes both a customer and supplier perspective and is divided into four stages: [Warsta/Seppanen, 2000]

1. The customer or supplier selection phase
2. Contracting phase
3. Execution phase
4. Follow-up phase

Figure 3.3: Warsta and Seppanen’s Tentative Model [Warsta/Seppanen, 2000]

The Customer or Supplier Selection Phase: In Warsta and Seppanen’s model the selection of customer or supplier is dependent on the type of software being sold. They point out that in the mass-market group (A) the selection phase does not directly occur since there is no real contact between the supplier and the customer. Often the software is sold through a third party vendor. It is only occasionally that
there may be a need for the customer to contact the supplier, for example for registration of the software or for support reasons. [Warsta/Seppanen, 2000]

In the case of enterprise solutions software (B) and professional software services (C) the selection of the customer or supplier phase usually involves an evaluation of the supplier by the customer. The duration of this stage will depend on the existing relationship between the two parties. In the case study carried out by Warsta and Seppanen they found that this familiarisation process can take from a couple of weeks to one year. It is largely dependent on the existence or not of past experiences with each other. If both parties are unfamiliar with each other then it can take some time to build up trust. The length of time can vary from situation to situation and there is no general rule on how long this can take. They point out that the contractor can also evaluate the customer, looking at details such as their reliability and their strategies in terms of technology and areas of business. In affect the customer is looking for a customer that is compliant to their own business strategy. [Warsta/Seppanen, 2000]

**The Contracting Phase:** At this point both parties have made a decision to proceed further into an agreement of some kind. During this phase both the framework contract and the detailed software specifications and development contract will be made.

The framework contract is general and is an overview of the contract, outlining aspects such as costs, time, resources and support. From their case study Warsta and Seppanen conclude that this document can be seen more as a legal contract involving lawyers and financial managers. [Warsta/Seppanen, 2000]

The detailed software specifications and development document as its name implies contains the specific details of the product to be delivered. It is usual that technical personnel from both the contractor and the customer are involved in the design and formulation of this contract. This document is seen as the main working contract between the technical experts from both the customer and the contractor.

**The Execution phase:** This phase is divided into two paths and depends on the type of software the parties are negotiating. In their study Warsta and Seppanen found that in the case of enterprise solutions software (B) the need to alter the software was quite small and therefore only took a few weeks. They also state that there are notable differences between the contracting and execution paths of (B) and (C) but they do not elaborate on these differences. [Warsta/Seppanen, 2000]

**The follow-up and after-care phase:** Here both the contractor and the customer verify that they are satisfied with the fulfilment of the contract. If both are satisfied then there is a strong possibility to conduct further business. This is informative for the supplier because it helps them in the future selection. According to Warsta and Seppanen the follow-up period begins when the software has been installed and is functioning correctly on the customers sites. They propose a guarantee period of three months where faults are fixed under the initial contract. Thereafter, faults are fixed according to normal compensation. [Warsta/Seppanen, 2000]
3.5 Management Roles & Responsibilities

Contracts have now evolved to a point where they not only contain the specific details about the agreement between the involved parties. Today, contracts also contain a complicated legal language with terms and conditions that need to be carefully considered before signing a contract. [Sutcliffe, 1999; Zant/Schlosberg, 2002] Therefore, in many cases it is necessary for the manager to have skills not only in management aspects but also in the interpretation of a contract’s legal language and of other contract details. [Gooden, 1998:500; Nicholas, 2001:114] Today, this is especially true in organisations, where more co-operation is being used and contracted for in industry. [Gooden, 1998:500] In some organisations the manager can acquire the expertise of a consultant when it comes to the legal formulations in the contract. However, basic knowledge of the legal formulations is still often preferable for an efficient and quick acceptance or discarding of legal formulations in the contract. Another area that the manager must be well prepared for is the feasibility study and the potential problem of having to issue a third party contract for services that they themselves can not provide. [Gooden, 1998:500]

Besides this, the manager is also under pressure to win the contract from the upper manager, which adds an additional pressure during negotiations. During negotiations the authors believe that it is important that the manager is able to understand the needs of the customer so that he/she can give in on certain occasions but be a tougher negotiator in others. The decision thereof should be influenced by whatever suits the overall company strategy. This means that the manager, when acting as negotiator, must take a stand and apply some pressure on the customer, but at the same time should be able to withdraw before the customer takes their business elsewhere. [Marsh, 2001:5] There is also the risk of losing authority and control during the negotiations. [Gooden, 1998:500] This is seen as problematic and often a reason why many managers are reluctant to negotiate contracts. The overall relationship with the customer is important during the actual negotiation as well as in future relations. Therefore, acting competently and maintaining a high level of trust between the manager and the customer is desirable. Consequently, the construction of the negotiation team is an important aspect of a successful negotiation. [Marsh, 2001:129]

3.5.1 Teambuilding for Negotiations

When the discussions have reached the stage where negotiations regarding the contract and project shall occur, it is in many ways up to the manager to create a good team of participants. According to P. Marsh, it is not only required that the personalities in the team are matched but the total competence of the team must cover the areas to be negotiated. [Marsh, 2001] Matching of personalities within the team is utterly important since the team needs to function together for an efficient negotiation. This is supported by other management literature authors who claim that the team needs to be in harmony in order to function effectively. [Nicholas, 2001; Humphrey, 1997] Communication is considered to be the prime factor for a successful collaboration within a team. [Nicholas, 2001]
The personalities and traits of the team members also have an impact on negotiations. This is supported by D. Kezsbom who although considering a broader management perspective still recognises that it is highly important to have a team that realises what the goals are and how to get there. She defines a team as a group of individuals that share a common goal and are aware of the independent roles as well as the other participants in the team. [Kezsbom, 1990:51] Further she argues that it is important to achieve a team climate where the team works independently towards a specific goal with a consensus of getting there by working together.

For a successful negotiation it is important to have a team that covers all aspects that can arise during the discussions. Therefore, the team shall be constructed so that negotiations can be carried out without delays and rearrangement of meetings. Representatives for each area as outlined by P. Marsh should therefore be present. In many cases one member holds many roles, which is acceptable once all the areas are covered. The important areas are shown in table 3.3. [Marsh, 2001:128]

<table>
<thead>
<tr>
<th>Area</th>
<th>Responsibilities / Coverage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commercial</td>
<td>Handles pricing, deliveries, commercial aspects on risk taking etc.</td>
</tr>
<tr>
<td>Technical</td>
<td>Handles specifications, methodology, 3rd party systems etc.</td>
</tr>
<tr>
<td>Legal</td>
<td>Handles contractual agreements, terms and conditions, insurance, legal formulations etc.</td>
</tr>
<tr>
<td>Financial</td>
<td>Handles terms of payment, credit insurance, financial guarantees etc.</td>
</tr>
</tbody>
</table>

Table 3.3: Negotiation Representation [Marsh, 2001]

3.5.2 Negotiations in a Management Perspective

In general, single person negotiations are not advisable. [Marsh, 2001] Even if all areas outlined in table 3.3 are covered through that individual position, manager or similar, many of the advantages of having more than one during negotiations are lost. Marsh suggests that during negotiations there shall be at least two from each party. In this way, team tactics can be used. Such tactics may include one person taking notes while the other plays a more active role in the discussion. They can complement each other during argumentation and additionally help each other to remember important issues that need to be addressed. [Marsh, 2001] This view is supported by I. Unt in his work. He recommends that the negotiating team should consist of more than one person if it is economically justified and the organisation allows for it. [Unt, 1995] The decision on the team make-up is often made by the manager who should have the overall responsibility and control of the negotiations. [Unt, 1995] Another advantage of having more than one set of negotiators is that substitutes can be provided when the original negotiator is absent.

3.5.3 Managers Role in Contract Negotiation

The management of contracts and specifically the negotiation can be a very complex task. Therefore many managers have difficulties in this area. [Gooden, 1998:500] In order to overcome this problem and aid managers in their negotiations V. Gooden, through a study of contracting managers in Department of Social Services (DSS),
Massachusetts, identified eight practices. The study was based on a project performed in 1981 [Gooden 1998, 1998:500 cited by Fisher and Ury, 1981] as a part of the Harvard Negotiation Project. The results suggest eight principles that may be helpful to managers. These principles are complemented with comments from additional literature sources as well as from the authors’ experiences.

1. **Successful managers emphasise the importance of pre-bid activities, particularly planning and needs assessment.**

   **Comment:** The need for planning is essential in all types of management. In the case of contracting it is important to see if a 3rd party supplier needs to be invoked to fulfil the contract needs as well as to determine if the project and contract aligns with the business strategy. [Nicholas, 2001:112] This applies to both the customer and the management sides because, in order for a project to be successful it must be based on and aligned with the organisation’s strategy. Besides this, the manager has a responsibility to provide the best solution to the customer's problem. Since the manager in many cases has superior technical competence the authors believe this can raise ethical questions. The manager is bound by his organisation to negotiate a profitable contract but at the same time has a commitment to the customer. [Eklund, 2002:52] In order to make a short term profit the manager might choose to neglect this commitment and sell a system that is not useful for the customer needs. However, in a longer perspective the customer relation is greatly affected by how the customer interpreted the past negotiation. If they believe that they have been mistreated in any way, the likelihood of them choosing the same contractor the next time is likely to have been reduced.

2. **Successful managers monitor waiting lists and utilisation of service to determine who actually use the service and to detect trends about who may need the service.**

   **Comment:** When negotiating and planning for a long term relationship with a customer the authors believe it is important to forecast trends in the market so that the company is not bound to a specific customer if the market should change. Therefore, the previous step is important to see that the contract will be issued in accordance with the overall business strategy. For instance, take an event where the market changes and the value of a company's specific product or speciality increases. If the company has issued a long term contract with a customer then the benefits of the increased market value of the product may be lost.

3. **Successful managers include other staff’s expertise and a large number of outside participants when reviewing and rating proposals.**

   **Comment:** In order to formulate a good contract, for both parties, it is important to receive second opinions. This is one of the main benefits of setting up a negotiation team that covers all the areas of a contract. [Marsh, 2001] The second opinion is especially important if experts are not part of the team but participate in the negotiation stage.

4. **Successful managers use a standard rating form as a tool to rate proposals.**
Comment: Templates and similar aids to help negotiate a contract can be very helpful. There are a number of different methods for evaluating a contract. [Nicholas, 2001:109] The method of using a rating tool, such as setting up the minimum requirements and thereby screening the proposals, filters those that fail to comply with those demands. Others are based on a rating system where factors involved are summed together and provide a system for comparing different proposals to each other. By adding weight to the more important factors the system is further developed. This reduces the risk of neglecting important factors during negotiation.

5. Successful managers conduct responsive debriefing sessions with bidders that substantially reduce the number of appeals.

Comment: In order to improve the negotiation skills as well as increase the customer relations the authors experiences indicate that internal as well as external reviews are important. In this way past experiences are reused in future negotiations. The part of the contract process that primarily deals with these issues is the follow-up stage.

6. Successful managers rely on and use the Commonwealth’s Component Pricing Catalogue to negotiate and allocate cost within an established range.

Comment: This is a point that is specific for the Harvard Negotiation Project and that empirical study. However, as stated in point 4, aids during negotiations can prove to be useful.

7. Successful managers assist providers with budget and program support to increase their opportunity for proposal acceptance and award.

Comment: This is a point specific for the Harvard Negotiation Project.

8. Successful managers share and process information based on experience, knowledge, involvement, and constantly improved technical expertise.

Comment: Similar to the fifth statement where reviews are used to improve the skills and provide better foundation for future negotiations.

3.5.4 Involvement in the Process

This section is divided into four main stages that follow the general stages in the contract process; the intention, contracting, execution and the follow-up.

3.5.4.1 Intention

The management involvement in this phase is primarily in the field of planning for the project and making an analysis of the benefits versus risks of the project. [Warsta/Seppanen, 2000] As a part of this, the need for contracting 3rd party contractors is important. However, as J. Nicholas states care should be taken so that the prime contractor is not contracting out more to 3rd party contracts than the prime contract covers. Otherwise the net benefits can be lost in multiple subcontracts. This is especially important if the fixed-price contract is used since it leaves less of a gap
for changes compared to an incentive or cost-plus type contract. [Nicholas, 2001:113] Therefore, a full analysis of the need for and the value of 3rd party contracts are important.

As a result of this phase a proposal or request for proposal (RFP) is issued. The RFP can be seen as an invitation to bid or request for quotation. [Nicholas, 2001:98; Warsta/Seppanen, 2000] This document is the first written artefact of the intention between the parties. The proposal is issued with factors such as how the project is to be divided in terms of subcontracts and similar major parts. [Nicholas, 2001:98]

3.5.4.2 Contracting

In this phase the parties have accepted each other as business partners and thereby start to develop deeper negotiations. Often the development team is part of these negotiations since more detailed discussions are used. [Warsta/Seppanen, 2000:244] During this stage it is in many cases up to the manager to lead his team during negotiations. [Marsh, 2001] Therefore it is important to maintain the reputation of being competent and of having the capability to fulfil the contract specifications. Technical issues must be answered competently, especially if experts are not present, and it is also important that customer relations are considered and nurtured. [Nicholas, 2001:113]

During this stage it is beneficial if the contractor has necessary information about the customer, especially in terms of how the contract can help them. [Marsh, 2001] If previous negotiations with the same customer have taken place, then this is often a source of useful information. [Nicholas, 2001:114] Obviously both parties want as profitable a deal as possible, and this should be remembered during negotiations. Being one step ahead can therefore provide that extra edge during tough negotiations but building long term relations with the customer is also important. What is compromised today, may pay off in the future.

3.5.4.3 Execution

At this stage the contract and project should be well under way and the relations with the customer should be nurtured and kept at a high level. The contract is used to verify details and is at this point a legally binding document. [Warsta/Seppanen, 2000] Changes should therefore be formally changed with possible renegotiations to follow. [Nicholas, 2001:114]

3.5.4.4 Follow-up

This stage mostly concerns aftercare. Maintenance of the previously built up customer relations is important. Performing reviews about the fulfilment of the contract is one activity that could take place in parallel with the customer. [Gooden, 1998; Warsta/Seppanen, 2000:245] Besides the follow-up on the customer, which mostly concerns customer relations, internal follow-up on the contract internally is also important. It can be useful to evaluate what could be learned from the stages of
the process. An internal review could be conducted in order to share experiences and information regarding the customer could be documented.

3.5.5 Differences Between Large and Small Companies

The room for internal experts is decreased in smaller organisations because it is not cost-effective to have experts in each particular field. Instead, the organisations rely on their personnel to have some expertise in all aspects of the contract, thereby distributing the needs of the organisation among the existing personnel. This is one significant difference that the authors’ identify between smaller and larger companies. In many instances larger companies have internal resources available to aid them in contract formulation and management.

As a means to solve this, since decision about contracts is also an essential part of company strategy, the authors believe that the responsibility for the contracts in smaller companies should be at higher management level such as the CEO or similar.

