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INTERNATIONAL OUTSOURCING

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MASTER THESIS

INTERNATIONAL OUTSOURCING

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EXECUTIVE SUMMARY

The core activity of technological companies is the manufacturing of products. This research focused on the decision making of these companies concerning outsourcing part of manufacturing to international suppliers. Before engaging in any strategic practice a company has to assess its internal and external environment. Hence, the central research question of this thesis is: *which internal and external factors influence the decision of Dutch technological companies to outsource manufacturing processes to international suppliers?*

To answer this question a conceptual outsourcing framework is developed, which incorporates internal and external factors that are derived from different theories. These factors help rationalize the decision making process and determine whether international outsourcing is a viable option for the company. The theoretical perspectives on which the framework is based, are Transaction Cost Theory (TCT), Resource Based View (RBV), Organisation Theory (OT), Knowledge Based View (KBV) and Location Theory (LT).

The applicability of the conceptual framework and the used theories are tested in the context of Dutch technological companies. By means of the qualitative method of conducting semi-structured interviews with purchasing managers, rich data is gathered that increased the understanding of international outsourcing from the viewpoint of these companies. These data provided input to further develop the subsequent quantitative data collection method of an online questionnaire. This mixed design has the advantage of being able to interpret and explain the quantitative results with the results of the qualitative method.

The obtained results indicated that the international outsourcing framework can be a useful tool to support the decision making processes since most factors are deliberated by the managers of Dutch technological companies. However, companies should implement the international outsourcing framework with caution as further research is needed to increase its validity. Outsourcing is a viable option when certain advantages can be realized by matching the manufacturing of certain components with country differences in external factors.

The results of this research show that companies still embrace outsourcing as a means to become more cost efficient, which is the predominant reason of the TCT. Therefore, outsourcing is a viable option when it reduces costs. However, this theory also states that outsourcing is a viable option when no specific assets are needed for the manufacturing of the products. Even though this can be confirmed, this research indicated that Dutch technological companies also outsource products for which specialized machines and tools or skills and experience of employees is required. Outsourcing high asset specific components does increase searching and negotiation costs, but can be implemented in practice. Especially for these components, long-term relations with suppliers is vital and is perceived as beneficial since it increases commitment, trust and development of inter-firm routines.

Regarding the RBV, this research confirms that outsourcing is a viable option when wanting to focus on core competences by outsourcing activities for which there is no strategic need to develop them in-house. However, Dutch technological companies do not seem to outsource because they lack unique resources and capabilities needed to manufacture a product. This theory states that this is a way to improve the quality of the products being manufactured, but in practice outsourcing can form a threat to the high-quality products of Dutch technological companies since some countries maintain a lower quality standard than is required. This, just like high asset specificity, underlies the importance of the location factors 'technological knowhow and competences' and 'the available machines, equipment and materials' in choosing an outsourcing location.

The results of this research indicate that outsourcing is a viable option when companies want to improve their competitiveness by transforming their company into a flexible entity which is in line with the OT. Companies want to adapt more easily to changes in the environment. According to this theory, a virtual organisation is a suitable design for such companies. However, the Dutch technological companies keep the highly knowledge-intensive and creative activities like R&D, Design and Engineering in-house since these are a source of their competitive advantage. For these manufacturing processes, outsourcing is not perceived as a viable option.

The KBV asserts that outsourcing is a viable option when a company lacks the unique knowledge needed to manufacture a product. However, access to specialized knowledge and innovations is not an important outsourcing motive for Dutch technological companies. The results do confirm that companies mainly outsource the manufacturing of components of which the required knowledge is of low strategic value. Moreover, mainly matured and explicit knowledge is transferred to the supplier. Through computer-aided designs, moulds or specifications it is easy to explain and state in detail what the company wants and how this should be manufactured by the supplier. For successful outsourcing it is important that the supplier has an extensive knowledge base, since it has to integrate the knowledge needed to manufacture the product. In addition, being able to communicate in a common language simplifies this knowledge transfer.

Regarding the LT it can be said that companies want to outsource manufacturing to that location where the external factors are most beneficial to the manufacturing of a particular product or component. Although the order of importance differ per type of product, there are certain conditions that need to be prevalent to make outsourcing a viable option. In general, the supplier should be located in a low-wage country so that labour costs can be reduced. The supplier also needs to have the appropriate machines and equipment in place and must have access to the required materials. Moreover, the supplier needs to employ a workforce that is sufficiently large and is capable to manufacture the products in accordance with the predetermined specifications and quality standards. Next to these factors, the Dutch technological companies also consider the total costs of transportation; legalisation and enforcement; stability of a country; and the languages spoken by the employees of a suppliers.

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ABBREVIATIONS

FME	Association FME-CWM
FDI	Foreign Direct Investment
TCT	Transaction Cost Theory
RBV	Resource Based View
OT	Organisational Theory
KBV	Knowledge-Based View
LT	Location Theory
LCC	Low Cost Country
IPR	Intellectual Property Right
CSR	Corporate Social Responsibility
SME	Small and Medium-sized Enterprises

PREFACE

This master thesis explores the internal and external factors, which influence the decision to outsource manufacturing processes to international suppliers. Based on theory, an international outsourcing framework is developed of which the different factors are tested by means of qualitative and quantitative research. Consequently, the framework is adjusted to make it applicable to the technological industry in the Netherlands.

The results of this research are based on technological companies that are located in the Netherlands and which are member of the association FME-CWM. In the past few months, I have had in-depth interviews with purchasing managers who are experienced in the field of international outsourcing. In addition, the technological companies were invited to complete a questionnaire, which was useful for finding conclusive answers. I would like to thank all participants for their offered time, valuable information, suggestions and outsourcing insights.

Furthermore, I would like to acknowledge Micha van Lin and Bas van Vroonhoven for their guidance and the possibility to do this assignment commissioned by the FME. I would like to thank my fellow colleagues of the International Business department for their support and for giving me an enjoyable time during the process of writing my thesis.

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Moniek Klein Gunnewiek

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1. INTRODUCTION

The technological (manufacturing) industry is an important cornerstone of the Dutch economy. This sector is a source of direct and indirect employment. Approximately 400.000 people are employed in the technological industry, which makes it the second largest sector in terms of volume of labour. Moreover, employment in the technological sector leads to additional jobs within other sectors like business services or transportation[1]. The technological sector is a source of economic prosperity because it accounts for a relatively large share (54%) of total export, which ultimately contributes to a strong economy. The sector is also a source of innovation. The core activity of this industry is the manufacturing of products. Companies in the Netherlands operate at the leading edge of advanced technology due to world-class standards of education, craftsmanship and industrial development. Amongst others the development of technological innovations makes manufacturing more efficient, increases productivity in multiple sectors and creates new products and supplementary services for existing and new target markets. Innovation is also important for Dutch technological companies in order to stay competitive. Globalisation has for example led to an increase in international competition due to the reduction of trade barriers. The Dutch companies have to compete with manufacturers from Low Cost Countries (LCCs). Innovation is key to staying competitive in the global market. Other challenges that technological companies nowadays seem to face are a lack of excellent personnel and scarcity of raw materials. Next to these external dynamics, the internal organisation of these companies also changed. The technological companies used to execute all the activities of their supply chain in-house. However, global access to suppliers and resources, advanced logistics and improved Information and Communication Technologies made it possible to restructure their company. The vertical integrated companies are transformed into flexible and less costly entities by means of outsourcing some activities of the supply chain to international suppliers.

1.1 Background

FME-CWM, in short FME, is a non-governmental association of companies in the technological industrial sector. FME is the largest industrial employers' organisation in the Netherlands with 2600 member companies and 130 affiliated trade companies. Their members operate across the full spectrum of business activities, ranging from primary metal manufacturing to shipbuilding, from the electronic - to the automotive industry and from capital goods to industrial automation. These member companies are mainly Small and Medium-sized Enterprises (SMEs) but also include some multinationals like e.g. Philips, Royal Haskoning and Stork. Together they employ a workforce of 275.000 people and enjoy a total turnover of 60 billion euros, of which 60 percent is generated through exports. FME's mission statement is to strengthen the position of the technological industry in the Netherlands and abroad, by means of lobbying, advice and services designed to improve the competitiveness of its members. Key task of the association is to look after the interests of its members and provide service both in the social and economic field. The organisation is built on three pillars:

- Policy and collective labour agreements: FME devotes itself to conducting research, present solutions and give advice related to problems that affect the whole technological sector or to problems an individual member company faces. The association manifests itself within various Dutch and international institutions and bodies. For example, the FME is affiliated to employers' organisation VNO-NCW and retains good relations with national ministries and government commissions. Across national borders, FME stands for the wellbeing of the Dutch technological sector in European bodies like CEEMET[2] and Orgalime[3], that consecutively uphold relations with EU authorities. In addition, a FME representative is positioned in Brussels to reinforce these connections.

[1] According to the Rabobank, 1 job in the industrial sector results in 1,5 jobs in other sectors.
[2] CEEMET: Council of European Employers of the Metal, Engineering and Technology-based industries.
[3] Orgalime: the European Federation of National Industrial Associations representing the European mechanical, electrical, electronic and metal articles industries.

- Services: FME helps their members on a variety of topics like labour, environment, energy, international business and technology. Experts can assist by means of the Service Desk, which can be called by entrepreneurs when having relatively simple questions concerning their business. For more complex problems and comprehensive assistance, FME's consultants provide direct support to the technological companies. For example, export consultants can help members when entering new foreign markets of which little is known. Moreover, lawyers and mediators are employed by the FME to solve legal disputes of members with other parties.
- Trade associations: In 130 trade associations, companies are working together to improve their business. Trade associations are e.g. building and security; electronics and mechatronics; medical; mobility; mechanical engineering and process technology; marine technology; etc.

The International Business department of the FME is specialized in informing, supporting and consulting Dutch companies in the technological industrial sector on all issues relating to international business worldwide. Focus is on business development in primarily the oil & gas sector; sustainable energy technologies; medical technology; infrastructure and sport; high-tech and outsourcing. Their international activities consist of organising numerous group entries to international trade fairs; company representations; network meetings; seminars and workshops; matchmaking events and trade missions held both at home and abroad. The International Business department provides information on request and acts as an intermediary. It will put appropriate parties into contact with each other for e.g. investment purposes and all kinds of industrial cooperation. Some examples are: subcontracting, agencies, contract production, market surveys and export consulting activities.

In addition to their services, FME wants to inform and educate their members on a structural basis on the rationale and circumstances that make international outsourcing a viable strategy for their company. International outsourcing is the allocation of activities which were formerly conducted in-house to foreign suppliers. Transferring ownership and control is inherent in this outsourcing process. Among the members of the FME, international outsourcing is a hot topic. The International Business research of May 2011, which is conducted by the FME among its members, indicated that 40% of the respondents are outsourcing (part of) the manufacturing of their products to international suppliers. Moreover, 14% specified that they currently are not outsourcing, but think that it might be an interesting option in the future. Consequently, this research focuses on outsourcing manufacturing processes. The decision to outsource is influenced by a number of factors which can make it highly complex. A wrong decision can lead to higher product costs, misuse of resources and lost opportunities, customers and market shares (Tayles & Drury, 2001). Despite the acknowledged importance of this decision, FME members which are currently outsourcing do not always appear to make the decision whether to 'make or buy' on a rational basis. The advisors of FME International Business experienced that a few members decided to outsource for the wrong reasons, have false expectations or focus on a short-term planning. Some appeal to the 'everybody is doing it' fallacy and therefore believe that outsourcing must be the best choice. Others motivated their decision by stating that 'it saves money', but don't take into account the hidden costs such as quality management, transport and logistics, and Intellectual Property transfer risks. By studying multiple companies, this research will assess what are the shared motives and realized advantages for engaging in outsourcing and which factors need to be considers to make outsourcing a viable option.

Whether international outsourcing is a viable option for a company is a strategic consideration for which careful assessment of multiple factors and extensive preparation is needed. Prior research suggests that companies are embedded within their environment and that managers should incorporate both internal and external factors when deciding to engage in any strategic practice (Lahiri & Kedia, 2011). So the decision to outsource manufacturing processes to a foreign supplier should be regarded as a joint outcome of the influence of internal factors in combination with external factors. *Internal factors* are factors that can be controlled by companies. It refers to personnel, management, money, raw material and capital goods which are available within a company. These resources and competences allow companies to manufacture valuable products, which is necessary for remaining competitive. However, companies must constantly adjust to

changes in the external surrounding within which it operates. *External factors* include e.g. economic, political, legal and cultural forces that influence a company. These external factors are beyond the control of the company and affect its business decisions. Differences in these factors for example result in particular countries having a comparative advantage in the manufacturing of certain products. For a company that is trying to survive in a competitive global market, this implies that it will benefit by sourcing each value-creating manufacturing process at that location where these external conditions are most conducive to the performance of that activity. So outsourcing is a viable option when certain advantages can be realized by matching certain manufacturing processes with country differences in economic, political, legal and cultural factors to for example reduce costs and maximize added value. On the contrary, there are also certain conditions, based on a combination of internal factors and external factors, which make outsourcing of manufacturing to international suppliers a difficult and unsatisfactory undertaking. Some manufacturing processes are less amendable for outsourcing purposes because they engender high transaction costs, jeopardize the competitive advantage of a company or are difficult to transfer between the company and a foreign supplier.

The strategy that is chosen by a company is based on an assessment of its internal and external environment. This determines if a company can create value through outsourcing, what products can be outsourced and to which location. It is important to note that the assessment of the internal and external environment is a continuous process. The outsourcing strategy that is chosen does not remain supreme and therefore companies continuously need to verify if the intended advantages still can be realized. For example, it seems that companies progressively shift their outsourcing practices from China to suppliers in India, since the projected cost savings are diminishing due to rising labour costs in China. The outsourcing of manufacturing to external suppliers should be beneficial compared to making it in-house, and should therefore endure the additional costs and risks associated with outsourcing to a supplier located in a foreign country of which perhaps little is known (Hymer, 1976).

1.2 Objective

Goal of this research is to obtain a rich understanding of the international outsourcing phenomenon from the viewpoint of Dutch technological companies. It will explain the internal and external factors that managers must consider according to theory and actually are considered in practice when deciding if the company should (continue to) outsource manufacturing to international suppliers. The results of this research will provide input for an outsourcing platform and an educational program that will be developed by the FME. Goal of these aforementioned means are to structurally inform and educate FME members on the rationale and conditions that make outsourcing a viable option. This can help current outsourcing companies to reconsider their strategy, but can also support companies that think that international outsourcing might be an interesting option in the future.

1.3 Research questions

The central research question of this thesis is:

"Which internal and external factors influence the decision of Dutch technological companies to outsource manufacturing processes to international suppliers?"

Sub questions:

1. Which internal factors influence the decision to outsource manufacturing internationally?
2. Which external factors influence the decision to outsource manufacturing internationally?

1.4 Research approach

To be able to come to a sound conclusion regarding the formulated research questions, a deductive research approach is applied. First, a critical review and synthesis of the literature on international outsourcing is completed. This review will help to develop a good understanding of international outsourcing and to build a conceptual framework encompassing internal and external factors that should be considered simultaneously when making international outsourcing decisions. Then, this conceptual framework is tested by means of qualitative research and complemented with quantitative research. Data is obtained from FME members by means of conducting interviews with - and distributing questionnaires to purchasing managers who are extensively involved in making (out)sourcing decisions within their company. Ultimately, the qualitative and quantitative data is analysed and compared and synthesized with theory in order to verify the internal and external factors included in the conceptual framework or, when necessary, to design an enriched version.

1.5 Scope of research

The scope of this research is set by multiple aspects. First, this research focuses on the internal and external factors that influence the decision making process prior to outsourcing manufacturing processes to international suppliers. The implementation and management of the relationship with foreign suppliers are out of the scope of this research due to time constraints. The decisions relating to e.g. the contact, contract and control stages are significant for successful outsourcing. Nonetheless, the internal and external factors are of main importance because companies should first decide if outsourcing is a viable option and under what conditions before they implement the outsourcing process. Second, the scope of this research is narrowed by its application to the technological industrial sector. This is because the FME maintains the interests of its members that are active in this sector. In specific, focus is on manufacturing companies located in the Netherlands. The primary activity of these companies is the manufacturing of products. Accordingly, this study is limited to manufacturing outsourcing. The transfer of (part of) the manufacturing of products is of interest. The outsourcing of support activities within a company like e.g. ICT, callcenters or finance is out of the scope of this thesis. Finally, this research is directed at purchasing managers. It is expected that multiple managers are involved in this process and that the definitive decision is made by corporate management. However, purchasing managers of the technological companies are acquainted with the details of an outsourcing decision. They gather all internal information by deliberating engineers and operations managers and they search the market for alternative sourcing options. Purchasing managers implement, control and manage the outsourcing process on a daily basis. This results in having specific knowledge about all the internal and external factors that could make outsourcing a success or a failure, and should therefore be incorporated when making an outsourcing decision.

1.6 Theoretical relevance

International outsourcing is not a new phenomenon and a lot of researchers have focused their study on this topic. However, this research will contribute to what is known by studying determining factors that collectively are not formerly been examined. Internal and external factors that influence the outsourcing decision are derived from theory and are simultaneously tested in practice. This research is also applied to a distinct context. Barely any empirical results can be found concerning the outsourcing endeavours of Dutch companies. Let alone, Dutch technological companies that outsource (part of) their manufacturing processes. These companies are in general SMEs that manufacture high-end and low-volume products. High quality and reliability of these complex products is very important for Dutch companies. The factors that are incorporated by purchasing managers of these companies can be distinct or differ in their importance and influence upon the decision to outsource manufacturing processes. This might especially the case when comparing this with multinationals, which regularly have been the focus population of previous studies. Moreover, this research is

applied to the international, dynamic environment and should therefore continue to be taken under discussion. “The international dimension of outsourcing, due to its evolving nature, continuous to be an important context for research” (Hätönen *et al*, 2009). The 21st century environment with high global competition and complex new challenges, innovative technological developments and interesting emerging countries can lead to different considerations when companies decide to outsource internationally. Hence, studying the combination of internal and external factors that are applied in the context of Dutch technological companies will ultimately result in an enriched understanding of the concept of international outsourcing.

1.7 Outline of the thesis

In the following chapter, the literature about international outsourcing is critically reviewed. Different definitions of the concept of international outsourcing are synthesized into a working definition, followed by an evolution of the practice of outsourcing. Key academic theories are described and applied to outsourcing. These theoretical perspectives are the sources of the different internal and external factors that are extracted and highlighted in the subsequent section. This chapter ends with a conceptual framework in which these factors are combined alongside a summary of when outsourcing, according to theory, is seen as a viable option.

Chapter 3 elaborates on the research methodology selected for testing the proposed conceptual framework. This framework is operationalized by specifying the exact measures that are used to assess the internal and external factors that are included in the framework. The methodology is discussed and finally the manner in which the obtained data is processed and analysed to determine which factors influence the decision to outsource manufacturing and to discover which explanations underlie these factors.

Chapter 4 analyses the data that is obtained by means of the interviews and questionnaire. The results regarding the internal factors are presented. The main motives for companies to engage in international outsourcing and the characteristics of the manufacturing processes and products being outsourced are examined. The findings regarding the external factors are explored to search for forces that are uncontrollable but do affect companies’ decision to outsource. This chapter finalises with conclusions about the results of this research.

Chapter 5 draws final conclusions regarding the research problem. The conceptual framework is assessed by comparing theoretical expectations with what was found in practice. The research questions are answered on the basis of the results of this research and the practical and theoretical implications are formulated. Finally, the limitations of this research and areas for future research are described.

2. THEORETICAL FRAMEWORK

In the previous chapter, the focus of this research is explained and the research questions are formulated. The first step, in examining which internal and external factors influence the decision to outsource manufacturing to international suppliers, contains a critical review of the literature. First, a working definition on the concept of international outsourcing is provided, followed by a description of how the practice of outsourcing has evolved throughout the decades. Next, five prominent theories are applied to international outsourcing. These theoretical perspectives are described and reviewed in order to identify the different factors that influence the outsourcing decision. Subsequently, these factors are divided into internal and external factors. The internal factors relate to the different motives to engage in outsourcing and the characteristics of the manufacturing of the product. External factors are associated with the environmental conditions and the advantages of foreign locations. The final section of this chapter presents the conceptual framework which combines the factors that are, according to theory, influencing the outsourcing decision.

2.1 Definition of international outsourcing

To provide a working definition of the term 'international outsourcing', which is suitable for the purpose of this research, different definitions used in academic literature are reviewed (see appendix A). In order for a strategy to be referred to as 'international outsourcing' several conditions need to be met. First, the activities are no longer pursued internally by the company, but are acquired from external suppliers (Quinn & Hilmer, 1994; Gilley & Rasheed, 2000; Ellram & Billington, 2001; Quélin & Duhamel, 2003). This necessitates breaking up the value chain and vertically disintegrate the chain by outsourcing manufacturing rather than conducting it in-house. Second, companies have leeway in deciding what it will outsource (Bailey, 2002; Barthélemy, 2003). Companies can decide to outsource the complete manufacturing of a product versus remaining some manufacturing processes in-house. In addition, management can also decide to outsource some components of the product but not all. Third, activities are outsourced to independent third parties. (Rothery & Roberson, 1996; Greaver, 1999; McCarthy & Anagnostou, 2004; Chase *et al*, 2005; Mol *et al*, 2005). Ownership and control are transferred to the external supplier. The company has no ownership rights over the supplier, which means that next to manufacturing also the development, planning, knowledge, administration, and responsibilities of the products or components are outsourced. Fourth, manufacturing needs to be allocated to a foreign supplier (Ok, 2010). Manufacturing can be outsourced to suppliers located within the same country, but this research focuses on international outsourcing, because the manufacturing of products are commonly outsourced to suppliers located across borders due to locational advantages. By integrating all the conditions mentioned above, a working definition of the term 'international outsourcing' is formulated. In this research, the concept of international outsourcing refers to:

The decision to transfer (part of) the manufacturing processes, which have previously been conducted in-house, to specialized independent suppliers located in a foreign country.

Outsourcing is often confused with 'offshoring'. Although there are some similarities and it is expected that there are some resemblances among factors influencing these strategies, it is important to note that these concepts differ. Offshoring refers to the relocation of the manufacturing of goods or the provision of services abroad. When relocating the manufacturing of products to a foreign location, a company has to decide if it wants to have direct control; if it does, the company sets up a subsidiary or a joint venture abroad which is a form of Foreign Direct Investment (FDI). When ownership and control of manufacturing are transferred to a foreign supplier, international outsourcing is envisioned. See table 1 for a clear overview.

