

SAIMAA UNIVERSITY OF APPLIED SCIENCES  
Business Administration  
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**THE PROCESS OF  
SELECTING SUBCONTRACTORS,  
CASE: LAITEX OY**

Thesis 2011

## Table of contents

1 INTRODUCTION .....	5
1.1 The background of the study.....	5
1.2 The objective and limitations of the study .....	6
1.3 Research questions .....	7
1.4 Theoretical framework .....	7
1.5 Research method.....	9
1.6 Structure of the study .....	10
2 FOUNDATIONS OF SUBCONTRACTING .....	11
2.1 The advantages of outsourcing.....	13
2.2 The risks of outsourcing.....	16
2.2.1 Company derived risks.....	16
2.2.2 Subcontractor performance risks .....	18
2.3 Managing the risks of outsourcing .....	22
3 THE PROCESS OF SELECTING A SUBCONTRACTOR .....	27
3.1 Framework phase .....	27
3.2 Selecting the country of outsourcing .....	29
3.3 Final phase of the subcontractor selection process .....	31
4 SUBCONTRACTOR ANALYSIS CRITERIA .....	34
4.1 Early studies of subcontractor selection.....	34
4.2 Subcontractor selection criteria in the 21 <sup>st</sup> century.....	36
4.3 What kind of a subcontractor is a good subcontractor? .....	41
5 LAITEX OY: COMPANY PROFILE .....	43
5.1 Key facts .....	43
5.2 Customers.....	43
5.3 Product lines .....	44
5.4 Current state of inbound supply chain.....	45
5.5 Creation of the subcontracting network.....	45
6 SUBCONTRACTOR STUDY .....	
6.1 Questionnaire.....	
6.2 Rating the companies .....	
6.2.1 Recommended subcontractors .....	
6.2.2 Other potential subcontractors .....	
6.2.3 Other subcontractors interested in a partnership.....	
<b>defined.</b>	
7 CONCLUSIONS.....	48
REFERENCES .....	51

## APPENDIX

- Appendix 1 Incoterms-chart
- Appendix 2 Interview questions
- Appendix 3 The questionnaire
- Appendix 4 Chart of total points
- Appendix 5 Point chart

## ABSTRACT

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The process of subcontractor selection, Case Laitex Oy, 67 pages, 5 appendixes  
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The purpose of the thesis is to investigate the process of subcontractor selection. The research question was What kind of a process is the selection of subcontractors?. Sub research questions like What kind of criteria is there to analyse subcontractors? and What are the subcontractor related risks in outsourcing? are also discussed in the thesis. The process begins with strategic decisions of outsourcing scope and scale, but the main task is the creation of criteria by which the potential subcontractors are evaluated. In outsourcing ventures, risk management is very important. This thesis discusses first the drivers for outsourcing, the risks related to it and the basic framework decisions of the subcontractor selection, and then introduces different criteria for analyzing and evaluating potential outsourcing partners. The final criteria can be, for example, stated as reliable business partner with quality products, technical capability, adequate production capacity and fast delivery – and all that at an inexpensive price. In the actual selection of a subcontractor, the general view is conclusive: sometimes commissioning companies may have to make concessions, trade-offs, between the most important criteria.

Two different research methods were used in writing the thesis: personal interviews and traditional questionnaire in the empirical part.

The purpose of the empirical study was to find new long-term subcontractors among Estonian, Latvian and Lithuanian metal workshops for Laitex Oy. Different databases were used in contacting metallurgy professionals in the Baltic States and they were asked to fill out a questionnaire about their company, its facilities and machinery. About 200 companies were asked to take part in the study, but only 24 companies provided the necessary information. The answers were rated according to the criteria created, and total points were calculated to all of the companies. These companies were then placed in a ranking list and presented to Laitex Oy.

process of subcontractor selection, subcontractor selection criteria

## TIIVISTELMÄ

Pipsa Paasio

Alihankkijan valintaprosessi, Case Laitex Oy, 67 sivua, 5 liitettä

Saimaan ammattikorkeakoulu

Liiketalous

Kansainvälisen kaupan koulutusohjelma

International Business

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Opinnäytetyön tavoitteena oli tutkia prosessia, jossa alihankkijat valitaan. Pää-tutkimuskysymys oli Minkälainen prosessi alihankkijoiden valinta on?, ja opin-näytetyö antoi vastauksen myös kysymyksiin Minkälaisia kriteerejä on olemassa alihankkijoiden arvioimiseen? sekä Mitä riskejä alihankintaan liittyy?. Alihankki-janvalintaprosessi käynnistyy strategisella päätöksenteolla, jossa valitaan ali-hankinnan ulottuvuus ja mittakaava. Opinnäytetyön pääpaino on kuitenkin itse kriteeristön luomisessa ja sen käytöllä potentiaalisten alihankkijoiden arvioinnis-sa ja vertailussa. Tämä opinnäytetyö käsittelee ensin alihankintaan kannustavat tekijät sekä siihen liittyvät riskit – alihankintaprojekteissa on tärkeää myös riski-en hallinta. Seuraavaksi käsitellään alihankkijoiden eri arviointimenetelmiä. On kuitenkin muistettava, että loppujen lopuksi alihankkijan valintaan vaikuttaa ko-konaiskuva, joten joskus päähankkijan on tehtävä kompromisseja kriteerejensä suhteen.

Työssä käytettiin kahta tutkimusmenetelmää: henkilöhaastatteluja sekä perin-teistä kyselyä empiirisessä osassa. Empiirisen tutkimuksen tavoite oli löytää pitkäaikaisia alihankintakumppaneita Viron, Latvian ja Liettuan metallipajojen joukosta Laitex Oy:lle. Potentiaalisten yritysten yhteystiedot kerättiin pääasiassa Internetistä ja noin 200 yritystä pyydettiin sähköpostitse osallistumaan kyselyyn. Internet-pohjaisessa kyselyssä selvitettiin tietoja itse yrityksestä sekä sen kone-kannasta ja tuotantotiloista. Kuitenkin vain 24 yritystä täytti kyselyn. Yritysten vastaukset arvioitiin luodun kriteeristön mukaisesti ja jokainen yritys sai pisteitä eri kategorioissa. Parhaiten menestyneet eli parhaiten kumppaniksi soveltuvat yritykset esiteltiin Laitex Oy:lle.

alihankkijan valintaprosessi, alihankkijanvalintakriteerit

# 1 INTRODUCTION

## 1.1 The background of the study

In today's business world, markets change rapidly and changes are wider reaching and complex. Internationalisation and cost reduction are the hot topics nowadays. As companies become more international and competition gets fiercer, the trend for most companies is to concentrate on their core business, on the business function they are truly good at. As a solution to this, many companies have opted to outsource some of their functions to service providers and subcontractors. Outsourcing to low cost countries with relatively well educated work force (e.g. China, India) has long been the source of cost reduction in, for example, the technology and clothing businesses. Eastern European countries like the Baltic States and Poland as well as Mexico in the Western hemisphere have emerged recently in the outsourcing field. (Oshri et al. 2009)

Outsourcing means basically that the client company concentrates on their core business and purchases the supporting or lower level products/services from the subcontractors. There are many reasons why a company may choose to outsource. Most often the drivers for outsourcing are cost savings and the ability to concentrate on core business. Outsourcing also enables the company to access various resources of equipment, labour, knowledge and scale and scope of business. By outsourcing, the company can gain more efficient or flexible business functions.

Because of the continuous growth of the outsourcing trend, it is more and more essential to understand the impact (good and bad) of outsourcing and to facilitate its management. It is crucial to acknowledge the risks of outsourcing before embarking on the subcontracting world and cooperation projects. Without proper risk management, outsourcing can backfire due to loss of control, poor quality, poor customer satisfaction, hidden costs or confidentiality and commitment problems.

The company commissioning the empirical part of the thesis is Laitex Oy. Laitex Oy is a company based in Lappeenranta, manufacturing conveyor belts and conveyor systems. Laitex Oy wishes to systematize their subcontracting and the aim of the thesis is to supply subcontractor analysing criteria to Laitex Oy and to create a subcontracting network of Baltic metalworking companies for Laitex Oy. The network would consist of metal workshops that are interested in subcontracting and that have the necessary machinery and knowhow. Companies that match the needs of Laitex Oy will be presented to the company after completion of the study.

## **1.2 The objective and limitations of the study**

The purpose of the thesis is to investigate the process of subcontractor selection. The process consists of multiple phases. Outsourcing begins with decisions on scope and scale. Then the criteria and methods for the analysis of potential subcontractors are created. This phase of the subcontractor selection process is the main aspect of this thesis. Finally, the potential subcontractors are identified and contacted for additional information, and eventually, negotiations of contracts are held. The objective is to create guidelines which help a company select the most suitable subcontractors.

### **Limitations of the theoretical part**

Terminology of outsourcing, subcontracting, and the parties involved, is very overlapping and a part of ongoing debate, so the terms and their meanings used in the thesis are firstly determined.

The thesis discusses the common drivers of outsourcing, but doesn't cover the business functions that can be outsourced. Also, the disadvantages of outsourcing are handled in connection with risk management. The thesis concentrates on the evaluation of the subcontractor, but doesn't apply any mathematical methods of evaluation (e.g ORMS, data envelopment analysis) or elaborate

different forms of outsourcing. Also, the decision-making process is left out, and the process of requesting proposals and quotas is only briefly introduced.

### **Limitations of the empirical study**

Only Estonian, Latvian and Lithuanian metal working companies that have email addresses have been chosen for the study. Based on the answers, the companies that suit Laitex Oy's needs will be chosen for the introductory ranking list.

### **1.3 Research questions**

The main research question is: What kind of a process is the selection of subcontractors? The thesis aims to create criteria to help evaluate, analyse and select subcontractors. The process begins with framework decisions, and continues with the creation of criteria. Identified potential subcontractors are then evaluated.