In a larger company the room for an dedicated contract manager is higher and possibly, if the amount of contracts correspond to the size of the company, a necessary resource because of the increased complexity in the contract management area. However, even with the use of a dedicated person for contract management the authors believe that the CEO should be a part of the process in order to negotiate contracts that are in line with the business strategy of the company. This especially applies to those contracts that have a significant impact on the organisation and the organisational strategy.

The management of contracts might also be different for different organisational structures. However, it is our belief that the personnel working with the contracts should work closely with the CEO and have close relationship to the marketing and sales departments as well as project managers and upper management. This is necessary because decisions concerning each of these areas will be formulated and signed for a long period of time. The need for good internal communication between the various different departments in the organisation is therefore apparent.

3.6 The Follow-up Process

The follow-up stage of the contract process is an essential part and should be carefully considered. As stated by T Levitt, “the relationship between a seller and a buyer seldom ends when a sale is made.” [Levitt, 1991] The need for actions that ensure that the customer returns are therefore important. The follow-up stage could in many ways determine the future relations with the customer as well as how experiences learned are used in future contract negotiations. For these reasons the follow-up stage is an important step. It can be divided into two categories, follow-up on the customer and follow-up on the contract.

According to the authors, the activities involved in the follow-up of the customer are related to the industry and type of product being considered. For example, customer follow-up of a COTS (Commercial Off The Shelf) product, such as a mobile phone,
will be less than customer follow-up of a product being developed for a specific customer. This implies that the amount of direct contact with the end-users determines the amount of follow-up that can be used on the customer.

As regards follow-up on the contract, the authors believe that the differences should be less between the different products and industries. Instead this could be reflected in the size of the organisation. Smaller organisations might not need the same amount as a larger organisation, that has more sub-divisions and consequently more people involved in the development. The detail level and type of information to store is also a factor to consider. It is important to store relevant information / knowledge in a way that makes it easily retrievable. [Davenport/Prusak, 2000:146]

3.6.1 The Customer

Customer follow-up is an essential part of the overall follow-up process. It involves activities designed to keep the customer satisfied and to maintain good relations. The way to strategically implement this customer relationship system can be explained by three sequential steps. [Brown, 2000:69]

- Customer acquisition
- Customer retention
- Strategic customer care

These steps are a part of the follow-up, although the follow-up comes into play at a later stage, since they provide a base for the future relations with the customer. Without this base the follow-up has no foundation and thereby less likely to be successful.

3.6.1.1 Customer Acquisition

During this step customers are identified and business relations are initiated. This can be achieved through activities such as marketing and networking. Contractors can target specific markets in order to attract potential customers. [Brown, 2000:69]

On an organisational level this stage involves activities such as implementation of systems to deal with new customers and training of personnel about the customer acquisition process. [Brown, 2000] This is important because it increases the organisation's proficiency at identifying new customers and of making the initial contact with the customer. This is also where trust and loyalty is founded between both parties. As stated by H. Mackay [Mackay, 1991], the first customer contact, during a meeting or an informal lunch, can tell very much about the customer as regards their personal and business views. Being an efficient listener at this stage can build confidence for future relations. Therefore, it is advisable to treat the customer with interest, thereby giving them a feeling of being important for the company.

Brown defines customer loyalty as the “result of an organisation creating a benefit for the customer so that they will maintain or increase their purchases from the organisation”. [Brown, 2000:55] He further argues that pure loyalty is only achieved
when the customer returns to the company without any form of reward. This is a truly important step in the sense that a healthy relationship, with a well-established mutual loyalty and trust between each other, can provide a long and beneficial co-operation. On the other hand an unhealthy relationship could potentially prove to have the opposite effect. In such a situation there is little trust between the parties and co-operation arises from negotiations where each party has to protect their own interests making sure that they are not taken advantage of by the other. The energy that could be spent establishing a beneficial business co-operation is instead spent reviving an unhealthy relationship. This is a clear setback for both parties. Therefore, when the first contact is made, the effort expended to create a relationship should be adjusted to the future goals of the relationship. [Storbacka/Lehtinen, 2000:99] If the relationship is built on a mass-market product the need and benefits of having a close customer relationship are not as high as in the event of a specialised product for a specific customer. However, the need for feedback and evaluation on the product might be high in both cases.

3.6.1.2 Customer Retention

This step involves activities that aim at organising and maximising the efforts made on the customers. Therefore it is important to build relationships with each of the customers and to group similar customers together. This allows the contractor to more efficiently manage each class of customer without losing the personal and individual contact. [Brown, 2000]

It is much more cost-effective to keep existing customers than to have a large expenditure on marketing and advertisement to attract new customers. Brown claims this ratio to be 1:3 in favour of keeping existing customers. [Brown, 2000:xii] In order to ensure that a customer stays with the contractor it is important to build up a relationship and to give the customer an incentive to remain. This will help the contractor to retain the customer, allowing them to develop the product together and to increase the chance of retention.

In recent decades the theory of Total Quality Management (TQM) has been researched and developed. TQM is based on the theory that quality is used as a factor to keep customers satisfied and in turn satisfied customers are profitable. [Storbacka/Lehtinen, 2000:113] However, this theory is also discussed and criticised with the argumentation that there are more factors involved other than the theory of a satisfied customer being profitable. Factors such as, the possibilities of measuring customer satisfaction, whether satisfied customers are automatically loyal, whether loyal customers are really profitable and is the correlation between quality and customer satisfaction linear, shall also be considered in relation to this theory. [Storbacka/Lehtinen, 2000:113] Therefore, the TQM theory is true for some occasions but in some more difficult cases the theory needs to be extended with the aforementioned factors.

Brown claims that over the past decade the industry has gone from selling products to a wide range of customers thus requiring the search for new customers, to the development of sales to/with existing customers. [Brown, 2000:xii] Storbacka and Lehtinen additionally state that the product should be developed for the customer not
the other way around. [Storbacka/Lehtinen, 2000:12] However, this requires a more developed customer relationship system since more contact is needed with the actual end-users.

3.6.1.3 Strategic Customer Care

The management of customers could be an important strategic resource if conducted in a proper manner. However, locating and collaborating with a customer is not enough in a longer perspective. Strategically organisations must be ready to forecast trends in the market and thereby identify customers that will be the most important in the future. [Brown, 2000:70] The short-term profit might not be the most beneficial to the organisation.

The strategic customer care step is a step where an organisation makes decisions about their customers based on a longer perspective. [Brown, 2000] Questions such as, which customers would be most beneficial to collaborate with in the future and who should the company be less eager to make long term agreements with, should be addressed. Different strategies for doing this are outlined by Storbacka and Lehtinen. The strategies are based on the amount of adaptation made by suppliers or customers in their processes in order to collaborate. Three strategies are mentioned, [Storbacka/Lehtinen, 2000:143]

- **Button strategy**
  Where the customer adapts towards the suppliers processes.

- **Zipper strategy**
  Where both the supplier and customer adapt their processes to each other in order to collaborate.

- **Velcro strategy**
  Where the supplier adapts to the customer processes. This is mostly done so that the customer does not need to spend time and resources to alter processes to collaborate.

3.6.1.4 Customer follow-up

As regards the follow-up stage on the customer in the contract management process the same principles as previously discussed apply. The main point being that the majority of decisions taken by the organisation are related to the overall strategy. If a contract is with a particularly important customer then more effort is probably made to make sure that they are satisfied with the result. Physical visits and other similar ways to show interest in the customer are important in order to maintain the established relationships. A simple phone call could prove positive and provide the customer with a feeling of being important. However, even if the customer is satisfied this does not automatically mean that they will remain a loyal customer forever. Storbacka and Lehtinen state that in some industries up to 75% of the customers who changed their contractor claimed to be satisfied with the initial contractor. [Storbacka/Lehtinen, 2000:117] This implies that other factors besides satisfaction play an important role. Such factors include pricing and new competitors.
entering the market. Additionally, they claim that dissatisfied customers are less likely to change their supplier because they believe that all suppliers are equally bad or that they do not think the effort required to change supplier is worth it. [Storbacka/Lehtinen, 2000:117] Other factors that affect the amount of follow-up needed are the type of product, COTS based or specialised product, and the size of organisation.

3.6.2 The Contract Follow-up

The contract follow-up can be seen as documented information of experiences from the contract process. A successful business needs a combination of technical and managerial factors to be a contender on the market. One of those factors is an iterative loop of support for reuse of experiences. [Basili et. al, 2002] In order to make the best possible use of these experiences a system for their storage and retrieval should be developed. [Davenport/Prusak, 2000:146] This is important since past experiences could provide solutions to future problems with negotiations or contract formulations. [Unt, 1995:100] With such a system many of the problems that have occurred previously, despite the fact that each negotiation is unique, should be easier to solve. As stated by Davenport/Prusak: “In a global economy, knowledge may be a company’s greatest competitive advantage”. [Davenport/Prusak, 2000:13] The use of past experiences is therefore an essential part of the overall organisational business strategy. Thus, the decisions regarding development of a system for contract follow-up should be more beneficial if taken on a higher level in the organisation. One problem is that measurement of the benefits of such a system are not always clear. Davenport/Prusak claim that it is easier to measure the costs of not having such a system than of having one. [Davenport/Prusak, 2000:170] One of the most beneficial type of experiences to store are those related to decisions taken on false or inadequate information. However, sufficient information on previous experiences in itself does not guarantee a correct decision. Other factors, such as politics, business strategy or similar might induce the need to alter the decision. [Davenport/Prusak, 2000:170]

When developing a system for knowledge storage and retrieval a decision must be made on the amount and type of information to store. The difficulty with too much information is that it can become time consuming to store and retrieve relevant facts. On the other hand, too little storage also poses a problem since important information may be omitted and thus making reuse practically impossible. [Davenport/Prusak, 2000:68] Therefore, finding the balance is essential in order to efficiently manage the organisations important experiences.

3.6.2.1 Storage

Davenport and Prusak discuss different categories of external and internal repositories for storage of information. [Davenport/Prusak, 2000:146] In the context of this thesis the most interesting are the structured internal and the informal internal repositories. The structured internal repository should contain formal documents that consist of easy to document information such as the contracts, notes from meetings, memorandum. All information in this category are relatively easy to store and their validity shall be decided at an organisational level. Unt states that storage of this type
of information is vital for the future since it reduces the misperception that can occur when the negotiations have finished. [Unt, 1995:162] If the information is documented disputes regarding unclear contract details can be easily solved. In this case the stored information or knowledge termed explicit. Such knowledge is straightforward information that is simple to store. The other category, the informal internal repository, involves a different type of knowledge. It primarily focuses on knowledge gained from experiences in different negotiating situations. This category is much more difficult to document because it can be difficult to write down experiences in a way that makes it understandable to someone who has not directly participated in the project or contract negotiation. Such knowledge is referred to as tacit information / knowledge. The discussion regarding codification of tacit/explicit knowledge is beyond the scope of this study. In their work Davenport and Prusak discuss the issues involved in this area in more depth. [Davenport/Prusak, 2000]

3.6.2.2  What to store

The prime reason for using repositories is to be able to reuse past experiences. Other advantages that repositories offer include viewing, tracking and verification of active contracts. It is also possible to keep track of terminated contracts. [Schlosberg/Zant, 2002] Therefore, it is necessary that the stored information meet these requirements. According to the authors, the required stored information shall be of most benefit if it is determined at an organisational level. In this way the stored information shall be adapted to the size of the organisation, the product being developed and the type of industry. The detail level of the information being stored is also affected by these factors and it is important to always have an appropriate level of detail.

Useful information to store could be notes about the negotiations in terms of what went wrong, what was good etc. Other beneficial information that can be stored could be information regarding the negotiating tactics of the customer. This can subsequently be considered for future negotiations. [Unt, 1995:100] It would also be beneficial to store the contract itself since it contains negotiated formulations, which could serve as a template. A contract management tool for this purpose would further increase the usefulness of storing since connections between past contracts and their changes can be associated with new future contracts. [Schlosberg/Zant, 2002] Time and possible re-negotiations could be avoided if the first draft of the contract is based on a previous version. An evaluation report, written after the contract negotiations have finished, that summarises the entire contract process and outlines experiences learned during the process is also a beneficial document.

3.6.2.3  Retrieval

Once a system has been put in place for storage of past experiences it is important that the system is used in an efficient way as regards retrieval and reuse of these experiences. Logically, the information must be easily accessible in order to be used. Currently, experiences are stored in both paper and electronic format. This may in itself present problems because of the differences between the two methods. [Schlosberg/Zant, 2002] A searchable repository is preferable in order to improve the retrieval process and to simplify updates. It is also important to consider traceability
when storing information. Traceability allows for easier tracking of those responsible for the stored information. This is especially important in cases where tacit knowledge is retrieved, since such knowledge may need some clarification because of its tacit nature. [Davenport/Prusak, 2000] Traceability to other related documents is also beneficial because this facilitates a logical structure of the repository. This simplifies quick retrieval of all relevant details about a particular contract negotiation.

### 3.7 Summary

The use of contracts can be traced back centuries. They have evolved from initial simple agreements to the complex business contracts that are in evidence today. Indeed contracts now constitute approximately 80% of all business transactions. There are two parties involved in a contract, namely the contractor and the customer, each with their own reasons for undertaking a contract agreement. From a contractor’s perspective profit and market-share are examples of why they partake in a contract while customer’s can be influenced by the quality and cost of the product or service. A contract is made up of four main components – the limits of liability, the scope of the work, the time frame and the payment schedule. The type of contract negotiated can affect the profitability of both the contractor and the customer and therefore is an important consideration. Fixed-price contracts are those where the price paid by the customer is agreed at the beginning of the project and payment is received by the contractor upon delivery. In cost-plus contracts the customer pays the costs incurred during the project and for the services of the contractor. Such contracts also have variants and the specific choice is determined by the preferences of both parties. A third type of contract can also be negotiated. It is an incentive type contract and contains elements of the fixed-price and the cost-plus. The costs are determined by an agreed ratio division, thus giving the contractor an incentive to keep costs down.

Process thinking allows organisations to repeat previously successful activities. This has clear benefits and there are many advocates of such thinking. A process can be seen to have three aspects; process definition, process learning and process result. Institutionalisation of a process allows people to carry out their tasks that are aimed at achieving a common organisational goal.

Three contract winning process models have been uncovered in this research. These models provide a framework that companies can use to win and negotiate their contracts.

- The Conventional Contracting Model comprises three phases; the Intention phase where contractors and customers make contact with a business alliance in mind, the Negotiation phase where the contract details are discussed and results in a main contract agreement, and the Performance stage where the contract is fulfilled.

- The Traditional Model involves binding and unbinding processes.
- The Tentative Model is made up of four stages: the Customer or Supplier selection phase, the Contracting phase, the Execution phase and the Follow-up phase.

The manager’s involvement in the contract winning process is both in the contract formulation and preparation as well as the technical negotiation behind it. The contracts and requirements from the customer have evolved to a point where it is important for a manager to be both efficient in technical aspects of the contract as well as the contract negotiation and formulation. This evolution has lead to reluctance amongst some managers to be involved in the contract process. Therefore, from research carried out eight principles to aid managers during contract negotiations have been devised.