Table 1. *The different forms of business relocation*

Location / *Ownership*	**Onshore**	**Offshore**
Outsourcing	National outsourcing	International outsourcing
Captive (in-house)	National investment	Foreign Direct Investment

Note: Adapted from "Insight into offshoring - Perspectives on offshoring in the Netherlands", by M.L. Biermans & M.J. van Leeuwen, 2006, *SEO Economic Research, No. 954*, p. 10. Copyright 2006 by SEO Economic Research.

Accordingly, offshoring and outsourcing can take place simultaneously, but can also be independent phenomena. Next to ownership and control, there are other determining factors that influence the choice of strategy. For example, Antràs (2003) found that the characteristics of a product play a role in the choice between FDI and outsourcing. He states that when a product is capital intensive and/or relatively new, FDI is likely to prevail. So the level of specificity and standardization of a product appears to be different for outsourcing endeavours relative to manufacturing it in a foreign subsidiary. Grossman & Helpman (2002, 2003) consider search and matching costs, customization costs, and protection of Intellectual Property Rights (IPRs) as factors that differentiate between foreign subsidiaries (FDI) and outsourcing suppliers. The majority of FDIs are done by large, research-intensive companies operating in oligopolistic markets. For further clarification, the practice of outsourcing is also different from alliances, partnerships and joint ventures because of the one-directional resource flow from the supplier to the company. In addition, the companies do not share profit and there is no mutual contribution (Belcourt, 2006). These are all different ways of entering foreign markets.

2.2 The evolution of outsourcing

In absence of developed external markets, companies traditionally conducted all their activities in-house. They transformed raw materials into final products in their own factory and distributed it via their trucks to the company-owned stores. The company did its own payrolling and taxes, etc. However, during the second industrial revolution increased specialization led to the first wave of outsourcing. So sourcing out work to external suppliers, because a company chooses not to or is no longer able to manufacture it in-house, is not a new phenomenon. Although outsourcing was already practised in these early days, it took companies till the 1980s before they embraced outsourcing as a strategy.

Following the extensive literature review of Hätönen & Eriksson (2009) on the development of outsourcing, three eras are identified in which different outsourcing objects and ways of managing the outsourcing relations are prevalent. See table 2 for an overview of the development of outsourcing. This first era is titled as the Big Bang because of the sudden breakthrough and the adoption of the outsourcing strategy by many companies in the 1980s. Companies predominantly began outsourcing low-tech manufacturing processes to become more cost efficient and maximize profits. The objects were first transferred to independent domestic parties, but enhanced infrastructures and lower logistics costs resulted in an increase of outsourcing manufacturing across borders (Slack, 2003). In addition, better education and advanced capabilities of some low-wage countries made outsourcing of high-tech manufacturing more attractive for companies.

Success stories from companies that already practised outsourcing, impelled other companies to 'jump the Bandwagon' in the early 1990s. It was in the beginning of this era that outsourcing really became popular (Morgan, 1999). Companies began outsourcing to expert suppliers in order to provide value to strategically important organisational processes of which they lack the resources, skills or competences. Furthermore, companies focused on their core competences to gain competitive advantage and therefore also outsourced peripheral activities. The outsourcing of strategic activities required closer company-supplier relations. This was established by means of strategic alliances. By the end of this era, outsourcing was practised in nearly all industries.

Due to the popularity it gained in the preceding Bandwagon era, outsourcing became more common and the practice as such was no longer a source of competitive differentiation (Lawton & Michaels, 2001). Therefore, the focus of companies changed to developing new adaptive business models that generate a competitive advantage and changes the industry's rules of the game (Engardio, 2006). More knowledge-intensive and creative activities like IT, product development and R&D will be outsourced and this is realised by means of collaborative relationships with suppliers.

Table 2. *The development of outsourcing*

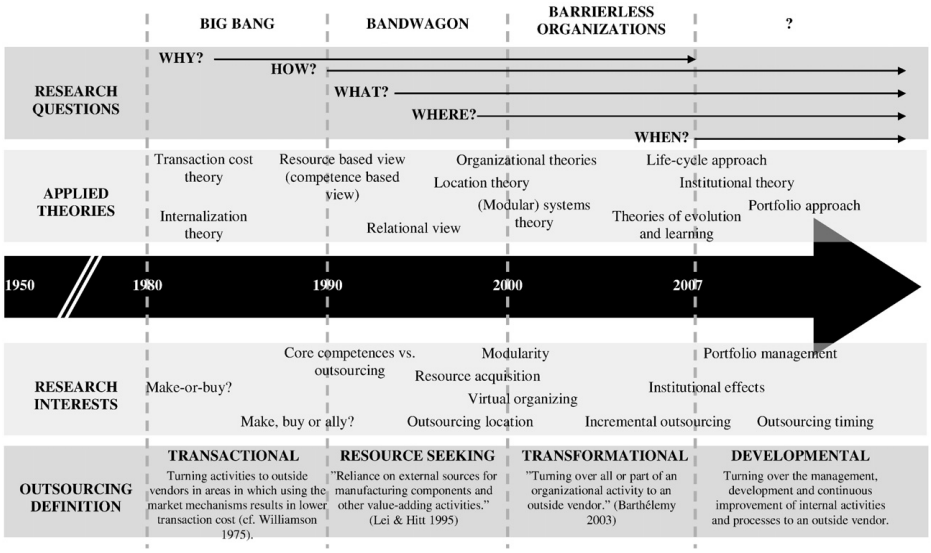
	Big Bang	Bandwagon	Barrierless companies
Time period	1980 - 1990	1990 – 2000	From 2000 onwards
Prime motives	Cut costs	Cut costs, capability enhancement, process improvement	Organisational transformation
Buzzword	Outsourcing	Strategic outsourcing	Transformational outsourcing
Outsourcing location	Domestic	International	Global
Management of the outsourcing relations	Arm's length transactions	Strategic alliances	Collaborative development
Organisation	Efficient organisation	Focused organisation	Virtual organisation
Core organisational competences	Management of key strategic business units (SBUs)	Key strategic competences (Core competences)	Dynamic competences and network competences
Strategic rationalization	Profit maximizing	Strategic and competitive edge	Survival
Outsourcing objects	Structured and well defined turnkey manufacturing processes	Strategically important organisational processes	Highly knowledge-intensive and creative projects
Main theories	Transaction Cost Theory	Resource Based View	Organisational Theories

Note: From "30+ years of research and practice of outsourcing – Exploring the past and anticipating the future", by J. Hätönen & T. Eriksson, 2009, *Journal of International Management, Vol. 15, No. 2*, p. 145. Copyright 2009 by Elsevier Inc.

2.3 Theoretical perspectives

The development of the practice of outsourcing has resulted in several theories that were adopted to explain this concept through time. These theoretical perspectives are explained in this paragraph since the internal and external factors that influence the outsourcing decision are derived from these theories. Accordingly, the theoretical perspectives are the foundation of the conceptual framework that is developed in this chapter and which ultimately is tested in practice. The first issue that attracted researchers' attention is the question 'why' companies decide to buy from an external supplier rather than to conduct it in-house. The question of 'how' outsourcing is done became apparent around the 1990s. Researchers developed an interest in the process of outsourcing, which contains a planning, developing, implementing and evaluation phase (Zhu *et al*, 2001). In addition, the how-question is also linked to the management of the outsourcing relationship between the company and the supplier. Moreover, researchers developed an interest in 'what' to outsource. This question boils down to the decision about what activities are amendable for outsourcing. Subsequently, the disciplines of Strategic Management and International Business concentrated on the question 'where' to outsource. Opportunities arose beyond national boundaries so companies had to decide on the best outsourcing location. The development of the practice and underlying theories of outsourcing evoked new research questions for future research. The 'when' question stresses the right outsourcing timing. Figure 1 summarizes the developed interest of researchers and the accompanied research questions that have guided outsourcing research.

Figure 1. *A review of outsourcing research and future insights*



Note: From "30+ years of research and practice of outsourcing – Exploring the past and anticipating the future", by J. Hätönen & T. Eriksson, 2009, Journal of International Management, Vol. 15, No. 2, p. 152. Copyright 2009 by Elsevier.

Researchers have applied multiple theories to the practice of outsourcing, which emphasizes the complex nature of this concept. Consequently, for this research a relatively holistic approach is adopted. The Transaction Cost Theory, the Resource Based View and Organisational Theory are seen as the main theories that are used to explain the concept throughout the three eras (see also table 2. of paragraph 2.2). In this paragraph, these theories are reviewed in order to determine the different internal and external factors that influence the outsourcing decision. However, in seeking to explain these factors in the context of technological companies, the Knowledge Based View is expected to be a relevant addition. This theory is appropriate in the context of this research, because the sample population also comprehends high-tech companies that create a competitive advantage by pioneering on recent developments in scientific technological knowledge. Moreover, since the focus of this study is on international outsourcing, a theory that elaborates on the allocation of activities to a foreign supplier is needed. For that reason the Location Theory is added. Combined, these theories approach outsourcing from multiple viewpoints and will therefore explain different but also complementary internal and external factors influencing the decision and practice of outsourcing.

2.3.1 Transaction Cost Theory

The Transaction Cost Theory (TCT) has received great empirical support and is often referred to as the predominant theoretical explanation of outsourcing (Anderson & Schmittlein, 1984; Joskow, 1988; Lyons, 1995; Masten, 1984; Monteverde & Teece, 1982; Murray *et al*, 1995; Walker & Weber, 1984, 1987). Coase (1937) and Williamson (1975) were the first to suggest that manufacturing should be organised within a company when the cost of developing or producing these products is lower than the cost of outsourcing it to an external supplier. This comes down to the 'make or buy' decision of a company. The total costs can be divided into manufacturing and transaction costs. Manufacturing costs consist of all expenses (including rent of building; raw materials and components; wages of employees; capital; taxation; etc.) incurred by a company in the process of supplying products to customers. Generally, international outsourcing reduces these costs because the foreign suppliers have access to superior cost drivers, like economies of scale and low cost locations (Jennings, 2002). On the contrary, outsourcing is associated with higher transaction costs. Transaction costs include costs of participating in the market by exchanging for example information, products and money. Transaction costs take place in three phases (Dahlman, 1979; Gurbaxani & Whang, 1991; Nooteboom, 1993):

- Contact phase: transaction costs include *search and information costs*, which are expenses made by the company when determining that the needed products or components are obtainable in the market; costs relating to examination of which supplier offers the lowest price; etc.
- Contract phase: transaction costs consist of *bargaining costs* incurred by the company when wanting to come to an acceptable agreement with the supplier; costs relating to the time and money needed to write an efficient contract; etc.
- Control phase: transaction costs include *monitoring and enforcement costs* required to ensure that the supplier meets the terms and conditions of the contract; the costs of (legal) actions taken when the supplier does not adhere to what has been agreed upon; additional expenses for checking if the product quality standards are realized; etc.

Companies have to take both the manufacturing and transaction costs into account and should choose the most cost efficient option. When the external supplier is somehow able to manufacture the needed components or products at a lower cost than the company is able to do in-house, manufacturing should be outsourced. But when the search -, information -, bargaining -, monitoring - and enforcement costs are sufficiently large, in-house manufacturing is preferred. Williamson (1975, 1985, 1995) identified the characteristics of the products that determine if in-house manufacturing or outsourcing is the most cost efficient option. The primary factors that increase the costs of transactions are: Asset specificity, Uncertainty and Frequency.

- Asset specificity

Asset specificity refers to "transaction-specific assets that are the physical and human investments which are specialized and unique to a task" (Erramilli & Rao, 1993, p. 21). A high specific asset is idiosyncratic and unique to the company. Being able to develop and manufacture a highly specific product requires investments in specific assets. Three dimensions of asset specificity are (Williamson, 1983; Malone *et al*, 1987; Masten *et al*, 1991):

- *Site specificity*: the degree to which specific natural resources, needed to manufacture the product, are accessible at a particular location and can only be transferred at a great cost.
- *Physical asset specificity*: the degree to which specialized machine tools, customized equipment or complex computer systems are needed to manufacture the product.
- *Human asset specificity*: the degree to which specialized human skills, knowledge, and experience of the employees are needed to manufacture the product.

Previous research indicates that products or components which require high asset specific investments reduce the degree of practising outsourcing (Globerman, 1980; Monteverde & Teece, 1982; Stuckey, 1983; Masten, 1984; Anderson & Schmittlein, 1984; Hennart, 1988; Lieberman, 1991; Hallwood, 1990; Lyons, 1995). Products or components characterized by low asset specificity are more appropriate for outsourcing purposes, because these can be manufactured with standard equipment and non-specialized knowledge (Williamson, 1975). In addition, relatively simple and complete contracts can be made between the company and the supplier and non-performing suppliers can easily be replaced by many other providers in the market.

When the manufacturing of a product requires investments in e.g. specialized machines, knowledge and skills, in-house manufacturing is preferred. Asset specificity increases the possibility of opportunistic behaviour. From the perspective of the outsourcing company, outsourcing activities that require investments in specific assets raises the threat of the company being locked-in to the relation with its supplier. Switching to a new supplier is expensive due to the investments made in e.g. logistic channels or knowledge that is idiosyncratic to the supplier. The supplier can exploit its position and act opportunistic by demanding higher prices or wanting to renegotiate what was agreed upon in the contract. In addition, the increase in monopoly power and the developed expertise are also sources of supplier opportunism. Thus, when asset specificity increases, the contract that is used as a safeguard mechanism for the investments made, becomes more complex. The agreement should comprehend terms that protect the company to all possible contingent outcomes and

associated behaviour of the supplier. Because the bargaining, monitoring and enforcement costs of these comprehensive contracts increases, TCT states that in these situations in-house manufacturing is preferred over outsourcing.

- Uncertainty

Different types of uncertainty are found in literature when studying the decision between in-house manufacturing and outsourcing. In this research, uncertainty considers the level of foreseeing and anticipating to changes in conditions surrounding the manufacturing of a product. This environmental uncertainty consists of *demand uncertainty* which contains volatility of sales, and *technological uncertainty* which relates to technological improvement. Conditions of high volatility in the demand environment will not necessitate in-house manufacturing. However, when asset specificity is high, demand uncertainty will positively influence the decision to continue to manufacture the product in-house. This is because uncertainty could impede the writing of an efficient outsourcing contract and accompanied on-going negotiations with suppliers on prices. Transaction costs will rise due to increases in bargaining costs. In outsourcing decision making, bounded rationality stresses that managers rationality is limited by the information they have and their ability to process all the information and knowledge. Therefore, it is unlikely that they can foresee every possible changing event, which consequently leads to contracts being incomplete. The formulated outsourcing contracts between the company and the supplier are lacking in specification or necessitate constant adjustments. This can result in opportunistic behaviour. In this case, opportunistic behaviour is self-interest seeking of the supplier by for example asking exorbitant prices for the manufacturing of the product. When asset specificity is low, however, there are numerous suppliers in the market which can manufacture that product for the company, so competition will diminish opportunistic behaviour. In sum, in-house manufacturing will only be more cost efficient in high demand uncertain environments in combination with high asset specificity (Levy, 1985; Lieberman, 1991; MacMillan *et al*, 1986; Walker & Weber, 1984, 1987; Williamson, 1985).

The reverse applies to technological uncertainty. When there is high technological uncertainty, meaning that the probability increases that a technology required to manufacture a product becomes obsolete, outsourcing is preferred. This especially applies to specialized assets, for which irreversible investments are at risk if there is uncertainty about their value and profitability in the long term. These specialized assets have a very low value in their secondary use because they are highly specific to a certain activity, making their value decrease remarkably if technological change renders them obsolete in their primary use (Balakrishnan & Wernerfelt, 1986). When innovations are accomplished, specialized assets may need to be scrapped and substituted by machinery and equipment that embody the advanced technologies. Most likely companies will not want to invest in technological assets when they are not sure they can earn back these fixed costs by manufacturing and selling a substantial amount of products to their customers. So low uncertainty allows for greater investments in technological assets and companies will therefore probably decide to keep manufacturing of the product in-house (Balakrishnan & Wernerfelt, 1986; Crocker & Reynolds, 1993; Walker & Weber, 1984, 1987).

- Frequency

In TCT literature, distinct meanings are ascribed to the concept of frequency. In this thesis, frequency refers to the number of transactions between the company and a specific supplier. Repeatedly transferring activities to the same supplier has numerous advantages: the company and the supplier can develop a mutual knowledge, develop inter-firm routines, build a trustful relation and diminish opportunistic behaviour (Hoetker, 2005; Ring & Van de Ven, 1994). However, managers must take into account the cost of developing a collaborative relationship with a supplier. In certain circumstances a single transaction with an unknown supplier will suffice, like when the company only seeks to outsource to a supplier because of cost reduction and will therefore seek for a supplier that offers the product at the lowest price at that moment. According to Williamson (1979), highly standardized transactions do not require a specialized governance structure (which refers to relational contracting). Only recurrent transactions will support relational contracting. This is especially the case for products that need specific assets or which are innovative. Relational contracts avoid the

difficulties of writing a comprehensive contract, because it allows parties to adapt to new information when it becomes available. Note that this only counts if it is "self-enforcing; the short-run value of reneging must be less than the long-run value of the relationship" (Baker *et al*, 2001, p. 40). Moreover, economies of scale cannot be realized by in-house manufacturing because products of high asset specificity are often of relatively low volume.

In sum, according to the TCT, the goal of a company is to minimize costs by choosing the most efficient option of supplying products to its customers. Outsourcing is expected to prevail when asset specificity is low. In addition, when asset specificity is high in combination with a high level of technological uncertainty outsourcing is also expected to be preferred. However, high asset specificity in combination with a high level of demand uncertainty can result in outsourcing difficulties and an increase of transaction costs. In this situation, in-house manufacturing or relational outsourcing contracts with particular suppliers are preferred. Decision makers should balance the total of the manufacturing costs of the supplier plus the transaction cost of outsourcing with the investments needed to manufacture the product at a low unit cost within the company.

2.3.2 Resource Based View

The Resource Based View (RBV) states that creating sustained competitive advantage depends on the unique resources and capabilities that a company can compete with. Resources are the tangible (e.g. factories, products, raw materials, labour force) and intangible (e.g. brand, reputation) assets a company holds or has control over. Capabilities are the 'bundles' of resources that are needed to perform certain manufacturing processes. For a resource or capability to be a source of competitive advantage it has to be (Barney, 1986a, 1986b, 1991; Amit & Schoemaker, 1993; Peteraf, 1993; Som, 2009):

- *Valuable:* valuable resources can improve a companies' market position. It enables the company to create value and outperform competition by exploiting opportunities or it helps neutralizing its threats. The valuable resources enable the company to implement strategies that improve its effectiveness and efficiency.
- *Rare:* for a resource to be of value it must be in short supply relative to demand. The company must possess a valuable resource that its direct and future competitors do not have.
- *In-imitable*: valuable and rare resources can only lead to sustainable competitive advantage if competitors cannot imitate this strategic asset. A source of inimitably is causal ambiguity, which follows from not knowing on which resource the competitive advantage is based. This particularly happens with knowledge-based or socially complex resources because these are idiosyncratic to the company (Peteraf, 1993; Mahoney & Pandian, 1992; Barney, 1991).
- *Non-substitutable:* the value-creating, rare and in-imitable resources cannot be substituted with some other strategically comparable resource.

Building on the RBV, outsourcing is a viable option when companies lack the unique resources or when there is no strategic need to internally manufacture a certain product or component (Barney, 1999; Leiblein *et al*, 2002). The strategic value of resources can be referred to as 'the degree to which these resources have an impact on the growth and the prosperity of the company' (Roy & Aubert, 2001). It is the extent to which the products create added value for the customers. The company should focus on these strategic resources and capabilities that lead to superior performance compared to their competitors and that offer unique value for customers. Task of corporate management is to identify these resources and capabilities and invest in developing them because time and competition can diminish their value. Complementary resources and capabilities can be obtained from outsourcing suppliers. According to Quinn & Hilmer (1995), the combination of concentrating companies' resources on core competences and outsourcing other activities leads to significant advantages, namely: high return on investments because the company concentrates on what it does best; well-developed resources and capabilities create high entry barriers for competition; exploiting the well-developed capabilities of external suppliers that would be too costly to replicate in-house; in volatile

industries, a focused company reduces risks and enhances responsiveness to changing market conditions and customer needs.

2.3.3 Organisational Theory

Organisational Theory (OT) is used to study the behaviour and management of companies. These theorists state that companies have to transform their business to stay competitive in the 21st century. The rapidly changing global world requires a more flexible design. Besides, improved logistics, advanced Information and Communication Technologies and global access to resources, suppliers and talent makes it possible to redesign the company into an adaptive entity with loosely coupled networks of organisational actors. The virtual company is seen as a suitable structure that can cope with competitive pressures (Bleecker, 1994; Davidow & Malone, 1992). In a virtual company, most of the key activities are outsourced to distinct world-class suppliers that can develop and manufacture these products more effectively. In seeking for innovative ways of value creation and greater efficiencies, the particular outsourcing suppliers continuously change (Galbraith, 1995). The outsourcing activities are managed from a small headquarter, which coordinates e.g. that the components manufactured by outsourcer A are transferred to outsourcer B which assembles the product and transfers the finished product to outsourcer C which finally distributes it to the retailers. "This use of an organisational hub to manage suppliers serves to (a) enhance global competitiveness; (b) increase work force flexibility; (c) develop inter-organisational synergies in key organisational functions; and (d) reduce administrative overhead and fixed costs" (Fitzpatrick & Burke, 2000, p. 15). So, this radical transformation enables companies, even new and small companies, to act on a global scale by combining strategic flexibility with value creation and cost reductions.