In the course of finding the answer to the main research question, sub questions like "What kind of criteria is there to analyse subcontractors?" and "How to choose a good subcontractor?" will be answered. Also, the criteria for analysing different countries are introduced, in order to find the most suitable origin for the most suitable subcontractor. Third sub question is "What are the subcontractor related risks in outsourcing?". When embarking on a subcontracting project, the risks must also be analysed and prepared for.

### **1.4 Theoretical framework**

Kortekangas & Spolander (2001) have composed a handbook for outsourcing partnerships, which is also based on questionnaires. The handbook discusses the partnership's contractual parts and the process of creating the contracts. Oshri et al. (2009) have written "The handbook of global outsourcing and offshoring" to discuss the increasing outsourcing trend, concentrating mostly on

the IT branch. The book covers all the issues of sourcing, both from the buyer's and from the contractor's side. The emphasis is on the qualities that both parties should develop before setting up a sourcing partnership, and how to improve the existing one.

Beil (2009); Kakabadse & Kakabadse (2005); and Benyoucef et al. (2003) have all studied the subcontractor selection. Beil's article is based on the steps of subcontractor selection, discussing the process of identifying, evaluating, negotiating and contracting. The article also introduces a supplier selection method called ORMS. Kakabadse & Kakabadse surveyed different companies for their article discussing current and future trends of outsourcing. The authors discuss the reasons behind outsourcing, the area of outsourcing, the arrangements of outsourcing, and the impact it has on employees. Benyoucef et al. have delved into the selection criteria and methods of suppliers (supplier corresponding subcontractor). Their criteria are based on analysis of both qualitative and quantitative factors, representing different analysing methods. The problems encountered in subcontractor selection and solving them are also discussed in the report.

O'Keeffe & Vanlandingham (2004) of the risk consulting company Protiviti and Lonsdale (1999) have studied the risk management of outsourcing. O'Keeffe & Vanlandingham conducted a survey of current practises and their effectiveness. The authors wanted to untangle the risks of outsourcing and to assess the efficiency of outsourcing risk management methods by surveying business professionals. Lonsdale's article "Effectively managing vertical supply relationships: a risk management model for outsourcing" discusses the reasons behind outsourcing disappointments. The author states that many outsourcing failures are caused by poor outsourcing risk management and offers a model for effective risk management.



## 1.5 Research method

Two different research methods are used in writing the thesis: personal interviews and traditional questionnaire in the empirical part. Personal interviews are conducted in order to gain specific information of the needs of the commissioning company. Personal interviews are conducted with Kari Kurronen, the Managing Director of Laitex Oy and with a former employee, Simo Sinkko, a teacher of Saimaa University of Applied Sciences.

Questionnaires are used in all kinds of research. Marketing research is used to gain information of the market, customers, advertising, products, sales, performance etc. Results of researches helps the management in making business decisions, because accurate and relevant information help to gain a more competitive advantage and to reduce and evaluate risks. Secondary data, like commercial and government sources, indexes, directories, reports, and trade publications, can be used. The Internet enables the studies to be made more economical and further reaching, but unfortunately the sampling frame is restricted because only the respondents that have access to the Internet and are willing to respond, are included in the sample. Age, geographical location and attitudes, for example, affect the access to the Internet. Still the Internet can be used especially for product or service development utilizing its global reach. (Proctor 2005)

The plan for a research project starts with defining the problems and the advantages of undertaking a study, then the research plan is made with definitions of required information and questions. Sampling frame, time schedule, limitations and data analysis are planned next. The questionnaire's structure, scaling and measuring need to be determined also. There are many different options for carrying out a survey by questionnaire: postal, telephone, personal, omnibus, panels, self administered, etc. Each one has advantages and limitations and the suitable method is chosen according to the needs and restrictions of the study. (Proctor 2005)

The questionnaire used in this study is introduced in chapter 6.1 and the questionnaire's questions are presented in Appendix 3 with a screenshot of the actual questionnaire. The companies chosen from public indexes, business directories, etc. are contacted by email and asked to fill out the questionnaire online. The answers of each company are evaluated according to requirements presented in chapter 6.2. Because the study is not like a typical market research by nature, but resembles more a Request for Information (see page 31), the response rate is expected to stay under 25 per cent.

## **1.6 Structure of the study**

The theoretical part is about the creation of subcontracting network. Issues like the characteristics of a good subcontractor, analysing and comparing subcontractors, and managing the risks of outsourcing are handled in the theoretical part.

First, the introduction discusses the background of the study, the objectives and limitations, research questions, theoretical framework and research methods of the thesis. In chapter 2, the terminology of outsourcing is discussed, and then the advantages of outsourcing, as well as the risks of outsourcing and its risk management. Chapter 3 introduces the stages of subcontractor selection, from framework to actual contracting; including the selection of the country to outsource to. Chapter 4 discusses the actual evaluation and selection of subcontracting partners.

The empirical part of the thesis consists of three parts: subcontractor contact information search, subcontractor questionnaire, and the analyzing and ranking of these subcontractors. In the empirical part, in chapter 5, the commissioning company, Laitex Oy, is introduced with a company profile and a brief overview of the current status of outsourcing. Chapter 6 presents the questionnaire: its structure and results. Finally, the results of the questionnaire and the ranking list of potential subcontractors are unfolded.

## 2 FOUNDATIONS OF SUBCONTRACTING

The phenomenon to be studied is complex, with various different terminology and explanations of terms. The terms outsourcing and subcontracting are often mixed up and sometimes used as synonyms. In some cases, a company can exercise both outsourcing and subcontracting. There is an ongoing debate on the terminology. Also, the names of the parties involved in the partnership vary: some say sub-supplier and subcontractor are synonyms - and some say they are both synonyms to supplier.

*Outsourcing* is contracting with another company or person to do a particular function, i.e. the procurement of products/services from an outside supplier or manufacturer. A former in-house operation is usually permanently transferred to the subcontractor. (Sourcingmag)

APICS (Association for Operations Management) dictionary explicates the terms as follows:

*“Outsourcing: The process of having suppliers provide goods and services that were previously provided internally. Outsourcing involves substitution—the replacement of internal capacity and production by that of the supplier.”*

*“Subcontracting: Sending production work outside to another manufacturer.”*  
(APICS dictionary 2010)

The federation of Finnish Technology Industries (formerly known as Metalliteollisuuden keskusliitto) released in 2001 a partnership guide for subcontracting. According to the report, subcontracting is production cooperation between the client (“main contractor”) and the subcontractor. The client company commissions either parts; stages of production; or production capacity from the subcontractor. Subcontracting is based on a contract and the nature of it is order-based. (Kortekangas & Spolander 2001)

The terminology debate is even stronger (and neverending) when determining the meanings of subcontractor and supplier. When talking about subcontracting,

the terms subcontractor and supplier are often used with convergent meanings. Formerly subcontracting was related to the construction business, where the term subcontractor was used to describe a person or company performing speciality tasks (e.g. plumbing, landscaping) for the general contractor. Nowadays the terms are more widely used in the business world to describe the partnership in any kind of outsourcing. (US Legal definitions 2010)

According to Kortekangas and Spolander (2001), supplier and subcontractor can be used also as synonyms depending on the nature of subcontracting. Kortekangas and Spolander define subcontractor as a party that offers its services to the main contractor. The service offer can be manufacturing parts; stages of production; or production capacity. In the first case the subcontracting party is called “a part supplier”, in the second “a stage subcontractor” and in the third “a capacity subcontractor”. The terminology is also dependent on the language: in the Finnish language outsourcing (*ulkoistaminen*) and subcontracting (*alihankinta*) have clear distinctions in meaning, as well as subcontractor (*alihankkija*) and supplier (*toimittaja*). (Kortekangas & Spolander 2001)

According to QS-9000, which is a quality standard developed by a joint effort of General Motors, Chrysler and Ford, the terms are (Elsmar Cove Forum 2002):

*“Supplier - providers of: a) production materials, b) production or service parts, or c) heat treating, plating, painting or other finishing services, directly to C, F GM or other customers subscribing to this [QS] document.”*

*“Subcontractor - providers of production materials, or production or service parts, directly to a supplier to C, F GM or other customers subscribing to this [QS] document.”*

ISO 9000 is a quality management system is a part of international supply chain management standard. ISO explains the terms in a supply chain:

*“In the company/organization that produces the goods is called supplier. The company/organization supplies goods to the customer. And the one who supplies materials to the company/organization is called subcontractor or sub-supplier.”* (Elsmar Cove Forum 2002)

So in the end, it is only a matter of perspective, and in some cases a matter of *what* is supplied. Outsourcing consists of various forms of activities and they can't be determined unambiguously. The business environment changes constantly and the definitions of outsourcing, subcontractor, supplier, etc. have to be defined case by case, company by company. Kortekangas and Spolander have acknowledged that such a universal terminology does not even exist, and agree that it is also not necessary. (Kortekangas & Spolander 2001)

In the case of Laitex Oy, the company will be commissioning the subcontractor to manufacture parts for Laitex Oy's products (e.g. conveyors) according to plans (drawings). The end products are sold to industrial companies. Laitex Oy is looking for a long-term partner, who is required to manufacture more than standardized parts or components, and that is why the terms subcontracting and subcontractor will be used.