During the negotiation managers have pressure to win the contract but must also being efficient in their relations with the customer. The construction of the negotiation team is therefore important both from the manager’s perspective, in order to get a good result, and from the customer’s perspective. The team should be constructed in such a way so that all questions, both technical and legal, are answered in a fast and efficient manner. The manager is involved in all parts of the contract throughout the products development cycle. This starts with the initial planning and preparation of the contract, through the negotiation, to the execution and final review and follow-up of the contracting process.

The follow-up phase of the contract winning process is mostly concerned with aftercare of the customer. It also makes use of the experiences that are gained throughout the process. The follow-up has been divided in two parts, the customer follow-up and the contract follow-up.

The customer follow-up is concerned with making sure that the customer is satisfied after the product has been delivered. It is important to align this with the overall company strategy and to maintain or even increase the relations with the customer. Different strategies presented from CRM systems are outlined in order to maximise the relations with the customer.

The contract follow-up is concerned with storage of experiences gained during the contracting process and how these can be reused in future contracts. Theory from different sources within the knowledge management field has been presented in order to provide a solid base for storage and retrieval theories.
CHAPTER

4  EMPIRICAL STUDY

This chapter contains an analysis of the interviews that constituted this research. The questionnaire used and the motivation for each question are outlined in Appendix A. The results of the interviews are presented in Appendix B. The analysis is structured so that the responses for each industry type are analysed and a comparison between the results of both is made.

4.1  Analysis and Comparison of the Interviews

This section is divided according to the first four categories outlined in the questionnaire (Appendix A).

4.1.1  General Company Information

This section presents the general information collected in the empirical study. The question aims to lay the foundation for the analysis of the participating companies.

4.1.1.1  Question 1: Can you tell us about your company in terms of size and number and type of projects?

The study shows that the software companies are in general smaller and more recently established (see tables Appendix B.1 and B.5). This is something that seems logical since the software industry is a quite new industry in comparison to non-software (industrial). The software companies are also more linear in the correlation between the establishment and their number of employees. The non-software companies on the other hand show an uneven result as regards the same correlation. They are in general more mature than software companies but have fewer employees. In fact the most mature non-software companies are also those with the fewest employees. This indicates that the products and the markets have greater impact on the company growth rate than the time of establishment. In the software industry the number of employees indicates that the newly developed technology, as often is the case with software companies, can only support a few but highly educated personnel in order to be a contender in the market. It can also be concluded from Question 1
that the market has a great impact on the growth rate of the companies. This depends on the focus that the companies have adopted regarding local, national or even worldwide markets for their products. Focus on a local market might not support a large organisation since this would logically require a larger turnover. This implies that if the local market has been chosen as part of the company strategy, the organisation is also kept small as a conscious choice. This is also aligned with the statements from two of the non-software companies who have their focus on the local or national market and have adapted their organisation for that purpose. The most recently established non-software company focuses on a worldwide market. This allowed and required them to grow and resulted in them being by far the biggest in size and turnover. Another factor to consider with the market, as regards the software companies, are the continuous changes invoked by new technologies. This requires the companies to be flexible and adaptable in order to meet the demands of the market.

In general, regarding customers and number of contracts, the software industry uses fewer but larger projects. Support agreements are also more common in this industry as a result of the type of products being developed. Besides the support agreements, the customers were mostly new to the companies. One of the non-software companies worked in a similar way to the software companies with few but more valuable projects. This company approximated that 80% of their customers were existing whereas the remaining 20% had never done business with them before. The remaining two non-software companies negotiated less profitable contracts but increased the amount issued every year. The customer base for these companies is in most cases new customers. The differences that can be seen between the industries indicate that the product being developed determines the focus that the company needs to have as regards attracting new customers or keeping existing ones. Standardised products with few deviations between the contracts, as generally used by the non-software companies, could be sold to a larger number of customers. This requires them to attract new customers accordingly. The software companies and one of the non-software companies worked with products that were specialised for each customer. Since the contract in general had a higher value and risk the need for building business relations and issuing support agreements were also higher. This comes at a cost, which makes it more beneficial to keep existing customers where the relationship and trust has already been built, rather than constantly seek to attract new customers.

4.1.2 Contract Preparation, Planning and Formulation

The questions included in this section aimed to identify the first part of the process specific activities being used as regards the preparation, planning and formulation of the contracts.

4.1.2.1 Questions 2 & 10: Can you tell us about your role in the company and your involvement in the contract process? / Who are the personnel involved in contract agreements?

In general, the result of the study showed a similar result between the industries (see Tables App. B.2 & B.6). In cases where the company deemed the contract to be large
the Chief Executive Officer (CEO) of the company always authorised the signing of the contract. In the event of small and standardised contracts the relevant salesperson or dedicated contract management resource could sign the contract. Because of the way a contract can influence the companies and their business strategies it is important to ensure that the contracts are aligned to these strategies. Therefore, this decision is often left to the CEO since he/she has the overall view of the company and thereby can verify that the contract and the strategy conform. In the software companies three out of five project managers were involved in the contracting process. Only one of non-software involved their project managers in the contracts. However, the study might be uneven since two of the non-software companies did not work project based. Thus, the terminology and use of project managers were not apparent. In some cases the project manager is also the CEO and thereby holds two positions in the study.

In general the use of a dedicated person for managing the contract was not apparent. Only one of the software companies and none of the non-software companies used a dedicated contract management resource. We define a dedicated person or resource as someone who works exclusively with contract management and the contracting process. The people involved in the contract process generally vary according to the complexity of the product. A standardised contract used for a COTS (Commercial Off The Shelf) product did not require as much personnel as a completely new contract for a specialised product.

4.1.2.2 Question 3: Does your company have a formal process in place for contract winning and negotiation?

The results to this question are depicted in Tables App. B.3 and B.7. All but one software company said that they use some form of process for their contracts. Only one out of three non-software companies use a process. This indicates that software companies are more process oriented. The reason for this may be that a process oriented approach is quite new to organisations and that the software industry, being newer, is more familiar with this approach. This contrasts with more mature industries where product focus is more prevalent. Software engineering as a research field emphasises improvement of processes in order to increase factors such as quality, resource efficiency etc. In this respect the software industry can be seen to differ from the non-software industry, where the focus and way of working is different. Traditional development methods may be a contributing factor here since the software industry began and emerged at the same time as process oriented approaches, whereas the non-software industry tends to use the more traditional methods and may need to change their work habits in order to make use of these new ideas. Quality standards such as ISO focus on processes and this can help companies who seek to work in this way.

The companies that have a formal process in place, two out of five software and one out of three non-software, developed their process as part of a quality standard implementation. Such standards include ISO 9000 and EASA. They claimed to have managed adequately without a documented formal process but now that they had it in place they saw it as a benefit. The companies that did not have any contract management process in place said that they used ad-hoc methods and templates when
constructing the contracts. They claimed that this is sufficient for the time being since the number of contracts is small and standardised. This implies that the need for formal processes is measured according to the number of contracts that needs to be managed as well as the amount of adaptations for each contract. The number of people assigned to contract management activities was also seen to influence the need for formal process. The benefits of a fully documented process were not acknowledged by the smaller companies as much as by the larger organisations.

4.1.2.3 Questions 4 & 5: If so, what are the phases of this process? / If not, how do you handle contracts?

Intention: The manner in which new customers are attracted differs between the industries. The main approach used by the software companies is marketing while the non-software companies tend to rely primarily on their reputation in the market place to attract the majority of their customers. However, other methods were also used and these are dependent on the market. All of the non-software companies are specialised in a narrow market and this allows them to rely on their reputation in areas such as quality, stability, cutting edge technology etc. to attract new customers. The software companies tend to have a broader market, forcing them to be more aggressive in their marketing strategy.

When formulating proposals all companies used the requirements elicitation technique to identify costs and to assess their ability to take on a contract. In addition to the proposals some companies performed demonstrations or prototypes of the product. This was more common in the non-software industry where every company demonstrated their products. Only one software company developed a prototype in a pilot project before the contract had been signed. This indicates that the non-software companies, with their more explicit products, could win the contract through demonstration as opposed to the software companies that have to sell a somewhat abstract idea at the proposal stage.

Negotiation: The result from the study indicate that the responses differed according to the market size and the type and complexity of the contracts that the companies focused on. For instance, physical meetings were used by all companies (five out of five software and one out of three non-software) that worked project based on customer adapted projects. This is most likely due to the fact that the importance of the contract is significant to the company and highlights the need to build a relationship and trust with the customer. Negotiations over the phone are used by two out of three non-software companies and most likely do not have the same effect on the relationship that are given by face to face meetings. The project based companies also use technology experts during negotiations in order to act competently and to provide fast and accurate answers during negotiations. All companies said that acting competently during negotiations is important in order to win the contract.

Similarities in the negotiation stage, amongst those using physical meetings, were the lack of negotiation tactics. No companies used specific tactics or had a strategy during negotiations. However, all but one software company and one out of three non-software said that they compromised short-term profit in order to fulfil longer-
term business goals such as position in the market or market-share. In general the
profits were seen in a longer perspective and beyond the current contract.

**Performance:** This stage provided very similar responses from all the companies in
both industries. In general, with the exception of one non-software company, very
little follow-up activities were performed. The customers were not visited as a
normal routine. When contact was made with the customers this was done in an ad-
hoc manner and was not formalised. When follow-up was used it was often the direct
result of a contract that had presented some obvious flaws. The non-software
company that formally uses follow-up did so primarily on the contracts where a
report was issued after the contract had been signed. This report typically stated what
went wrong in the project and what was handled in a good way.

4.1.2.4 **Questions 6 & 7: How long has the process been in place? / Has it
been modified over time?**

The answers received from this question provided a similar set of responses across
both types of industries. All of the answers aligned with the opinion that the
processes and standards adopted should be a part of the long term business strategy
with the customers needs as a focus. The main reason for having a documented
formal process was the implementation of a quality standard such as ISO 9000 or
EASA. The EASA was mentioned by one of the software companies, the remaining
companies worked with or towards ISO certification. The reasons for implementing a
standard can be seen in the advantages that are offered in terms of increased
reputation, the benefits of structured work routines and better relationships with the
customers and sub-contractors. In some cases a standard accreditation was also a
requirement from contractors or customers and this potentially opens up new market
opportunities for the company.

One of the most commonly mentioned areas for improvement was the legal area. It is
seen as problematic because of the impact it can have on the company if not properly
managed. This was also the area where most changes were carried out along with
general re-assessments of customer requests.

4.1.2.5 **Question 8: Can you tell us about tools or techniques you use?**

The study showed that very few tools and techniques are used to aid the contract
winning process. The study showed a practically identical result from the two
industries.

As regards the techniques used, only one software company used Work Breakdown
Structure (WBS) as part of their process. The WBS technique is used to break down
the project into smaller components, allowing for identification of individual costs on
a lower abstraction level. This was used as an aid in the budget calculation and in
negotiation of the contracts.

As regards the tools used the different industries showed an identical result. Every
company used standard office tools, MS Excel and MS Word, as their main tools for
constructing contract templates and for estimating contract costs. Additionally, some of the companies used databases that helped them retrieve previous contract details and to calculate some contract terms.

4.1.2.6 Question 9: How long does it take to prepare a contract before submitting it to a customer and what factors do you consider?

From the study carried out the preparation of the contract proposal for software companies takes from one hour to one week. For non-software companies this activity in general takes up to one hour but it can in some circumstances take up to one week. The entire contract winning process for software companies takes anything from two weeks to one year, with the average response rate being between four and six months. Non-software companies also show a large variation in the length of time that they take to complete the entire contract winning process, taking from two to three days up to one year. However, the conclusion from the responses received is that the process takes less time for non-software companies. This is due to a number of factors. The main factors that influence the time it takes to submit and win a contract are the complexity and scope of the product, the customer and the market.

Product scope and complexity: From the responses of both industries it is clear that the larger the scope and the greater the product complexity then the longer length of time it takes to prepare a proposal and to complete the entire contract winning process. As stated, the process takes less time for non-software companies and this indicates that the products produced by the non-software companies that were interviewed were less complex than their software counterparts. In general, there was a high level of complexity attached to the products produced by the software companies.

The Customer and the market: The time taken to complete the proposal and the contract winning process can also be related to the type of customer and the market for the product. In general, it takes less time to carry out these activities when the customer is an existing one and more time when the customer is new. This is true for both types of industries. Of the companies interviewed, software companies tended to focus more on new customers.

4.1.2.7 Question 11: What type of contracts do you usually negotiate?

In general, both industry types negotiate fixed-price contracts. The results to this question are summarised in Tables App. B.4 and B.8. For both industries, the process usually involves a proposal followed by some form of negotiation on the price followed by an agreement on the price. Once agreed the price will only change if the customers requirements change and in this case a re-negotiation takes place.

Just one of the companies interviewed used incentive based contracts though this company pre-dominantly used fixed-price contracts.
4.1.2.8 Question 12: When formulating the contract are the details very specific or more general?

The details specified in the contracts formulated by software companies were very dependent on the technical requirements of the customer. In the majority of contracts the technical details are documented in great detail. Other areas that are also considered to be important are those of project performance and quality control. Most companies have a general contract template as a starting point and more specific details are added as necessary.

All the non-software companies use a standard contract template whose legal terms and conditions have been written and verified by a legal authority. Both technical and non-technical details are added to the contract as seen fit and again is dependent on the customers needs.

In general, both the software and the non-software companies have a standard contract template that they use as a starting point. The amount of detail added to the standard template is in both cases dependent on the customers requirements. The tendency is for the software companies customers’ to specify their technical requirements in greater detail than the non-software companies customers’. The non-software companies tended to put more emphasis on the legal terms and conditions compared to the software companies.

4.1.3 Contract Negotiation

This section and the questions involved aim to identify the activities used by the companies during the negotiation stage of the process.

4.1.3.1 Question 13: Can you tell us about the negotiation stage?

The duration and usage of the negotiation stage varies between the software companies interviewed. Some companies negotiate after winning the contract while others negotiate during the contract winning stage. Therefore the lengths of time given can vary depending on the particular companies usage of the term negotiation. With this in mind it can take between two days and one month to negotiate a contract. The time is dependent on the customers requirements and the project complexity. During negotiations the areas that are discussed and negotiated mainly concern costs, schedule and legal terms and conditions. As previously stated all companies conduct face to face negotiations and involve either the CEO individually or the CEO and project manager or technical expert.

The amount of and form of negotiations used by the non-software companies varies and is dependent on the customer and the type of product being sold. The amount of resources available to the company can determine the type of negotiation that takes place. For a small company with low profit margins on their goods it is not financially viable to meet all customers face to face so therefore negotiation takes place over the phone or through electronic means. Companies larger in size whose products are more expensive tend to carry out negotiations face to face over a two to
three day period. Negotiations normally concern costs, schedule and legal terms and conditions. The personnel involved usually were the CEO and sales personnel and in some cases technical experts.

In both the software and non-software companies the duration of the negotiation stage varies and can take up to one month. In general, the issues discussed in both concerned similar areas, those of costs, schedule, and legal terms and conditions. All of the software companies conducted face to face negotiation while not all the non-software companies did so.