2.3.4 Knowledge-Based View

The Knowledge-Based View (KBV) is grounded on the RBV of the firm, but emphasizes that knowledge is the most significant resource that can create sustainable competitive advantage. Whereas other resources can lead to superior performance, it is the integration and application of knowledge needed to transform these resources into a valuable product that makes it the most unique and in-imitable resource (Grant, 1996). Hence, if a company knows more than its rivals it can gain a competitive advantage, even if the other resources controlled by the company are not unique (Penrose, 1959; Romer, 1992). KBV theorists assert that strategic advantages created by knowledge can be sustained due to the difficulty of imitation. Knowledge is socially complex and idiosyncratic to the firm. Applying the KBV to outsourcing raises the question of whether a company should transfer the necessary knowledge to manufacture a product to an outsourcing supplier or should the product be manufactured in-house? Different factors, relating to the nature of the knowledge underlying a product and the ability to transfer and protect this knowledge, need to be considered when answering this question:

- *Strategic value of knowledge*: knowledge can be considered strategic when it enables the company to execute its competitive strategy better than its rivals (Zack, 1999); it exploits the competitive resources and capabilities to its full potential; and it is valuable, rare, in-imitable and non-substitutable. Companies should not outsource the manufacturing of products that are based on strategic knowledge, because then it will lose its uniqueness and it necessitates protection of Intellectual Property.
- *Knowledge maturity*: refers to "the extent to which an activity offers the opportunity to learn how to perform the activity more effectively or efficiently" (Zack, 2010, p. 38). In this research, it relates to the question if a new and improved version of the product can be designed or if it can be manufactured more efficiently? If the answer is no, than the knowledge underlying a product is matured. Maturity can be caused by the company finding itself not capable of learning and accumulating knowledge or by the whole industry which has reached the state-of-the-art level of development of the product.
- *Knowledge specificity:* refers to the ability of knowledge being specified; to state in detail. Knowledge can be categorised into explicit knowledge, which is easy to specify, explain, and document, and tacit

knowledge which is personal, difficult to formalize and can only be observed through its application. The former can easily be shared by communication between companies, the transfer of the latter is slow, costly, and uncertain (Kogut & Zander, 1992). So if the knowledge needed to manufacture a product is highly specific, which is explicit knowledge, it is ideal for outsourcing purposes because it can easily be transferred to the supplier.

- *Proximity:* refers to the similarity of the outsourcing company in comparison to the foreign supplier based on physical location, relation, culture, institution and knowledge.
  - Physical proximity: influences the effort, time, and cost of transferring knowledge through different media (Kraut *et al*, 2002). Tacit knowledge sharing necessitates rich, direct and frequent communication which is best realized by companies in close proximity (DeCarolis & Deeds, 1999).
  - Relational proximity: refers to "duration and quality of the experience that the two contracting parties have working together" (Cummings, 2003, p. 17). Long-term positive outsourcing relations will make the transfer more effective and efficient and decreases the risk of misappropriation (Kotabe *et al*, 2003).
  - Cultural proximity: refers to cultural differences between the company and the supplier, which complicate the knowledge transfer (Javidan *et al*, 2005). E.g. language, norms and values, etc.
  - Institutional proximity: the environment comprises of legal, regulatory and governmental institutions. Factors like IPRs can obstruct knowledge transfer and protection.
  - Knowledge proximity: refers to "how large a gap exists between the source and the recipient in terms of their knowledge bases" (Cummings, 2003, p. 15). The larger the gap between the company and the supplier, the more problems the supplier has with integrating the knowledge needed to manufacture the product.

  So the greater the difference between the company and the outsourcing supplier - based on location, relation, culture, institution and knowledge - the more difficult and costly it will be to transfer and protect knowledge from misappropriation.
- *Experience:* refers to the degree to which the company has previous international outsourcing or international business experiences. Prior positive international outsourcing experience will contribute to a more open attitude towards outsourcing other components or manufacturing processes as well (Graf & Mudambi, 2005). In addition, knowledge of a particular location, because of prior international business endeavours, will make it a more attractive outsourcing destination.

In sum, outsourcing the manufacturing of products that is based on strategic knowledge will jeopardize the current and future competitive advantage of the company. However, mature knowledge diminishes the opportunity to learn, which in combination with high knowledge specificity makes it appropriate for outsourcing endeavours. There is little potential for performing the activity more effectively or efficiently and it is easy to explain and document how the product should be manufactured. It also reduces the risk of misappropriation of knowledge. Outsourcing to suppliers which operate in an environment which in proximity is close to that of the company, makes the transfer and protection of knowledge less difficult and less costly. Finally, it is expected that companies choose outsourcing locations over which they have knowledge, generated either by previous outsourcing or international business experiences.

2.3.5 Location Theory

The Location Theory (LT) focuses on the geographic location of economic activities. In this research, economic activity refers to the manufacturing of products. The LT relates to which manufacturing processes or components are manufactured where and why. The theory is based on the belief that companies select locations that are beneficial and increases their profits. In general, when companies operate across borders they have to cope with different environmental factors like (Ball *et al*, 2009, p. 23+135):

- *Political*: elements of a countries' political climate such as nationalism, terrorism, stability of government, trade restrictions, and international organisations which can influence the success of international business.
- *Physical:* elements of nature such as location, topography, climate and natural resources. Location and topography are for example important factors influencing the efficiency of transporting the manufactured products. The natural resources need to be considered because these might be essential for manufacturing the products.
- *Economic:* factors like unit labour costs, just like other manufacturing factors, ultimately determine the price the company has to pay for the outsourced manufactured product. Outsourcing to LCCs will reduce operational costs.
- *Sociocultural:* elements of culture such as attitudes and beliefs, religion and language are important to international managers. Managers have to understand the characteristics of a specific foreign culture, need to accept the differences and adapt to the norms and values of this culture when doing business with this country. Important is to reflect if companies can communicate by a common language or if foreign managers prefer to do business in their local language. If so, the disadvantages of using an interpreter need to be considered.
- *Technological*: the technological skills affect how resources are converted to products. To be able to manufacture the technological products, the employees of the supplier need to be skilled in e.g. welding, processing and shaping metal and need to know how to make a product based on technological drawings or a mould.
- *Legal*: the foreign laws and regulations govern the constraints in which international companies must operate. An established legal system and security of IPR are important to protect the product from being copied by the supplier.
- *Labour*: composition, skills, and attitudes of labour are of importance because these forces affect productivity and ultimately a companies' profitability. The quality and quantity of labour are significant, because the workforce has to be able to manufacture the product as was required by the company.

Although these environmental factors affect doing international business in general, it is expected that this will also affect the success of international outsourcing. The way and potential of doing business with a specific foreign supplier will likely be influenced by these external factors. In addition, when companies are already outsourcing manufacturing to a certain location, it is expected that a negative impact of changes in environmental circumstances will lead to a reconsideration of the outsourcing strategy. When outsourcing to a particular country is no longer beneficial due to increasing costs and risks, companies will probably look for other outsourcing destinations.

2.4 Internal factors

Internal factors are internal aspects over which the company has control. These factors include all resources and activities which enable the company to perform. As said, this research concentrates on the internal manufacturing processes of a company that facilitate the transformation of raw material into valuable products. Moreover, it focuses on the internal factors that are derived from the theories described in the preceding paragraph, which are considered as key explanations of outsourcing. In this paragraph, the internal factors that influence a companies' decision to outsource (part of) the manufacturing of products to international suppliers are reviewed. In essence, for international outsourcing to be a viable option, the advantages of using foreign suppliers needs to outweigh those of continuing in-house manufacturing. The first section elaborates on the different motives for companies to outsource manufacturing processes across borders. This is followed by an explanation of the internal factors 'frequency' and 'experience'. Finally, the different product factors that will likely influence the decision to outsource are described.

2.4.1 Motives for international outsourcing

In psychology, a motive is seen as 'a particular internal factor or condition that tends to initiate and sustain activity' (Guilford). When applying this thought to this research, it can be said that the motives for companies to start outsourcing manufacturing to international suppliers are internal factors influencing organisational behaviour. There is a thin line between internal factors and external stimuli and it is even expected that they act in cooperation. However, in this research, it is decided that motives are combined under the heading of internal factors, because external stimuli alone are ineffective in companies engaging in outsourcing and require some internal help. External factors can force companies to adjust their internal processes, but the decisions concerning how this is done and which strategy is chosen to remain competitive are internal activities.

The number of companies that practice international outsourcing is growing rapidly. The increasing connectivity and interdependency of companies and markets in the world economy has induced companies to focus on their core business, and scatter other value adding activities around the world to places with locational advantages (Farrell, 2010). The heavy worldwide competition forces companies to maximize productivity and profitability. "Outsourcing has become an activity in the companies' value chain, whereby competitive advantages may be gained when products are manufactured effectively and economically by outside suppliers" (Javalgi *et al*, 2009, p. 156). International outsourcing has become a widespread competitive strategy for companies of different sizes operating in distinct industries. The motives for outsourcing were in the beginning mainly based on cost savings, but come to be more versatile in time.

It is clear that companies outsource activities because they consider it as beneficial in one way or the other. Prior research found that motives vary between companies and countries. For example, Kakabadse & Kakabadse (2002) concluded that significant differences exist between the USA and Europe. American companies motivated their outsourcing decision from a more strategic perspective by continuously aiming to achieve best practices, improving (service) quality, focusing on core competences and leverage new technology. In contrast, European companies view outsourcing as a way to reduce costs and to gain economies of scale. The study of Quélin & Duhamel (2003) among large European manufacturing companies verified that cost savings is the key driver for outsourcing. However, they also found that focusing on core activities and gaining flexibility are important motives for outsourcing as well. When concentrating on the Netherlands, Deloitte's (2009) application of the global outsourcing survey for the Dutch market found that when it comes to a companies' largest outsourcing contract, cost reduction was the primary driver in their decision to outsource. It is even believed that the financial crisis and the economic recession strengthened this motive. Ok (2011) further specified this financial motive by determining that reduction of labour cost is by far the most important reason of Dutch companies for engaging in international outsourcing. This is followed by improved competitiveness; strategic decisions taken by the group head; and reduction of other costs.

Although in literature the goal, context and sample population of each study differs, there seems to be some consistency among the most common motives for international outsourcing. *Cost savings* (TCT, RBV, OT) has continuously been the primary motive for international outsourcing (Barthélemy & Geyer, 2000; Belcourt, 2006; Gilley & Rasheed, 2000; Jennings, 2002; Kakabadse & Kakabadse, 2002; Kremic *et al*, 2006; Kumar & Eickhoff, 2005; Lacity & Hirschheim, 1993b; Lacity *et al*, 1994; Leavy, 2001, 2004; Lonsdale & Cox, 1998; McFarlan & Nolan, 1995; Quélin & Duhamel, 2003; Zhu *et al*, 2001). Direct cost savings can be realized when the foreign supplier possesses greater efficiency due to economies of scale. In addition, companies can outsource to LCCs of which labour -, manufacturing - and other operational costs are much lower compared to the Netherlands. Indirect cost savings can be achieved, because the company can focus on its core and outsources peripheral activities which reduce the overhead costs. Outsourcing can also *improve cost control* (TCT) (Alexander & Young, 1996b; Barthélemy & Geyer, 2000; Belcourt, 2006; Quélin & Duhamel, 2003; Lacity *et al*, 1994) by outsourcing activities to specialized suppliers that for example is an activity which requires too much work; there are not enough employees who can fulfil this job; and in-house manufacturing costs more

than that it contributes to the company. Focusing on less, but manageable core activities reduce the costs of a company.

Outsourcing enables the company to *focus on its core competences* (RBV) and activities that lead to a competitive advantage (Alexander & Young, 1996b; Belcourt, 2006; Gilley & Rasheed, 2000; Heikkilä & Cordon, 2002; Jennings, 2002; Kakabadse & Kakabadse, 2000, 2002; Kremic *et al*, 2006; Kumar & Eickhoff, 2005; Lacity *et al*, 1994; Leavy, 2001, 2004; Lonsdale & Cox, 1998; Prahalad & Hamel, 1990; Quélin & Duhamel, 2003; Quinn, 1999; Quinn & Hilmer, 1994, 1995; Saunders *et al*, 1997; Zhu *et al*, 2001). By outsourcing peripheral activities, the functional scope of a company will be reduced which ultimately results in a focused company that is more *flexible* (OT) and better able to adapt to changes in the environment (Gilley & Rasheed, 2000; Heikkilä & Cordon, 2002; Jennings, 2002; Kremic *et al*, 2006; Quélin & Duhamel, 2003; Quinn & Hilmer, 1995). It increases strategic flexibility, but it also eases the management of manufacturing capacity and the required number employees. The problem of hiring and firing employees when dealing with volatility in sales is transferred to the supplier. For example, during this economic recession the automotive industry will sell less than what was predicted, because customers tend to postpone big investments in products. Moreover, companies have to deal with seasonal changes. In addition, shorter product life cycles, increased competition and changing customer demands impose companies to faster deliver the product to the market. Outsourcing can reduce the *time to market* (OT) (Jennings, 2002; Kumar & Eickhoff, 2005; Lonsdale & Cox, 1998; Quinn & Hilmer, 1995) by accelerating e.g. the manufacturing or distribution of the products by contracting world-class suppliers and utilizing their additional capabilities. Finally, as said, outsourcing allows for transferring difficult to manage functions or activities which are too time-consuming to develop internally. By *getting rid of these problem functions* (RBV) *(*Belcourt, 2006; Kremic *et al*, 2006; Lacity *et al*, 1994) resources become available to support core functions.

Outsourcing is also a means to get *access to superior resources, skills and knowledge* (RBV, OT, KBV) (Belcourt, 2006; Gilley & Rasheed, 2000; Jennings, 2002; Kakabadse & Kakabadse, 2000, 2002; Kumar & Eickhoff, 2005; Lacity *et al*, 1994; Leavy 2001, 2004; Lonsdale & Cox, 1998; Quinn, 1999; Quinn & Hilmer, 1994, 1995; Zhu *et al,* 2001) that are not available in-house and will supplement the companies' capabilities. For example, technological companies in the Netherlands appear to have a shortage of technological labour. The industry is one of the main sectors that has to deal with the ageing of the population and is therefore looking for technological labour that can replace the current workforce that is entitled to a pension. Moreover, for the sector to be able to grow, additional excellent employees are needed. Growth based on innovation changes the type of employees required for the job. The demand for higher educated employees will increase. Not only for R&D, but also the mechanisation of the manufacturing call for employees that have know-how and are qualified to work with these complex robots and machines. Since there is a lack of this type of employees in the Netherlands, outsourcing can support gaining access to skilled labour across borders. In general, whether it is by accessing skilled labour, knowledge, new technologies or other resources, outsourcing can *improve quality* (RBV) (Belcourt, 2006; Gilley & Rasheed, 2000; Jennings, 2002; Lacity *et al*, 1994; McFarlan & Nolan, 1995; Quinn, 1999; Quinn & Hilmer, 1995) when activities are transferred to expert suppliers.

In literature, additional motives that influence the decision to outsource are found. Outsourcing is also practised in order to *reduce the companies' risk* (Kremic *et al*, 2006; Quinn & Hilmer, 1995) and to *copy competitors* (Kremic *et al*, 2006; Lacity *et al*, 1994) when they seem to have success with outsourcing internationally or because it is fashionable. For the last motive, it is important to note that the information, a company has obtained about the successful outsourcing endeavours of another player in the market, may be too optimistic. Moreover, imitating the success of other companies is not a premise for success in your own company.

Turn fixed costs into variable costs (Alexander & Young, 1996a; Gilley & Rasheed, 2000; Kakabadse & Kakabadse, 2000, 2002; Kumar & Eickhoff, 2005; Lonsdale & Cox, 1998) and *reduce invested capital (*McFarlan & Nolan, 1995) are also seen as important motives for outsourcing. In sum, based on the theories described in paragraph 2.3 and the empirical results of previous research, the following motives can be distinguished:

Table 3. *Motives for international outsourcing*

Theory	Outsourcing when	Motives
TCT	Outsourcing is a viable option when it reduces costs.	• Cost savings • Improved cost control
RBV	Outsourcing is a viable option when companies lack the unique resources and capabilities; or, when there is no strategic need to internally develop a certain activity.	• Focus on core competences • Cut costs through economies of scope and product diversification • Access to superior capabilities, resources and competences • Improve quality • Get rid of problem functions
OT	Outsourcing is a viable option when companies want to improve their competitiveness by transforming the company into a flexible entity.	• Gain flexibility • Reduce time to market • Cost reduction • Access to resources of world-class suppliers
KBV	Outsourcing is a viable option when the company lacks the superior knowledge.	• Access to specialized knowledge and innovations
LT	-	-
Added	-	• Spread risks • Copy competitors • Turn fixed costs into variable costs • To reduce capital invested

2.4.2 Frequency and experience

The *frequency* of transactions between the company and a specific supplier is seen as a factor that influences the practice of international outsourcing. Literature indicates that the performance of a long-term relation dominates a short-term relation due to increased trust and commitment. In addition, transaction costs will decrease because the bargaining and monitoring cost of one long-term contract will probably be lower than the contracting costs of multiple short-term contracts (Hviid, 1999). Graf & Mudambi (2005) found that companies include the factor *experience* when they have to decide whether or not they are going to outsource an activity. Although their research focuses on outsourcing IT-processes, it is expected that the factor experience will also influence the manufacturing outsourcing decision. It is reasonable to assume that companies are more likely to outsource manufacturing processes when they have prior experience with the management of outsourcing activities in general. Research even indicates that outsourcing rests on incremental learning and that companies first choose to outsource to locations of close physical proximity and subsequently to more distant locations, and that they decide to outsource non-strategic functions before strategic functions (Graf & Mudambi, 2005; Hagel & Brown, 2005; Maskell *et al*, 2005; Morgan, 2003). Knowledge gained in the contact, contract and control stages of previous outsourcing endeavours will significantly contribute to the success of outsourcing other products or components. Prior international business experience is also expected to positively influence the outsourcing decision. Knowledge about doing business with a certain country and the information that is already acquired about the environmental factors of this specific country will make it a more attractive location for outsourcing purposes. The search and information costs of the contact phase can be reduced due to the generated knowledge of the location (Eriksson *et al*, 1997; Hymer, 1976). So prior knowledge of international business and international outsourcing which is obtained by a company, will not only make the outsourcing strategy of a new component or manufacturing process more viable, it also reduces the related transaction costs and risks of international outsourcing. See table 4 for an overview.

Table 4. *Frequency and experience*

Theory	Factors	Sub factors	Description	Outsourcing when
TCT	Frequency	• Short-term relation • Long-term relation	The number of transactions between the company and a specific supplier.	Outsourcing is a viable option when the manufacturing of the product can be outsourced to a supplier with which the company has a long-term relation. Long former relations decrease contracting, monitoring and enforcement costs due to increasing commitment, trust and development of inter-firm routines.
KBV	Experience	• International outsourcing experience • International business experience	The degree to which the company has previous international outsourcing or international business experiences.	Outsourcing is a viable option when the company is familiar with doing international business or has already outsourced other activities to international suppliers. Prior international business experiences decreases search and information costs. Prior international outsourcing experiences decrease transaction costs and associated risks.

2.4.3 Product factors

This subsection describes several product factors that determine whether outsourcing is a viable option. These factors do not define the exact type of product, but merely characterise them in a certain scope. These characteristics are seen as key determinants in the outsourcing decision because they can engender high transaction costs, jeopardize the competitive advantage of a company or make it difficult to transfer between the company and the supplier. Deciding which manufacturing processes or components are amendable for outsourcing purposes depends on a combination of factors. Based on the theories described in paragraph 2.3, different product factors are distinguished and summarised in table 5.

Products can be characterised by their *asset – and knowledge specificity*. Companies have to evaluate if the manufacturing of a product is dependent on specific resources or knowledge. Suppliers will only invest a large amount of money in specific machines or specific skills of employees with the expectancy of selling a substantial amount to the company. Knowledge specificity is concerned with the transferability of the manufacturing of the product. When it is difficult to explain and document the knowledge, the company has to put a lot of time and effort in training the supplier to make it able to manufacture the product (Kogut & Zander, 1993; Williamson, 1975). This will probably also lead to choosing a supplier that is located in close physical proximity to Netherlands. The *strategic value of the resources and knowledge* necessary to manufacture the product is frequently used as a factor influencing the international outsourcing decision (Alexander & Young, 1996a; Duarte *et al*, 2004; Hussey & Jenster, 2003; Quinn & Hilmer, 1994; Quinn, 1999). Hence, it is expected that the strategic value also influences the outsourcing location decision. Companies only outsource strategically important manufacturing processes when they seek unique resources or knowledge over which they have no control. Because of its strategic importance, companies will only outsource these manufacturing processes to locations with low country risk (Graf & Mudambi, 2005). Finally, *knowledge maturity* is an important factor characterising a product and influencing the appropriateness of outsourcing. Outsourcing the manufacturing of products of which the knowledge has not matured can lead to a loss of know-how and innovative capacity.

Table 5. *Product factors*

Theory	Factors	Sub factors	Description	Outsourcing when
TCT	Asset specificity	• Site specificity • Physical asset specificity • Human asset specificity	The level to which specific assets like natural resources, machines, systems, and skills are needed to manufacture the products.	Outsourcing is viable when no specific assets are needed for the manufacturing of the products. Low asset specificity decreases contracting and monitoring costs and diminishes the threat of opportunistic behaviour.
RBV	Strategic value of resources	• Valuable • Rare • In-imitable • Non-substitutable	Unique resources, which are valuable, rare, in-imitable and non-substitutable, can create a sustained competitive advantage.	Outsourcing is a viable option when companies lack the unique resources, needed to manufacture the product, or when these resources are of low strategic value.
OT	-	-	-	-
KBV	Strategic value of knowledge	• Valuable • Rare • In-imitable • Non-substitutable	Unique knowledge, which is valuable, rare, in-imitable and non-substitutable, enables the company to execute its competitive strategy better than its rivals and exploits the companies' resources to its full potential.	Outsourcing is a viable option when companies lack the unique knowledge, needed to manufacture the product, or when this knowledge is of low strategic value.
	Knowledge maturity		The extent to which the product offers the opportunity to learn how to perform the activity more effectively or efficiently.	Outsourcing is a viable option when the knowledge underlying the manufacturing of a product is matured. Mature knowledge decreases the potential for improving the product or the manufacturing processes and reduces the risk of misappropriation of the supplier.
	Knowledge specificity	• Explicit knowledge • Tacit knowledge	The degree to which the knowledge can be specified, explained and documented.	Outsourcing is a viable option when the knowledge, necessary for the manufacturing of a product, is explicit. Knowledge that can be stated in detail can easily be transferred between the company and the supplier.
LT	-	-	-	-

2.5 External factors

External factors are external aspects over which the company has no direct control. These external factors of the environment in which the company operates, can either benefit or harm a companies' future performance. It is therefore important to take these factors into account when making strategic decisions. In this paragraph, the external factors that influence a companies' decision to outsource (part of) the manufacturing of products to international suppliers are reviewed. These factors relate to the external conditions which make outsourcing a viable option and to the location attractiveness of international outsourcing destinations.