## **2.1 The advantages of outsourcing**

Global sourcing has been made possible by the technological advantages in the telecommunications industry together with the Internet. Space and time have shrunk, and it is easy to divide organizational activities across the planet. Also the supply of low-cost workers in certain countries, which have also simultaneously improved their telecommunications infrastructure, and their business, economic as well as political environment, has eased the way of outsourcing. In some countries, outsourcing means also lower taxes. (Oshri et al. 2009, p. 7)

The general advantages of outsourcing are: concentrating on the company's own core competence, lowering overhead costs and gaining access to the partner's experience, expertise, equipment and contacts. By concentrating on the core competence with an outsourcing strategy the company can create best-in-the-world capabilities. Utilizing the subcontractors' existing knowledge and equipment has two advantages: 1) the company doesn't have to invest in the training of employees or in new facilities, and 2) often the subcontractor has more in-depth expertise and lower unit costs for the outsourced function than

what the company would be able to create in-house. Also by using several providers the outsourcing company can vary the scale and scope of the production, and ultimately manufacture round the clock by exploiting different time zones. In other words, the subcontractor(s) can be taken aboard for flexibility: to level the fluctuations of capacity or demand. (Oshri et al. 2009, p. 8)

Deciding on which business functions to purchase from outside service providers or subcontractors is generally seen to be the key for gaining cost reductions or complete advantage. In the study of O’Keeffe & Vanlandingham of Protiviti risk consulting company (2004) the top three drivers for subcontracting were 1) the need to reduce cost or internal headcount; 2) the internal capacity is constrained by increasing market demand; and 3) the internal manufacturing or service performance is insufficient or does not meet requirements. (O’Keeffe & Vanlandingham 2004)

To further support the literature, a survey by top consulting team Andrew and Nada Kakabadse is introduced. The survey to identify key trends and current critical issues in outsourcing was conducted by Kakabadse & Kakabadse in 2002. The two stage survey was answered by 747 persons of senior management position in large and medium-size enterprises from the U.S., U.K., and continental Europe. The companies represented several business sectors, ranging from financial services, IT/telecommunications, supply chain and logistics, to pharmaceuticals/chemicals. Table 1 represents the respondents’ **purposes to outsource** at the time of the questionnaire and what they evaluated would be important in the future. (Kakabadse & Kakabadse 2005)

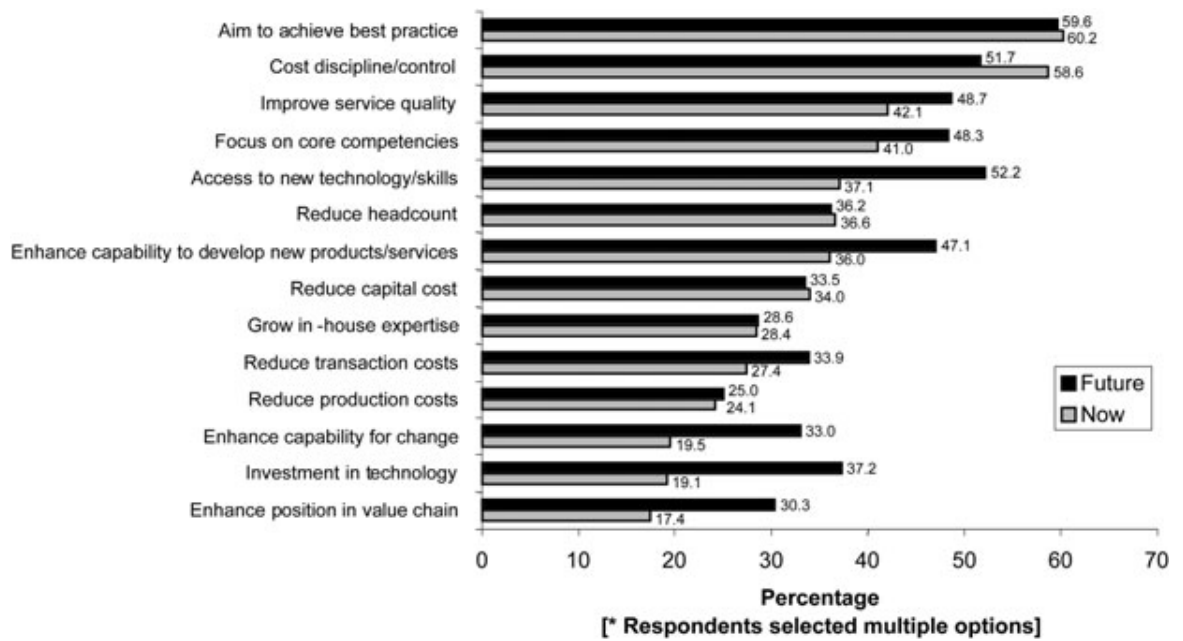


Chart 1 Purpose to outsource (Kakabadse & Kakabadse 2002)

As seen in Chart 1, the most important (with over 40 per cent of answers) drivers for subcontracting “now” (2002) were “aim to achieve best practise” and “cost discipline/control”, with “improve service quality” and “focus on core competences” following respectively. “Access to new technology/skills”, “reducing headcount”, “enhancing capability to develop new products/services” and “reducing capital cost” were evaluated to be the next important issues (over 30 per cent of answers). The respondents evaluated though that the importance of “access to new technology/skills” and “enhance capability to develop new products/services” would increase dramatically in the future, with “cost discipline control” giving room to them, but still being an important issue.

“Reducing headcount”, “reducing production costs” and “growing in-house expertise” were evaluated about as important now as in the future. “Enhancing capability for change” and “enhancing position in value chain”, as well as “investing in technology” were seen to become more important in the future. They were actually seen to have more importance than “reducing production costs”. Also, reducing other costs (transaction costs and capital costs) was seen to become less important than these three. Overall, the trend of outsourcing was anticipated to lean towards gaining competitive advantage through new abilities.

This suggests the shift from pure contract transactions towards partnerships and other forms of integration and cooperation.

It is also possible that the company is looking for new subcontractors, either to replace the current subcontractor(s) or to increase the level of subcontracting. Beil (2009) has listed four main reasons for finding new subcontractors. First reason to look into other subcontractors is the dissatisfaction of current subcontractor(s), or that the current subcontractor(s) have gone under. Secondly, new subcontractors may be able to provide the company with novelty products: offer better alternatives and cost reduction with new technology. Other costs, like more favourable export regulations or minimum wages can turn the scales to a totally different country even. It is also possible that the company only wants to drive competition by tendering the current subcontractors. (Beil 2009)

## **2.2 The risks of outsourcing**

Outsourcing has many advantages but is not without disadvantages. A risk can only exist if there is a possibility of benefit (e.g. profit). A business risk, whether it be economical (the loss of income or higher expenditures) or reputational (e.g. end customer dissatisfaction), always exists in business ventures. The risks of outsourcing derive from the planning and execution of the process, because disappointments of outsourcing are often due to poor management. The subcontractor can also pose a threat if he is not adequately evaluated, chosen, instructed and monitored.

### **2.2.1 Company derived risks**

The communication between the two parties is essential in order to state what is expected. Lack of commitment, inadequate communication, as well as incompatible personalities are typical problems of outsourcing ventures. Trust and commitment are needed to build any real partnership. The lack of trust may lead to the lack of information sharing, resulting in misunderstandings of needs and problems. If dissimilar personalities clash, the professional solution is to find a



way to understand the other party, and learn how to communicate better. By communicating with the partner, new business opportunities or other advantages can also be revealed. (O’Keeffe & Vanlandingham 2004)

Naturally, the company’s core functions or capabilities should not be outsourced. Outsourcing critical operations results in a weaker competitive position, which is the opposite of the outsourcing objective in the first place (concentrating on core competence). Still, this is a very common mistake. If the company’s position in the market place is not strong enough, and the subcontractor has acquired sufficient knowhow and information from the buyer (client company), the subcontractor might try to bypass the original buyer and try to sell directly to the end customer. Parts purchasing is one way to protect the company’s expertise: ordering parts for the end product from different subcontractors or suppliers. This way no subcontractor can “hijack” the end customer(s) or the client company’s knowhow. Outsourcing too much or outsourcing the above mentioned core capabilities can also lead to losing control. Loss of control can reflect to quality assurance or data security. (Oshri et al. 2009)

Another common outsourcing risk is becoming too dependent on the subcontractor. Companies should avoid outsourcing from limited supply markets. If outsourcing occurs from a small number of subcontractors, or only just from one, the subcontractor(s) capabilities of providing the required volumes with required standards (quality, price, delivery times etc.) must be carefully analyzed to diminish the risk caused by subcontractor performance failures. Sometimes subcontractor dependency can be self-inflicted: if the negotiated contract is not compiled by a cross-functional team, the decisions of e.g. a manager might hinder the options of the purchasing manager. It is also important that all of the parties involved in the outsourcing action understand the total cost structure, value improvement and commit to the relationship. (Lonsdale 1999; O’Keeffe & Vanlandingham 2004)

Outsourcing management can be seen as a compilation of “hard” and “soft” components. These components affect the work style and communication in the

work place. In the McKinsey 7-S model (according to Beardsell 2009) *strategy, structure and systems* are the “hard” elements; and *shared values, skills, style* and staff “soft” elements. “Hard” components like strategy, scope definition, risk assessment, cost savings, operational advantages, vendor selection, contracts, governance, information security, performance metrics, technical infrastructure and legal compliance are the ones that most companies focus on. Most well-known “soft” components are leadership and management competencies, but the other “soft” components like employee mindset and motivation, global team dynamics and communication, and cultural differences are also important parts of a good outsourcing relationship management. The model is based on the idea that if a company is to succeed, both the “hard” and “soft” elements need to be levelled and equally reinforced. (Schomer 2010; Beardsell 2009)

### **2.2.2 Subcontractor performance risks**

If the subcontractor’s outcome is poor, it affects negatively on the other operations of the company and also their relationships to customers. Thus the risks of outsourcing lie first of all in subcontractor selection, and then in the performance of the chosen subcontractor(s). Performance can be evaluated by reviewing the production quality, delivery speed and accuracy. Also in the phase of transferring knowledge, some problems might emerge, and cultural issues should never be underestimated. Risks derived from subcontractor performance can be divided into five different categories: quality, failure to deliver in time, data security, knowledge transfer and culture. (Östring 2004)