4.1.3.2 Question 14: Do you store experience and results from past contract negotiations?

All the companies interviewed, both software and non-software, stored experiences from past contract negotiations. These experiences are stored in all cases in both paper and electronic format. The lengths of time that these experiences are stored for range from two to ten years depending on the product. Companies from both types of industries have similar types of processes for storing their experiences.

4.1.3.3 Question 15: Do you re-use this knowledge?

All the companies interviewed reported that they did reuse the experiences that they stored. The retrieved information is used as a starting point for new proposals and can also act as a guide regarding past negotiations with customers.

4.1.3.4 Question 16: Is it beneficial?

All the software companies thought that the experiences that they stored were beneficial. In all cases this is true because it means that they do not have to create a new basic contract each time they do business with a customer. The storage and retrieval of contract experiences is seen to increase the efficiency of the contract winning process. However, it is interesting to note that one software company saw the storage process as time consuming and non-revenue creating so therefore was selective on what they stored.

All the non-software companies believed that the experiences that they stored were beneficial. The majority mentioned that they are beneficial because they can retrieve information on the pricing levels that were previously used.

Both the software and non-software expressed similar views when answering this question. They all felt that the stored experiences were beneficial for future contracts and would continue to store their experiences. One area of improvement that was mentioned was in the retrieval of the experiences. Some companies would like to have better search and retrieval functionality.
4.1.4 Contract Follow-up

The follow-up section outlines the findings as regards the follow-up being used by companies.

4.1.4.1 Question 18: How do you follow-up on contracts that are won or lost?

In general, software companies that win the contract follow it up by concentrating on delivering a quality product on time and within budget. Follow-up also involves meeting with customers at least once a year and by obtaining their feedback on their products and services. When software companies lose a contract they will almost always contact the customer and ask for an explanation as to why they did not win the contract. This allows them to learn for future proposals and negotiations. The non-software companies behave in a similar fashion when a contract is lost. Sometimes they try to get a copy of the competitors winning proposal. Similarly, when contracts are won they try to continually satisfy the customers requirements.

4.1.4.2 Question 19: Do you sometimes compromise your profits on contracts in order to gain market–share, goodwill, and reputation?

The majority of software companies compromise their profits on contracts. The reasons why they do this are to win market-share, to increase their reputation in the market place and to create goodwill and trust with their customers. In one company this is part of their overall business strategy.

Similarly, the majority of non-software companies also compromise their profits for similar reasons as the software companies. Of the companies who avoid compromising their profits they instead focus on delivering additional services and functionality.

4.1.4.3 Question 20: Are there areas in the process where improvements can be made?

One area that is mentioned by both software and non-software companies as an area for improvement is in the storage and retrieval of past contracts and contract experiences. Another common area for improvement is in the marketing of their products.

The other areas for improvement vary both within the same industry type and between the two types of industries. Such areas include the formulation of a formal process for contract winning, improved communications both internally and with customers and improvement of the legal terms and conditions of their contracts. The appendix contains a complete description of the areas for improvement mentioned by the companies.
4.2 Summary

The empirical research carried out in this thesis uncovers a number of interesting findings. They are now summarised.

- The software companies that took part in the study are more process oriented than the non-software companies. This may be attributed to the fact that software companies are newer and that the software industry tends to encourage process thinking and work more within project structures.

- Not all companies have a formal process in place for winning and negotiating contracts but most have some form of process, even if some aspects are carried out in an ad-hoc manner. A general breakdown of the process stages resulted in Intention, Negotiation and Performance.

- Products and markets appear to have a greater impact on the company growth rate than its age while software companies tend to focus on fewer but larger projects.

- The vast majority of companies do not have a dedicated resource to handle contracts. In all companies, where the projects are sufficiently large, the CEO makes the decision regarding the terms and conditions of the contracts that are won. This decision is normally made so that conformity with the overall company strategy is achieved. The people involved in the contract process vary in accordance with the project complexity.

- Neither set of companies are using contracting tools in a widespread manner. Companies mostly use standard office tools to handle their contracting activities.

- The time spent by the companies to prepare a contract can vary and can be seen to be influenced by the product scope and complexity, the customer and the market.

- In both types of companies the duration of the negotiation stage varies and can take up to one month. The main issues discussed during negotiations include costs, schedule, deliverables and the legal terms and conditions.

- The majority of companies compromise their profits on contracts. This is done in order to win market-share, increase their reputation in the market place and to create a sense of trust with their customers.

- All companies store experiences and results from past contract negotiations. These are stored in both paper and electronic format. All of the companies re-use these experiences in some manner.
• Follow-up of contracts that are won focuses the attention of the contractor on delivery of the specified product. Follow-up of lost contracts means that the customer seeks reasons as to why they did not win the contract.

• In general, companies seek to improve their process for storage and retrieval of past contracts and past contract experiences. Other areas for improvements are in communications with the customer and more awareness of the legal terms and conditions of contracts.
5 DISCUSSION

This chapter discusses the findings of the research. This mainly includes a comparison between the theoretical and the empirical studies, linking the two together and outlining our opinions on the findings.

5.1 Process Models

In the theoretical part of this research three models for the contracting process have been outlined. The extent to which these models are used in industry is unclear. The results of the empirical research carried out in this thesis indicate that a universal model is not used in the contracting process. Indeed, in the software companies interviewed only 40% said that they had a formal process in place for this purpose. Another 40% classified their process as being partially formalised, meaning that there are some processes in place but still an amount of the work involved in the contracting process is done in an ad hoc manner. Of the non-software companies who were interviewed only one third had a formal process in place. These results illustrate that companies can adopt a more process oriented view towards winning and negotiating contracts.

When analysing the factors that may influence the existence or not of a formal process we have identified that there are many to consider. These include, the type of company it is, either software or non-software, the maturity of the company, the size of the company in terms of number of employees, if the company is product or process oriented, the market for the companies products, the existence of documented quality standards and/or development frameworks, management strategy, customers, the availability of resources, process expertise and general knowledge about the contracting process.

As outlined, some of the companies who were interviewed have a formal process in place for winning and negotiating their contracts. A further analysis of these processes outlines their activities. In order to clearly represent these activities we have chosen to categorise them into the three stages that form the Conventional Model, i.e. Intention, Negotiation and Performance [Granfors, 1989]. The activities that are included in each of these stages are outlined in the presentation of the interview results in Appendix B. Some of these activities are similar to those
highlighted in the theoretical model and therefore a correlation can be seen between the theoretical and the empirical work.

In the Intention stage of the Conventional Model the initial contact is made between contractor and customer. Typically, this stage concludes with a letter of intent outlining contractual duties. This corresponds with the activities that we have placed in this phase based upon our interview presentation and analysis. These activities include contact with the customer, elicitation of requirements and a subsequent proposal outlining the intentions to provide a product or service to the customer.

In theory, the negotiation stage initially involves discussion and clarification of the terms of the agreement. It concludes with a contract document that contains the terms and conditions of the contract. These include details such as technical specifications, cost, schedule and responsibilities [Granfors, 1989]. These activities correspond to those mentioned by the interviewed companies who stated that negotiations mostly concerned the time-plans, the cost, the payment details and the deliverables. One feature regarding negotiations that is missing from the theoretical model are the tactics that may be used in negotiations. In our empirical research we found that some companies compromise their profits during negotiations in order to gain market-share. These issues are discussed in more detail later in this section.

In the Conventional Model the performance stage involves fulfilment of the contract documents details. Of course these details will depend on the nature and complexity of the project and must be agreed upon by both the contractor and the customer [Granfors, 1989]. Because of this there exists a variation in the activities that were carried out by the companies who participated in the empirical research. Obviously all companies concentrate on delivering the details agreed in the contract but having delivered the product there are differences in how or indeed if companies follow-up on the delivery. Only 40% of the software companies followed-up after delivery while the percentage in the non-software companies was also low. Other details on the follow-up activity are discussed later in this section.

The Tentative Model outlined in the theoretical research was developed for the software industry. It considers three different product types [Warsta/Seppanen, 2000]. In our empirical research the companies interviewed either developed enterprise solutions software or professional software services. It is our view that the model is equally as effective for either type of solution. In our opinion the stages in the Tentative Model and their activities overlap with the stages of the Conventional Model. The Customer or Supplier selection phase is similar to the Intention stage where potential customers are sought based on criteria such as product compatibility. The activities of the Contracting phase correspond to the Negotiation stage while the Execution and Follow-up phases in the Tentative Model largely correlate to the Performance stage in the Conventional Model. Although the majority of companies interviewed perform the activities mentioned in all of the above stages the problem lies in the fact that there is no specific recognised process that unifies these activities. This result in companies using ad-hoc practices when trying to win and negotiate contracts and by the admission of the majority of companies this is not an effective way to carry out this important activity. Therefore, the need for a formal process model and guidelines on how to use this model became apparent. This need becomes
the focus of our recommendations, which are presented and explained, in the next chapter.

5.2 Contract Management Tools

Research shows that the use of contract management tools can help companies in the process of winning and negotiating contracts (section 3.3) [Morrison/Dunbrack, 1994; Informationweek.com, 2002]. The technology and options available to users can provide help in areas such as contract modelling, contract terms and conditions, auditing of bills and payments and analyses of contracts that are won and lost. The use of tools by the companies who were interviewed was not widespread. The software companies mostly use standard office applications such as MS Word and MS Excel. The non-software companies also use these standard office tools as well as some customer relations tools to track customer details. From our literature research it is not advisable to depend on such standard office tools because they are not designed to share information that is important to contract agreements [Bray, 2004]. For example, these tools cannot measure accurately specific financial performances. The advantages that these tools have to offer have been outlined in the theoretical study and these should be considered by the companies. [Morrison/Dunbrack, 1994; Informationweek.com, 2002] The size of the company can influence the use or selection of a contract management tool and this is also a consideration. Therefore the needs of each company must be assessed individually and then a decision can be made on whether the acquisition of such a tool will be a cost-effective solution.

5.3 Contract Design

As the contract is a legal document its contents must be considered in great detail by both the contractor and the customer. Therefore the design of the contract is an important issue for all parties. For confidentiality reasons towards the companies who participated in the empirical research the specific details of their contracts are not disclosed. However, we can state that the majority of companies have a standard contract template that they use as a starting point. As each customer and project varies the content of the contract also changes. According to the interview responses the areas that are specified in great detail are those concerning schedule, cost, design specifications and responsibilities. In our theoretical work (section 3.2.4) we have highlighted the main areas that a contract shall contain; limits of liability that states the responsibilities of the contractor, scope of the work, time frame and payment schedule [Sutcliffe, 1999]. These are consistent with the responses we received in the interviews that were carried out and illustrates that there is a correlation between our empirical research and literature resources.

5.4 Contract Types

The type of contract that a company chooses can impact on their cash-flow and profits. In our research we discovered that all software companies negotiated fixed-price contracts. Similarly, the non-software companies negotiated fixed-price
agreements with one company also negotiating incentive based contracts. This unanimous use of fixed-priced contracts is not in agreement with literature where the use of both the other types of contracts, cost-plus and incentive based contracts are well documented [Bartholomew, 1998; Clough/Sears, 1994]. According to literature, the use of cost-plus contracts in the software industry is mainly seen in companies that have been established for quite a number of years and are termed ‘older’. The software industry is relatively young in comparison to more mature industries anyhow so therefore the ‘older’ companies probably are in existence for more than twenty years [Banerjee and Duflo, 2000]. Taking this figure into account one of the software companies that we interviewed can be termed ‘older’ compared to its younger counterparts. This company uses fixed-price contracts as do all the other companies so therefore the association of older companies to cost-plus contracts was not seen in our research. The younger companies use fixed-price contracts and this can be seen to be consistent with literature. This observation can also be accountable to the fact that the projects that are small tend to use fixed-price contracts.

5.5 Contract Negotiation

The empirical study indicates that the time taken to negotiate a contract varies from a few days to one month. The diversity in the amount of time needed depends on the complexity of the project and the requirements of the customer. This analysis seems logical. A contract agreement concerning a standardised product does not need as much negotiation as a contract regarding a specialised project. This is especially true for the products provided by the non-software companies who can often use a demonstration of an existing product during negotiations. The negotiation would therefore be more in terms of costs and the delivery schedule. This is supported by the results of the empirical study.

The empirical study shows that during negotiation physical (face to face) meetings are the most popular and successful medium for negotiation. This is supported in theory where it is also stated that physical meetings are the most proficient method for negotiations [Marsh, 2001]. The theory of negotiations discusses the construction of the negotiation team as a way to cover all aspects of the contract. It also outlines the application of negotiation tactics [Gooden, 1998:500]. The people involved in the negotiations, as stated by the companies, indicates that they have considered the coverage of all areas, using technology experts in projects where they are required. However, it was not explicitly stated that a certain set of negotiation tactics were part of an overall business strategy. We believe that when experienced people negotiate contracts they may use some sort of tactics. However, often they are not formalised but rather part of the negotiators individual experiences.

Profitability can be viewed in many ways. The theory talks about market-shares, goodwill and reputation as different ways to make a profit depending on the perspective taken [Davenport/Prusak, 1998]. As discussed in the theory, the industry viewpoint on profit has undergone a transformation in the past decades, going from achieving a short term profit to a long term profit. This is mainly achieved through the factors mentioned above. The conformance of the empirical result with this theory was quite surprising for us. Most of the software companies were very clear about compromising their profits in order to achieve market-share, goodwill and
reputation. However, this contrasted with the views expressed by the non-software companies who showed a reluctance to compromise their profits. It is difficult to analyse if this is due to the fact that these companies do not consider this in their long-term business strategy or if it is a result of the small margins on their very limited local market. The small margins mean that each of their products must cover their own costs, thus leaving little room to negotiate and compromise profits. However, since the companies also are the most mature and the longer perspective is in comparison a new trend, it has come to prominence in the last 15-20 years, it is not unreasonable to argue that these industries have not yet adapted to these new trends.

5.6 Contract Follow-up

The empirical part of this thesis indicates that all companies do store information about their past contract experiences. Otherwise, no clear distinctions between the two industry types can be found. The way the experiences are stored, as aligned with the theoretical view of structured and informal internal repositories, holds to some extent. The interviews indicated that experiences are stored in both electronic and paper format, with varying amounts of information in both. We interpret that if experiences are stored in paper format then they are formalised, indicating that it has been decided upon at an organisational level. Storage of such artefacts may be done in structured formal repositories, as discussed in section 3.6.2.1. Here, the contracts are stored with other details such as plans for non-software companies or design plans for software companies. From the empirical study it can be seen that electronic storage can be a structured informal repository and used in a similar way to paper format. We believe that the use of electronic repositories will increase in importance in the future and perhaps at least partially replace paper format storage.