Factors that determine the attractiveness of a location for manufacturing outsourcing purposes is underexposed in literature. Previous research has mainly focused on the most beneficial offshoring location. Some authors applied Dunning's (1980, 1988, 2000) Eclectic Paradigm, which originally was designed to determine the location for setting up a manufacturing subsidiary abroad (FDI). Different location factors influencing FDI decisions are identified: "the availability of advanced telecommunications, communication costs, a labour pool of sufficient quality, labour costs, government financial incentives and regulations, the political and legal environment, an attractive living environment, access to good transportation, and the language and culture" (Bunyaratavej *et al*, 2007; Doh, 2005; Kshetri, 2007; Palvia, 2004 in Hätönen, 2009, p. 63). However, probably not all of these factors are relevant when considering the outsourcing location. When wanting to explain outsourcing location decisions, greater emphasis is placed on the Location specific advantages of the OLI framework since Ownership specific and Internalization specific factors are not applicable. As said, when companies engage in international outsourcing, the manufacturing, ownership and control is transferred to foreign suppliers. This also entails that companies no longer have to deal with

complications and difficulties of hiring and firing employees, purchasing the needed equipment and machines, upholding alterations in government legislation and tax regulations. Nevertheless, some factors are expected to remain important and need to be considered when making the outsourcing location decision.

The expected similarity of factors influencing offshoring and outsourcing locations decisions will probably also apply to A.T. Kearney's established measure of location attractiveness for offshoring services. The so called 'Global Services Location Index' uses over 40 measures to compare countries on financial attractiveness, people skills and availability and business environment (see appendix B1). According to this index, respectively India, China and Malaysia remain in the top three of the most attractive countries for offshoring services. Minevich & Richter (2005) developed two indexes to measure the competitiveness of outsourcing locations in the world. This index incorporates the opportunity, risk and costs profile of the foremost outsourcing countries in the world (see appendix B2). The Global Outsourcing Index (GOI) was developed in 2005 and ranks the countries according to their competitiveness as an outsourcing location in that year. According to this index, India was number one, followed by China, Costa Rica, Czech Republic and Hungary. The Future Outsourcing Index (FOI) considers the long-term competitiveness of these countries by forecasting which country is the most attractive outsourcing location in 2015. These authors believe that China will be the most competitive outsourcing location in the future followed by India, U.S., Brazil and Russia. The GOI and FOI mainly assessed the competitiveness of countries as an outsourcing destination mainly for IT-outsourcing purposes. But as said, most location factors are likely to apply to manufacturing outsourcing as well.

The factors found in the theories described in paragraph 2.3 and the indexes of appendix B provided input to construct a new index of location factors. However, some factors are left out and others are transformed to make it appropriate for this research into manufacturing outsourcing. See table 6 for an overview of the external factors.

Table 6. *External factors*

Theory	Factors	Sub factors	Description	Outsourcing when
TCT	Environmental uncertainty	• Demand uncertainty • Technological uncertainty	The level of foreseeing and anticipating to changes in conditions surrounding the manufacturing of the outsourced product.	Outsourcing is a viable option when there is low uncertainty about demand. Outsourcing when demand is highly uncertain will only be viable on the condition that the product is of low asset specificity, because it decreases bargaining and monitoring costs. In addition, high technological uncertainty in combination with high asset specificity makes outsourcing viable because the financial risks taking of investing in technologies that become obsolete is transferred to the supplier.
RBV	-	-	-	-
OT	-	-	-	-
KBV	Proximity	• Physical proximity • Relational proximity • Cultural proximity • Institutional proximity • Knowledge proximity	The similarity of the outsourcing company compared to the foreign supplier.	Outsourcing is a viable option when manufacturing is outsourced to a supplier which in proximity is close to company. Close proximity between the company-supplier makes the transfer and protection of knowledge easier and less costly.

Table 6 (continued). *External factors*

Theory	Factors	Sub factors	Description	Outsourcing when
LT	Geographic location	• Physical distance • Natural resources	The location of a country and its attributes relating to concentration of resources.	Outsourcing is a viable option when the company outsources to a country that has the needed natural resources for manufacturing the product.
	Infrastructure	• Transportation • ICT infrastructure	Quality of infrastructure for transportation purposes and ICT infrastructure.	Outsourcing is a viable option when the company outsources to a country which has an adequate infrastructure. This will increase efficiency in transporting products by e.g. improving the moving load and delivery speed.
	Legal	• Legalisation and enforcement • Bureaucracy • Corruption • Protection IPR	Legal forces are the laws and regulations of a country.	Outsourcing is a viable option when the company outsources to a country which has an established legal system. This provides a level of security and diminishes risks.
	Government policy	• Stability of government • Free Trade Agreement (FTA) • Terrorism	The actions and political forces set by the government.	Outsourcing is a viable option when the company outsources to a country that has signed a FTA, which eliminates tariffs and quotas. A stable government increases certainty of delivery of the products.
	Human capital	• Workforce size and availability • Level of education • Technological skills	The skills, competences and characteristics of employees which make them able to carry out the required labour.	Outsourcing is a viable option when the company outsources to a supplier that employs a workforce that is capable to manufacture the products in accordance with the predetermined specifications and quality standards.
	Labour costs	• Compensation level	Cost associated with compensation and wages of employees.	Outsourcing is a viable option when labour costs can be reduced by outsourcing to suppliers in low-wage countries.
	Culture	• Language • Norms and values • Religion	Culture consists of shared attitudes, norms and values, religion and language among the population of a country.	Outsourcing is a viable option when the company outsources to a supplier with which it can communicate in a common language.
	Corporate Social Responsibility	• Human rights • Workplace and safety regulations • Global environmental concerns	CSR means that the company acts responsible by incorporating social, environmental, ethical and human rights concerns into their activities.	Outsourcing is a viable option when the company outsources manufacturing to suppliers that are socially responsible and do not destroy the environment.

2.6 Conclusion

The supply chain of manufacturing companies is evolving into a more open system in which manufacturing processes are outsourced. International outsourcing is the decision to transfer (part of) the manufacturing processes, which have previously been conducted in-house, to specialized independent suppliers located in a foreign country. From a literature point of view, the theories underlying the practice of outsourcing has also evolved from the early 1980's with TCT, to the 90's being the RBV and KBV, and from 2000 and onwards the OT and LT. Throughout the years each theory has highlighted a subset of factors for legitimizing the decision to outsource. These aspects are seen as being complementary and should therefore all be considered. In this research, all the factors found in literature are subdivided into internal and external factors.

Numerous motives, frequency, experience and different product factors are seen as important internal factors. The *motives* of companies to engage in outsourcing manufacturing processes to international suppliers are expected to relate to cost savings, focus on the core competences, access to resources or because of other motives mentioned in this chapter. *Frequency* is seen as a measure of the number of transactions between the company and a certain supplier. It is expected that frequent transactions, being a long term relation with the supplier, will positively influence the viability of outsourcing due to increased trust, commitment and inter-company routines. So when a company can transfer a manufacturing process or component to a supplier

with which they already have a positive relation, it will validate the decision to outsource. *Experience* is divided into international outsourcing and international business experience, in which the former is expected to have a positive influence on the decision to outsource other manufacturing processes or components, and the latter will likely affect the knowledge held about a specific location and will therefore make outsourcing to location X more viable. The product factors are concerned with the general characteristics of the products, which make certain processes or components more amendable for outsourcing purposes than others. Regarding the *asset - and knowledge specificity* of a product, it is expected that only products or components are outsourced that can be manufactured with standardized machines, skills and explicit knowledge due to diminishing transaction costs. Furthermore, it is assumed that if the needed *resources and knowledge are of strategic value* it will only be outsourced when the company doesn't possess nor has control over these unique resources. Otherwise only products or components of low strategic value are outsourced. The factor *knowledge maturity* indicates the level to which the manufacturing process or component can be improved. If the company, or the whole market, is not able to develop an enhanced or innovative version of the product then outsourcing is a viable option.

The environmental uncertainty, proximity and several factors concerning the location attractiveness like e.g. geographic location, infrastructure, human capital, labour costs and culture are seen as important external factors. *Environmental uncertainty* is divided into demand uncertainty and technological uncertainty. It is expected that only standardised products, which can be manufactured by several players in the market, can be outsourced when sales is volatile. In addition, outsourcing is a viable option when technological uncertainty is high due to rapid innovations, which diminishes the potential return of investments in machines. The factor *proximity* refers to the similarity of the supplier and its environment compared to that of the company. It is assumed that differences make transfer and protection of knowledge more difficult. Consequently, outsourcing to locations which are in close proximity is stated as being viable. The various *location factors* make up the attractiveness of a foreign location. See figure 2 for a summary of all the factors derived from literature. This conceptual framework will be tested in the context of Dutch technological companies, which are already outsourcing (part of) their manufacturing processes to foreign suppliers.

Figure 2. *Conceptual framework*

3. METHODOLOGY

In the previous chapter, a framework is developed comprising internal and external factors that according to theory influence the decision to outsource internationally. The second step in coming to a valid conclusion regarding the research questions, is determining which methodology can be used to test the validity of this conceptual framework in the context of the Dutch technological industry. This methodology chapter is divided into three sections. The first section explains the context in which the conceptual framework will be tested in practice. The second section describes how the different factors are measured. The third section explains in more detail how the data will be obtained. Hence, the data collection techniques employed to test the validity of the conceptual framework and the population of companies of which to draw conclusions about is described. The subsequent and final section explains in what manner the obtained data will be processed and analysed, which is relevant for a good interpretation of the data and representing valid conclusions.

3.1 Testing the validity of the conceptual framework

In the literature review, international outsourcing is viewed from a broad perspective due to scarcity of previous research regarding manufacturing outsourcing in the Netherlands. However, it provided direction for this research by developing a conceptual framework that now can be applied to the Dutch technological (manufacturing) industry. This industry consists of companies that manufacture transportation devices, electrical engineering, machinery and equipment. In addition, the suppliers of this sector, being the rubber and plastics, metal and chemistry branches are also referred to as the manufacturing industry. In general, the Dutch manufacturing companies concentrate on a specific, accurately delineated market. They search for optimal specialisation within that market by focusing on their core competences. Within this niche market, the manufacturing companies develop multiple products that are valuable to their customers. Dutch manufacturing companies typically manufacture high-end and low-volume products. These complex products are characterised by high quality and reliability. The manufacturing industry differentiates itself from other Dutch industries because it is creative, innovative, dynamic and internationally focused. The International Business 2011 survey of the FME, which is conducted among its members, showed that these companies on average export their products to twenty-four countries. In addition, they have foreign subsidiaries for manufacturing (29,8%), sales (40,8%) or use other business structures like joint ventures (2.4%). The Dutch technological industry has some specific characteristics that probably will influence the determining factors for their outsourcing decision. This research will test which internal and external factors, concerning the decision to outsource manufacturing processes to international suppliers, are most relevant for Dutch technological companies.

3.2 Measurement of factors

Based on the literature review, different internal and external factors are found that are expected to influence the decision to outsource. This paragraph explains how these factors are measured in practice. Factor measurement is developed based on previous literature wherever possible and needed. However, some factors are difficult to operationalize due to limited empirical research or because of a lack of widely accepted measures. In addition, it is estimated that some factors, like the various motives and location attractiveness factors, don't need to be further specified based on previous research because these factors are relatively straight forward. The various *motives* are assessed by means of a 5-point Likert scale which specifies the importance of motives and the extent to which these motives influenced the outsourcing decision.

Frequency is a variable that did receive relatively little empirical attention (Rindfleisch & Heide, 1997; Macher & Richman, 2008) especially in comparison with asset specificity and uncertainty, which are the other factors of the TCT. Williamson (1985, p. 60) notes that "the costs of specialized governance structure will be easier to

recover for large transactions of a recurring kind". However, previous research has been largely unsuccessful in confirming this hypothesis. Several empirical studies show no positive association between transaction frequency and organisation mode (Anderson & Schmittlein, 1984; Anderson, 1985; Maltz, 1993, 1994), while other studies dichotomize transaction frequency into one-time versus recurring exchanges with a supplier and do find a significant relationship (John & Weitz, 1988; Klein, 1990). This research relates to the last operationalization since frequency is assessed by a semi-open question in which is measured whether companies in general have short-term or long-term relations with their supplier and why.

The factor *experience* consists of international outsourcing experience and international business experience (Graf & Mudambi, 2005). No empirical results or measures of these factors in the field of outsourcing could be found. There exists research concerning the influence of internationalisation experience on entry modes but the comprehensive assessment of this construct, encompassing more than five items, is not suitable for this study. The factor experience is measured by means of qualitative research for which this high level of complexity is not necessary. Therefore two questions are formulated in which is asked if previous international outsourcing experiences influenced the decision to outsource other components as well, and if prior international business experience influenced the decision to outsource to that specific country. Dependent on the answers provided, the researcher can ask additional questions relating to the context of the gathered experience and the specific influence on the outsourcing decision.

Different product factors are found in literature and are integrated in the conceptual framework. *Asset specificity* is assessed by a 5-point ranking question. Three items are identified for asset specificity being site specificity, psychical asset specificity and human asset specificity. 'Site specificity' refers to a situation where the company and the supplier are involved in a relationship with one another due to the importance of close proximity is accessing assets which, ones in place, are relatively fixed and therefore difficult to transfer (Joskow, 1988; Lamminmaki, 2005; Morill & Morill, 2003; Williamson, 1983). Most studies measure site specificity by means of physical proximity, which refers to the distance between the company and the supplier (Ghani & Khan, 2004; Joskow, 1987; Nishiguchi, 1994). Therefore, in this research, this item is combined with the external factor 'physical distance'. 'Physical asset specificity' refers to investments in physical assets, being machines, tools and equipment that are tailored to a specific transaction and have few alternative uses, because of their specific characteristics (Joskow, 1987, 1988; Morill & Morill, 2003). In previous research, physical asset specificity is operationalized in terms of the extent of the actual investment in physical assets made by the supplier specifically for the purpose of the relationship (Buckline & Sengupta, 1993; Heide & John, 1990; Klein *et al*, 1990; Lieberman, 1991; Murray & Kotabe, 1999; Weiss & Anderson, 1992). In this research, this has been translated into the degree to which the supplier needs to invest in specialized machines, customized equipment or complex computer systems to be able to manufacture the product. This is measured on a 5-point Likert scale ranging from low-investment to high-investments. 'Human asset specificity' could be characterized as specialized (technical) skills and experience required in carrying out the activity being outsourced (John & Weitz, 1988). The operationalization of human asset specificity is a direct translation of the measure of Walker & Poppo (1991). However, their measure featured the word 'unique', while the purpose of this factor was to measure the specificity of an asset and does not need to be confused with the internal factor 'strategic value'. Consequently, 'unique' is replaced by 'specialized'. Human asset specificity is the extent to which specialized (technological) skills and experiences of the employees of the supplier are needed. This item is measured on a 5-point Likert scale ranging from non-specialized to specialized. *Knowledge specificity* has also been described as knowledge specific assets (Dibbern *et al*, 2005) which are not easily transferable (Lamminmaki, 2005). In empirical application, this dimension has been assessed by knowledge codifiability. Reference is made to Zander & Kogut's (1995) definition and measurement of this construct. These researchers measure the degree of knowledge codifiability in terms of documentation (e.g. manuals, instructions, policies) of task procedures and related information, and also in terms of articulation of un-recorded implicit knowledge. In this research, this is translated into the degree to which knowledge, needed for manufacturing the product, can be specified, explained and documented. This is measured by a 5-point Likert scale ranging from explicit to tacit knowledge. Knowledge absorptive capacity of the supplier is also perceived as an

important measure of knowledge specificity. Absorptive capacity is the supplier's ability to identify, assimilate and apply the external knowledge, obtained from the outsourcing company, to the manufacturing process in order to manufacture the product or component. Antecedent of the absorptive capacity is the prior-based knowledge of the supplier. Consequently, this measure can be combined with the external factor 'knowledge proximity'.

There is a lack of widely accepted measures concerning strategic value. Since the literature review is based on the work of Barney (1999), it is decided to continue to assess the four items that are identified for the s*trategic value of resources and knowledge,* being value, rarity, in-imitable and non-substitutable. Together they portray the degree of the strategic value of the resources that are used to manufacture a product. Hence, for a resource to be a source of competitive advantage all items need to be present. For example, a value-creating resource of a company that is also controlled by competitors is of non-strategic value and consequently is not a source of competitive advantage. The questions for determining strategic value are based on Barney (2002) and the research of Watjatrakul (2005) and McIvor (2009). Each item is measured on a 5-point Likert scale. Value is assessed by the degree to which the resources and knowledge enable the company to neutralize risks and exploit opportunities (on a scale ranging from not valuable -> valuable); rarity by the degree to which competitors possess and control these resources and knowledge (common -> rare); in-imitable by the degree to which competitors can imitate these resources to manufacture the product (imitable -> in-imitable); and, non-substitutability by the degree to which competitors can manufacture the product with substituted resources (substitutable -> non-substitutable).

Knowledge maturity relates to the state of being fully developed. Some researchers see maturity of knowledge as understanding the effects of the input variables on the output. For example, Bohn (1994) represents a typology of eight stages of knowledge in a manufacturing process. He asserts that knowledge about variables that affect a manufacturing process move up through the stages of Grant *et al*' (1991) product cycle of manufacturing technology as the manufacturing process becomes better understood. These product cycle stages are: new products, growth/maturity and standardization. Low stages of knowledge are tacit. High stages of knowledge are explicit; due to generated know-how followed by know-why about the input variables effect on the output. Bohn related low stages of knowledge to the new products stage and stated that these are difficult to transfer, however he asserts that over time all knowledge becomes codified into operation manuals and scientific formulae. In practice, as a process matures some know-how and know-why becomes codified in rules of thumb, embodied in behaviours and captured in worker routines and tacit actions (Kim, 1993; Rebentisch & Ferretii, 2005). These researchers measure knowledge by its codifiability, because knowledge maturity relates to the characteristics of knowledge which ranges from tacit to becoming more explicit. This influences the transferability of manufacturing processes at the various stages of its life cycle. Therefore, knowledge maturity is in this research combined with knowledge specificity.

In empirical research, *environmental uncertainty* has been measurement by means of demand uncertainty (Heide & John, 1990) and technological uncertainty (Walker & Weber, 1984; Balakrishnan & Wernerfelt, 1986). Together these factors determine the extent to which the environment of a company is uncertain. Demand uncertainty has been measured by Walker & Weber (1984) through the extent to which significant fluctuations are expected in the daily or monthly volume requirement for the component. However, the term 'volume' is expected to be ambiguous, because in practice this is also seen as a term relating to the weight of a product. Therefore 'volume' is replaced by 'sales'. In addition, the measurement of demand uncertainty is in this research formulated in a similar but simpler way by: the degree to which changes are expected in the monthly sales. This is measured on a 5-point Likert scale ranging from constant to changing. Technological uncertainty increases the probability that technologies become obsolete due to frequent changes. Especially for specialized assets, which are of low value in secondary use, the assets need to be discarded and substituted by machinery embodying the advanced technology when innovations take place (Balakrishnan & Wernerfelt, 1986). Balakrishnan & Wernerfelt (1986) see technological uncertainty as the mean life of the process technology adopted in the industry and measure this by the average 'age' of plant and equipment in use. However, for this

research it is expected to be too difficult to decide whether the average age of a technology is relatively young or old, due to the researchers' lack of knowledge concerning the different machines and equipment and their life cycle. Therefore, this judgement is transferred to the participants who are asked to give an indication of the degree to which technologies, needed to manufacture the product, are replaced by new technologies. This is measured on a 5-point Likert scale ranging from no replacement to frequent replacement.

The factors *proximity* is measured by psychological proximity, institutional proximity, knowledge proximity, cultural proximity and relational proximity (Cummings, 2003; Javidan *et al*, 2005; Decarolis & Deeds, 1999). Together these items make up the proximity factor. However, this factor is not directly measured in this research, since these can be combined with other external factors. The factor physical proximity is seen as being similar to the external factor 'physical distance'; relational proximity is combined with the measurement of the factor 'frequency'; cultural proximity is measured by the external factors 'language, norms and values and religion'; and institutional proximity which comprises legal, regulatory and governmental institutions is measured by the external factors 'legalisation and enforcement' and 'government policy'. Only knowledge proximity is measured as an individual factor, but is added to the question concerning the influence of location factors, in which the participants have to rate the importance of the factor 'knowledge base and areas of expertise' in choosing an outsourcing location.

The various *location factors* are seen as being straight forward and don't need to be further clarified for this research. These external factors are measured by means of a 5-point Likert scale, which specifies the influence of the factors in choosing an outsourcing location. In addition, questions are asked concerning which of these location factors contributed most to the success of international outsourcing and which caused the most problems. These questions are relevant to find out if there is consistency among the external factors that were rated as being important for decision making, compared with which are relevant after implementation. See appendix C for a complete overview of the operationalization of the various internal and external factors.

3.3 Data collection

In this research, a mixed design for data collection is chosen. Mixed research uses both quantitative and qualitative data collection techniques in a single study (Saunders *et al*, 2009). The data collection techniques are employed sequentially; first the qualitative data is obtained, followed by the collection of quantitative data. Based on Greene *et al* (1989) the underlying reasons for the mixed design for this research are (1) triangulation; seeking convergence, confirmation, coherence of results from the quantitative and qualitative methods, (2) complementarity; seeking explanation, enrichment, illustration and interpretation of the quantitative results with the results of the qualitative method, and (3) development and initiation; seeking to use the results of the qualitative method to help develop or inform the quantitative method, which consists of reconsidering the factors that are measured and reviewing the formulated questions. Potential contradictions between what was found in the literature review and the results of qualitative research provide additional input for the quantitative data collection technique. In addition, new factors that originated by means of the qualitative method can be added and measured in the quantitative data collection technique.

So the conceptual framework that is developed in the previous chapter is first tested by means of a qualitative method. The qualitative research is the main data collection method of this research and findings will be supplemented with quantitative results to come to more conclusive answers to the research questions. Through the use of qualitative research methods, insight is gained into the outsourcing experiences and views of participants who practice international outsourcing. For this research, it is necessary to understand the underlying reasons and factors that explain the decisions that participants have made and to understand their attitudes and opinions, so therefore qualitative research is conducted. Interviews provide the opportunity for participants to fully explain their decision and the meanings they ascribe to various factors influencing international outsourcing. This will add significance and depth to the data that is obtained. It is important to completely understand why a factor influenced the decision and in what way, these are data that is difficult to

obtain by means of a plain question in a questionnaire. Qualitative research has also the advantage of discovering factors that are not reflected in literature, but which are significant for a comprehensive understanding and to draw valid conclusions. The major advantage of this method is that it can confirm what is already known, but it also leaves room for learning.