#### **Quality**

In order to ensure that the quality of products doesn’t deteriorate due to outsourcing, the company has to select, qualify and manage the subcontractor well. Quality of the products can be examined by looking into the certifications of the subcontractor, auditing the production facilities or by requesting samples. Good questions to ask are also: when was the company established; is the company on any approved subcontractor lists from trade associations or gov-

ernment; and which companies can they name as references. Poor quality decreases customer satisfaction and creates additional costs for the company. Poor quality of only one part can make the whole product dysfunctional, which can lead to additional costs from recalls, warranty, and inventory costs, not to mention the lost reputation and potential sales. Good product quality can be accomplished by cross-training and by giving an adequate transition time, but these are sadly not often practised because of trying to save on costs. (O’Keeffe & Vanlandingham 2004; Beil 2009)

### **Subcontractor failure to deliver on-time**

If the subcontractor fails to deliver the goods on time, it hinders the company’s on-time delivery and affects customer satisfaction. Like poor quality, delayed deliveries cause extra costs and decrease end customers’ trust. The worst case scenario is non-delivery, which causes even more damage. Especially in companies relying on just-in-time-deliveries (JIT), the punctual delivery from the subcontractor is a necessity. JIT-deliveries enable smaller inventories, but require the order-delivery-system to work seamlessly. Delays on production or delivery may also be caused by factors that cannot be controlled by the company or subcontractor. Examples of these are weather conditions, delays in harbour or customs office, and labour disputes like strikes; or situations of political unrest. (O’Keeffe & Vanlandingham 2004)

### **Data security and protection**

In outsourcing, the protection of confidential information goes without saying but still both parties of the outsourcing relationship should analyze which information is confidential and how it is protected. The requirements for security vary according to the nature of the outsourcing company’s business, the personal data being handled, and the services being outsourced. Security issues have a significant effect on the outsourcing outcome, especially in the IT branch, but all businesses have their innovations and business secrets. Data should be safeguarded at the subcontractor’s so that it is separated from other data and can-

not be corrupted by other companies' data; and so that only authorised staff can access the data, without being able to copy the it. Staff security refers to the security issues of personnel: security checking of employees, protocol training and validated procedures. Hardware security revolves around the secure location, appropriate maintenance, and correct power, air conditioning and fire prevention. Backups are vital, and disaster recovery plans recommended. Some form of security documentation, especially if breaches occur, should be provided to the commisioning party. (Oshri et al. 2009, pp. 88-90)

Protecting the intellectual property (IP) is the corner stone of data protection. IP rights are the rights that people have been given over the creations of their minds, like literacy, inventions, symbols, names or images. The key forms of IP are patents, copyright, trademarks, industrial design rights and trade secrets (Oshri et al. 2009, p. 90). It is vital to protect an original business idea early in the formation of the business. Unprotected proprietary information leaves the company vulnerable for other people or businesses to use the idea, causing loss of revenue and maybe that of the whole product.

### **Transferring knowledge**

Knowledge transfer refers to the transmitting or sharing of information or knowhow, i.e. business knowledge. This takes time, money and effort. Often the transfer requires a period of training or practising, and is associated with personal competences or skills. Knowledge transfer coheres with data security. (Oshri et al. 2009)

### **Culture**

Cross-cultural awareness and knowledge of the business partner's culture mindset and customs have a significant impact on the outcome of an outsourcing project. "Culture" refers to the way people interpret experiences and behave. Maybe culture is not given enough attention because of its relative intangibility. According to Julie Beardsell (2009), "it is known that partner expertise, collaboration and culture are higher critical success factors in outsourcing than price".

The basis of researching cultural differences was created by *Geert Hofstede* (2009) in the beginning of 1980's when he introduced his *Dimensions of cultural differences*. He examined different cultures in the light of power distance, individualism, masculinity, and uncertainty avoidance. (Long-term orientation was added later.) Country culture is crafted by history, geography, language, literature, folklore and education level, and consists of customs, manners, habits, etc. The country's culture has an effect on working practices, e.g. time concept and working tempo; low or high context language and non-verbal communication; attitude to change and authority; tolerance and the equality of e.g. sexes and young/old employees. Culture affects the ways of assigning and carrying out tasks; expectations of roles; commitment and professionalism. Also, issues like private space over public space, or deductive thinking over inductive thinking can cause cultural clashes. In addition to the above mentioned low/high context language and non-verbal communication, the language itself can cause problems. If the language of business is a second or third language for both parties, misunderstandings might occur. For example, Incoterms have been created to diminish the possibility of different meanings of same word or term. Incoterms define clearly the responsibilities of buyer and seller and the point of liability transfer. Incoterms are introduced in Appendix 1. (Beardsell 2009; Hofstede 2009)

Company culture, or corporate culture, may differ a lot or just a little from the country's culture, but at least every company has their own working habits, e.g. paperwork, working hours, common courtesy influenced by managerial example. Work days can also vary from country to country. The religion, customs, etc. of a country might regulate the working days according to public holidays or religious calendar. To create a thriving partnership in outsourcing, one must understand the other culture; have the ability of cross-border leadership and communication; have strong governance; create cultural competencies of outsourcing; and understand culture's influence on content specific factors in business. (Beardsell 2009; Oshri et al. 2009)

### 2.3 Managing the risks of outsourcing

Outsourcing, like any other business strategy or project, requires careful planning and managing, but also resources, or the transition phase may fail due to underachieved schedules and budgets. The company should perform a risk analysis first and then create the risk management plan according to the chosen subcontractor(s)' features and level of risk. By analysing the subcontractors, the company reduces the risks in sourcing, production and Research&Development. It is a lot easier and cheaper to prepare for possible problems than to spend a lot of time and other assets trying to solve already existing problems. If a source of possible risk is found, it must be eliminated or reduced, and in some cases it just has to be accepted and prepared for. For example, if a company relies on a financially weak subcontractor, problems with deliveries may occur, because of problems with payment to subcontractor's workers or to sub-suppliers. (O'Keeffe & Vanlandingham 2004; Östring 2004)

The type of analysis needed depends on the type of subcontractor. The deeper the relationship, the higher the risk – and therefore higher the need for more in-depth analysis. In other words, if it would be difficult to change a subcontractor, a corporate analysis of the subcontractor should be performed. Whereas in short-term or one-off contracts (i.e. low risk "exchanges"), a short credit risk analysis is sufficient. Time, i.e. money should not be wasted on easily replaceable subcontractor(s).

Östring (2004) uses the terms focus supplier and non-focus supplier, but as the explanations reveal, supplier and subcontractor are used here with overlapping meanings. *Focus suppliers* are the ones which are essential to the company's business, i.e. losing a focus supplier could cause significant damage. The definition of a subcontractor is just this: an essential service provider. *Non-focus supplier* refers to a party that is not providing products or services essential to the company's line of business, and whose loss would not have a major impact on the company. These service providers are better called suppliers, because they supply products that are not involved in the company's production, such as

office stationary, cleaning, waste management etc. Also easily replaceable suppliers that provide standard commodities can be seen as non-focus suppliers. (Östring 2004, p. 25)

Östring's (2004) *key supplier* is a focus supplier with high volume - in other words the most important subcontractors. If a large company is a key supplier, it is good to know how the company is seen by the subcontractor. Are the products and services which the client company purchases the subcontractor's focus business, or might it be that the subcontractor is considering divesting that particular business division? It is good to prepare for changes like the subcontractor selling the division, or acquisitions which might affect the production. If there are signs of losing the service provider, the search of replacing providers must be commenced. On the other hand, a key supplier can be a small firm, but then the quantities needed must be verified. Also, if the key supplier is a small firm, it may have problems with investments, and then the client company must consider the importance of this particular subcontractor. Would it be lucrative to invest in the subcontractor? If the subcontractor offers something unique and vital to the company, it might be wise to consider a more in-depth partnership, e.g. investments, training, joint ventures. (Östring 2004, pp. 27-28)

### **The steps of risk management**

The first step of risk management is *risk assessment* of a subcontractor, which can be divided into three categories: risk identification (past experiences and the subcontractors that are most likely to cause problems in production); risk analysis and risk prioritization (the leverage of each risk). If sufficient funds to analyse all subcontractors do not exist, the company should concentrate on the most important ones. Subcontractor risks can be seen as monetary losses; performance failures e.g. delayed deliveries or non-deliveries can cause the loss of reputation, customers, or market share. (Östring 2004)

The second step of risk management is *risk control*, which consists of three elements: risk management planning, risk resolution and risk monitoring. Risk

management planning refers to the strategy of how the goals of subcontractor risk management are fulfilled, e.g. risk avoidance, transfer or reduction. Risk resolution is the scenario where the risks are managed (solved). Monitoring the subcontractors means also monitoring the risk they present. The basic project risk management model (Picture 1) of O’Keeffe & Vanlandingham (2004) illustrates well also the plan of Östring (2004). The universal model captures the essentials of risk management: first assessing the risks, then creating and implementing management strategies to control possible risks; and then moving on to the important monitoring and evaluating part. Analysing the information gained through one experience helps to improve the future risk management plans. (O’Keeffe & Vanlandingham 2004; Östring 2004, p. 23)