The informal internal repositories contain less structured information, such as informal written reports about the customer or the negotiation as discussed in section 3.6.2.1. The aim of this information is to document experiences and ideas that arose during the contracting process. These experiences may be useful in future negotiations with either an existing or new customer. Although this information is difficult to document, as discussed in theory in section 3.6.2.1, the empirical study shows that this kind of information is in fact stored and identified as useful information during re-negotiations or completely new negotiations. However, some of the companies in the empirical study also claim that they restricted the amount of information being stored since it is time consuming to create and store and the net benefits are not clearly seen. We believe that this is related to good organisational practices for retrieval of stored information. The level of detail of the information is also important. Too much detail can decrease the usefulness of the information since the important information can not be identified and extracted easily by anyone other than its author. We believe that if the detail level is adapted to the need for relevant information, it would take less time to document and the retrieval would in turn be more efficient. However, this would probably not be achieved solely with directions from upper management. Most likely a change in attitude and organisational culture would be needed in order to successful implement a storage and retrieval system.

The amount of reuse of past contract experiences is significant. All of the companies said that they reused their past contract experiences. Mainly, the information was
used as a starting point or template for new contracts. In this way past formulations, such as terms and conditions, were transferred and changed if necessary from contract to contract. Thus, a constant evolution occurs in order to adapt to the market and to the needs of the customer. By using past contracts as a foundation, the risk of omitting important information in the contracts is reduced. This is especially important for the legal aspects of the contracts, which were seen as being particularly difficult to formulate. However, once this had been achieved the need to change them was small compared to other parts of the contract. Some companies use a template whose legal terms and conditions had been verified by a legal consultant. The theory suggests a searchable repository with categorised information in order to make the information accessible in an efficient way [Davenport/Prusak, 1998]. This was not seen in the empirical study. However, some of the companies expressed a willingness to have a searchable system since they had identified the fact that they did not make as much use of the stored information as they wanted.

The empirical study showed a uniform approach to the follow-up of a contract that was either won or lost. However, as discussed in theory the follow-up is a rather wide area with much to consider. [Brown, 2000:69; Davenport/Prusak, 2000] The main follow-up performed on lost contracts was to find out the reason for not winning the contract and then to make use of that information in future negotiations. In the event of a contract being won, the next step was generally to deepen the relationship with the customer. This is supported by the three strategies outlined in section 3.6.1. [Brown, 2000:69] Maintaining customer satisfaction is most beneficial for future relations. The ratio is stated as much as 1:3 in favour of costs for maintaining an existing customer as opposed to attract and build relationships with a new customer. As a means to deepen the relationship with the customer, the empirical study indicated few methods or approaches to achieve this. Theory however, suggests that evaluation and reviews after the project has been completed or the contract has been signed, could be an efficient way to make sure that the customer is satisfied with the result. It would also give a professional impression and leave the customer with a feeling of being important to the company. Internal reviews within the companies, aimed at finding the positive and less positive occurrences during the negotiation, are also said to be beneficial for future negotiations. In general, little formal follow-up was apparent in the empirical study. However, although not formally stated, contacts or visits to the customers were conducted by most companies in order to show an interest in and to assure the continued satisfaction of the customer.

5.7 Improvement Areas

The empirical study provided a diverse range of answers regarding areas for improvement. A number of areas are not directly related to the contract process. However, since the process spans all activities, from the first contact with the customer to the follow-up, the areas pointed out are nonetheless discussed. The areas are also discussed in more detail in the recommendations we make in relation to the implementation of the proposed process.

The areas pointed out during the empirical study are given in the order of significance that they were mentioned by the companies. First of all, communication
with the customer during the early stages of the process as well as internally between sales persons, project managers etc. could be improved in order to make the contract process more efficient. If the companies could communicate in a better way with the customers during the early stages then time could be saved later in the negotiations. In the case where no contract was agreed the relationship could be terminated at an early stage, thus eliminating unnecessary work on the contractors behalf. Some companies used a similar approach since it saved time and efforts for both parts.

Another area where improvements could be made is in the way past contract experiences are stored, retrieved and reused. Managing this in a better way could potentially provide better and more efficient negotiations in the future since experiences from past negotiations could provide solutions to problems that regularly occur. This is also supported in theory, section 3.6.2, where information is said to be one of the most important competitive advantages for companies to handle [Davenport/Prusak, 2000:13].

Another area where improvements could be made is in the legal aspects of the contracts. The legal terms and conditions are complex to interpret and could cause severe liability if not carefully considered. It is therefore considered difficult to manage but still important to have. The solution could be a template containing the legal terms and conditions. Ideally this document shall be drafted by legal consultants. This indicates that the companies experience the increased complexity of the contracts as discussed in section 3.2.1. [Byrne-Halczy, 2002]

Additionally, increased provision and support of tools in the area of storage and reuse of past experiences was also stated to be desirable by one of the companies. A general contract management tool would be helpful in this regard. A more efficient marketing strategy, with a slight change of focus towards the Internet, was also seen as an area that could be further developed. One company stated that the development of a structured approach to every contract negotiation would be good. The proposal here is the formulation of a checklist that includes all relevant factors, thus reducing the risk of neglecting important facts.

5.8 Summary

This section, containing the discussion part of the thesis, has outlined the authors opinions on the findings of the theoretical and the empirical studies. A complete summary containing the conformant and non-conformant facts concerning both studies is presented in Appendix C.
6  RECOMMENDATIONS

This chapter outlines the recommendations and guidelines that we identified from our research. First, we explain the reasons for formulating the recommended process model. The process itself is then presented in detail and the benefits of the proposed process are then outlined. Here we compare it to the processes presented in the theoretical study. From the empirical investigation and our studies of state-of-the-art research we provide recommendations to small development companies in the area of contract winning and negotiation. These recommendations will give the companies an insight into the contract winning process and provide them with a new process more suitable and adaptable to their needs.

6.1  Foundation for the Recommended Process Model

The main focus of this thesis is on the contract winning process. It is our interpretation that this process begins when a contract is formed between two parties, who throughout this thesis have been referred to as the contractor and the customer. Once this initial contact has been made the process proceeds through a number of stages, from negotiation to follow-up. During our literature review we uncovered three process models that are used in the contracting process. These have been outlined in section 3.4.3 and have been discussed throughout the process analysis and discussion. The empirical research has outlined the extent to which companies use a formal process in the contract winning activity. As has been previously stated there is no universal model that is used by either the software or non-software companies that were interviewed. Some have a process in place, others have a partial process while others do not have a process at all. During the interviews a majority of the companies expressed their desire to have a formal process or to improve their existing process for the winning of contracts. This desire has focused our attention on the need for a model and therefore we have formulated our own model for this purpose.
6.2 Contract Winning Process Model

The model is based on the three models that have been outlined in the theoretical section and on the responses given by the companies to the questions related to their processes. It is shown below.

![Diagram of Contract Winning Process Model]

*Figure 6.1: Recommended Contract Winning Process Model*

The Contract Winning Process Model that we propose contains five stages:

1. Acquisition
2. Formulation
3. Negotiation
4. Delivery
5. Follow-up

The activities involved in each stage will now be outlined. The description will also include details on how the model is intended to work and the interactions that occur between stages.
6.2.1 Acquisition

The first stage of the process involves initiating business relations with the customer. We use two different scenarios to describe the situations that contractors may find themselves in. In the case where the contractor seeks to make contact with a customer then there are a number of activities that the contractor can perform. These may include a market analysis of their area of business to find out about potential customers. Other methods that can be used include attendance of trade fairs where they may meet potential customers or through a network of contacts that can be built up through previous business transactions.

The other scenario is when the customer makes contact with the contractor. In order to achieve such a situation we believe that the reputation of the contractor in the marketplace is a very important aspect. Reputation is not a commodity that is built up overnight so therefore it takes much work on the part of the contractor to create it. In order to increase reputation in the marketplace the quality of the product should be of a very high standard and it is also important that the service and commitment provided to the customers is at a high level. Furthermore, contractors can seek to increase their reputation in the marketplace through advertisement, either on the Internet or other media publications.

Once the initial contact has been made and there is willingness on both parts to do business then this leads to the next stage.

6.2.2 Formulation

During this stage the contractor and customer meet and discuss the needs of the customer and the abilities of the contractor to meet these needs. This allows both parties to assess the other's qualities and to make a decision on the likelihood that they can form a contract together. Once a decision has been made to continue into an agreement the need for requirements elicitation becomes important. During requirement elicitation the technical and/or other needs of the customer are elicited and recorded. It is important to include all stakeholders in this process as this ensures complete coverage of the requirements to be included. Once the requirements elicitation has been carried out then the contractor can compile a draft proposal detailing the technical specifications, the costs, schedule, scope and responsibilities. This is submitted to the customer and then negotiation between both parties takes place. This is the next stage in the process.

6.2.3 Negotiation

During the negotiation stage there are a number of important factors that should be considered in order to increase the chance of being successful. The main thing to remember is the companies overall business strategy along with the importance of the customer. The contractor must address whether it would be beneficial to compromise profits at some stage of the negotiation in order to potentially gain market-share and increase reputation. Taking a stand is most likely needed at some time during negotiations but the ability to give in on some point may pay dividends in the future.
At the negotiations stage it is important to behave in a professional and competent manner. One way to do this is to construct the negotiation team so that the team’s knowledge covers all possible questions that arise. This is also beneficial because it can mean that the time needed for negotiations is reduced, since an issue does not need to be postponed to future meetings. As discussed in theory, if possible the negotiation team should contain at least two persons. This allows them to support each other, important factors are less likely to be forgotten and they can team up and use tactics. These tactics may be minor aspects such as one person focusing on negotiating while the other take notes and perhaps evaluates the costs and time schedules. Although seemingly minor details, they can be very effective during negotiations.

The negotiation stage should conclude with a contract agreement document that includes details about the deliverables, the roles and responsibilities, costs and time schedules.

6.2.4 Delivery

Once the negotiation stage has finished the delivery stage can begin. The starting point for this stage is the contract agreement document. This is a direct result of the negotiations and contains all the information that is needed for the contractor to proceed. The main activity of this stage is the development and delivery of the product. We recommend that this is done in accordance with standard development processes available in industry today. The type of process used is very much dependent on the company and the type of products it develops. It is also possible that re-negotiations take place during this stage. This may be due to changes that occur in the customer/product requirements. If this occurs then the contract agreement should be changed accordingly and the corresponding changes implemented. Once the final product has been developed then it is delivered to the customer. This leads onto the final stage of the process, the follow-up.

6.2.5 Follow-up

The follow-up stage has two perspectives. The first is the contract perspective and the second is the customer/product perspective. Follow-up from the contract perspective involves storage of the contract documents. This is important because they may be beneficial for future contracts and negotiations. It is recommended that after each project an analysis is carried out with an emphasis on the details that are specific to the contracting process. It is advisable to document these details paying particular attention to the areas where improvements can be made. These improvements can then be taken into account for future contracts.

Follow-up of the customer involves contacting them after the product has been delivered to make sure that they are satisfied with the product. It is advisable to meet the customer once or twice a year to discuss the product from their perspective. This allows the contractor to increase their understanding of the customers needs and consequently may mean that they will provide further solutions in the future. It also
serves to build the reputation of the contractor and creates trust between both parties. Both of these factors can enhance the possibility of future business contracts.

6.3 Contract Management Tools & Other Recommendations

As can be seen from the diagram there is a link from all stages to a contract management tool. This tool has multiple functionality that can be used in each of the stages that we have outlined. In the acquisition stage it can act as a repository for customer details. In the formulation it can allow companies to model contracts and help in the formulation of a proposal. Such a tool can be helpful in the negotiation stage by allowing companies to retrieve previous negotiation experiences and to use them to their benefit in the new negotiations. In the delivery stage the tool allows users to track the terms and conditions of the contract and to perform cost analyses on the progress of the project. Finally, in the follow-up stage the tool can help companies to analyse contracts that are won and lost and to gain an in-depth knowledge of contract renewals. There are other benefits that contract management tools can offer and the recommendation for companies is to decide on the level of detail that they require in their contracting process and then source a contract management tool that fulfils these requirements.

Further recommendations to companies centre around the types of contracts that are negotiated. The vast majority of contracts that are negotiated are fixed-price. The advantage of this type of contract is that it allows the contractor to calculate and budget their resources according to the negotiated price of the contract. It is possible that companies do not always negotiate the contract that is most beneficial to them. For example, in older companies who work on complex projects it may be better for them to negotiate cost-plus or incentive based contracts. The choice of contract is dependent on the above factors and others such as risk and resources available. Consideration of these can help a contractor to decide on their choice of contract and it may prove that the present choice of contract is not the most beneficial. Therefore we recommend that companies assess the benefits and characteristics of all contract types.

6.4 Benefits of the Contract Winning Process Model

In order that companies can use our proposed model with confidence it is important to outline the benefits that usage of the model will achieve.

The first benefit is the general advantages that process thinking and the establishment of a formalised process have to offer. These benefits have been outlined in section 3.4.1.2. For example, the use of a process allows an organisation to repeat previous successes. This is especially true where process have become institutionalised in an organisation.

The model also has the benefit of complete coverage of all the stages and activities that are involved in the contract winning process. This begins with the customer
acquisition and follows right through to the follow-up of both the contract and the customer. This complete coverage was not present in the three theoretical models that were presented (section 3.4.3) and therefore our proposed model can be of greater benefit to the development companies. We also offer a greater in-depth explanation of the activities that are involved in each stage of the process compared with the theoretical models. These include advice on how to carry out effective negotiations and the importance of legal terms and conditions.

Our proposed model considers the situation where the contractor seeks the customer and also where the customer seeks the contractor. In so doing it offers suggestions on how each scenario can be handled before the requirements elicitation process commences. This feature also offers additional benefits to company who seek to use the model.

The iterative nature of the model provides flexibility to its users. This feature has been included because in the vast majority of contracts re-negotiation of both requirements and the terms and conditions of the contract is needed. By factoring this into the overall process it allows an organisation to allocate the necessary resources to the contract winning effort in terms of time and personnel.

Another benefit of the proposed process model is that it is a generic model. Therefore it can be used by both software and non-software companies. Also, the degree to which the activities of each stage of the process are conformed to can depend on the relationship with the customer and the type of product being developed. This means that the company using the model can decide to what level of detail they need to use each stage. This allows greater flexibility and control.

The proposed process model advocates the use of a contract management tool. This tool can be used in all stages of the process and therefore its use can have many advantages. It can act as a repository for past and present customers as well as a source for contract templates. Such tools may also have the facility to calculate different types of contracts based on inputs from the contractor. This is beneficial because it allows the contractor to see which contract will offer them the most financial rewards.

Contract follow-up is an important area and in our model we have facilitated follow-up of both the contract and the customer. This offers clear benefits to the companies who will use the model in terms of retrieval of details of past contracts and of customer details. This has the advantage of allowing companies to learn from past experiences.

6.5 Summary

The recommendations leading from this thesis are formulated in the proposed contract winning process model. The model is based on theoretical models and the conducted empirical study. It contains five stages.

1. Acquisition: This stage involves initiation of business relations with the customer. We have recognised two scenarios when this can take place; the
customer makes contact with the contractor or the contractor makes contact with the customer.

2. **Formulation:** During this stage the contractor and the customer meet to assess their compatibility in terms of doing business together. If they decide to continue working together then the requirements elicitation becomes important. Once this step has been carried out the contractor can compile a draft proposal where the details are specified. This proposal is then submitted to the customer and preparation for negotiations can begin.