After the interviews are held, quantitative data is collected by means of questionnaires. The enriched understanding of the practice of international outsourcing gained through the qualitative data, helps to develop and optimize the questionnaire. The questionnaire is used because it is an efficient way of collecting numerical data from a larger sample. It is also an effective way of reaching the sample population which consist of busy managers who operate across borders. Goal of the quantitative research is to obtain information about the relative importance of the various factors in order to provide more conclusive answers.

3.3.1 Interview

The type of interview format that is chosen is the semi-structured interview, because this non-standardised interview allows for flexibility. In each interview a list of questions is covered, but additional questions can be brought up during the interview as a result of what the participant says. The interview questions cover all factors of the conceptual framework. See appendix C and D for an overview of all the important outsourcing factors and the related questions. The interview is divided into four parts, of which part two and three are the main fragment of this research:

- Part 1: general information
- Part 2: internal factors
- Part 3: external factors
- Part 4: extra information concerning the services of FME

Each of these parts begins with open questions regarding the subtopic followed by some scaling questions. First, open questions are used to let the participant describe the situation extensively. This enables the researcher to develop a good understanding of the participant's perspective regarding international outsourcing and it allows for discovering factors that were not found in literature. Especially the answers to open questions may require asking additional questions to clarify this understanding, which justifies the semi-structured format. Probing questions are also suitable for further exploration of given answers. Each section will also contain some scaling questions. "Scaling questions are a coherent set of questions or items that are regarded as indicators of a construct or concept" (Corbetta, 2003 in Saunders *et al*, 2009, p. 378). The specific internal and external factors that are found in literature will be tested by means of these scaling questions. A five-point Likert scale is applied in the interview. In appendix D the interview protocol can be found. The interviews are held face-to-face and took place at the respective companies. A personal meeting increases the probability that more information will be obtained; that the participant is focused and not distracted by work or emails; and non-verbal communication can be 'read' by the interviewer, which helps to steer the interview. Preceding the interview, the purpose of the research and the structure of the interview is explained and confidentiality and anonymity is guaranteed. When the participant agrees, the interview will be audio-recorded for transcribing purposes only. Relying on what the interviewer remembers is likely to be unreliable and making extensive notes limits the interviewer's ability to listen carefully.

3.3.2 Questionnaire

For this research, a self-administered questionnaire is employed to collect quantitative data from respondents. The software program SurveyMonkey is used to design the questionnaire and to collect the data. This online questionnaire is inexpensive and is efficient due to its fast collection of much data. The questionnaire will contain multiple choice and ranking questions in order to measure the internal and external factors of the conceptual framework. However, which (sub) factors are questioned in the online survey was dependent on the results of the qualitative research (see appendix E). Revision by subdivision or integration of

(sub)factors is performed to improve the focus of the quantitative research. The different motives and location factors, which (on average) are ranked lower than 3 are withheld from the questionnaire. Conversely, factors are added when two or more participants spontaneously mentioned them as being important in the open questions.

The results of the qualitative research in comparison with what was expected according to theory provide incentive to make adjustments to the questionnaire. Firstly, the internal factors are evaluated. As will be shown in the next chapter, not all *motives* are perceived by the interview participants as being an important reason to engage in international outsourcing. Therefore, the motives that on average were rated below 3 are deleted, which means that it is no longer necessary to measure 'Improve cost control', 'Improve quality', 'Get rid of problem functions', 'Reduce time to market', and 'Copy competitors' in the questionnaire. An important motive being 'Make manufacturing capacity more flexible by increasing/decreasing it when necessary' is added to the list of motives, because it is explicitly mentioned by many participants. This factor is part of 'gaining flexibility', but it is subtracted from this motive because gaining flexibility is relatively broad and flexible manufacturing capacity is brought up individually. In addition, because 'Gaining access to skilled (technological) labour' is also stated multiple times as being important, it is decided that this motive is separated from 'Access to superior resources, knowledge and innovations'. This will make the motive of gaining access to all kinds of resources more precise. Moreover, the factor of 'Reduction of investments' is specified by 'Reducing investment in machines' since continuous investment in machinery withholds companies of keeping manufacturing in-house. Together with the motives that were found in literature and which are rated as being important, these motives are questioned in the questionnaire. Moreover, an additional question concerning the different motives is added. Cost savings is seen as being a highly important motive. Therefore it is important to know which specific cost savings companies wanted to realize in advance and consequently if these envisioned cost savings match the actual cost savings.

The internal factors *frequency* and *experience* are not measured in the survey. This is because the reasons and arguments behind an answer are more important than the answer itself. For example, the information about companies wanting to engage in long-term relations with their suppliers is not valuable unless insight is gained in the reason why and when companies see this as being beneficial in comparison to short-term relations. Moreover, the factor experience needs more clarifications about the specific context and whether or not it did influence the outsourcing – and location decision, in what way and why. This cannot be captured in a simple question, so therefore a questionnaire is not a suitable means to test these factors.

The factor *asset specificity* has been assessed by means of site specificity, physical asset specificity and human asset specificity. However, site specificity is withdrawn from the questionnaire. Most researchers use 'physical distance' as a measure of site specificity. Although this factor is ranked on average relatively high, the importance is not explained by the assets or natural resources that are accessible at that location which can only be transferred at great costs. Participants merely explained the physical distance in light of the height of transportation costs for their outsourced components. Consequently, this measure fails to determine site specificity. Alternative measures that are generally used, could not be found due to a lack of empirical research that includes site specificity as an item of asset specificity. "What is even more striking is the scant attention paid to site specificity, only examined by approximately 10% of such studies" (De Vita *et al*, 2011, p. 342). As a result, asset specificity is measured by physical asset specificity and human asset specificity in the questionnaire. The factor *knowledge specificity* will be assessed by the same measures as used in the qualitative research. This also applies to the factors *strategic value* and *knowledge maturity*.

Second, the external factors are evaluated. The factor *environmental uncertainty* has been assessed by means of demand uncertainty and technological uncertainty. Although these factors are included in the questionnaire, these are measured indirectly. Based on the qualitative research it is assumed that the factor demand uncertainty is associated with the motive of being able to increase or decrease capacity when needed. Since this motive is already incorporated in the questionnaire, a direct measure of demand uncertainty is no longer required. Moreover, technological uncertainty is expected to be related to the motive of companies wanting to

reduce investments in new machines. Likewise, this motive is already included in the questionnaire, so a direct measure of technological uncertainty is no longer required. The factor *proximity* will be assessed by means of the same measures as was described in the preceding paragraph. Nevertheless, relational proximity is excluded since the factor 'frequency' will not be tested in the questionnaire for the reasons which are described above. In addition, physical proximity will not be measured since

Most *location factors* are perceived as being important in choosing an outsourcing location. However, some factors are deleted based on their ratings and the specific comments of interview participants. Factors that are withdrawn from the questionnaire are: the infrastructure sub factor 'ICT infrastructure'; the cultural sub factors 'Religion' and ´Norms and values; and the factor 'Corporate Social Responsibility'. Although 'Government policy' has an average rating of below 3, this outcome is indeterminate since the sub factors 'Political stability' and 'Free trade' are also spontaneously mentioned by other participants when answering the open question concerning the importance of external factors. This ambiguousness resulted in the decision to include these factors in the questionnaire. Important location factors that are added based on the qualitative results are: 'Continuity of electricity', 'Transportation costs', 'Strikes', 'Inflation and currency risk', 'Welfare level of a country', 'Available machines, equipment and materials' and 'Leading industries in that country'. Overall, the location factors are revised by subdivision of the sub factors, which in the questionnaire are measured as individual items. Based on the experience gained during the qualitative research, it can be concluded that the categories were too broad since some sub factors were important whereas others were not. These adjustments all result in an enriched focus and improved measurement of the location factors.

In general, all rating questions are adjusted to a 10-points scale. In this way, it is expected that the differences between e.g. the various motives and location factors becomes more clear and highlights which factors are really important according to the respondents and which are 'just' important. For the complete questionnaire see appendix F.

3.3.3 Sample population and size

The focus population of this study consists of technological manufacturing companies that are member of the FME. FME is the largest organisation in the Netherlands embodying employers and businesses in the technological industry. It directly represents 2600 companies and is therefore perceived as being a representative reflection of the complete Dutch technological industry. For the qualitative research, a purpose sampling strategy is chosen, because it allows for selecting cases that (1) are actually outsourcing manufacturing to international suppliers, (2) represent a cross section of the technological industry based on the products that these companies manufacture, and (3) are outsourcing to multiple countries, which facilitates developing insights into important location factors, independent of the specific country to which they outsource. In total 10 companies are selected from a group of 98 FME members that participated in the International Business survey of 2011 and answered the question 'Are you outsourcing activities internationally?' by indicating that they are outsourcing (part) of the manufacturing processes (40%). Consequently, of these companies it is indisputable that they outsource manufacturing processes to international suppliers. Of this group of 98 cases, companies are chosen that manufacture different kind of products. In appendix G, a standard classification of the technological industry can be found that is also used by the FME to group their members into subcategories. As can be seen in table 7, most categories are covered by the sample. Within each category, the final selection decision is made based on a combination of: company size (the technological industry mainly consists of SMEs); the number and diversity of countries to which the company outsources manufacturing; and, the companies' location in the Netherlands (a radius of approximately 125 kilometres from Zoetermeer is used to prevent that conducting interviews is an excessively time-consuming undertaking). All sampling criteria are used to come to a heterogeneous group of companies, which is representative for the technological industry. The selected companies are approached by phone and ultimately 8 have agreed to participate. The reasons for not willing to participate were 'not willing to share information' and 'don't have time'. All interviews are held with managers that have direct responsibility for

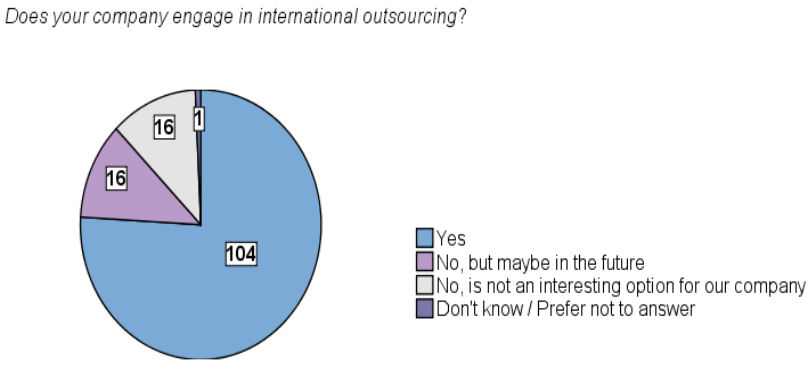
developing and managing (out)sourcing initiatives. Due to assured anonymity of participation in this research, information concerning the name of the company, name of the participant and detailed information regarding the core business of the selected companies cannot be published in this thesis. See table 7 for an overview of the companies that have been researched in the qualitative research.

Table 7. *Interview participants*

Company	Classification of technological industry	Nr. of employees	Outsourcing countries	Job title participant
Manufacturer of electronic machinery	Electrical machinery and apparatus	371	Hungaria, Poland, Slovakia,	Purchaser & Expediter
Manufacturer of medical instruments	Medical, precision and optical instruments	81	China, Israel, Poland, Romania, Slovenia,	Manager Purchase
Manufacturer of products for the aerospace industry	Other transport equipment	128	China, Malaysia, Poland, Romania,	Supply Chain Manager
Manufacturer of electronic equipment	Radio, television and communication equipment	105	Belgium, China, France, Germany, Netherlands	Director sourcing & Supply Chain
Manufacturer of machinery for food processing	Machinery and equipment	110	China, Slovakia	Purchaser
Manufacturer of metal constructions for transportation purposes	Motor, vehicles, trailers and semi-trailers	299	Netherlands, Romania, Slovakia, Turkey	Purchasing Manager
Manufacturer of power electronic machinery	Electrical machinery and apparatus	128	Czech Republic, France, Germany, Italia, Japan, Netherlands, Switzerland, Turkey	Purchaser
Manufacturer of machines for the agriculture and forestry industry	Machinery and equipment	65	Hungaria, Poland, Slovakia	Supply Chain Manager

For the quantitative research, the sample population consists of (A) the previous group of companies minus the companies that participated in the interviews; (B) the 132 FME members that participated in the International Business survey of 2010 and answered the question 'Is your company internationally active (besides your export activities)?' by indicating that they outsource to third parties (33%), plus (C) the 416 FME members that are listed in an outsourcing database, because they have joined the FME on one of their outsourcing missions, matchmaking events, seminars or other outsourcing activities. The questionnaires are sent to all the companies of the sample population, so group A, B and C combined. In total a group of 636 technological companies were selected. From this sample size, however, it is uncertain if companies of group C are actually outsourcing and if companies of group B and C are outsourcing manufacturing processes. Although the eventual sample size can be decreased, several elements are implemented that can positively influence the return rate: the length of the questionnaire is restricted so that it takes respondents no more than 10 minutes to finish it; the cover letter is personalized by addressing the manager by name; a follow-up mailing is sent to give thanks to respondents and for reminding others to fill-out the questionnaire; and a deadline is set and communicated in the cover letter. Ultimately 137 companies participated, but not all did meet the condition of being an outsourcing company based on the formulated definition of 'transferring (part of) the manufacturing of products or components to independent international suppliers'. The actual sample consisted of 104 companies (76%). Hence, only those companies that indicated that they are outsourcing in accordance with the formulated definition (answer ´yes') are incorporated in the quantitative analysis. See figure 3 for the results of the first question asked, after the international outsourcing definition was provided in the online survey.

Figure 3. *Sample composition*



3.4 Data processing, analysis and reporting

The data that is collected by means of the interviews consists of a combination of qualitative data, in the sense that it are opinions and perspectives expressed in words, and quantitative data that is derived from the scaling questions. Before analysis took place, the interviews were first transcribed by means of the audio-recordings and interview notes. This is done shortly after the interview was conducted. Then a deductive approach to processing and analysis is applied, in which the qualitative data is grouped into predetermined categories that are based on theory and the conceptual framework. The conceptual framework is relevant in explaining international outsourcing decisions and it provides a good structure to base the data analyses upon. However, some categories emerged from the collected qualitative data. It was therefore important to not just focus on the pre-set categories but critically analyse the data, search for important factors and contemplate adding categories based on indeterminate factors that appear to influence the international outsourcing decision in practice. Added categories provided direction for further research, which is conducted via the questionnaire. The answers to the respective open questions were appropriated to the correct categories. Other data that is gathered by means of the interviews is ranked data, which could already be analysed as being numerical data. The data gathered via the qualitative research is processed and analysed via the program Excel. The data that is obtained by means of the questionnaire is transported from SurveyMonkey to SPSS. Based on this database, frequency tables and diagrams could be made to understand the data and explore essential resemblances and controversies among the answers of the respondents. Finally, the results are compared with what was expected to happen according to theory. Ultimately, the qualitative and quantitative results are used to provide an answer to the research questions. The pure qualitative data is used to add meaning to the numbers and percentages.

4. RESULTS

The previous chapter clarified that the research questions are answered by testing the validity of the conceptual framework in the context of the Dutch technological industry. Data is obtained concerning the internal and external factors that appear to influence the outsourcing decision. The results of the interviews and the questionnaires are combined and described per factor. The first section elaborates on the results of the conducted research concerning the internal factors. The subsequent section describes the results for the various external factors.

4.1 Internal factors

Based on the questionnaire, it can be clarified that half of the technological companies acquire less than 20% of their total purchasing by means of outsourcing. Moreover, a quarter outsources 20-40%, which ultimately indicates that most inputs of the supply chain are purchased via other supply channels. The decision to outsource (part of) the manufacturing processes to international suppliers is set out by corporate management or is initiated by the purchasing managers. It is a strategic decision, which is in line with the future direction of the company. How the specific details are filled in is determined in consultation with an engineer who provides the specifications of a product or component. The purchasing manager constantly evaluates if current suppliers still deliver the right price-to-quality ratio and searches the market for attractive outsourcing locations and new suppliers. This is a continuous process of trying to optimise the supply chain. The internal factors that, according to the purchasing managers, are incorporated in the decision to outsource manufacturing to international suppliers are discussed in this paragraph.

4.1.1 Motives

The interview participants see international outsourcing as a necessary means to survive in the globalized world. When a company decides to keep manufacturing processes in-house, they have to compete with the rest of the world and should therefore be the best in class. This means that they need to have some cost advantages, pursue a high quality standard which cannot be found elsewhere or they want to stay state-of-the-art. However, the latter also entails heavy investments in new technologies. “By continuing to manufacture products in-house, companies are actually saying that they are better than the rest of the world”. Most companies do not find themselves in this exclusive position and are therefore outsourcing (part of) their manufacturing processes to international suppliers. The quality of the products that are manufactured by the Dutch are excellent, but prices are under pressure so cost reductions are vital for competing with competitors.

Cost savings is mentioned by all interview participants as an important motive. However, international outsourcing is no longer just seen as a necessary evil, the strategy is also embraced because of its advantages of focusing on core competences; relatively ease of changing manufacturing capacity; reducing capital invested; and gaining access to skilled labour. These factors are reinforced by the average ratings that are calculated based on the scores provided by the interview participants (see appendix E). Companies want to concentrate on what they do best by keeping the activities in-house of which they can add value. Non-core competences are outsourced to suppliers that can do it better or can manufacture it at a lower price. Flexibility is also seen as an important motive due to changes in the economy. Nowadays, it relates to transferring the problems that originate when the company receives fewer orders from their customers. However, especially before the economic downturn, this factor relates to the opportunity to increase capacity when sales are rising. Building a new plant costs time and money, so outsourcing is an attractive option to quickly expand capacity. In this way companies can reduce capital invested, which is also seen as an important motive. Although this also relates to companies being reluctant to replace machines and equipment that become obsolete. “The investments needed to manufacture products in-house are vast and within 2-3 years you lag behind, because you have to keep investing to remain state-of-the-art”.

The results of the quantitative research show a relatively similar distribution of the importance of motives for outsourcing. See table 8 for an overview of the results. Cost savings is the most important motive that influenced the outsourcing decision of Dutch technological companies. Primarily, these costs savings are realized due to reductions in employment costs because of lower wages and decreasing expenses regarding recruitment and hiring and firing employees (45,8%), and due to diminishing costs of raw material and other materials (32,1%). The second most important motive for outsourcing is making manufacturing capacity more flexible by being able to increase or decrease when necessary. Companies want to adjust the total amount of products that are generated in a given period to changing circumstances in the internal or external environment. Subsequently, focusing on the core competences is also rated as being an important motive, followed by gaining flexibility. Accordingly, the key motives for companies to engage in international outsourcing are comparable to the results of the qualitative research. Important is to note that companies are not necessarily outsourcing because they want to have access to resources like skilled labour, which is somewhat contrary to what was expected based on widespread assumptions regarding the labour market within the Netherlands. In addition, access to resources like knowledge and technologies is not a motivation to outsource manufacturing. Probably this can be explained by technological companies in Netherlands operating at the leading edge of advanced technology due to industrial developments and good standards of education. It is also questionable whether outsourcing is the appropriate means for gaining access to knowledge and technologies, since participants of the interview indicated that for manufacturing processes like R&D they prefer joint ventures or partnerships over outsourcing.

Table 8. *Importance of motives for outsourcing*

Question: How important were the following motives in deciding to outsource manufacturing internationally?

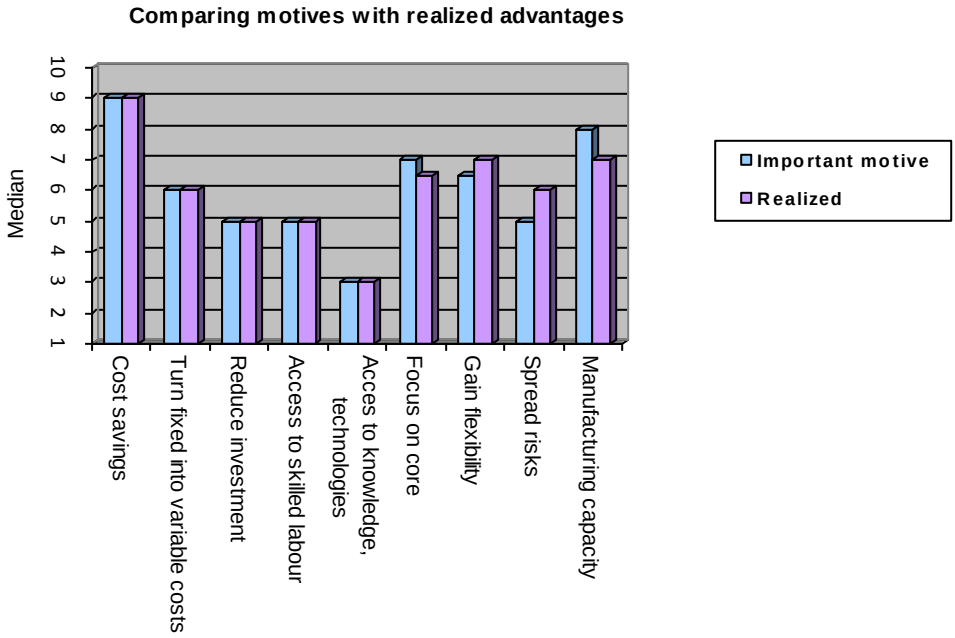
Motives	Mean*	Std. Deviation
Cost savings	8,7	1,8
Make manufacturing capacity more flexible by increasing/decreasing when necessary	6,4	3,0
Focus on core competences of the company	5,9	3,3
Gain flexibility	5,7	2,8
Turn fixed company costs into variable procurement costs	5,4	2,9
Spread risks	4,9	2,9
Access to skilled (technological) labour	4,8	2,6
To reduce capital invested in machines	4,8	3,2
Access to superior resources, knowledge and innovations	3,6	2,7

* Scale 1: not important till 10: very important

By means of the quantitative research, respondents were asked which advantages (relating to the motives) they were able to realize by outsourcing part of the manufacturing processes to international suppliers. See figure 4 for an impression of these results, which are compared with the importance of the motives for engaging in outsourcing. Overall, there is consistency among the two parameters. However, the realized 'flexibility of manufacturing capacity' is rated one point lower than what probably was anticipated in advance. Based on the interviews, it can be said that companies do not specify the exact quantity of the products or components that they will purchase from the supplier. They do provide a forecast of the order intake for the coming six months on which the supplier can e.g. base its acquisition of resources upon. However, when the company receives a large quantity order from a customer, it has to assure that the supplier increases its manufacturing capacity within a short timeframe. Sometimes this can be difficult since most suppliers also manufacture components or products for other clients, which can result in the supplier having other priorities. This might be a possible explanation of the differences between the manufacturing capacity factors. Moreover, the results of the motives and realized advantages of the factor 'spreading risks' also deviate. These measures differ in a positive way, since spreading risks does not necessarily drive companies to engage in outsourcing,

but in practice this is realized. Therefore, it can be seen as an additional advantage of international outsourcing.