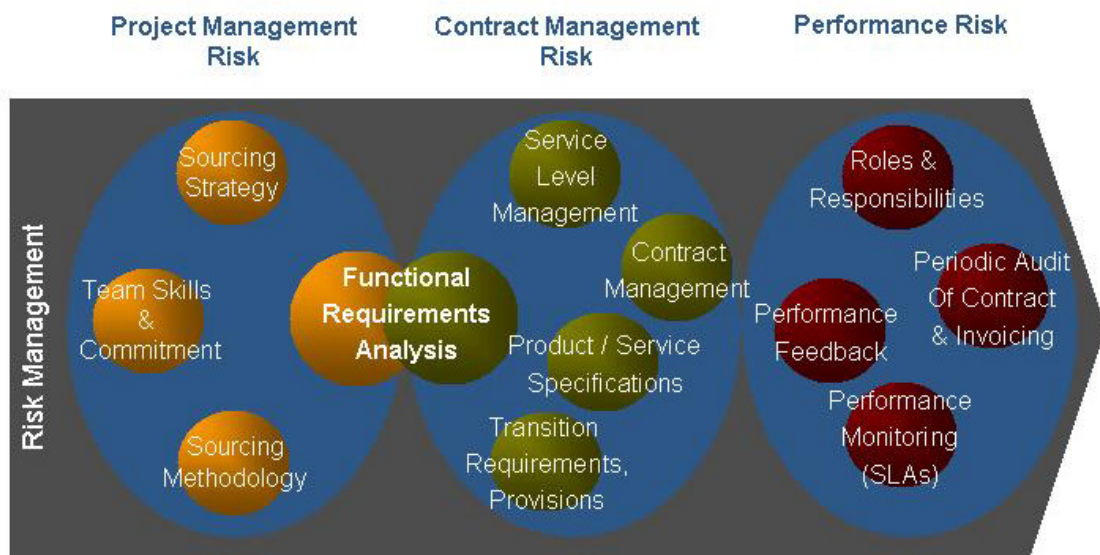


Picture 1 A basic project risk management model. (O’Keeffe & Vanlandingham 2004)

As stated, the cornerstone of outsourcing risk management is the continuous evaluation of the outsourcing project, so that the initial goals and objectives are reached. According to an outsourcing risk management plan created by O’Keeffe & Vanlandingham (2004), the ongoing process of risk management



consists of three main elements: supplier and contract management, service level agreement (SLA), and billing accuracy. *Supplier and contract management* is documentation of statistics or historical performance of the outsourcing relationship. The goal of this is to enhance the performance of both partners. *SLA* is a document which defines the relationship between the two parties: the provider and the recipient. SLA regulates, for example, the contracted delivery time; performance, tracking and reporting; customer duties and responsibilities; security and confidentiality; termination and financial penalties. Contract terms determine the SLA, and it should be evaluated and updated periodically. *Billing accuracy* is also a key factor in outsourcing risk management, because many issues or problems of outsourcing involve billing. Contract risk management refers to the risk ranking of each outsourcing contract to e.g. high, medium and low risk contracts. The higher the risk, the more monitoring and reviewing is needed. (O’Keeffe & Vanlandingham 2004; SLA information zone 2007)



Picture 2 The Protiviti outsource risk management framework (O’Keeffe & Vanlandingham 2004)

The Protiviti outsource risk management framework (Picture 2) illustrates how the project management risk, contract management risk and performance risk create the entirety of risk management. As stated in the earlier chapters, the

sourcing strategy and methodology, together with skills and commitment to the outsourcing project, create the basis for a functional and goal-orientated outsourcing project. The management of the project's risks continues on the contract level: what is required from the partner and how the requirements and needs are expressed. The very important performance monitoring of both parties and the communication between them through SLAs, feedback and periodic audits are depicted in Picture 2 in the performance risk section.

### 3 THE PROCESS OF SELECTING A SUBCONTRACTOR

The process of subcontractor selection is a complicated operation with multiple phases. Subcontractor selection begins with the decisions of the outsourcing scope and scale: the objective, goals, policies and strategy. Next the criteria and methods for the analysis of potential subcontractors are created. This phase of analyzing the subcontractors is discussed in the next chapter. The chosen criteria are listed and weighed (importance) so that the potential subcontractors can be numerically compared. Finally, the potential subcontractors are identified and contacted for additional information, and eventually, negotiations of contracts are held. It is good to remember though that the evaluating and monitoring of the subcontractor is a continuous part of the process.

#### 3.1 Framework phase

First, *the level of outsourcing* must be determined. Outsourcing an activity means contracting a set of processes or smaller parts of it to a subcontractor. When more than 80 % of a function's operating budget is transferred to external providers, the company is exercising *total outsourcing*. When it is the opposite, i.e. more than 80 % of the operating budget are retained in the company, it is called using *total in-house sourcing*. *Selective outsourcing* refers to levels of 20 to 80 % of operating budget kept in-house, while sourcing the rest. (Oshri et al. 2009, p. 16)

The next step is the selection of an *outsourcing model*. As sourcing continues to grow, new models of global sourcing emerge. The different models can be categorized into four sections: domestic outsourcing, offshore outsourcing, domestic insourcing and captive models. "Domestic outsourcing" refers to a situation where a third party of the client organization's country is employed to complete a specific job. "Offshore outsourcing" (or offshoring) means outsourcing to vendor(s) in a different country as the client company. "Nearshoring" means

taking the outsourced work to a nearby country. In “domestic insourcing” certain services are managed internationally in a unit in the same country as the company itself. “Captive models” refer to strategic decisions to place certain activities of the company into a wholly owned subsidiary in another country. (Oshri et al., 2009, p. 15; Sourcingmag)

Also the *number of subcontractors* is to be decided on. The decision of whether to outsource from one or more subcontractors is also a major issue in selecting the subcontractor(s), as well as in managing the risks of outsourcing. The number of subcontractors has a critical impact on the level of dependency on subcontractors, but also because it affects the possibility of changing the particular subcontractor and influencing the costs of it. A subcontractor can be categorized by three definitions: sole source, single source and multiple sources. A sole source subcontractor is one subcontracting company in one location; a single source is one subcontractor with several locations. A single source subcontractor offers a bit more safety in the event of location specific risks like natural catastrophes, but doesn't shelter against problems caused by the subcontractor's weak financial situation or organizational decisions. Dependency on one sole or single subcontractor is quite risky. Optional backup subcontractors should be listed in case of quality, quantity, delivery, etc. problems. Having multiple sources means just that: several subcontractors with several locations. It must be kept in mind though, that different companies might have different capacities in terms of expertise, facilities, delivery times, and so on. (Östring 2004, p. 26)

After the company has selected the framework for outsourcing, the adjacent task is to establish the analysing criteria of potential subcontractors. There are various feasible methods of analysing subcontractors, and Chapter 4 presents some of them. The analysing process starts with selecting the country to outsource from, because the characteristics of a country determine the foundations of a business environment.

### 3.2 Selecting the country of outsourcing

In addition to Brazil and the Russian Federation, many Asian countries like China, Indonesia, and India have been the typical subcontractor countries because of low costs, but more than 120 developing countries have emerged into the outsourcing field to compete for foreign investment. The “new” countries are attracting companies with low-cost skilled workers and their language skills (e.g. Philippines with English, South America with Spanish and Morocco with French). At the same time, the above mentioned “traditional” subcontractor countries are struggling with the pressure to raise wages. Central and Eastern European countries like the Baltic states and Poland; South America (e.g. Mexico) and the Middle East and Africa offering more high-value activities are considered to be the new key emerging markets of outsourcing. (Oshri et al. 2009; Kotlarsky 2010)

In the beginning of the process of finding subcontractors, the company must evaluate different countries and their attractiveness as a sourcing destination. There are a great number of selection strategies available, also called frameworks, but all of them discuss costs, business environment, labour resources and specific skills. For example, Kearney (2007, according to Oshri et al. 2009) has created a global services location index, which considers the financial attractiveness, people skills and availability, and business environment in the framework for selecting the destination of outsourcing. He gives each section scores and counts a total score to determine the best location. Farrell’s (2006, according to Oshri et al. 2009) frameworks were chosen to be most effective by Oshri, Kotlarsky and Willcocks. The six factors of Farrell’s framework consist of assessing the costs, skills, quality of infrastructure, business environment, risks, and market potential. Julia Kotlarsky, an Associate Professor at the Warwick Business School has summarized the findings of Oshri, Kotlarsky and Willcocks into article *New Opportunities in Global Outsourcing* (2010). The factors to be analysed are the costs, the skills, the market and the political and regulatory environment. (Oshri et al. 2009, pp. 33, 45)

## **The costs**

The costs refer to the evaluation of 1) costs of labour (average wages for skilled workers and managers); 2) the costs of infrastructure (networks, internet, power, rent); and 3) corporate taxes (tax breaks and regulations). Also, some local investment incentives might affect the amount of taxes or other costs. When considering the costs of infrastructure, also the quality of it must be assessed. Characteristics of the telecommunications and IT systems like network downtime and connectivity; the reliability of the power network; availability and quality of real estate, as well as the scale and quality of transportation infrastructure should be analysed. (Kotlarsky 2010)

## **The skills**

Skills considers the size of the labour pool with required skills, which means technical and business knowledge, management and language skills, and the ability to learn new concepts and innovate (Kotlarsky 2010). The country's ability to supply sufficient labour resources for growing demand, i.e. the annually increasing number of desirably skilled graduates, is called *scalability of labour resources*. This is a very important factor when considering outsourcing to a certain country. According to Kotlarsky (2010), "*countries that offer scalability of labour resources are also more likely to keep wages relatively low due to the constant supply of new graduates.*" What Kotlarsky doesn't mention, is the competition between skilled graduates: the more people are graduating, the more outstanding results or personal skills one must have to obtain a desired opening. It is then country dependant, whether the high qualifications of potential employees results in higher salary demands. (Kotlarsky 2010)