3. **Negotiation:** During the negotiation stage it is important to remember the overall business strategy of the company and how this equates with the needs of the customer. Consideration of these factors can help the negotiators to decide whether to compromise their profits on the contract. The negotiation stage results in a contract agreement document that includes details on the project deliverables, the costs, roles and responsibilities and the time schedules.

4. **Delivery:** The contract agreement document is the focal point in this stage and it allows the contractor to achieve the goals of development and delivery. Delivery of the product is the final act of this stage.

5. **Follow-up:** The follow-up stage has two perspectives. The contract perspective focuses on the storage of the contract documents. The customer/product perspective involves activities to assure satisfaction with the delivered product.

Provision of a contract management tool is recommended as it provides multiple functionality and can be used in every stage of the proposed process model.

It is also recommended that contractors assess the characteristics and benefits of all types of contracts as it is possible that they are not negotiating the most advantageous to them.
CHAPTER 7

7 CONCLUSION

This chapter presents the conclusions that we have identified from the thesis. The chapter begins by outlining general conclusions arising from the research. Here the research questions that were stated in the introduction are answered. Next, some criticisms and areas for improvement are stated. This is followed by suggestions for further research. These aim to provide recommendations for the future studies in the field of contracting processes.

7.1 General Conclusions

The aim of the thesis has been to investigate current practices used by both software and non-software companies in winning and negotiating contracts. This lead to an examination of the existing differences between both types of companies in this area. This in turn provided a basis to formulate a recommended process model for contract winning. In industry and from our previous course experiences most emphasis is placed on post contract activities. These activities include project planning, cost estimation, scheduling etc. Since we believe that the pre-contract activities are of equal if not greater importance for a successful project, we wanted to take the opportunity to learn more about the factors involved in contract management and how they are used in today's industry. Throughout the thesis, the perspective taken, during analyses, discussion etc., has been from a software engineering viewpoint. We are particularly interested to investigate if the management and process approaches have been considered. To address these issues we undertook a comprehensive approach that covered both the theoretical and empirical studies. These have allowed us to answer the research questions outlined at the beginning of the thesis. The central theme running through each question is the contract winning process.

Research Question 1: Do small development companies use a uniform process to win contracts?

This question addresses whether small development companies use a uniform process to win contracts. From our empirical research we found that this is not the case. As we have already outlined not all the companies have a formal process in place to win and negotiate contracts. The existence or not of a formal process is linked to a number of factors. Such factors include the maturity of the company, their
attitude towards process thinking, the resources available to them and the attitude of management. Some companies have a formal process in place and see the benefits that this has to offer them particularly in the area of re-use of previous contract experiences. Of the companies that did not have a formal process in place, a number of them expressed their willingness to implement such a process.

**Research Question 2:** Are there any similarities/differences between the contract winning process used in small software development companies and small industrial development companies?

Addressing the second research question the empirical research shows that there are similarities between the software and non-software companies concerning their contract winning process. These similarities lie in the fact that the majority of companies have standard templates that act as a starting point in the contracting process. The details of each company contract are specific according to each customer’s requirements. The majority of companies do not have a dedicated resource for the contracting process. Usually it is the CEO’s task to negotiate and finalise the contracts that are won. All companies store and re-use past contract experiences though the degree to which this is done varies between companies.

**Research Question 3:** Could a general contract winning process be formulated?

During the research it became apparent that there existed a pattern in the activities that companies use to win contracts. This was also displayed in literature where three process models were uncovered. All companies used a number of activities that helped them to win contracts. However, these activities were often performed in an ad-hoc meaning that there was a lack of a formal process. Having analysed the results of the empirical research and complimented these with the existing theoretical work we formulated a process model that companies could follow in order to win contracts. This model forms a large part of our recommendations and is central to this thesis work.

**Research Question 4:** What follow-up procedures are used, if any, to improve the contract winning process?

Most companies follow-up on contracts that are lost by trying to find out why they lost the contract. To do this they contact the customer and request an explanation and if possible the winning proposal. This information allows them to improve on areas in which they are weak. Follow-up on the customer is not widespread and is an area in which we recommend improvements. This is also a part of our overall recommendations.

In order to answer the research questions we have conducted an in-depth analysis of the contract winning process. This research and analysis has allowed us to understand how small development companies try to win contracts. In so doing we have come to the realisation that not all companies use a formal process when trying to win contracts. We have also come to the conclusion that a general contract winning process would be beneficial to these companies, as it would give them a structured and standard way to carry out this important activity. This has led us to create a Contract Winning Process Model containing five stages. It is our belief that
As we conducted the study and made the initial contacts with the companies for the empirical part, we quickly discovered the interest in the field of contract management. Most of the companies contacted wanted to participate and had identified their contract management area as problematic but did not see a way to improve it. The interest of this study was therefore very high amongst the participating companies.

7.2 Criticism of the Research

During the execution of this study we have identified a number of areas where we believe improvements can be made and considered in a similar study. Although we identified some of the areas from the start we would have considered them in greater detail if we were to redo the study. The areas are outlined below and are divided between the empirical and theoretical part of the thesis.

7.2.1 Empirical Study

- Selection of companies
  The selection of companies provided a broad study with different types of companies within the chosen industries. A more focused selection on one type of company from each industry would probably have given an easier analysis with more reliable findings. The analysis of the individual companies was also influenced by the market that they focused on. However, the focused approach would have needed more time, especially for the empirical study where selection and sourcing of interviewees would be more difficult.

- Similarity in the companies
  The small development companies that participated in the research ranged in size from three and sixty. This range provided large differences between the companies. This influenced the result since the market for these companies differed significantly and thereby demanded varying levels of process use. However, it also gave us exposure to a broad range of processes, from companies with few employees and no process up to companies with more employees and a fully documented and formalised contract winning process.

- Larger empirical study
  The study would possibly have provided a more reliable result if the number of companies participated would have been larger. Nevertheless, even with a survey size of eight companies a clear pattern regarding the contracting process and it associated activities emerged.

- Interviewees interpreting the questions differently
  Although we tried to eliminate this factor, it is a factor to be aware of when using surveys. The questions were sent out in advance and motivation for each question was formulated. This most likely reduced the risk of
misinterpretation. However, unwillingness to provide comprehensive answers to questions relating to business strategy is not something we could prepare for. Each interview started with an assurance to the interviewee that full discretion regarding their identity and answers was used.

7.2.2 Theoretical Study

- Theoretical field coverage
  The contract process thinking is a rather new area, although the history of contracts is very old. In general, few research studies have been conducted in the field of contracting processes. This is reflected in parts of our theoretical work where reliance on single sources of reference occurs.

7.3 Further Research

During the study we have identified a number of interesting areas where continuous studies could be performed. These are areas that are either outside the scope of this thesis or because of time constraints they could not be elaborated on in this thesis. The provision of an efficient contract winning process is interesting for the small development companies that participated in this research. We make the assumption that these companies are representative of the general view in both industries and therefore it seems that such a process is of interest to the majority of small development companies. The area is seen as problematic and quite complex, which in some cases results in the companies continuing with the traditional methods even though they see and want improvements. Further studies within the field should thereby be beneficial and appreciated.

- Focused study in terms of profitability, success rate, and efficiency with and without a formal contract winning process in place.

  It would be interesting to perform a study with two companies, one with and one without a formal process, and then measure efficiency, success rate, profitability etc. over a defined period of time.

- Are the companies with a documented formal process more efficient?

  A broader study aimed at finding out if companies in general benefit by using processes, such as a contract winning process.

- Contract management tools; do they help and if so in what way.

  A more detailed study of the available tools for contract management, exploring their benefits and extent. A research such as this could investigate if the tools could be improved to help the companies in other areas.

- Case study with implementation of the proposed contract winning process model.
A long-term study to implement and evaluate the proposed contract winning process model. Its benefits and advantages in relation to other process models could be examined. It could also be analysed in terms of adaptability to certain organisations, markets and products.
8 REFERENCES


APPENDIX A, QUESTIONNAIRE

Questionnaire with Motivation

Part 1 – General Company Information

Q1. Can you tell us about your company in terms of size and number and type of projects?

Motivation: Just some background information. This can also allow us to understand the number of contracts that the company has won and also perhaps if they try to win new business or if most of the contracts are with repeat customers.

Part 2 - Contract Preparation, Planning and Formulation

Q2. Can you tell us about your role in the company and your involvement in the contract process?

Motivation: This question allows us to draw conclusions on the type of personnel that are involved in the contract winning process.

Q3. Does your company have a formal process in place for contract winning and negotiation?

Motivation: We try to find out if the company has consciously thought about their process of contract winning and negotiation.

Q4. If so, what are the phases of this process?

Motivation: To gain knowledge on how the company goes about winning the contract.

Q5. If not, how do you handle contracts?

Motivation: If formal processes are not used do they rely on ad-hoc methods and / or the individual skills of their personnel.

Q6. How long has the process been in place?

Motivation: If the process has been in place for a number of years and the company is successful then there is a likelihood that their process is a good one (at least good for them). If its new and untried then we can find out how is it working.

Q7. Has it been modified over time?

Motivation: We want to find out if they made changes and if so why. Did they find a better way of winning the contracts and what did they change.
Q8. Can you tell us about tools or techniques you use?

Motivation: We want to find out if they use specific techniques and / or tools to help them win contracts. For example do they use a database to store old contract negotiations.

Q9. How long does it take to prepare a contract before submitting it to a customer and what factors do you consider?

Motivation: We want to find out if there is a common length of time that companies allow for the process and also if they consider past contracts, market situations and other such factors.

Q10. Who are the personnel involved in contract agreements?

Motivation: We want to find out if the company relies on one person or a group of people to win and negotiate contracts. Also, is this person the PM and also who they deal with when they talk to their customer.

Q11. What type of contracts do you usually negotiate?

Motivation: We ask this question to find out if the company usually negotiate a fixed-price, cost-plus or an incentive based contract. They could also negotiate a contract that is a variation of one of these contract types.

Q12. When formulating the contract are the details very specific or more general?

Motivation: We want to find out how much time and effort the company makes in this stage of the contract winning process. Also, what typically goes into the contract at this point.

Part 3 – Contract Negotiation

Q13. Can you tell us about the negotiation stage?

Motivation: How do they go about this stage. Who are involved? Answering these questions allows us to understand more about how the contract is brought to fruition.

Q14. Do you store experience and results from past contract negotiations?

Motivation: We want to find out if they use past experiences when negotiating the contracts and how they store this knowledge.

Q15. Do you re-use this knowledge?

Motivation: We find out if the stored knowledge is used and how. Maybe we can get some examples of where this knowledge was re-used.
Q16. Is it beneficial?

Motivation: We try to understand if there are benefits in storing the past experiences. Maybe find out occasions where they were beneficial.

Q17. If you do not store the knowledge do you think it would be beneficial to do so?

Motivation: Maybe the company did not think about this before and perhaps their past experiences could benefit them in the future negotiation.

Part 4 - Contract Follow-up

Q18. How do you follow-up on contracts that are won or lost?

Motivation: We want to find out if they analyse how and why they were successful or not. Do they use the experience to improve the process? Also, when they win the contract, what are the next stages?

Q19. Do you sometimes compromise your profits on contracts in order to gain market-share, goodwill, and reputation?

Motivation: We want to see if some companies use such tactics to get into or stay in the market place.

Q20. Are there areas in the process where improvements can be made?

Motivation: Perhaps there are some things that could be changed for the better and we try to find out what this could be.

Part 5 – Final Questions

Q21. Would you be interested in taking part in a case study carried out by us on the contract process?

Motivation: Perhaps if we find a particular company interesting then we can carry out a case study at their company.

Q22. Would you like to see the results of our research?

Motivation: If they would like to see the report and perhaps learn more on the area.
APPENDIX B, PRESENTATION OF INTERVIEWS

Software Companies

Q1. Can you tell us about your company in terms of size and number and type of projects?

<table>
<thead>
<tr>
<th>No. of employees</th>
<th>Established</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>1997</td>
</tr>
<tr>
<td>35</td>
<td>1982</td>
</tr>
<tr>
<td>10</td>
<td>1995</td>
</tr>
<tr>
<td>4</td>
<td>1998</td>
</tr>
<tr>
<td>30</td>
<td>1999</td>
</tr>
</tbody>
</table>

Table Appendix B.1: Nr of employees and time of establishment in software industry

Table Appendix B.1 presents an overview of the software companies that we included in our study. The companies develop and/or provide software solutions for their customers. What is clearly visible is that most of them are quite recently founded. Their number of employees also correlates to when the company was established. As can be seen the companies with fewer employees are in general more recently established.

The contracts being signed are few but valuable to the companies. Most of the projects lead to support agreements. Besides the support agreements, most of the customers are new.

Q2 & Q10. Can you tell us about your role in the company and your involvement in the contract process? / Who are the personnel involved in contract agreements?

<table>
<thead>
<tr>
<th>PM</th>
<th>MD/CEO</th>
<th>Sales</th>
<th>Tech. Experts</th>
<th>Dedicated</th>
<th>Authorising person</th>
<th>Process in place since</th>
</tr>
</thead>
<tbody>
<tr>
<td>CI</td>
<td>CP</td>
<td>CI</td>
<td>CI</td>
<td>No</td>
<td>MD/CEO</td>
<td>No formal</td>
</tr>
<tr>
<td>CP</td>
<td>CI</td>
<td>CI</td>
<td>CI</td>
<td>No</td>
<td>MD/CEO</td>
<td>1982</td>
</tr>
<tr>
<td>CI</td>
<td>CP</td>
<td>CP</td>
<td>CI</td>
<td>Yes</td>
<td>MD/CEO</td>
<td>2001</td>
</tr>
<tr>
<td>CI</td>
<td>CP</td>
<td>CI</td>
<td>CI</td>
<td>No</td>
<td>MD/CEO</td>
<td>1998</td>
</tr>
<tr>
<td>CP</td>
<td>CI</td>
<td></td>
<td></td>
<td>No</td>
<td>MD/CEO</td>
<td>2003</td>
</tr>
</tbody>
</table>

Table Appendix B.2: Involved persons, establishment of processes and interviewee in software industry

Table Appendix B.2 illustrates the people we met during the interviews and those normally involved in the contracting process. The notation CP is the Contact Person who was interviewed. All of the interviewees were involved in the contract process. Beside themselves all other personnel normally involved are denoted as CI (Contract Involvement). The table headings should be interpreted as follows:
PM; Project Manager
Sales; Sales department/person
Tech. experts; Technological experts in different areas that could answer specific technology questions during negotiations.
Dedicated; When a person is assigned to solely work with the contract management issues.
Authorising; The person who has the final authority to sign the contracts.

All of the companies used the CEO/MD as the person to have the final authority to sign the contracts. One of the companies had an appointed person for handling their contracts. The companies that have a fully or partially documented process had quite recently started working with it. In two of the five interviewed companies technological experts where used regularly during the contract negotiations.

Q3. Does your company have a formal process in place for contract winning and negotiation?