Figure 4. *Importance of motives compared with realized advantages*



During the interviews it is asked whether the purchasing managers expect that the outsourcing motives are subject to change. Most participants expect that the relative importance of the different motives will not change in the future. They expect that cost savings will remain important. Although one interview participant mentioned that this is on the condition that their image of being a manufacturer of high quality products and sustainability will prevail. It is also believed that flexibility will continue to be an important factor, because when the economy recovers and business is booming, it is important that companies can respond by expanding capacity. A noteworthy response is that of a participant who stated that its company will most likely switch from outsourcing to offshoring. Ownership is becoming very important for their value proposition, due to some 'bad' experience with a supplier which copied one of their products and sold it to their potential clients. This is a costly mistake which they do not want to encounter again. This will always be a factor that companies have to take in to account in their risk assessment, especially when outsourcing to countries in Asia.

4.1.2 Frequency

The answers relating to the question about the *frequency* of transactions are somewhat similar. All interview participants indicated that they try to engage in long-term relations in which recurrent transactions occur between the company and a specific suppliers. This is especially important for products of high asset specificity, for which a company has to endure an extensive start-up process before the supplier can actually manufacture the product for your company. Moreover, for strategically important products companies also envision long term relations. Companies want to build a relationship with their suppliers because switching costs are high; the performance of the supplier improves, because he knows what is expected and how he can manufacture it efficiently; commitment increases; doing business with the supplier becomes less complicated and when there are problems, it is easier to solve them. One participant explained that their so called 'preferred suppliers' are manufacturing products for their company for 3-10 years because they continuously score well on their vendor rating. When you are a preferred supplier, you are entitled to preferential treatment for new outsourcing projects of the company. Other companies indicated that they have relations of approximately 3-5 years. However, some companies mentioned that a long term relation is not necessarily

required for standardized products that can be bought from several other suppliers that are active in the market. Still, interview participants indicated that they hardly engaged in international spot-based transactions. This was not a rating question, so no average indication is calculated.

4.1.3 Experience

The opinions about whether prior *experiences* influence the outsourcing decision differ. All participants have prior international outsourcing experiences of which some think this helped them in making better decisions by incorporating factors that are relevant in practice, while others state that experiences are idiosyncratic to a particular product/component and does not influence future outsourcing decisions. Moreover, experience is mainly gathered via their former jobs held at other companies that operate in an entirely different industry and is therefore not deliberated when making current decisions. Previous international business experience with a particular country is considered as beneficial, but does not directly influence the choice of where to outsource. For example, an interview participant explains that he knows through experience that when you are in China you always have to double-check whether they say 'yes' because they mean it or because they don't want to lose face. However, this experience did not affect the decision to outsource to this country, since China is chosen because it is a low cost - and large manufacturing country. Other participants also indicated that a lack of previous international business experience does not withhold them from outsourcing to a certain country. This was not a rating question, so no average indication is calculated.

4.1.4 Product factors

The supply chain consists of several processes being R&D, Design, Engineering, Manufacturing, Assembly and Sales. Manufacturing is the only process that has been outsourced by every interview participant. Companies outsource mass products and – components, but also customized work. It is mainly manual labour and machining that are transferred to LCCs due to their labour cost advantages. Two companies indicated that they also outsource Assembly, which means that they outsource the manufacturing of a complete product. One company is a so called 'born global' organisation that does not manufacture its own products, the interview participant of the other company is proud to say that they reached their goal of receiving 90% of their products assembled within a box. Next to Assembly, this company also outsources packaging, warehousing and distribution. The results of the quantitative research also show that most companies outsource Manufacturing of components (55,9%) and/or loose parts (70,6%). Assembly has been outsourced by some companies (28,4%). Based on the interviews, it can be said that the reason why other companies maintain Assembly in-house, is because it is specialized work; it is their core activity in which they can add value; or it is too important to outsource because it is their last check before the product is delivered to the customer. One company is of the opinion that the labour force in developing economies is not capable of managing the complete logistics chain and should just stick to manual labour. "The Dutch have excellent logistical knowledge, which is needed to make sure that for example 100 components are delivered at the same time, in the same place for assembly purposes". R&D (5,9%), Design (7,8%) and Engineering (13,7%) are manufacturing processes that are mainly done by the companies themselves. Interview participants indicated that these manufacturing processes are merely undertaken in-house or by way of joint ventures with other companies or via partnerships with design and engineering agencies. These processes are seen as being valuable due to their distinguishing capacity that is a source of superior company performance. Outsourcing is therefore not perceived as a viable option.

It is explicitly mentioned that all product factors which are measured in this research, differ per component that is outsourced. So the findings hereunder are based on general statements about all components that are outsourced. In the qualitative research, the factor *asset specificity* was measured by site specificity, physical asset specificity and human asset specificity. Site specificity is measured by physical proximity and consequently geographic location. Although this factor is ranked on average relatively high, the importance of

physical proximity is not explained by the natural resources that are accessible at that location which can only be transferred at great costs (see next paragraph for results concerning location factors). Physical asset specificity was ranked on average a 5,0 with a standard deviation of 3,0, which indicates that there is wide variability concerning this factor. So companies outsource components which are manufactured with standardized physical assets, but it also outsources components for which specialized machines, equipment or complex computer systems are needed. Companies indicated that they either outsource to suppliers that already have these machineries up and running in their plant, or let the supplier invest by buying these machineries in exchange for some guarantees on return. Generally for small-quantity orders, companies outsource to suppliers that can include the manufacturing of the component into their current manufacturing line. This is because the company is not in the position to negotiate that the supplier will invest in specific assets due to low volumes. When comparing the results of companies that outsource components of low physical asset specificity[4] with companies that outsource components of high physical asset specificity[5] regarding the different outsourcing motives, it can be said that the main motives - cost savings, flexible manufacturing capacity, focus on core and gaining flexibility - remain the most important for engaging in outsourcing. The average ratings per motive are relative similar. However, it can be specified that 'cost savings' is a somewhat more important motive for outsourcing components of low asset specificity compared to high asset specificity (respectively a mean of 9,0 compared to 8,0). On the contrary, 'reducing capital invested in machines' (a mean of 4,2 compared to 5,3) and 'access to superior resources, knowledge and innovations' (a mean of 2,8 compared to 5,0) are more important motives in deciding to outsource the manufacturing of components for which specialized machines, equipment and computer systems are needed. See appendix H for an overview of the comparing results.

With regard to specialized skills and experiences needed to manufacture the component, the interviewed companies indicated that they have high demands regarding their outsourced component since they want to sustain a high quality level. An interview participant explained that if he needs ten welders for his outsourced work, then he wants to see ten certificates all based on a German standard. Although the skills and experience of the employees of the supplier are important, it is cited that it is not rocket science that the company is outsourcing, meaning that the manufacturing process is comprehensible. Primarily, low - till medium tech components are outsourced of which it is relatively straight forward what the company wants from the supplier. This duality of requesting excellent skills for manufacturing high quality products in combination with the relative ease of humans being able to apply the necessary skills, can be the explanation of the average rating of a 5,0 on the human asset specificity factor. When comparing the results of low – versus high human asset specificity regarding the different motives for engaging in outsourcing, the top four remains the same. Although the following motives are not the most important, it is interesting to note that the importance of spreading risks; access to skilled (technological) labour; and access to superior resources, knowledge and innovations increases when the required skills and experience becomes more specific.

Regarding the factor *knowledge specificity*, the interview participants perceived it as being relatively easy to specify, explain and document the knowledge needed to manufacture the component which they have outsourced. Computer-aided designs, moulds or specifications are handed over to the supplier with which they are able to manage the process of manufacturing the component. In addition, an interview participant indicated that when a company has problems with transferring the manufacturing of a component, it is not designed properly. However, companies also outsource components for which extensive training is needed in the start-up phase. These are complex components that have need of highly specialized knowledge which is obtained via learning-by-doing. A representative of the company is sent over to the supplier and will explain step by step how it should be manufactured. This is an extensive and costly operation, but it will pay off in the long term. It is therefore not seen as a factor limiting the company to outsource a component for which specific knowledge is needed. Nevertheless, in general, mainly components are outsourced of which the knowledge

[4] Rated below 5, so 1 till 4
[5] Rated above 5, so 6 till 10

can be specified. For both, the transfer of explicit and tacit knowledge, the absorptive capacity is really important. The knowledge base and areas of expertise of a supplier are determining factors in choosing an outsourcing location (mean of 7,0 - see location factors). Although the importance of the motive of 'access to superior resources, knowledge and innovations' increases when companies outsource components of high knowledge specificity (mean of 2,7 compared to 5,3), the four main motives remain the same. See table 9 for an overview of the findings relating to asset specificity and see appendix H for the results of the quantitative data analysis.

Table 9. *Asset specificity and knowledge specificity*

Question: In general, the manufacturing of which type of components are outsourced to international suppliers?

Asset specificity		Mean*	Std. Deviation
Physical asset specificity	Components for which specialized machines, customized equipment or complex computer systems are needed.	5,0	3,0
Human asset specificity	Components for which specialized (technological) skills and experience of the employees are needed.	5,0	3,0
Knowledge specificity	Components for which knowledge is needed that is difficult to specify, explain and document.	4,0	3,0

* Scale: 1 = not outsourced till 10 = outsourced

The *strategic value of resources and – knowledge* is of importance in the sense that mainly those manufacturing processes that are of low strategic value are outsourced. Particularly R&D, Design and Assembly are manufacturing processes, which require unique and valuable resources and will therefore be kept in-house. These processes are a source of competitive advantage and legitimize the companies' existence. Regarding the sub factor rarity, interviews participants indicated that the raw materials, labour force and machines which are needed for the outsourced product are accessible for every company in the world. Although a participant indicated that they use an expensive manufacturing technology, which they can afford due to a high return on investment. This creates a financial barrier for other companies, which consequently use an inexpensive substitute that is aesthetically of lower quality. So it is available but not affordable for everyone. This can function as an explanation of the average rating of a 3,5 provided by respondents of the questionnaire. In general, companies do not outsource components for which unique resources are required that they exclusively possess. Competitors have no control over these resources, which makes it a source of competitive advantage. Based on the results, it can be assumed that these resources are mainly knowledge intensive or expensive to obtain, since companies have access to all other resources in the world. The responses of the interview participants relating to in-imitable and non-substitutable resources were straight forward: everything can be copied or be manufactured with substitutable resources. IP sensitivity is not really a factor that is considered when deciding if a product is amendable for outsourcing purposes. Some companies let the supplier sign a Non-Disclosure Agreement before they send their drawings and specifications over. But all agree that there is not much you can do about IP infringement, except continuous technological development. Conversely, respondents of the questionnaire indicated that they do not outsource components that can be copied or manufactured with substituted resources. However, the location factor ´protection of IPR´ is not perceived as being a key factor in choosing an outsourcing location (for low strategic value a mean of 4,8 and for high strategic value a mean of 5,6). There is no direct explanation for these contradictory findings. When comparing the results of outsourced components of low – versus high strategic value regarding the different outsourcing motives, a similar image is seen as with asset specificity. The four key motives remain the same; cost savings is ranked higher for low strategic value; and although it is not a primary motive, the factor 'access to superior resources, knowledge and innovations' increases from 3,0 to 5,4 when the component becomes more strategic. See table 10 for an overview of the average ratings regarding strategic value and appendix H for the analysis of the quantitative research.

Table 10. *Strategic value*

Question: In general, the manufacturing of which type of components are outsourced to international suppliers?

Strategic value of resources and knowledge		Mean*	Std. Deviation
Value	Component for which resources and knowledge is required that enable the company to neutralize risks and exploit opportunities.	3,2	2,8
Rarity	Components for which resources and knowledge is required that competitors don't possess nor control.	3,5	3,0
In-imitable	Components for which resources and knowledge is required that can be copied by competitors.	3,6	2,8
Non-substitutable	Components that competitors can manufacture with substituted resources.	3,6	2,8

* Scale: 1 = not outsourced till 10 = outsourced

Knowledge maturity is measured by the question whether companies outsource components for which knowledge is needed that is difficult to specify, explain or document (see table 9). Therefore knowledge maturity can be summarised by an average of 4,0, which means that in general mature and standardized components are outsourced of which high stages of know-how and know-why is generated about the manufacturing process. This explicit knowledge enables relative ease of transfer from the company to the supplier. However, the standard deviation of a 3,0 indicates that some Dutch technological also outsource components of which the underlying knowledge is tacit and not fully developed. This is in line with the findings regarding the knowledge specificity factor. Some companies outsource components of which the knowledge can only be transferred via training and requires extensive contact.

4.2 External factors

The external factors are forces in the external surroundings in which the company operates. These factors are beyond the control of the company and affect its business decisions. As said, differences in these factors result in particular countries having a comparative advantage in the manufacturing of certain products. For a company that is trying to survive in a competitive global market, this implies that the company will benefit by sourcing the manufacturing of each component or process at that location where these external conditions are most beneficial to the execution of that activity. In this paragraph, the external factors that influence the decision to outsource are described.

4.2.1 Uncertainty

Uncertainty is such a factor over which the company has no control. In this research, it is measured by means of demand and technological uncertainty. Regarding *demand uncertainty*, some interview participants indicated that their sales fluctuate as a result of the economic conjuncture, seasonal changes or because it is sensitive to trends. For these companies, outsourcing is a means to change capacity relatively easy without having to cut cost by for example firing employees. Based on the quantitative research it can be concluded that 'flexible manufacturing capacity' is a very important motive for companies to engage in outsourcing. It can be summarised by a mean of 6,4, which represents the second most important outsourcing (see table 8). In the interviews, only two companies indicated that they operate in a *technological uncertain* environment of which the participants both indicated that this was not the reason why the company started to outsource the manufacturing of this product/component. Some participants, however, indicated that technology is not uncertain but that the volatility of sales influences the technology and raw material used to manufacture a product. Aluminium is for example substituted by steel, and the welding technology is replaced by using moulds. In the quantitative research, technological uncertainty is indirectly measured by the importance of the motive 'to reduce capital invested in machines' in deciding to outsource manufacturing internationally. The results show that reducing investments in machinery (mean of 4,8) is not a key motive compared to other

motives which drive companies to start outsourcing manufacturing. Although it is important to some companies, it is not a shared opinion among the larger sample.

4.2.2 Proximity

The factor *proximity* is assessed by means of five items, which are indirectly measured mainly by some of the location factors. In the qualitative research, the findings regarding physical proximity indicated that the distance between the company and the supplier is an important factor influencing the location choice. Although this is mainly in line with the height of transportation costs, some interview participants also indicated that due to frequent supplier visits that have to be undertaken by the company, it is important that the supplier is in close proximity. Moreover, the supplier needs to be located relatively nearby an airport, because traveling to rural areas takes too much time. In addition, one interview participant even mentioned that their suppliers are located in close proximity to each other. This participant refers to adjacent countries in Eastern Europe, which enable him to combine these official visits so that it is not an excessively time-consuming undertaking which takes place on a regular basis. Although previous research indicated that physical proximity can be measured by the factor physical distance, the quantitative data gathered regarding this factor is in research only used in light of the importance for selecting an outsourcing location. This is because it is not clear whether the average rating can for example be explained by the importance of physical proximity for knowledge transfer purposes, or be explained by height of transportation costs. Based on the qualitative research, institutional proximity does not seem to be a determining factor for knowledge transfer. Legalisation and enforcement is perceived by interview participants as being important in a more general way of making sure the component can be transported from the supplier to the company without obstructions. Protecting knowledge from misappropriation is seen as a misconception. Based on the quantitative research, no conclusions will be drawn relating to institutional proximity. This is because it is not clear whether the average importance of the factors ´legalisation and enforcement´ and ´government policy´ can be explained in light of knowledge transfer purposes or whether this is due to other reasons that for example are clarified by interview participants. Contrary to the previous proximity sub factors, knowledge proximity is seen as being relatively important, because a knowledge gap between the company and the supplier will make knowledge transfer more problematic. Moreover, expected advantages like cost savings and high quality standards will be difficult to realize. The quantitative research confirms these findings since the technological knowhow and competences of the workforce of the supplier is rated as being important in choosing an outsourcing location. Of the sub factors relating to cultural proximity, only 'language' is mentioned by interview participants as being important for transferring knowledge purposes. Employees of both the supplier and the company need to be able to communicate in a similar language. Differences between norms and values do not necessarily complicate knowledge transfer, but the company has to understand and acknowledge these differences and incorporate this in managing the relation with the supplier. In the quantitative research, the factor ´language´ is on average rated a 6,0, which indicates that most companies consider this factor in choosing an outsourcing location. Relational proximity is measured by the factor frequency. Companies do prefer positive long term relations with specific suppliers, because of the ease and efficiency of transferring and decreasing risk of misappropriation due to increased trust. For conclusions regarding the type of company-supplier relationships see paragraph 4.1.2.

4.2.3 Location factors

Companies outsource to a multitude of countries which are mainly located in Asia, Eastern Europe, Western Europe or North-America (in specific the U.S.A.). For the Dutch technological companies, the most important outsourcing country is China, followed by Poland, Germany, Czech Republic, Slovakia, India, Belgium, Romania, Italy and Hungaria. Based on the interviews, it can be concluded that mass manufacturing is outsourced to China due to low costs and efficiency. Eastern Europe is an attractive outsourcing location for these companies due to several reasons. First, heavyweight products are outsourced to these countries due to

low transportation costs. Second, customized work and specials are transferred to Eastern Europe, because these types of products are contact-intensive which makes it easier if the supplier is relatively proximate. Third, these people are seen as being more pro-active, involved and willing to collaboratively develop a customized product. Fourth, companies do not want deliver - and transportation times to exceed the maximum of two days. Long transportation times will make the company less flexible. Finally, companies outsource to Eastern Europe because of low manufacturing costs. A participant mentioned that his company transferred its outsourced product, for which the technique of turning and milling is needed, from China to Eastern-Europe because of rising price developments. Assembly is outsourced to the West-European countries due to quality warranties. A participant explicates that you cannot expect that a Chinese has the same standards of quality. Chinese people have a different quality reference framework compared to Western people who are raised in a world of high-quality products.

There are several location factors that influence the outsourcing location decision. Usually the search for an attractive outsourcing location starts at home by doing market research via sources like the Internet, news broadcasts and labour cost statistics. Purchasing managers search for countries based on diverse sourcing criteria. When a certain country meets these criteria, the purchasing manager will get quotations of multiple suppliers, let them manufacture a sample and visits the plant. Although the search and selection of an appropriate supplier is out of the scope of this research, it is important to note that this process goes hand in hand with finding an outsourcing location. For example, a participant mentioned that some companies are capable of manufacturing a product at a high-quality standard, while other manufacturers that are located in the same country have a lower standard that does not meet the requirements. This even holds for the Netherlands. Thus some factors are not just related to a country but also to particular suppliers. Multiple sourcing criteria are mentioned in the interviews, namely: transportation costs, quality of roads and presence of airports and harbours; technological know-how; leading industries of a country; availability of raw materials and continuity of electricity; labour costs and standard of living; inflation and currency risk; and political stability, free trade, strikes and corruption. Leading industries are important because of the technological skills and knowhow of a country or area. Czech Republic is for example traditionally known for its leading electronic industry. When the interview participants were asked to rank the different external location factors that were found in literature, analysis shows that (on average) the most important factor for finding an attractive outsourcing location is labour costs (see appendix E for a complete overview). This is in line with the most important motive for outsourcing, being cost savings. The infrastructure and geographic location are of importance since it must be easy to set up an efficient logistics chain. In addition, when doing business with suppliers which are located in e.g. Eastern-Europe or Asia, a company is always faced with transportation costs. Suppliers can be chosen based on their low cost wages, but this does not mean that this low cost advantage should be depleted by high transportation costs. However, a participant stated that when a component adds a substantial amount of value to your final product, transportation costs are less important. It is important to note that heavyweight components are less suitable for international outsourcing due to the high transportation costs and are therefore either outsourced to Eastern Europe or to suppliers located in the Netherlands. Geographic location is also seen as an important location factor, because purchasers have to visit these suppliers on a regular base.

After revision of the relevant location factors based on the qualitative results and by subdivision of the sub factors, the location factors are measured via quantitative research. See table 11 for a complete overview of the results of the importance of the location factors based on the quantitative research. Again, labour costs is the most important factor in choosing an outsourcing location. Companies realize cost savings due to reductions in employment costs. This primary motive results in that companies are mainly outsourcing to LCCs. However, the suppliers, which are located in a LCC, should have the appropriate machines and equipment in place and need to have access to the required materials, which is the second most important motive. Based on the interviews, it can be explained that not all LCCs meet this condition. For example, a participant mentioned that outsourcing to the Ukraine is not an option for his company since for the manufacturing of mechanical components proper machinery is needed. However, most plants in the Ukraine are former state-owned

companies with machines and equipment of over 50 years old. The third and fourth most important location factors are associated with human capital, namely technological knowhow and competences of the workforce, and workforce size and availability. The quantity and quality of the available workforce is important because suppliers need to be able to manufacture the product as is required by the company. The fifth factor that is important in choosing an outsourcing location is the total costs of transportation. Based on the findings of the interviews it can be assumed that low weight and high value products or components, such as electronic consuming goods, are more amendable for outsourcing to far distant locations since it will outweigh the transportation costs. The manufacturing of other components is mainly outsourced to Eastern Europe.