## **The market**

Market potential of a country can be evaluated by the attractiveness of the local market. Vendor landscape, i.e. the size of the needed business sector offering

the service, should be considered, not only from the market side, but also by looking at the functionality, affordability and usability of the vendor pool. The current gross domestic product (GDP) and its growth rate and the living standard are good indicators of the market's situation. The target markets accessibility should be considered also. Time difference, travel time and frequency, quality and trustworthiness of transport carriers might hinder the business. But, as stated earlier, utilising production in different time zones can also enable round-the-clock production. Easily accessible nearby markets in the country and its neighbouring countries increases the market potential. Also the compatibility of the business environment should be evaluated; more on culture, customs and ethics in chapter 2.2. (Kotlarsky 2010)

### **The political and regulatory environment**

The aspects of governance other than taxes are the stability, fairness and efficiency of the legal system. Questions to be asked are: What are the policies on foreign investment and labour laws, as well as how heavy is the bureaucratic and regulatory burden? And what about the level of corruption and crime, or security issues like fraud, terrorism and the protection of Intellectual Property? Also, the risks of political unrest (e.g. revolution) and labour uprising should be considered. These threats can be foreseen by monitoring elections and changes in executive and legislative power, labour union activities, internal politics and regulatory stances. The stability of the currency and inflation rate should not be forgotten either. (Kotlarsky 2010; Sourcingmag)

### **3.3 Final phase of the subcontractor selection process**

Chapter 4 concentrates on the criteria for subcontractor analysis, but the actions of a client company after the selection of subcontractors are briefly introduced next because the awarding of contracts is the last phase of the whole process. After determining the framework and criteria for outsourcing, a list of potential subcontractors is created. The methods used for identifying potential

subcontractors are not discussed in the thesis, but the empirical part gives some examples of information sources.

Once this group of suitable pre-qualified subcontractors is generated, the subcontractors are approached with a formal request of providing information of their products or services. There are three types: *Request for information* (RFI), *Request for proposal* (RFP) and *Request for quote* (RFQ). RFI is only a request of information regarding the products the subcontractor could provide, and doesn't state a particular intention to award a contract. RFI is the subcontractor's chance to state the superiority over other subcontractors, but usually the subcontractor only answers a RFI when he expects the buyer to send RFP or RFQ, because responding to RFI is time consuming. RFP is used when procuring non-standard or highly complex products, because it necessitates the subcontractor's involvement and expertise. In RFP, the buyer states the performance requirements, and the subcontractor replies with a detailed set of possibilities meeting them; and at which price. Usually after that the negotiations start. RFQ is the statement of work with the exact specifications of the product (size, material, quantity, etc.). As the RFQ is typically used for standard items, the offers are usually tendered. (Beil 2009)

The last step of the subcontractor selection is to state the formal contractual terms: payment terms, delivery terms (quantities, delivery frequencies, delivery locations), and other terms like service level, quality level, technical specifications, and duration of the contract. Usually Incoterms are used. Finally, the contract is awarded to one or multiple subcontractors found to fit the conditions set in the initial stage of subcontractor selection. (Beil 2009)

It must be kept in mind though that the selection of a partner is not the privilege of the client company –also the subcontractor chooses whom to supply products to. These factors make the client company more attractive in the eyes of the subcontractor: the client's reputation; CEO's involvement in the relationship; size of the project; the possibility of additional profit; the possibility of new market or business entry; or the prospects of acquiring new knowledge. Naturally, if



the subcontractor is in need of revenues, he is more likely to accept orders with less favourable terms and conditions. (Oshri et al. 2009, pp. 81-82)

## **4 SUBCONTRACTOR ANALYSIS CRITERIA**

Once the country of outsourcing is analysed and selected, the criteria of analysing the subcontractors is composed. The criteria is used to evaluate the listing of alternatives, i.e. potential subcontractors. The importance of a subcontractor analysis cannot be underestimated: nowadays the relationships with subcontractors have developed into more or less outsourcing partnerships. Adequate information of the business partner is needed in order to reduce the risk caused by such arrangements (e.g. joint ventures, alliances, JIT-deliveries). Subcontractor analysis can begin with analysing the scope of the subcontractor: looking into references, previous contracts and the sizes of previous projects. A credit check is always recommended to determine if the subcontractor has a strong enough cash flow. Otherwise, a risk management plan in case of bankruptcy is needed. This information also helps to examine the workshop's production volume and project scheduling; and whether the experience needed (the ability of technical complexity, for example) exists in the company or not. (Beil 2009)

### **4.1 Early studies of subcontractor selection**

The problem of supplier selection was addressed by Dickson (1966, according to Aguezzoul & Ladet 2003) in the 1960's. Dickson's writings are considered to be the first ones on the matter. As already discussed, the term supplier was used to describe the company supplying parts or services to the contracting company. Hence, the earlier studies of supplier selection can be used to depict the history of subcontractor selection. Dickson studied the answers of 274 purchasing department personnel in the U.S. and Canada, and he identified 23 criteria that the companies used to select their suppliers. These criteria are presented in Table 2 Dickson's vendor selection criteria. Quality; delivery; performance history; warranties and claim policies; and production facilities and capacity were rated at least with "considerable importance". As expected, the price was not rated with extreme importance. Dickson noticed that the importance ratings changed according to the purchased good. For example, warranties and

production capacity had significant importance in some cases, while in others they were seen as “unworthy of much consideration”. Dickson’s conclusion was that there were three essential factors when choosing vendors: the ability to meet quality standards; the ability to deliver the product on time; and performance history. (Weber et al. 1991; Aguezzoul & Ladet 2003; Cheraghi et al. 2004)

**Table I** Dickson’s vendor selection criteria

<b>Rank</b>	<b>Factor</b>	<b>Mean rating</b>	<b>Evaluation</b>
1	Quality	3.508	Extreme importance
2	Delivery	3.417	
3	Performance history	2.998	
4	Warranties and claim policies	2.849	
5	Production facilities and capacity	2.775	Considerable importance
6	Price	2.758	
7	Technical capability	2.545	
8	Financial position	2.514	
9	Procedural compliance	2.488	Average importance
10	Communication system	2.426	
11	Reputation and position in industry	2.412	
12	Desire for business	2.256	
13	Management and organization	2.216	
14	Operating controls	2.211	
15	Repair service	2.187	
16	Attitude	2.120	
17	Impression	2.054	
18	Packaging ability	2.009	
19	Labor relation record	2.003	Slight importance
20	Geographical location	1.872	
21	Amount of past business	1.597	
22	Training aids	1.537	
23	Reciprocal arrangement	0.610	

**Table 1** Dickson’s vendor selection criteria (Weber et al. 1991)

Dickson’s theory was investigated 25 years later. The study of Weber et al. (1991) “Vendor selection criteria and methods” was based on 74 publications written between 1966 and 1991 about supplier selection, most of which were in reference to Dickson’s work. Weber et al. (1991) found that “quality”, “delivery”, “price”, and “production capacity and location” were the most often named criteria since 1966. So, Dickson’s theories were still accurate although the world had

seemingly changed. (Weber et al. 1991; Aguezzoul & Ladet 2003; Benyoucef et al. 2003)

#### **4.2 Subcontractor selection criteria in the 21<sup>st</sup> century**

Although the study of Weber et al. (1991) is now twenty years old, the results are still retold in the latest studies. Of course, the world has changed, and along with it the criteria of subcontractor selection. Competition has increased, the markets have globalized, and technological advantages have been made (e.g. Internet-based programs). Selecting the right subcontractor is even more important, affecting the profitability of the company as well as the quality and customer satisfaction. Still, the “traditional” factors (quality, delivery, price, and service) are important, only giving room to new aspects like just-in-time communication, process improvement and supply chain management. (Cheraghi et al. 2004)

In the study of Cheraghi et al. (2004), the researchers studied the issue of subcontractor selection criteria, as Dickson (1966) and Weber et al. (1991) did. Table 2 depicts the findings of Cheraghi et al. comparing their own study and the study of Weber et al. In addition to researching the factors named by Weber et al., Cheraghi et al. added some modern features like reliability, long-term relationship, process improvement, product development, and cultural aspect to their questionnaire. (Cheraghi et al. 2004)

When comparing the results of Weber et al. with their own, the biggest change was found in the massive increase of importance of repair service (198 per cent increase), communication system (153 percent increase), and procedural compliance (90 per cent increase). Also, management and organization had increased their importance by 33 per cent. All of these factors are influenced by human interaction. It is also noteworthy that the new factors added by Cheraghi et al. ranked also quite high; most important being reliability (rank 9), then flexibility (rank 10), consistency (rank 15), and long-term relationship (rank 16). (Cheraghi et al. 2004)

Geographical location, as well as reputation and position in the industry, had meanwhile lost its importance. It can be said that globalization is the reason behind this: geographical location is no longer important as the world is connected not only through various transport methods, but also because the communication systems have connected buyers and sellers from the opposite ends of the world. A small, newly founded company in the suburbs can offer as high quality products and maybe even more innovative solutions than the industry leader. Desire for business, training aids, warranties & claim policies and amount of past business were no longer mentioned in the literature, but they had not been found very important by Weber et al. either. The researchers concluded that quality; delivery; price; repair service; technical capability; production facilities and capacity; financial position; and management and organization were the top ten ranking factors. (Cheraghi et al. 2004)

**Table 5. Comparison Of Factors: 1966-1990 And 1990-2001**

Factor	1966-1990		1990-2001		Overall	
	Papers		Papers		Papers	
Quality	40	54%	31	79%	71	63%
Delivery	45	61%	30	77%	75	66%
Performance History	7	9%	4	10%	11	10%
Warranties & Claim Policies	1	1%	0	0%	1	1%
Production Facilities and Capacity	25	34%	10	26%	35	31%
Price	55	74%	26	67%	81	72%
Technical Capability	19	26%	11	28%	30	27%
Financial Position	8	11%	7	18%	15	13%
Procedural Compliance	2	3%	2	5%	4	4%
Communication System	3	4%	4	10%	7	6%
Reputation and Position in Industry	9	12%	1	3%	10	9%
Desire for Business	2	3%	0	0%	2	2%
Management and Organization	10	14%	7	18%	17	15%
Operating Controls	5	7%	0	0%	5	4%
Repair Service	7	9%	11	28%	18	16%
Attitude	9	12%	5	13%	14	12%
Impression	4	5%	2	5%	6	5%
Packaging Ability	5	7%	0	0%	5	4%
Labor Relations Record	3	4%	1	3%	4	4%
Geographical Location	15	20%	2	5%	17	15%
Amount of Past business	1	1%	0	0%	1	1%
Training Aids	3	4%	0	0%	3	3%
Reciprocal Arrangements	3	4%	2	5%	5	4%

Table 2 Comparison of studies made by Weber et al. (1991) and Cheraghi et al. (2004)

Cheraghi et al. (2004) also argued that the importance of price will continue to diminish in the future, greatly due to eProcurement, which will increase global competition. The Internet is considered to save sourcing time, reduce costs, help efficiently locate new subcontractors, greatly improve communication with them and help track subcontractor performance (Purchasing 1999, according to Cheraghi et al. 2004).