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
<th>Partial</th>
</tr>
</thead>
<tbody>
<tr>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
</tbody>
</table>

Table Appendix B.3: The use of processes in software industry

Table Appendix B.3 shows the answers to the third question. As the table illustrates only one company claimed that they use a documented process. Two companies said they do not have a documented formal process in place. The remaining two said they use a partially formalised process. A partially formalised process means that they use templates as an aid every time a contract was negotiated. This gave them a standardised approach for their contract process but the entire process was not formalised.

Q4 & Q5. If so, what are the phases of this process? / If not, how do you handle contracts?

The answers given to questions four and five, concerning the phases of their processes, were complex to document. Therefore, we divided the general contract process into three phases. The steps are intention, negotiation and performance. The intention phase concerns all the actions that take place before the negotiation is invoked. Negotiation is the phase when the negotiation is carried out. The performance stage is concerned with the follow-up and the follow-through of the contract. The answers that we received from the interviews have been placed in these phases, allowing for a better overview of the answers.

Intention
In the software companies, marketing is usually the first step that is used to attract customers. Two out of the five interviewees said they use this approach above all others. The remaining companies use networks, alliances with other companies or
relied on their reputation in the market place, meaning that the customers contacted them. The next step used by every company is to elicit the requirements from the customer and to create a proposal for a project. In this step, one company uses a pre-project evaluation, resulting in a prototype that was verified and presented to the customer. Others defined the time-plans, costs, risks involved and similar factors in the proposal and submitted/presented it to the customer.

Negotiation
The common approach during negotiations is the use of physical meetings. The negotiations mostly concern the time-plans, costs, payment details and the deliveries. No specific negotiation tactics were mentioned in the interviews but acting competently was said to be important during negotiations. In many cases a technological expert was used in order to quickly give a technological opinion without the negotiations being stranded. During the negotiations profit in a shorter term is said to be important. Profit is also seen in a longer perspective in terms of market-shares and future relations with the customer. All but one company said they were willing to compromise some profit in order to gain market-share.

Performance
When it comes to the follow-up of their contracts little information was given. Three companies use no specific follow-up on their customers. The remaining two have some follow-up on their customers but it differed between them. One company visits their customers at least once a year but use no specific follow-up on the contract. Another company stores experiences from the negotiations and writes a concluding note about the negotiation and the relation to the customer for future reference. All form of ‘possible corrupted and strange behaviour’ is noted and documented. The customer was not visited on a regularly basis as a normal routine.

Q6 & Q7. How long has the process been in place? / Has it been modified over time?

All answers for these two questions were related to long term business strategy. Many of the answers were directed towards the customer and their needs. Having a formal process in place gives a reputation of professionalism and is therefore seen as a factor to compete with other companies. Another reason why process thinking is used is related to ISO 9000 or the EASA (European Aviations Association) certification. Being certified for either of these requires that processes and routines are documented. The reason for certifying the company could be to gain a stronger reputation in the market. In some cases, a quality certification may be a requirement from the supplier or customer.

The reason why these processes are updated is because it is necessary to adapt to the new requirements of their customers. In some cases the process has flaws in some areas, particularly the legal area, which is a reason for updating and evolving the process.

Q8. Can you tell us about tools or techniques you use?

The answers to this question indicates that few tools and techniques were known and even less are being used. The majority of the companies solely rely on standard
office tools, MS Excel and MS Word, to create and maintain their contracts. When it comes to the techniques used, only one company actively used a dedicated technique. This technique is the WBS (Work Breakdown Structure) and it is used to identify their costs.

Q9. How long does it take to prepare a contract before submitting it to a customer and what factors do you consider?

During the initial stages of the contract winning process a proposal is submitted to the customer. The preparation of this proposal can take from one hour to one week depending on the scope and content of the proposal in question.

The entire contract winning process can take between two weeks and one year. There are a number of contributing factors to this large variation. First of all, the type of customer can impact on the time it takes to prepare and submit the contract. The customer could be either a new or an existing customer. In general, it takes more time to prepare and submit a contract to a new customer. The customer may be a private or a public company and this too can impact on the duration of the contract winning process. For example, a community or local authority can be seen as a public company because it is administered through public funds. From the interview answers it is apparent that the process takes longer when the customer is a public company. Another factor to consider is the complexity of the product. The more complex the customers requirements the more time it will take to prepare, submit and win the contract.

Q11. What type of contracts do you usually negotiate?

<table>
<thead>
<tr>
<th>Contract Type</th>
<th>Number of Companies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fixed-price</td>
<td>5</td>
</tr>
<tr>
<td>Cost-Plus</td>
<td>0</td>
</tr>
<tr>
<td>Incentive</td>
<td>0</td>
</tr>
</tbody>
</table>

Table Appendix B.4: Type of contracts in software industry

All the software companies that were interviewed negotiate fixed-price contracts (see Table Appendix B.4.). The majority of these contracts are Firm Fixed-price (FFP) in nature. Here the amount to be paid by the customer is determined during negotiation and fixed before the project begins. If the customer has additional requirements during the project then the new costs are calculated and either an addition is made to the existing contract or a new contract is negotiated. The option that is taken most often depends on the amount of new requirements and the time involved to deliver them.

In one company where consultancy services were available, they use a fixed hourly rate to charge their customers.

Q12. When formulating the contract are the details very specific or more general?
The contract details often depend on what the customer wants, in terms of requirements and the legal terms and conditions. In general, the technical details are specified in great detail. For one company, areas such as quality control and performance of the project are specified in detail. Another company uses a general contract coupled with more specified appendices. The general contract is always included and acts as a starting point while the more specific technical requirements and services are added to the appendices. One company mentioned that they are aiming to specify their legal terms and conditions in a better way as they had encountered some problems in this area in previous contract negotiations.

Q13. Can you tell us about the negotiation stage?

The length and content of the negotiation stage varies between companies. One company said that after winning the contract it can take up to one month to negotiate the contract. They discuss more details such as the time plan, payment details and legal aspects. These details are similar to two other companies though the length of time may vary. One company includes the negotiations in parallel with the contract winning stage.

For one company not much negotiation takes place as the contracts are not customised too much and are more or less in line with the initial proposal. They inform the customer of costs during the initial stages of the process and this saves them time later on as they know early on if the customer can afford the contract or not.

Another company said that if negotiation is necessary then it can take up to one week. The negotiation usually focuses on either cost or schedule and normally a compromise is reached between both parties.

Q14. Do you store experience and results from past contract negotiations?

All of the companies store experience and results from past contract negotiations. They are stored in both paper and electronic format. Some companies use both and some use either one or the other. One company stores the length of time that a specific task takes in a database. This helps them with future estimates and simplifies their proposal writing. Checklists are also used by one company as a means to monitor inclusion of all contract items in the final contract.

One company said that they store their experiences mentally and try to re-use the experiences in a beneficial way the next time they tried to win a contract.

Q15. Do you re-use this knowledge?

All companies re-use the information they store in some form because it saves them from reproducing the same or similar proposals. Past negotiations and contracts are used as a basis for newly formulated contracts.

Q16. Is it beneficial?
All companies said that it is in some way beneficial. It means that they do not have to start from scratch when formulating new contract proposals. One company saw the storage as an important part of their business as it increased efficiency when generating new contracts. Another company believed that the more information that was stored then the more detailed and accurate approach could be applied in future contract winning and negotiation.

Another company thought that storage was dependent on the time and effort it would take. In their experience the preparation and negotiation were very time consuming and did not create any direct revenue. Therefore they would be selective on what they would store in databases.

Q18. How do you follow-up on contracts that are won or lost?

As regards the contracts that are won one company stated that they store the contract and then concentrate on delivering the product on time. Another company meets with their on-going customers at least once a year to make sure that they are happy with their products and services.

When contracts are lost all companies will almost always call the customer to ask why they did not win the contract. They request a copy of the winning contract so they can compare and analyse it in terms of cost, time, support and other important factors. However, it is not always possible to receive the winning contract and therefore they may just be told over the phone or by e-mail that they lost out because of price or for another reason. In this situation they record and store the information for future reference.

Q19. Do you sometimes compromise your profits on contracts in order to gain market-share, goodwill, and reputation?

Four out of five software companies said that they sometimes compromise their profits on contracts in order to win market-share, goodwill and reputation. One company said that it was part of the company strategy because in the longer perspective gaining market-share is sometimes more important than to make a short-term profit. Another company uses goodwill when it believed it was beneficial to do so while another company said that they cut their profit in order to increase reputation and for their company to gain more exposure in the market place.

Q20. Are there areas in the process where improvements can be made?

One company would like to have a formalised process for contract winning and negotiation. This would ideally include checklists to ensure that no steps or questions are neglected.

Another area of improvement mentioned by one of the companies is in the legal side of winning and negotiating contracts. They would like to have the legal terms and conditions formulated in a way that benefits them and does not leave them open to exploitation by the customer.

One company said that they could improve the marketing of their products.
One company would like to make better use of the information that they store as it would make them more efficient and increase their chances of winning more contracts.

Two companies thought that they could improve their communication with the customer during the initial stages and the negotiation stage of the process.

One company said that they would like to see some statistics on preferred approaches for winning contracts. This would allow them to use certain processes in certain situations.

Q21 & Q22. Would you be interested in taking part in a case study carried out by us on the contract process? / Would you like to see the results of our research?

All the companies were interested to read the results of the research. Some expressed an interest in the possibility of taking part in a case study.
Non-Software Companies

Q1. Can you tell us about your company in terms of size and number and type of projects?

<table>
<thead>
<tr>
<th>No. of employees</th>
<th>Established</th>
</tr>
</thead>
<tbody>
<tr>
<td>58</td>
<td>1991</td>
</tr>
<tr>
<td>7</td>
<td>1953</td>
</tr>
<tr>
<td>3</td>
<td>1903</td>
</tr>
</tbody>
</table>

Table Appendix B.5: Nr of employees and time of establishment in non-software industry

The companies that participated in the study are in general, mature, well established companies (see Table Appendix B.5.). They are all in the manufacturing area but differ in the type of technology used in production. All of them rely on creating and maintaining a reputation of having a high quality product as a way to be successful in the market.

Two of the companies are very old with much experience in industry. The most recently established company is also the largest in terms of employees. These figures vary substantially because of the differences in the industry and the market for their products. The amount of new customers for two out of three companies were significantly high as opposed to contracts with existing customers. One of the companies worked in a similar manner to software companies but estimated that only 20% of their business was with new contacts.

Q2 & Q10. Can you tell us about your role in the company and your involvement in the contract process? / Who are the personnel involved in contract agreements?

<table>
<thead>
<tr>
<th>PM</th>
<th>MD/CEO</th>
<th>Sales</th>
<th>Tech. Experts</th>
<th>Dedicated</th>
<th>Authorising person</th>
<th>Process in place since</th>
</tr>
</thead>
<tbody>
<tr>
<td>CP</td>
<td>CI</td>
<td>CI</td>
<td>CI</td>
<td>No</td>
<td>MD/CEO</td>
<td>1997</td>
</tr>
<tr>
<td>CP</td>
<td>CI</td>
<td></td>
<td></td>
<td>No</td>
<td>MD/CEO</td>
<td>No formal</td>
</tr>
<tr>
<td>CP</td>
<td>CI</td>
<td></td>
<td></td>
<td>Yes</td>
<td>MD/CEO</td>
<td>No formal</td>
</tr>
</tbody>
</table>

Table Appendix B.6: Involved persons, establishment of processes and interviewee in non-software industry

Table Appendix B.6. illustrates the people we met during the interviews and also those who are normally involved in the contracting process. The notation CP is the Contact Person we were interviewing. All of the interviewees were involved in the contract process. Beside themselves all other personnel normally involved are denoted as CI (Contract Involvement). The table headings should be interpreted as follows:

PM; Project Manager
Sales; Sales department/person
Tech. experts; Technological experts in different areas that could answer specific technology questions during negotiations.

Dedicated; When a person is assigned to solely work with the contract management issues.

Authorising; The person who has the final authority to sign the contracts.

As can be seen, the CEO/MD is always involved in the contracts and has the final authority to sign the contracts. Only one of the companies uses one person dedicated to the management of their contracts.

**Q3. Does your company have a formal process in place for contract winning and negotiation?**

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
<th>Partial</th>
</tr>
</thead>
<tbody>
<tr>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>x</td>
<td></td>
</tr>
</tbody>
</table>

Table Appendix B.7: The use of processes in non-software industry

Table Appendix B.7 shows whether the interviewed companies use a formal contract winning process. The results show that only one of the companies has a documented formal process in place. The rest do not use any documented formal process.

**Q4 & Q5. If so, what are the phases of this process? / If not, how do you handle contracts?**

The answers given to questions four and five, concerning the phases of their processes, were complex to document. Therefore, we divided the general contract process into three phases. The steps are intention, negotiation and performance. The intention phase concerns all the actions that take place before the negotiation is invoked. Negotiation is the phase when the negotiation is carried out. The performance is concerned with the follow-up and the follow-through of the contract. The answers that we received from the interviews have been placed in these phases, allowing for a better overview of the answers.

**Intention**
The common approach to attract customers is to use reputation in the market as well as building a network of potential customers. These networks could be attained through fairs and by advertisement. One company also uses market research as an approach to help them enter a new market. The next step in this stage was to create a proposal from the elicited requirements and instructions from the customer. This could also be followed by a demonstration of an existing product or prototype. The proposal is then sent to the customer.

**Negotiation**
In the non-software companies the answers on how negotiations are performed varied. One company used strict physical meetings where experts and project managers were present. One company tried to use physical meetings whenever
possible, but this rarely happened. Therefore negotiations are mostly conducted over the phone or by email. The third company rarely holds physical meetings with their customers and carried out all their negotiation over phone.

The negotiations mostly concerned product prices. One company also has more strict negotiations about payment, time-plans and deliveries. The business strategy tactics used during the negotiations were not significant. When tactics were used it was mostly concerned profit in relation to market-shares. Two of the companies said that they almost never compromised their profit during negotiations. Instead they tried to negotiate additional services and quality in the product. One company said that they use specific tactics to earn market-share. This was specifically carried out in order to quickly become a factor in a new market.

**Performance**

In general, little follow-up was carried out by the companies. In two of the companies no structured follow-up is used, either on the contracts or on the customer. However, at least one of the companies uses personal contacts via the phone as a way to maintain their customer relations.

The remaining company has a structured way to write a concluding note after the negotiations. If the contract was lost and the negotiations were aborted a “trash report” was also documented and stored for the future.

**Q6 & Q7. How long has the process been in place? / Has it been modified over time?**

Almost all of the answers to these two questions were related to the companies long term business strategy and to their customers needs. In order to attract new customers and adapt to their needs an ISO certification could be a way to increase reputation on the market. A certification such as ISO 9000 gives, besides the benefits it has in terms of documented processes, a reputation of a rigid company that works in a structured way. It also has the benefit of portraying the company as competent, which is an important competitive factor.

One significant reason for updating and evolving the process that is in place is to make an adaptation to the customers needs. The company should always seek to improve their existing processes. It is these improvements that propel the company forward.