In additional analysis, the influence of different product characteristics on location factors is examined. Regarding physical asset specificity, it can be concluded that 'labour costs' and 'workforce size and availability' are more important factors in choosing an outsourcing location for components which can be manufactured with standardized machines, equipment and systems. For components of high physical asset specificity, logically the factor 'available machines, equipment and materials' is more important. Although the order of the factors differ, these remain the four key factors in choosing an outsourcing location, irrespective of the machines, equipment and systems needed to manufacture it.

Low physical asset specificity

1. Labour costs (8,5)
2. Workforce size and availability (7,2)
3. Technological knowhow and competences of workforce (6,9)
4. Available machines, equipment and materials (6,8)

High physical asset specificity

1. Available machines, equipment and materials (8,1)
2. Labour costs (7,6)
3. Technological knowhow and competences of workforce (7,4)
4. Workforce size and availability (6,6)

When comparing the average rating of location factors between outsourced components of low - with high human asset specificity, the results are relatively similar. Understandably the 'technological knowhow and competences of the workforce' is a more important location factor when companies outsource components for which specialized skills and experience is needed. But together with 'available machines, equipment and materials', 'labour costs' and 'workforce size and availability' the factors remain the most important. The same holds for the influence of knowledge specificity on the different location factors. Regarding strategic value, it should first be noted that the results of the comparison between low – and high strategic value regarding location factors should be interpreted with caution, since only a small amount of companies represent the results of high strategic value (n=14). It can be said that next to technological knowhow and competences (7,4), available machines, equipment and materials (7,2) and labour costs (6,8), also the stability of a country (6,5) and the language (6,5) are important factors when searching for an outsourcing location for components of high strategic value. For low strategic value the importance of the four most important location factors is similar to what is shown in table 11. For a complete overview see appendix H.

Table 11. *Importance of location factors*

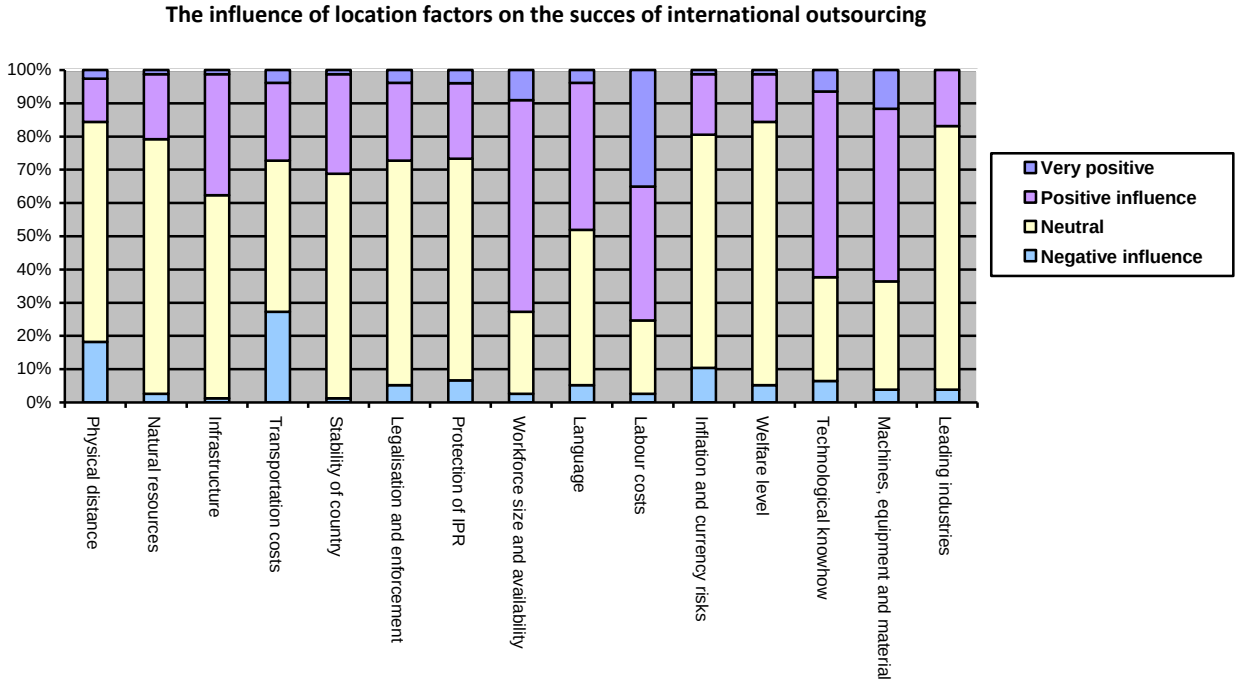
Question: How important were the following factors in choosing an outsourcing location?

Location factor	Mean	Std. Deviation
Labour costs	8,1	2,1
Available machines, equipment and materials	7,4	2,3
Technological knowhow and competences of workforce	7,0	1,9
Workforce size and availability	6,9	2,2
Total costs of transportation	6,2	2,5
Legalisation and enforcement (customs, corruption, free trade)	6,0	2,3
Stability of country (politics; strikes)	6,0	2,4
Language	6,0	2,3
Inflation and currency risks	5,6	2,7
Protection of Intellectual Property	5,1	3,0
Presence and quality of roads, rails, (air)ports	5,0	2,3
Physical distance	4,9	2,8
Leading industries of that country	4,7	2,7
Welfare level of a country	4,4	2,3
Presence of natural resources; continuity of electricity	4,0	2,7

* Scale 1: not important till 10: very important

When the interview participants were asked which of the external environmental factors had the greatest impact on the success of outsourcing, it is interesting to see that they all underlined the importance of human capital. You need professionals who care for constantly delivering a component of excellent quality. This affects the lower level employee, but also corporate management and the technical engineers of both the supplier and the outsourcing company because they all have to support an outsourcing project. Moreover, labour costs are seen as a successful factor because this results in the company remaining competitive and securing their market share. Finally, language is seen by some participants as an important factor affecting the success of outsourcing. They will only do business with suppliers of which the employees speak English or German, because they experienced working with an interpreter as a bottleneck. However, another participant stated that he did not see language difficulties as an issue since the company will work around it by e.g. hiring someone in the Netherlands who speaks that particular language, hiring someone who can function as an agent in that country or by using an interpreter. According to this participant, language is not a decisive argument in the decision to outsource to a certain location. When comparing these qualitative results with what was found based on the questionnaire, a similar conclusion can be drawn (see figure 4). Labour costs; human capital, being workforce size and availability and technological knowhow and competences; and the language are location factors that can positively influence the success of international outsourcing. Machines, equipment and material can be added based on the quantitative results. This factor is in line with the importance of the location factors.

Figure 5. *The influence of location factors on outsourcing*



* A 'very negative influence' is not applicable, since no respondents filled out this answer

In the interview, the participants were asked which problems can arise when companies outsource manufacturing to international suppliers. Human capital is mentioned again as a factor, because people can be the key to success or failure. A couple of months ago, a participant experienced the problems that Customs can create when the companies' products could not be exported from Romania to the Netherlands. Moreover, the risk of being dependent on a supplier in combination with the supplier not delivering the needed product is mentioned multiple times. A manufacturing stop of the supplier, for whatever reason, is something an outsourcing company has hardly any influence over. An important challenge for every company is being able to constantly deliver products of high quality. The results of the questionnaire point out that transportation costs and physical distance are factors that can negatively influence the success of international outsourcing. Probably these two factors are related in that distant location increase transportation costs and will therefore diminish the envisioned cost savings. However, the interview participants indicated that there are factors that can be problematic, but careful preparation and execution of the outsourcing process will substantially decrease the possible problems and risks. This can be done by: doing your homework; outsource a product or component that is amendable for outsourcing purposes; have clear specifications and explain with 100% accuracy what you want; prepare your organisation; put the right people on the right jobs; and contract a reliable and excellent supplier. These are all elements that the company can influence, so a lot of problems can be prevented.

5. CONCLUSIONS

This final chapter presents the findings of this research concerning the internal and external factors that influence the decision of Dutch technological companies to outsource (part of) manufacturing to international suppliers. Conclusions are drawn for answering the central and sub research questions, and the implications of these findings for researchers and for companies that (want to) outsource manufacturing to international suppliers are discussed. Finally, the limitations of this research are described and possibilities for future research are presented.

5.1 Research questions

This research was motivated by the goal of obtaining a rich understanding of the international outsourcing phenomenon from the viewpoint of Dutch technological companies. It explains the internal and external factors that managers must consider according to theory and actually are considering in practice when deciding if the company should (continue) to outsource manufacturing to international suppliers. This goal has been translated into a central research question and two sub questions. First, the sub questions are answered by comparing the results of the literature review with the findings of the qualitative – and the quantitative research. This will ultimately contribute to coming to final conclusions regarding the central research question, which will be elaborated on in the subsequent section.

5.1.1 Internal factors

- *Which internal factors influence the decision to outsource manufacturing internationally?*

International outsourcing of (part of) manufacturing to international suppliers is perceived by Dutch technological companies as an important means to stay competitive in the globalized world. Companies incorporate multiple internal factors when deciding to engage in this strategic practice. First, different *motives* positively influence the outsourcing decision. The most important motive is cost savings. The costs of labour and (raw)materials make manufacturing in the Netherlands a too costly undertaking. Therefore, this is (partly) outsourced to LCCs through which the cost reduction advantage can be realized because of lower manufacturing costs. Companies also outsource manufacturing internationally to make manufacturing capacity more flexible by increasing or decreasing it when necessary. When the demand for a certain product increases to the extent that the company can no longer handle its sales orders within a relatively short timeframe, external suppliers' manufacturing capacity can be used to level these peaks. In addition, by means of international outsourcing companies create a flexible layer, which can abate a decrease in sales. Companies do not directly have to worry about the hiring and firing of employees. In practice, the realized flexibility of manufacturing capacity is rated slightly lower than what was hoped for, which can be explained by the difficulty of influencing the supplier to prioritize the companies' order in relation to orders of other customers it serves. Companies also decide to outsource internationally since they want to focus on their core competences. Many technological companies have abandoned their diversification strategy and concentrate on what they do best. They concentrate on a specific, accurately delineated market and search for optimal specialisation within that market. Peripheral activities are outsourced to excellent suppliers and the companies' resources are utilized to what is considered as being the core and supports creating a competitive advantage. A final important motive for the Dutch technological companies is to gain flexibility. By focusing on less but manageable activities companies increase their ability to adapt to changes in the environment. These changes can for example be the results of changes in customer needs, alterations in laws and regulations or improved industry standards due to innovations developments. Turning fixed company costs into variable purchasing costs; spreading risks; access to skilled (technological) labour; and reducing capital invested in machines were ranked on a middling level. To conclude, access to superior resources, knowledge and innovations does not seem to apply to Dutch technological companies.

Second, *frequency* influences outsourcing in a way that for recurrent transactions companies try to engage in long-term relations with their suppliers. This especially holds for components or products which are characterised by high asset specificity or high strategic value. The reasons underlying this preference relate to an extensive start-up process; high switching costs; improvement of supplier' performance; growing commitment; and the increased ease of doing business with the supplier due to inter-firm routines. For standardized components, recurrent transactions with a specific supplier is not necessary. However, companies indicated that even for these components they often do business with the same supplier.

Third, although theory indicated that *experience* is an important factor, in practice this does not seem to be a determining factor in the decision to outsource internationally. However, this factor has only been tested in the qualitative research. Some companies indicated that experiences are distinctive to an outsourcing object and do not influence future outsourcing decisions. While others explained that previous experiences can help in better decision making or can be beneficial when is outsourced to a location of which prior knowledge is gathered. However, companies do not consider it as being a determining factor in the decision process since they for example do outsource to foreign location of which relatively little is known. Perhaps the advantages of prior experiences play are more central role in the implementation of the outsourcing strategy.

Fourth, regarding *asset specificity* is can be concluded that Dutch technological companies outsource components which can be manufactured with standardized equipment, tools, skills and experience as well as components which require investments in specialized assets. However, finding suppliers which are able and willing to manufacture the components for which specific assets are needed, is more difficult. Suppliers want to have a high return on these specific assets, which leads to companies having to give some guaranties on the number of components that they will source from this supplier. Therefore, for low volume components companies search for suppliers that already have these machines up and running in their plant and employ skilled and experienced workers, so they can incorporate the manufacturing of this component into their assembly line. The top four motives for outsourcing these different components remain the same, signifying that, irrespective of the required assets, cost savings; flexible manufacturing capacity; focus on core; and gaining flexibility are the most important motives. In more detail, it can be said that costs saving is on average ranked higher for low asset specificity and focus on core competences is on average ranked slightly higher for high asset specificity. Regarding *knowledge specificity*, it can be concluded that companies mainly outsource standardized components of which the underlying knowledge can easily be specified, explained and documented. However, some companies indicated that they outsource components of which the knowledge is tacit. Based on the qualitative research it can be confirmed that this knowledge is difficult and more costly to transfer since extensive training of the supplier is needed. Although the most important motives for outsourcing these knowledge specific components are cost savings and focusing on core, research indicated that the importance of access to superior resources, knowledge and innovations increased considerably compared to outsourcing low knowledge specific components. A possible explanation for this results is that companies which want to focus on their core also want to exploit the well-developed capabilities of external suppliers that would be too costly to replicate in-house. Regarding *strategic value*, it can be concluded that companies in general only outsource components and manufacturing processes for which non-strategic resources and knowledge is needed. The strategic resources are a source of competitive advantage and helps to outperform competition. However, for continuing to exploit these unique resources and sustain a competitive advantage, it is important to invest in further developing these resources and knowledge. Regarding *knowledge maturity* it can be concluded that companies mainly outsource fully developed components. These are standardized components of which the knowledge is explicit. The knowledge is easy to codify due to generated knowhow and know-why, which makes it easier to transfer the knowledge required for manufacturing this component to the supplier. Companies mainly make their knowledge explicit through computer-aided designs, moulds and specifications.

5.1.2 External factors

- *Which external factors influence the decision to outsource manufacturing internationally?*

Companies incorporate multiple external factors when deciding to engage in the strategic practice of international outsourcing. First, regarding *environmental uncertainty* it can be concluded that fluctuations in sales result in companies outsourcing (part of) the manufacturing of these products, because of the relative ease of changing capacity within a short timeframe. Making manufacturing capacity more flexible is a very important motive for engaging in outsourcing, irrespective of the degree of asset specificity. The results concerning the importance of this motive for components which are characterised by low physical - and human asset specificity compared to high physical - and human asset specificity are similar. Therefore, it can be assumed that demand uncertainty leads to international outsourcing. The results concerning technological uncertainty are not really convincing, in the sense that it does not appear to be a determining factor in the outsourcing decision making process. In general, results show that reducing investments in machines is not a key motive for Dutch technological companies to international outsource manufacturing. Although the importance of this factor is rated on a middling level, it is important to note that the importance increased when companies outsource components for which investments in specialized machines, equipment and computer systems are needed in comparison to components characterised by low physical asset specificity. This might be explained by specialized assets being of low value in secondary use. Therefore companies are more reluctant to invest in these machines when the probability increases that the technology become obsolete when innovations take place and need to be discarded and substituted by machinery embodying the advanced technology. Although the number of players in the market which have these specialized machinery is probably limit, the searching costs live up to the huge investments needed for new machines.

Second, no clear conclusions can be drawn concerning some of the sub factors of *proximity*. Of the measures of physical and institutional proximity it cannot be expressed to what extent the importance of the location factors can be explained by the similarity of the company and the supplier for transferring knowledge purposes. For example, physical distance is rated as being an important factor in choosing an outsourcing location, but it cannot be explained whether this is due to the height of transportation costs or because frequent contacting is needed for knowledge sharing which is best realized by companies in close proximity. The same holds for institutional proximity; is the average rating of the importance of legal, regulatory and governmental institutions important for knowledge transfer purposes or e.g. for being able to transport the manufactured components from the supplier to the company without obstructions. Regarding, relational proximity it can be said that long-term positive relations is perceived as making the transfer more effective and efficient, but this is based on qualitative results only. The results concerning knowledge and cultural proximity are more certain. ‘Language´ is a relatively important factor in the selection of an outsourcing location. Most companies prefer to do business with supplier of which the employees can speak in a common language. This research even indicates that language has a (very) positive influence on the success of international outsourcing. This factor becomes even more important for outsourced components or products which are of high strategic value or require investments in specific human asset. It is therefore essential that not only corporate management, but also the employees of both the company and the supplier are able to communicate in this similar language. The knowledge base of the supplier is important, since the technological knowhow and competences of the workforce enable them to integrate the knowledge needed to manufacture the product or component for the company. The importance of this factor for finding an attractive outsourcing location, (slightly) increases when for the manufacturing investments in specific assets like machines, tools and skills are needed and when the component or product is of high strategic value. Research indicates that the technological knowhow and competences of the workforce of the supplier positively influence the success of international outsourcing.

Third, different location factors are identified which companies incorporate when making a location decision. The most important factor is labour costs. This is in line with the most important motive of companies for engaging in international outsourcing, being cost savings. Technological companies want to reduce

employment costs by outsourcing manufacturing to LCCs of which the wages are much lower compared to the Netherlands. Next, the machines, equipment and materials which are available to the supplier are important. Companies want to deliver products of high quality and reliability to their customers for which it is significant to have the required machines in place and good materials can be used. In addition, the quantity and quality of the available workforce are of importance. The prominence of technological knowhow and competences is already explained in the previous section. Workforce size and availability is important since companies mainly outsource labour-intensive manufacturing processes since the realized benefits of cost savings are highest for these components. Other important factors in choosing an outsourcing location are: total costs of transportation; legalisations and enforcement (customs, corruption, free trade); stability of country (politics, strikes); language; and inflation and currency risks. Some companies also incorporate protection of IPR; presence and quality of roads, rails and (air)ports; physical distance; and leading industries of that country, which were ranked on a middling level. The welfare level of a country and the presence of natural resource, continuity of electricity are not important factors in choosing a suitable outsourcing location.

5.2 International Outsourcing Framework

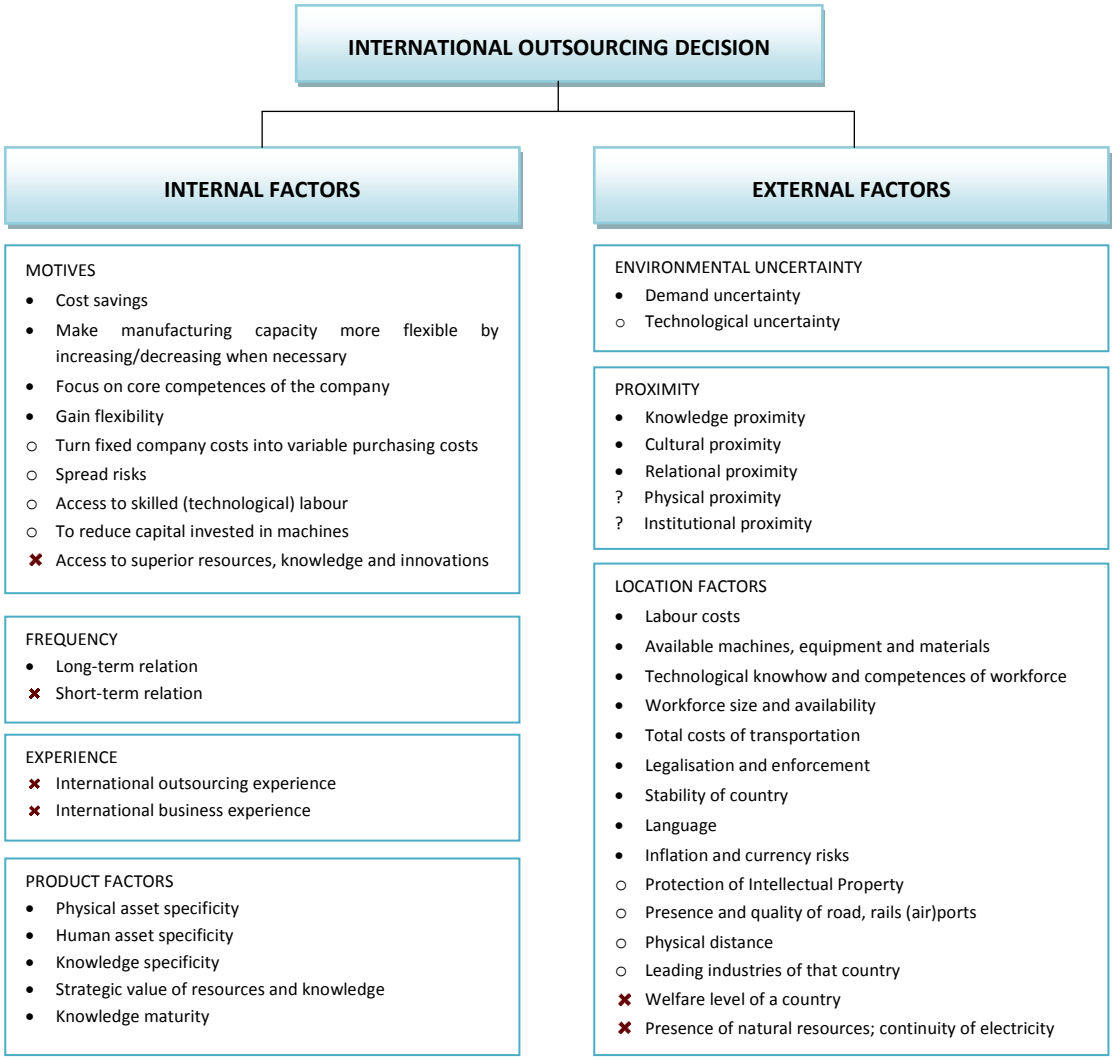
The central research question of this research was:

- *"Which internal and external factors influence the decision of Dutch technological companies to outsource manufacturing processes to international suppliers?"*

To draw final conclusions regarding the formulated central research question, the answers to the sub research question are combined and integrated into an improved international outsourcing framework. Each internal and external factor that according to theory influences the decision to outsource internationally is incorporated in the framework. Subsequently, to each factor a bullet is assigned which indicates whether this factor has influenced the outsourcing decision of the Dutch technological companies that participated in this research. For the different motives and location factors, the black, closed bullet symbolizes important factors in deciding to outsource manufacturing internationally and respectively important factors in choosing an outsourcing location. These factors were rated on average a 5,5 or higher. The order also represents the sequence of importance. So cost savings is the most important motive and labour costs is the most important location factor. The white, open bullet symbolizes motives and locations factors that were rated on a middling level, ranging from an average of 4,5 till 5,4. This mid-section contains factors that are important to a small number of companies and can therefore be considered since it might be important in some cases. The red cross symbolizes factors that are found in literature but do not apply the Dutch technological companies. These factors are not important in outsourcing decision making and were rated on average a 4,4 or lower. The symbols that are assigned to frequency, experience and relational proximity are only based on the results of the qualitative research. It indicates that companies try to engage in long-term relations in which recurrent transactions occur between the company and the supplier. International outsourcing and international business factors are not perceived as determining factors in the outsourcing decision, but prior experiences are merely valuable when the strategy is implemented. For the different product factors, the black, closed bullet indicates that it is an important factor that needs to be considered and influences the outsourcing decision. However, the characteristics of the factors are key in deciding whether this product or component is amendable for outsourcing purposes. For a clear clarification, see paragraph 5.1.1. The symbols assigned to environmental uncertainty and knowledge - and cultural proximity are also based on the scaling like was applied to the motives and location factors. This indicates that demand uncertainty is an important factor in the decision of Dutch technological companies to outsource manufacturing internationally. Volatility of sales is reason for these companies to engage in international outsourcing. Technological uncertainty is rated on a middling level. This factor is important to a small number of companies and can therefore be considered since it might be important in some cases like when companies want to outsource components for which specialized machines, equipment and tools are needed. Overall, this framework should be interpreted with caution since no statistical significant tests are executed and the sample size was relatively small. Goal of this research was to

gain insight in international outsourcing from the perspective of Dutch technological companies and not to make statistically valid conclusions.