Beil (2009) has listed the findings of the study “Supplier evaluation framework based on balanced scorecard with integrated corporate social responsibility perspective” by Worapon Thanaraksakul and Busaba Phruksaphanrat (2009, according to Beil 2009). The researchers studied 76 relevant research papers of vendor/supplier evaluation and selection. In the literature used in the study, price, quality and delivery were the most commonly named subcontractor analyzing criteria. These three factors are clearly the “power three” criteria as they are constantly named throughout decades. Also (Beil 2009):

- production capacity and flexibility,
- technical capabilities and support,
- information and communication systems,
- financial status,
- and innovation and R&D were highly rated.

As the researchers before, also Beil (2009) found the same characteristics in his study. The purchasing literature frequently names also (Beil 2009):

- quality systems,
- management and organization,
- personnel training and development,
- performance history,
- geological location,
- reputation and references,
- packaging and handling ability,
- amount of past business,
- warranties and claim policies,
- procedural compliance,

- attitude and strategic fit,
- labour relations record,
- and desire for business as analyzing criteria.

Environmental and social responsibility; safety awareness; domestic political stability; cultural congruence; and risk of terrorism were named as contemporary criteria. These criteria have only lately come forth as the world has changed. Environmental and corporate social responsibility can offer a competitive edge: for example, for a growing number of consumers, environmentally friendly, locally produced goods are extremely important, as well as human rights and putting an end to child labour. These issues also concern packaging and transport modes. Consumers are nowadays interested in the whole supply chain, so the company should be able to produce information about their subcontractors too. Cultural compatibility, political situation and risks like terrorism and natural or human made disasters should be evaluated already while choosing the country of outsourcing, see chapter 3.2. (Beil 2009)

Another often cited study of evaluation criteria is the practical study of Barbarosoglu and Yazgac (1997, according to Benyoucef et al. 2003), in which a general purpose model was applied to a leading Turkish electric motor manufacturer. Benyoucef, Ding and Xie (2003) have summarized the study into three criteria (performance quality, business structure/manufacturing assessment and quality system assessment) with sublevels. The first component of **performance quality** is *shipment quality*, which is measured by the percentage of defective material both in incoming quality control and in production line control as well as the percentage of customer returns. Also, the percentage of defective material in final products is considered. The second issue with performance is *delivery quality*: accurate delivery with the right quantity packed correctly. The third part is the *cost structure*: including the consistency of pricing and the cost reductions gained from the outsourcing venture. (Benyoucef et al. 2003)

**Business structure and manufacturing capability assessment** begins with assessing the level of *technical co-operation*: how the subcontractor deals with quality problems and what is their capacity of designing and information shar-

ing. Secondly, the *employee profile* is analysed: the amount of employees, their training and the employee structure of the organization. *Financial status* with total revenue and total profit are evaluated next. Also, the importance of the client company for the subcontractor is important: how big of a share of the subcontractor's total volume comes from the client company. These factors were already discussed earlier in connection to risk management. Issues related to the manufacturing capacity are the equipment itself and the overall functionality of manufacturing (effectiveness of manufacturing and materials handling, like packaging and storing; as well as lead times). *Equipment analysis* consists of analysing the computer units and the production machinery (amounts, models, capacity utilization ratio, energy requirements, repair and maintenance). (Benyoucef et al. 2003)

The first component of **quality system assessment** is *the commitment of the management*. Management example is seen in the existence of internal audits and quality assurance system documents. The appreciation of quality functions is important, but maybe as important is the level of staff involvement in quality improvement. *Product development* and *improving the processes* are the next issues of assessing the quality system. They are evaluated by the techniques used and the effectiveness (functionality, capability) of outcomes. *Quality planning* consists of a quality database and the traceability and authenticity of the controls. Inspections and tests of materials and the final products are essential, and linked to that is the quality and calibration of the measuring and testing equipment. Last, but not least, the *quality assurance* in supply (quality control of incoming materials and the purchasing methods) and in production is evaluated, as well as the number of quality employees and their training. (Benyoucef et al. 2003)

Once the most suitable criteria for the subcontracting company have been identified, the emphasis of each must be determined. The selection of the subcontractor(s) is then a trade-off between the chosen criteria. For example, getting a reliable subcontractor with quality goods means spending money, so the correlation between these three should be carefully analyzed (low price with slow



delivery versus higher price with JIT-deliveries). Each company makes these decisions according to their business strategy and plan. (Beil 2009)

### **4.3 What kind of a subcontractor is a good subcontractor?**

“Good” is always a subjective term, but some universal characteristics exist (Beil 2009): A good subcontractor

- is reliable
- offers quality products and value for money
- has the ability to provide strong service and clear communication
- values partnership
- and has a subcontracting company with financial security.

If the subcontractor doesn't deliver quality products in time, the company's reputation and customer satisfaction will suffer. A good subcontractor lets the customer know if the delivery is going to be delayed (or when other problems emerge), and is also constantly looking for ways to improve the service. He suggests improvements and is open to change. If the subcontractor feels appreciated, he is more likely to understand the value of the client company's customers, and is more committed to end customer satisfaction. (Beil 2009; Business link)

A good subcontractor is also able to produce bigger quantities within short lead times (*surge capacity* availability). Over the lifetime of a longish contract the needs of the buyer might change according to general market changes. A subcontractor has good surge capacity when the usage of overtime or second or third shift is possible. (Beil 2009)

Although a subcontractor might look good on paper, have good business structure of the company and financial stability; good manufacturing capability; good quality control; and fine references, a long-term partnership requires mutual commitment and trust. Trustworthiness is generated by communicating with the

partner, keeping promises of quality, delivery and quantities, as well as mutual understanding. Compatibility is not the synonym of “same”, but the ability to adjust and the willingness to understand the partner, whether it may be his personality, corporate culture or customs and habits of his country.

## 5 LAITEX OY: COMPANY PROFILE

### 5.1 Key facts

Laitex Oy's main activity is the designing and manufacturing of materials transfer and handling applications for the process industries globally. The company has been offering conveying solutions since November 1986. Laitex Oy (private company limited by shares) is located in Lappeenranta, Finland. (Laitex Oy)

The managing director of Laitex Oy is Kari Kurronen and in 2009 the company employed 40 people. The turnover of 2009 was 3 827 000 Euros (Balance Consulting, according to Kauppalehti), which was 2.6 million less than the previous year. The share capital of Laitex Oy is 16 819 Euros, the nominal value being 168,19 Euros (PRH). The year 2009 was (Kauppalehti.fi: Yrityshaku)

In 2010 Laitex Oy was awarded with a Rating Alfa Certificate called "*Suomen Vahvimat*" (Strongest of Finland) from *Suomen Asiakastieto*. Suomen Asiakastieto is Finland's leading provider of business and credit information. The certificate rates Laitex Oy as a company that empowers the future economy of Finland. (Laitex Oy.; Suomen Asiakastieto Oy.)

### 5.2 Customers

Most of Laitex Oy's products are exported: only 30 per cent of all net sales come from the Finnish market. The company has delivered its products to all continents. The main customers of Laitex Oy are the wood-processing, power generation, and chemical industries. Wood-processing facilities use Laitex Oy's conveyors in debarking plants, sawmills, plywood and particle board plants, pulp mills, recausticising plants and power plants. Laitex Oy has supplied its products to *Arauco*, *International Paper*, *Metsä-Botnia*, *M-Real*, *SCA*, *Stora-*

*Enso, Sunila, Södra Cell, and UPM Kymmene.* (Laitex Oy: Expertise; References)

In power plants, the conveyor systems of Laitex Oy are used as receiving stations for firing solid fuels and also for air protection. Example customers include *Aalborg Energie Technik, Andritz, Fortum, Foster Wheeler, Energy Ecology Engineering (EEE), Kvaerner Pulping, Mitsui Babcock, Standardkessel, and Vattenfall.* For the international energy systems company Alstrom, Laitex Oy provided equipment for the power plant in Narva, Estonia. The “after slump deal” of September 2009 was worth over one million Euros, and it also included an option of another equipment delivery for 2010. (Laitex Oy: Expertise; Laitex Oy: References; Etelä-Saimaa)

The conveyors can also handle the basic materials transfer needs of the chemical industry: preparation concentrates, calcinates, deposits, sludge, dust and ashes. The technique can also be applied for mixing, shredding or cooling. Laitex has supplied *Finnish Chemicals, Hydroplast, Kemira, and Primalco* with different materials handling units. (Laitex Oy: Expertise; References)