**Q8. Can you tell us about tools or techniques you use?**

The tools and techniques used in the contract winning process of the non-software companies are few and are often standardised. Every company used MS Word and MS Excel in the creation and maintaining of their contracts. In addition to the standard office tools two companies use CR (customer relations) systems. The CR systems are used to keep track of all the contacts that the company have with customers. It also stores specific information, such as detailed instructions, plans, contracts etc., about each occasion. Whenever the company is in contact with a customer, their details are retrieved from the CR system, giving access to previous information about that particular customer. The CR system also provides helpful
information during negotiations since it supplied details of the previous sales and of the pricing that was used then.

One company used a MS Access database that is integrated with their accounting system. It is used in price calculations. This approach simplified the transfer of data within the organisation as well as eliminating the likelihood of human error.

No specific techniques were found to be used as an aid in their contract winning process.

Q9. How long does it take to prepare a contract before submitting it to a customer and what factors do you consider?

In the case of two companies, where the contract was standardised, preparation of the proposal takes between ten minutes and two hours. However, if the contract needs to be customised to the specific requirements of the customer and legal advisors are needed the preparation can take up to two weeks.

One company had a very quick completion time on their contracts. From the initial contact to the contract agreement it normally takes two to three days. Perhaps this is more to do with their products and the nature of their customers. Of the other companies in this category, one stated that the entire process takes about three to six months and that the time was dependent on the customer and the market. The other company said that it could take up to two months to sign the contract from the initial contact.

Q11. What type of contracts do you usually negotiate?

<table>
<thead>
<tr>
<th>Contract Type</th>
<th>Number of Companies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fixed-price</td>
<td>3</td>
</tr>
<tr>
<td>Cost-Plus</td>
<td>0</td>
</tr>
<tr>
<td>Incentive</td>
<td>1</td>
</tr>
</tbody>
</table>

Table Appendix B.8: Type of contracts in non-software industry

As shown in Table Appendix B.8 the vast majority of contracts that all three companies negotiate are fixed-price contracts. Additionally, one company occasionally use incentive based contracts.

One company has begun to negotiate contracts covering leasing of products. They also plan to negotiate incentive-based contracts in the future.

Q12. When formulating the contracts are the details very specific or more general?

The three companies use a standard contract agreement whose legal terms and conditions have been verified by a lawyer. The companies add details as necessary and the amount and type of detail is dictated by the customer.
One company pointed out that customer pressure and expectations on them have increased. This affects the overall time of the process since changes that the customer want must be evaluated technically and legally. If certain terms cannot be agreed upon then the company normally issues amendments. These specify under what specific conditions the company can guarantee the fulfilment of the contract terms.

**Q13. Can you tell us about the negotiation stage?**

One company said that they do not negotiate at all as the customer either accepts or rejects the offer.

Another company primarily negotiates their contracts by phone or through e-mail. This company is very small and because the volume is low in terms of capital and quantity of goods it is not financially viable to meet customers face to face. When a price is negotiated confirmation is either e-mailed, faxed or sent by mail and when the customer returns the signed contract the order can be completed.

The third company said that negotiations usually take two meetings with the customer. These meetings may include some prototyping of the product. At this point all the technical details have been discussed and clarified and the sales people now negotiate with the customers purchasing personnel. The negotiations may take half a day and they aim to have a reasonable gap between the initial quote and the negotiation quote. Sometimes the customer will agree with the initial quote and therefore little negotiation is needed. The sales manager usually signs the contract and the CEO issues the order confirmation.

**Q14. Do you store experience and results from past contract negotiations?**

All three companies store experiences and results from previous contract negotiations. One company store the contracts for the past two and a half years in electronic format. Previously, all contracts were stored in paper format. Of the other companies interviewed one said that they store contract information for the last ten years in both paper and electronic format.

Another companies storage system is mostly built on the experiences of the sales managers and includes information on how to handle negotiations and the customers. They also store concluding contract reports written by the sales manager. These include all details of the contracting process.

**Q15. Do you re-use this knowledge?**

All companies re-use the stored knowledge. Two of the companies said that they found it useful because they can check all previous correspondence with the customer before sending a new quote or proposal.

One company thought that they could improve the way that they used the stored information.
Q16. Is it beneficial?

All three agreed that it is beneficial to store previous contract experiences. One company went on to say that it helps them relate to past negotiations and the amount of discount that they previously gave. This is helpful if it is a difficult customer who may have extra requests and simplifies the formulation of the new contract. They also look at the prices so that the difference is not too big from past contracts. If the difference is too large the customer might think that they receive a lower quality product and for this reason the discount rate can not be too much.

Q18. How do you follow-up on contracts that are won or lost?

One company uses a large amount of advertisement to attract customers and they do not follow-up on the customers who do not buy their product. Also, they do not have the resources to follow-up on contracts that are won or lost. They concentrate on providing a quality product and if they receive feedback from the customers they deal with this as it happens.

Both of the other companies follow up on lost contracts by contacting the customer. In the case of one company they try to get the customer to consider them and their products in the future. The other try to get a copy of the competitor’s winning proposal so they can see in what area they should concentrate on for the future.

Q19. Do you sometimes compromise your profits on contracts in order to gain market-share, goodwill, and reputation?

Two of the companies said that they occasionally compromise their profits on contracts in order to win market-share, goodwill and reputation. One said that they try to avoid doing this, as this will cut their profit margins too much. Therefore they try to deliver additional services instead.

One company said that this was part of their aggressive business strategy. If they though that one customer was important in the market place then they will make a bigger effort to win their business. This is done in order to win market-share and to compete with and beat their competitors or to enter into new markets. This company also uses goodwill to keep existing customers and to uphold their good reputation. They value their relationship with their customers and realise the importance of nurturing these relationships so therefore they can sometimes give the customer extra services or features in order to keep them satisfied.

Q20. Are there areas in the process where improvements can be made?

One company stated that they would like to improve the tools that they have for recalling previous customers and contracts. A database containing these details was seen as something that would be beneficial in this area.

Another company would like to develop the advertisement of their products and are looking at the Internet as a means to do this. They see this as a cheaper way of
advertising when compared to printed colour catalogues. The risk is that they do not reach the same customer base as they presently do.

The third company would like to improve what type of information they store and how they store it. Also, internal communication between sales and production departments could be improved. This would save time in the different stages of the contracting process.

**Q21 & Q22. Would you be interested in taking part in a case study carried out by us on the contract process? / Would you like to see the results of our research?**

All the companies were interested to read the results of the research. Some expressed an interest in the possibility of taking part in a case study.
# Appendix C, Summary of the Discussion

<table>
<thead>
<tr>
<th>Area</th>
<th>Theoretical view</th>
<th>Empirical study</th>
<th>Correlations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Use of models</strong></td>
<td>Three process models were described and discussed. They differed in detail but are generally quite broad. One area that is missing in all of them is that the negotiation tactics are not mentioned.</td>
<td>No uniform process was evident.</td>
<td>Theory presents models indicating that the area has been identified with a need for improvement. However, this was not seen in industry. This fact could be contributed to unawareness of the available processes or that they are merely theoretical models not applicable in industry.</td>
</tr>
<tr>
<td><strong>Determinating factors for use of models</strong></td>
<td>Theory discusses that a means to get processes in place is through implementation of some of the quality standards available, such as ISO 9000, CMMI. Otherwise, the decision of using a process should be based on the maturity of the company, type of industry, market and strategic focus etc.</td>
<td>Those that have a process in place have implemented this when undertaking a certificate such as ISO or similar. The companies having a partial process mostly use it as ad-hoc methods evolved. The remaining companies, who are not using any process, work as they always have traditionally done.</td>
<td>The study showed little correlation to theory except for those that implemented the process with a standard.</td>
</tr>
</tbody>
</table>

Table Appendix C.1: Summary of Process Models
There are a number of available tools on the market. They can aid in areas such as contract modeling, legal terms and conditions, auditing of bills and payment and analysis of won and lost contracts.

The tools used are mostly standardised office tools that are used to create the contract. Customer relations systems were apparent in some cases.

The tools are used in industry these were not specifically designed for contract management. The potential that a contract tool could provide is therefore not utilised.

### Table Appendix C.2: Summary of Tools

<table>
<thead>
<tr>
<th>Area</th>
<th>Theoretical view</th>
<th>Empirical study</th>
<th>Correlations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Usage and availability of tools</strong></td>
<td><strong>Tools</strong> are a number of available tools on the market. They can aid in areas such as contract modeling, legal terms and conditions, auditing of bills and payment and analysis of won and lost contracts.</td>
<td><strong>The tools used are mostly standardised office tools that are used to create the contract. Customer relations systems were apparent in some cases.</strong></td>
<td><strong>The theory and the findings in the industry do not correlate. Although tools are used in industry these were not specifically designed for contract management. The potential that a contract tool could provide is therefore not utilised.</strong></td>
</tr>
</tbody>
</table>

### Table Appendix C.3: Summary of Design

<table>
<thead>
<tr>
<th>Area</th>
<th>Theoretical view</th>
<th>Empirical study</th>
<th>Correlations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Considerations</strong></td>
<td><strong>Important to consider since it contains important matters that may be a liability if not carefully considered.</strong></td>
<td><strong>All the companies experienced problems in the design and formulation of their contracts. They were afraid of potential liabilities that could arise due to poor contract design. The majority had a standard template as a framework for each of their contracts.</strong></td>
<td><strong>Correlates. The theory stresses the importance of a waterproof formulation of the contracts. This is seen in the industry where precautions are taken not to create liability for the company.</strong></td>
</tr>
<tr>
<td><strong>Contents</strong></td>
<td><strong>Limits of liabilities, scope of work, time frame and payment shedule.</strong></td>
<td><strong>Responsibilities, delivery schedule, payment, design specification.</strong></td>
<td><strong>The theory and industry correlates well. This is not that surprising and argues that the empirical contents have evolved over time.</strong></td>
</tr>
</tbody>
</table>
### Table Appendix C.4: Summary of Types of Contracts

<table>
<thead>
<tr>
<th>Area</th>
<th>Theoretical view</th>
<th>Empirical study</th>
<th>Correlations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Different types</td>
<td><strong>Mature companies are supposed to use cost-plus, whereas less mature negotiate fixed-price.</strong></td>
<td><strong>All companies use fixed-price contracts. One company occasionally uses incentive based contracts.</strong></td>
<td><strong>The theory does not fully correspond to the findings in the empirical part. The mature companies also negotiate fixed-price contracts.</strong></td>
</tr>
</tbody>
</table>

### Table Appendix C.5: Summary of Negotiation

<table>
<thead>
<tr>
<th>Area</th>
<th>Theoretical view</th>
<th>Empirical study</th>
<th>Correlations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>How is it performed</strong></td>
<td>Physical meetings</td>
<td>Physical meetings either at the customer or contractor site.</td>
<td>The theory corresponds to the empirical part. Physical meetings are the most efficient negotiation method.</td>
</tr>
<tr>
<td><strong>Tactics</strong></td>
<td>Profitability has changed into a longer perspective thereby leaving room for tactics such as, compromise, short-term profit, market-shares, goodwill etc.</td>
<td>Most of the companies were very clear about the use of tactics. The most reluctance was found in non-software companies.</td>
<td>To a large extent the theory and the empirical studies correlate. The most mature and smallest non-software companies expressed reluctance to these tactics.</td>
</tr>
<tr>
<td><strong>People involved</strong></td>
<td>The teams should be a minimum of two persons and should cover all possible areas of negotiation.</td>
<td>The teams were constructed to cover all aspects of the negotiation. Generally, the teams consisted of at least two persons.</td>
<td>The theory correspond to empirical part.</td>
</tr>
</tbody>
</table>
Table Appendix C.6: Summary of Follow-up

<table>
<thead>
<tr>
<th>Area</th>
<th>Theoretical view</th>
<th>Empirical study</th>
<th>Correlations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Amount of follow-up</strong></td>
<td>Follow-up is important as a means to evolve the way the contract processes are performed through the use of experiences. Follow-up on the customer is important to build relationships and to build a base for future collaborations.</td>
<td>Follow-up is used, although mostly in the form of storage of the contracts. Little follow-up on the customer is used in a formal way.</td>
<td>The theory and empirical study are aligned in some sense. Follow-up as regards storage of past experiences and the contracts is carried out. However, follow-up on the client is not formally achieved.</td>
</tr>
<tr>
<td><strong>How to store</strong></td>
<td>Informal and formal repositories are suggested in theory as the way to store different information.</td>
<td>Experiences are stored in both electronic and paper-format.</td>
<td>The storage is mostly done in formal repositories, either electronically or in paper-format. Informal repositories were not found to be used in the study. The study therefore conforms to theory in some sense as regards the use of formal repositories.</td>
</tr>
<tr>
<td><strong>Reuse of experiences</strong></td>
<td>Reuse is important as a means to make use of experiences in future contracts. The way to store information is thus important.</td>
<td>All of the companies said that they reuse their stored experiences and contracts. This was mostly achieved by using past contracts as a template for the new ones. Some companies wanted to improve and extend the reuse procedures with a searchable repository.</td>
<td>Correlations were found. Reuse of contracts is used by industry as suggested by theory. The repositories used for this purpose are quite simple and it would be beneficial to improve them.</td>
</tr>
<tr>
<td>Area</td>
<td>Theoretical view</td>
<td>Empirical study</td>
<td>Correlations</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>------------------</td>
<td>-----------------</td>
<td>--------------</td>
</tr>
<tr>
<td><strong>Communication</strong></td>
<td>Communication is a prime factor for a healthy organisation.</td>
<td>Better communication cross-over between the personnel with the contracts would be beneficial.</td>
<td>The industry and theory correlate well in stating that communication is important.</td>
</tr>
<tr>
<td><strong>Storage and Reuse</strong></td>
<td>Good storage techniques, for example, searchable databases, that facilitate reuse are said to be beneficial in order to evolve the existing processes and to learn from previous mistakes.</td>
<td>Reuse is used as a way to quickly formulate a contract template that would reduce the risk of neglecting important details in the contracts. Some of the companies would like to further develop this, store and reuse more of the experiences.</td>
<td>The industry identified the benefits of reusing information and would like to increase the extent to which this is done. However, the primary issue was not to evolve the process. It was more aimed at making sure that all the necessary details are included in the contracts.</td>
</tr>
<tr>
<td><strong>Legal area and formulations</strong></td>
<td>Contracts have evolved to the point where they have become more and more detailed. This makes them more difficult to understand and formulate.</td>
<td>The legal area is seen as problematic and one the majority of the companies identified as an improvement area.</td>
<td>The industry experienced the evolvement of the contract and the details of the contracts. However, the study did not reveal information, rather it was not in the questionnaire, of whether this was a rapid or a continuous step by step evolution.</td>
</tr>
<tr>
<td><strong>Tools</strong></td>
<td>A good efficient tool could prove to be beneficial to the contracting process.</td>
<td>Tools are seen by some industries as an aid that they would consider using in order to simplify the contracting process.</td>
<td>Tools can be an additional help to manage and formulate contracts. This is especially true in the storage of information. Standardised office tools are used today. The industry favours increased the use of tools. Therefore, we recommend companies to consider available tools on the market and to estimate the benefits versus costs for purchase, training, upgrades etc.</td>
</tr>
</tbody>
</table>

Table Appendix C.7: Summary of Areas for Improvement