Laitex Oy also serves the needs the mining industry. Most commonly the conveyors are used for transferring materials of cement and lime industry, and they are even capable of transferring goods straight up. *Mondo Minerals, Optiroc, Outokumpu, Partek Nordkalk, and Specialty Minerlas* are examples of these deliveries. For the waste and recycling management industry Laitex Oy produces equipment like shredders and crushers. (Laitex Oy: Expertise; References)

### **5.3 Product lines**

Laitex Oy provides a full service ranging from engineering the materials handling solution to manufacturing and the company also offers repair and maintenance service of conveyers. The company manufactures all types of mechanical conveyor systems and conveyors which can transfer various kinds of mate-

rials (bark, wood chips, limestone, cement, sludge, kaolin, peat, powder etc.). The extensive product range covers: Screw conveyors, Drag Chain Conveyors, Chain conveyors, Belt conveyors, Bucket elevators, Shredders, Rotor Crushers, Receiving Stations, Screw dischargers, Chain dischargers, Belt dischargers, Stoker Dischargers, Rotary feeders, Disc Sieves, Feeders, Slide Gate and Diverter Valves, Zero Speed Switches and Silo dischargers. (Laitex Oy: Expertise)

#### **5.4 Current state of inbound supply chain**

Component purchases aside, Laitex Oy has exercised some separate “experiments” of subcontracting. Laitex Oy has previously ordered parts from Finnish, Russian (St. Petersburg), Estonian and from one Latvian (Riga) manufacturer. Also, in 2010 Laitex Oy had a purchasing cooperation with Larox Oy to purchase products from some foundries in China. Laitex Oy doesn’t want to invest in in-house production facilities, so the company has tried to look at several possibilities of outsourcing. In component purchases (transmissions etc.) the end customer often defines the subcontractor. If not, the person in charge of the project tenders the couple of suppliers which Laitex Oy uses. Standard items like bearings are ordered from a wholesaler with yearly contracts. (Sinkko 2010)

#### **5.5 Creation of the subcontracting network**

Laitex Oy seeks to fulfil the individual needs of each customer. The company prides on the high quality of the products. Laitex Oy wants to concentrate more on product designing and development, and the company’s goal is to increase their turnover by outsourcing the production. Laitex is a thriving company with great growth potential in mind. The goal is to double the revenue and create more volume through subcontracting. At the moment Laitex Oy has to manufacture some parts themselves when the subcontractors cannot deliver fast enough, and that is the reason to find more subcontractors.

Laitex Oy has subcontracted from Finnish, Russian, Estonian and Latvian companies before. Thus, Laitex Oy has commissioned a thesis from the writer. The

aim of the writer's thesis is to find new long-term subcontractors among Estonian, Latvian and Lithuanian metal workshops. According to Kari Kurronen, the Managing Director, Laitex Oy had previously ordered some subcontracting services from companies in St. Petersburg, Tallinn, Narva and Riga. Tartu, in Estonia was also accepted as main target area for the subcontractor search, because the area is well known (machine) industrial area, and is 185 kilometres away from Tallinn. In comparison, it is 210 kilometres from Tallinn to Narva. (Tartu 2006; Kurronen 2010; Laitex Oy; Sinkko 2010; Google maps 2010)

Laitex Oy is interested in a systematic, continuous, long-term subcontracting partnership, and is also open to the idea of yearly contracts. The deliveries and their frequencies, and the types and amounts of the products will vary according to each project at hand. (One project can last even up to 1,5 years.) The most important aspect of subcontracting is that Laitex Oy is only interested in subcontracting the manufacturing of parts. At the moment, the parts of each conveyer belt or system is manufactured by several subcontractors. Laitex Oy has developed and designed the innovative conveyer systems they sell, so it is crucial to keep the business secret and assembly in-house. Otherwise the subcontractors could change into competitors. (Kurronen 2010)



## 7 CONCLUSIONS

The purpose of this thesis was to investigate the process of subcontractor selection. The research question was “What kind of a process is the selection of subcontractors?”. This process has multiple phases, the first one being the comprising of framework, i.e. the strategic decisions of outsourcing scope and scale. The thesis also discussed the advantages and risks of outsourcing and offered some risk management solutions –outsourcing is like any business venture, and should be carefully planned and managed. The main task of the subcontractor selection process is the creation and usage of criteria by which the potential subcontractors are evaluated.

Cheraghi et al. (2004) found that quality; delivery; price; repair service; technical capability; production facilities and capacity; financial position; management and organization; reliability; and flexibility were the ten most important factors of subcontractor selection. Beil’s (2009) study gave similar responses, only adding information and communication systems, innovation and R&D to the list. The literature also names factors like repairs and warranties, references, environmental and social responsibility, communication and location as selecting criteria.

The study of Barbarosoglu and Yazgac (1997, according to Benyoucef et al. 2003) concentrated in creating numerical criteria for each segment of business function, from performance quality and quality assessment to business structure and manufacturing capability assessment. The study analyses e.g. the amount of defective goods produced, technical capability and R&D, employee skills and training. In buyer –seller relationships the transaction can be made only by looking at these factors, but I personally believe personal factors, compatibility and trust play a role in creating long-term relationships. The understanding of cultural differences is also important.



Not only the scope and scale of outsourcing derive from the company's strategy and business plan, but also the criteria by which the subcontractors are evaluated. Every company has its own requirements and priorities. The criteria can be, for example, stated as: a reliable business partner with quality products, technical capability, adequate production capacity and fast delivery –and all that at an inexpensive price. In the actual selection of a subcontractor, the general view is conclusive: the commissioning company must determine what kinds of compromises it is prepared to make.

It is the writer's wish that Laitex Oy benefits from commissioning this thesis and finds subcontractors for long-term partnerships among the companies in the listing. Special acknowledgements to Minna Ikävalko, my thesis mentor, and to Timo Myöhänen and Simo Sinkko for technical consulting.

## **PICTURES**

Picture 1 A basic project risk management model, page 25

Picture 2 The Protiviti outsource risk management framework, page 26

## **CHARTS**

Chart 1 Purpose to outsource, page 16

## **TABLES**

Table 1 Dickson's vendor selection criteria, page 36

Table 2 Comparison of studies made by Weber et al. (1991) and Cheraghi et al. (2004), page 38

Table 3 Grading table, page 49

Table 4 Total points, page 52

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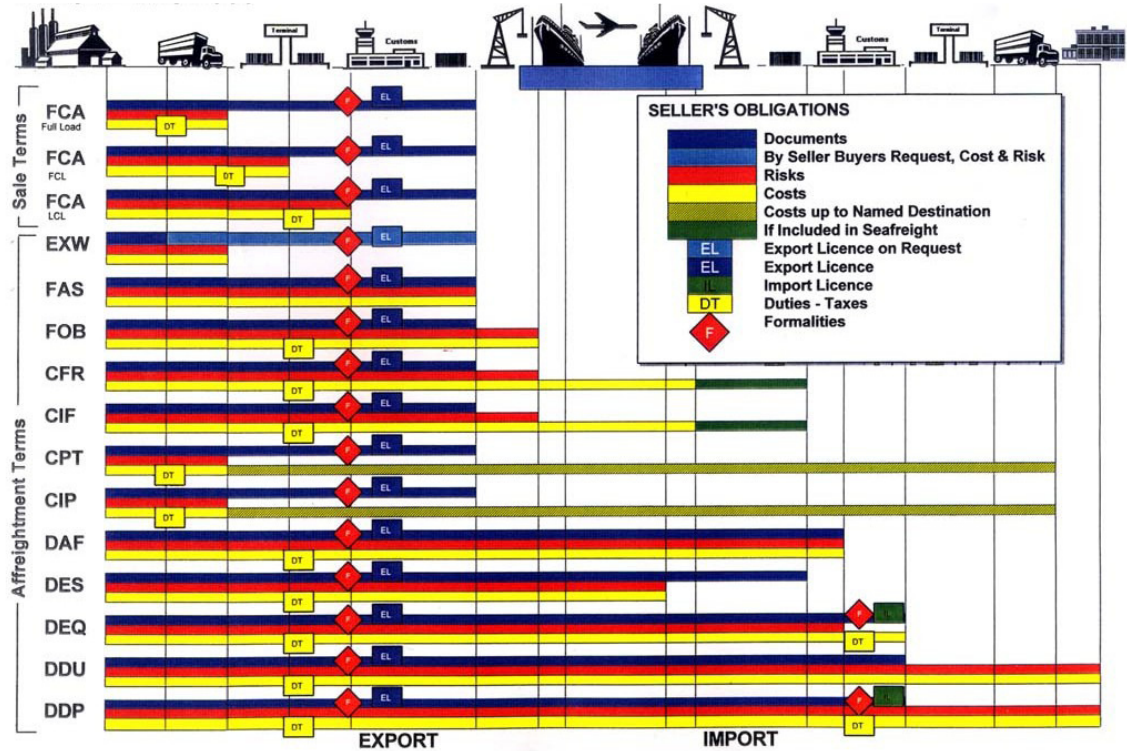
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Appendix 1 Incoterms-chart  
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Note: The ICC introduced the new Incoterms 2010 on the 5<sup>th</sup> of October 2010. The new terms now called “*Rules for any mode or modes of transport/for sea an inland waterway transport*” took effect on 1<sup>st</sup> of January 2011. Some changes were made: in FOB, CFR and CIF were given new terms: “on board” and “contract or procure a contract for the carriage of the goods...”. This change was made for *string sales*. Also new terms were introduced: **DAP** (Delivered at Place) which replaced DDU, DAF, DES and DEQ; and **DAT** (Delivered at Terminal), which replaced DEQ of the Incoterms 2000, leaving the total in 11 Incoterms. (INCE&CO)