Figure 6. *Concluding international outsourcing framework*



Legend
- • This factor needs to be considered since it does influence the outsourcing decision
- ○ This factor can be considered since it might be relevant for making an outsourcing decision
- ✖ Not an important factor
- ? Not clear since this factor is not measured properly

5.3 Implications

The *practical implications* of this research are concerned with the applicability of the conceptual framework in the context of Dutch technological companies. For these companies, the international outsourcing framework offers a means to make rational decisions concerning outsourcing (part of) manufacturing to international suppliers. Accordingly, managers should take into account the different theories and the associated factors, which will help them during their assessment of the internal and external environment of their company. This will ultimately determine if the company can create value through outsourcing, what products can be outsourced and to which location. Transferring (part of) manufacturing to

international suppliers can be a viable option which needs due consideration. Based on this research, the following recommendations are made:

- Focus on what you do best; identify the core competences of your company that provide value to customers and differentiates your company from competitors. These strategically important and often knowledge-intensive resources and capabilities are a source of competitive advantage. Invest in developing them so that you can stay ahead of competition. For most Dutch technological companies this means that they have to keep R&D, Design and Engineering in-house.
- Outsource supplementary activities to the best suppliers in the world; by outsourcing these activities to LCCs, your company is able to sustain its market position, because it can compete with competitive prices despite global price pressures. The conditions to perform these non-strategic and often labour-intensive processes are most beneficial in these countries since they enjoy cost advantages like lower employment - and (raw)material costs. For most Dutch technological companies this means that they have to transfer the Manufacturing of components or loose parts to excellent suppliers.
- When you want to gain flexibility or turn fixed company costs into variable procurement costs, engage in international outsourcing. International outsourcing can offer these substantial advantages, because it allows you to expand manufacturing capacity without having to make heavy investments. Moreover, by creating a focused organization, your company is better able to adapt to changes in customer preferences, rules and regulations or (technological) innovations.
- The advantages of international outsourcing are best realized by outsourcing components, which can be manufactured with standardized machines and equipment or non-specialized skills and experiences of employees. Companies can outsource components for which more specialized assets are needed, but you have to take into account that this is more challenging since the number of suppliers in the market that already have these assets or are wanting to invest in them is much smaller. In addition, it might be more expensive since search and information costs will rise and the risks of the supplier asking exorbitant prices increases. Especially in this situation, it is important to engage in long-term relations since switching costs are high and the increased trust, commitment and routines between the company and the supplier will help to avoid the potential difficulties. Overall, it is important to have clear component specifications and that you explain with 100% accuracy what you want from the supplier.
- Take the following factors into consideration when determining to which country (or supplier) your company is going to outsource manufacturing: low labour costs; advanced machines, equipment and materials; excellent technological knowhow and competences of the workforce; workforce is sufficiently large; total costs of transportation; established legal system and enforcement; stable country (politics); and the languages spoken by management and lower level employees. Do your homework and find out if these factors are present in that country and if a particular supplier meets these conditions. This is important for your company in order to keep quality standards high and make outsourcing successful.

Moreover, the results of this research provide input for the FME to adapt and to further develop their international outsourcing services. Next to structurally informing and educating their members on the rationale and conditions that make outsourcing a viable option, they need to fulfil an intermediary role by helping companies to find reliable suppliers in foreign locations. This can be by means of a platform for exchange of information (18,7%), matchmaking (14,9%) or outgoing outsourcing missions to for example Eastern Europe (11,9%) or China (7,5%). When organising outgoing outsourcing missions or associated matchmaking events between companies and international suppliers, it is important that the FME takes into account the importance of the different location factors. Outsourcing missions to countries of which suppliers in general have advanced machineries; the workforce is sufficiently large and technically skilled; and labour costs are low, fit the conditions of making outsourcing a viable option for their members.

The *theoretical implications* of this research are concerned with the insights gained regarding the applicability of the TCT, RBV, OT, KBV and LT in the context of Dutch technological companies. Although future research is needed, the results of the qualitative and quantitative research provided useful insights concerning the

relevance and usability of these theories. This modest research contributed to our understanding of international outsourcing from the perspective of these companies. However, the results should be interpreted with caution. The different theories will now be evaluated in light of what is found by means in this research.

First, the TCT can still be seen as a predominant explanation of international outsourcing. Companies still embrace outsourcing as a means to become more cost efficient. However, this is not solely done in order to maximize profits, but is seen as a necessary means to remain competitive in this globalized world. Manufacturing is outsourced because the cost of manufacturing these products is lower when foreign suppliers perform this activity compared to in-house manufacturing. This is due to suppliers having cost advantages like low labour costs and low costs of (raw) materials plus they might have access to cost drivers like economies of scale. Therefore, outsourcing is often seen as the most cost efficient option for the company. Regarding asset specificity it can be said that the findings of this research are in line with was expected according to theory. Products which require high asset specific investments reduce the degree of practising outsourcing. Although most companies outsource products or components which are characterized by low asset specificity, there is also a substantial amount of companies which outsource products or components for which specialized machines and equipment or specialized skills and experience is needed. However, these high asset specific components can only be outsourced on one of the two conditions: (1) high volumes need to be manufactured, or (2) there are suppliers in the market that already have these specialized machines up and running or have employers administering the required skills. When this is not the case, in-house manufacturing is preferred. The limitations do not apply to outsourcing components of low asset specificity since these can be manufactured by multiple players in the market. Regarding uncertainty, theory predicted that demand uncertainty will not necessitate in-house manufacturing, except when asset specificity is high. However, somewhat differing findings our found in this research. Based on the quantitative and qualitative research, it can be said that volatility of sales volume is reason to engage in outsourcing. Companies prefer being flexible in adjusting manufacturing capacity to relative demand. Advantage is that the companies no longer have to deal with hiring/firing employees and don't have to build a new plant. So it can be assumed that demand uncertainty positively influences the decision to outsource internationally. In addition, no noteworthy differences are found between the influence of low - versus high asset specificity on the motive of making manufacturing capacity more flexible by increasing/decreasing it when necessary. Regarding technological uncertainty, theory states that high asset specificity in combination with high technological uncertainty will lead to outsourcing. Although the importance of the motive of ´reducing capital invested in machines´ increased from an average of 4,2 for low physical asset specificity to a 5,3 for high asset specificity, the motive is ranked on a middling level indicating that it is not a key motivation to engage in international outsourcing. The same holds for the results of low – and high human asset specificity which were both ranked by a 4,7. Based on these results, no clear statements can be made concerning the influence of technological uncertainty on the outsourcing decision. Regarding frequency, the results of the qualitative research confirm what was expected according to theory. Most companies frequently transfer activities to the same supplier. They prefer long term relations for the reasons indicated in literature, namely: inter-firm routines, develop a mutual knowledge and build a trustful relation. This is especially the case for products or components that require investments in specific assets. The results also confirm that standardized components do not necessarily need to outsourced to a supplier with which the company has a long-term relation. In sum, applying the TCT to Dutch technological companies results in a confirmation of companies seeking to minimize costs by choosing the most efficient option of supplying products to its customers. Outsourcing prevails when asset specificity is low. Components for which specific assets are needed, will only be outsourced by means of relational contracts. Opposing from what was expected, technological uncertainty doesn't seem to be a determining factor in the outsourcing decision. So technological volatility in combination with high asset specificity does not directly lead to companies outsourcing that component. Components of high asset specificity are mainly kept in-house because suppliers are reluctant to invest in these specific machines especially not if the supplier cannot earn back its invested capital because of low volume orders. High demand uncertainty in combination with low – and high asset specificity leads to outsourcing manufacturing. Therefore, for the TCT, the predictions

regarding demand uncertainty need to be adjusted and highlighted since it does lead to outsourcing manufacturing. The role of asset specificity need to be nuanced, since the characteristics of high versus low asset specificity need to be considered in relation to the consequences (e.g. difficult to find supplier, long-term relation etc.) but it is not a determining factor in that both can be outsourced in practice. Based on this research, the factor technological uncertainty doesn't seem to be an important external factor, but further research is needed.

Second, the RBV is also a relevant theory in explaining international outsourcing in the context of Dutch technological companies. The manufacturing processes or components for which strategic assets are needed are kept in-house. So it does confirm this theory in the way that companies mainly outsource the processes or components for which there is no strategic need to internally manufacture it. Companies focus on the strategic resources that lead to superior performance. Although companies acknowledge the sub factors 'value' and 'scarcity' as being indicators of strategic value, they mention that 'non-substitutability' and 'in-imitable' are not relevant since everything can be copied. This is mainly based on the what companies explained during the qualitative research. In order to stay competitive, companies have to keep developing (innovative) versions of the component or improve the process. They agree that time and competition can diminish the value of these resources and capabilities. Concentrating a companies' resources on core competences and outsource other activities is perceived as being an important motive for companies to engage in outsourcing. However, the RBV also states that companies outsource to add value to strategically important organisational processes of which they lack the resources, skills or competences. This does not seem to apply to technological companies in the Netherlands. Most companies do not outsource to gain access to resources, technologies and innovations. Nor do they use outsourcing as a means to counteract their lack of (technological) labour. Whether this is due to companies not lacking these resources or that they solve this problem in another way is not clear. The companies which is spoken to during the interviews, indicated that they don´t have difficulties with finding capable, technical employees. In sum, based on this research, changes to the RBV can be made by deleting the sub factors 'in-imitable' and 'non-substitutability' since these don't seem to be indicators of strategic value plus it is founded that international outsourcing is not a viable means to get access to superior resources, knowledge and innovations that a company may lack.

The OT theory indicated that from the year 2000 onwards companies outsource to develop a new adaptive business model. It can be said that companies have transformed their business into a more flexible design by outsourcing manufacturing processes to international suppliers. By focusing on less but manageable activities the company can adapt more easily to changes in the environment. Although flexibility is rated as being an important motive, the progressive state of a virtual company in which most of the key activities are outsourced to distinct but world-class suppliers is not reached nor envisioned. Companies want to keep their key manufacturing processes in-house, because they see it as a source of their distinguishing capacity. International outsourcing is merely seen as a means to be strategically flexible, adapt to changes in demand and create value and cost reductions by outsourcing to suppliers that can develop and manufacture these products more effectively. Maybe in the future companies will outsource more knowledge-intensive and creative processes like R&D and Development, but nowadays only a few companies outsource these processes. In sum, regarding the OT, the results of this research confirm the basic underlying of this theory of companies wanting to improve their competitiveness by transforming into a flexible entity, but it does not relate to the advanced state of outsourcing most key activities. So flexibility is important, but the way companies meet this goal is different and not that far-reaching as is stated in this theory.

Regarding the KBV, this research confirms what was expected according to theory. Companies don't outsource manufacturing processes or components which are based on strategic knowledge since it will jeopardize the current and future competitive advantage of the company. Mature and specific knowledge underlying a process or component is outsourced, because it is standardized and relatively easy to transfer to the supplier. For transferability purposes, it is perceived as beneficial when the company and the supplier have long-term positive outsourcing relations; the employers of both the company and the supplier can communicate in a

common language; and the supplier administers the technological knowhow and competences needed for manufacturing the product. Concerning the experience factor, the results of the qualitative research show that previous international outsourcing or international business experience is by some companies perceived as being beneficial, but it is not seen as a determining factor in the outsourcing decision nor is it decisive in the selection of an outsourcing location. In sum, regarding the KBV, the factor experience can be removed since it is not an important factor that needs to be considered in outsourcing decision making. The importance of strategic value needs to be highlighted. For knowledge specificity the consequences of transferring explicit versus tacit knowledge are important since both can be implemented in practice, but explicit knowledge is easier and less costly. The role of proximity in outsourcing decision making, needs further research.

Regarding the LT, this research confirms that companies select locations that are beneficial and increases their profits. Theory described a multitude of environmental factor that affect international business in general, and of which it was expected to influence international outsourcing as well. According to this research, important factors in choosing an location for outsourcing manufacturing are: labour costs; available machines, equipment and materials; technological knowhow and competences of workforce; workforce size and availability; total costs of transportation; legalisation and enforcement (customs, corruption, free trade); stability of country (politics, strikes); and language. Based on this research, the LT can be further developed since no previous studies were found in which the LT was applied to international outsourcing. By incorporating these particular location factors, the theory is more suitable for deciding whether the company should outsource manufacturing processes and to international suppliers.

5.4 Limitations and future research

First of all it is important to note that the working definition of this research, which is formulated based on different definitions used in academic literature, is not correct. A condition that needed to be met, was that the activities are no longer pursued internally by the company but are acquired from external suppliers. However, in practice this is not always the case. Some companies appear to be so called 'born global' companies and have never manufactured the product or component in-house. They don't see in-house manufacturing as beneficial because they e.g. can never win the battle with LCCs. From the beginning, the company designed a business model in which international outsourcing of manufacturing was incorporated. Therefore, the definition of international outsourcing needs to be adjusted and reformulated into 'the decision to transfer (part of) the manufacturing processes to specialized independent suppliers located in a foreign country'.

The conclusions in the preceding paragraphs show that international outsourcing entails multiple factors. Each of these factors have a certain level of influence on the decision making process. This confirms that international outsourcing is a complex concept to which different theories can be applied. Although this research focused on five prominent theories, other theories are seen as being important as well (see figure 1). For a comprehensive understanding it can be argued that all need to be incorporated when studying the decision making process prior to international outsourcing. Due to preferences of keeping it plain and manageable within a certain time constraint, not all theories are included in this thesis. This leaves room for future research. For example, how do the Life-cycle approach, Institutional theory and Portfolio approach influence the decision to outsource manufacturing to international suppliers? These are also relevant theories for exploring the right outsourcing timing.

In addition, other areas are of interest in the context of outsourcing manufacturing. This research concentrated on the internal and external factors that influenced the outsourcing decision. However, for outsourcing to be a viable option it is also important to gain insight into which (other) factors influence the selection of reliable suppliers. Moreover, in the implementation phase, questions relate to how this relationship between the company and the supplier needs to be managed, how the outcomes of outsourcing can be measured and which tools can be implemented to optimise its effectiveness. In addition, it may be interesting to explore

international outsourcing from the viewpoint of the suppliers. This interest is strengthened by some results of this research. For example, according to theory companies should outsource high physical asset specific resources when technological uncertainty is high. However, in practice this is difficult to realise since suppliers are reluctant to invest in these specific machines and equipment as well. Insights gained through suppliers´ perspective can help the Dutch technological companies in developing a strategy that actually can be implemented or perhaps can help to create a win-win situation.

The influence of the factor proximity on the outsourcing decision making, requires further research, particularly regarding the sub factors physical proximity and institutional proximity. In this research, these factors were not measured properly which resulted in that it is not clear by which (potentially third) factor the importance of the respective physical - and institutional proximity was explained. Therefore, it needs to be clarified whether, in practice, it is important that a company and a supplier need to be in close geographic distant to each other for knowledge transferring purposes. Are the effort, time and costs for transferring this knowledge important in selecting a supplier. In addition, is it important that the legal, regulatory and governmental institutions are similar to the institutions in the Netherlands? And in specific, which rules and regulations are important? Moreover, is it possible for (small- and medium-sized) companies to combat infringers or not?

Moreover, a good measure of the factor site specificity needs to be developed and the role of uncertainty in the outsourcing decision making needs further research. Regarding the latter, it is important to find out whether uncertainty about demand does lead to outsourcing, since this is contradictory to what was predicted in theory. In addition, is technological uncertainty a factor that needs to be considered and in what way. Is there a difference between companies that outsource large – compared to small quantity orders regarding this factor, which makes it difficult if not impossible to realise in practise and is therefore not considered by Dutch technological companies.

Furthermore, the sample size of this research is relatively small. The size is sufficiently large for accomplishing the goal of explanation and understanding. The data obtained during the interviews were valuable and together with the quantitative data it permitted to gain insight in the factors that influence the outsourcing decision. However, the results cannot be generalized to the whole population of Dutch technological companies. To increase validity and reliability, the conceptual framework should be tested among a larger group of companies.

Next to broadening the research scope or increasing the sample size, it could also be relevant to change the context of this research. The results of this research are based on companies operating in the technological industry of the Netherlands. However, there are other sectors that could benefit from a similar research. What can we learn from other sectors and their decision to outsource internationally? In addition, it could be interesting to apply the international outsourcing framework to manufacturing companies located in different countries. Insight into the applicability of the outsourcing framework in different environments can increase its practical relevance.

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Master Thesis

International Outsourcing

APPENDICES

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February 2012

APPENDIX A. DIFFERENT DEFINITIONS OF OUTSOURCING

Author/s (year)	Concepts of outsourcing
Quinn & Hilmer (1994)	External acquisition of activities, including those traditionally considered an integral part of any firm, provided that they do not form part of the firm's core capabilities.
Lei & Hitt (1995)	The act of trusting in external capabilities and skills for the manufacture of determined production components and other activities that have added value (often capital intensive).
Rothery & Roberson (1996)	The act of turning to an external organisation to perform a function previously performed in-house. It entails the transfer of the planning, administration and development of the activity to an independent third party.
Greaver (1999)	The act of an organisation transferring periodic internal activities and decision-taking to external suppliers through contracts.
Gilley & Rasheed (2000)	It is the substitution of activities performed in-house by acquiring them externally, although the firm has the necessary management and financial capabilities to develop them internally. It is also an abstention from performing activities in-house.
Ellram & Billington (2001)	The transfer of the production of goods or services that had been performed internally to an external party.
Bailey *et al* (2002)	Handing over some or all of that particular activity and related services to a third party management, for the required result.
Barthélemy (2003)	Turning over all or part of an organisational activity or process to an outside vendor.
Quélin & Duhamel (2003)	The operation of shifting a transaction previously governed internally to an external supplier through a long-term contract, and involving the transfer to the vendor.
McCarthy & Anagnostou (2004)	Not only consists of purchasing products or services from external sources, but also transfers the responsibility for business functions and often the associated knowledge (tacit and codified) to the external organisation.
Chase *et al* (2005)	An act of moving some of a firm's internal activities and decision responsibilities to outside providers.
Mol *et al* (2005)	The procurement of supplies from legally independent entities (suppliers).
Sanders *et al* (2007)	Choosing a third party or an outside supplier to perform a task, function, or process, in order to incur business-level benefits.
Ok (2010)	Production outside the enterprise or group and outside the compiling country by non-affiliated enterprises

Note: From "A review of outsourcing from the resource-based view of the firm", by T.F. Rodriguez & V. Padrón-Robaina, 2006, *International Journal of Management Reviews, Vol. 8, No.1*, p. 51. Copyright 2006 by Blackwell Publishing Ltd.

APPENDIX B. OUTSOURCING LOCATION MEASURES

B1. Global Service Location Index

Category	Subcategories	Metrics
Financial attractiveness (40%)	Compensation costs	• Average wages • Median compensation costs for relevant positions (call-centre representatives, BPO analysts, IT programmers and local operations managers)
	Infrastructure costs	• Rental costs • Commercial electricity rates • International telecom costs • Travel to major customer destinations
	Tax and regulatory costs	• Relative tax burden • Corruption perception • Currency appreciation or depreciation
People skills and availability (30%)	Remote services sector experience and quality ratings	• Size and existing IT and BPO sectors • Contact centre and IT centre quality certifications • Quality ratings of management schools and IT training
	Education and language	• Scores and standardized education and language tests
	Attrition risk	• Relative IT and BPO sector growth and unemployment rates
Business environment (30%)	Country environment	• Investor and analyst rating of overall business and political environment • A.T. Kearney Foreign Direct Investment Confidence Index™ • Security risk • Regulatory burden and employment rigidity • Government support for the information and communication technology (ICT) sector
	Infrastructure	• Overall infrastructure quality • Quality of telecom, Internet and electricity infrastructure
	Cultural exposure	• Personal interaction score from A.T. Kearney Globalization Index™
	Security of IPR	• Investor ratings of IP protection and ICT laws • Software piracy rates • Information security certifications

Note: From "Offshoring opportunities amid economic turbulence. The A.T. Kearney Global Services Location Index™, 2011", by A.T. Kearney, 2011.

B2. Global Outsourcing Index

The Global Outsourcing Index measures the competitiveness of countries as being outsourcing locations based on three main factors:

- **Cost:** Few companies would outsource at all if doing so didn't save them money. The cost factor, which includes compensation and wages, infrastructure cost, and tax and regulatory cost, makes up 30 percent of the GOI.
- **Risk:** Every country possesses its own strengths and weaknesses, risks and rewards. The Overall Risk Rating, which makes up 54 percent of the GOI, aggregates a variety of risks every potential outsourcer must take into account:
  - *Geopolitical risk* (10%): includes stability of government, corruption, geopolitics, security.
  - *Human capital risk* (10%): includes quality of educational system, labour pool, number of new IT graduates.
  - *IT competency risk* (10%): includes project management skills, high-end skills and competence (custom code writing, system writing, R&D, business process experience).
  - *Economic risk* (6%): includes currency volatility, GDP growth.
  - *Legal risk* (6%): includes overall legislation, tax, and intellectual property.
  - *Cultural risk* (6%) Includes language compatibility, cultural affinities, innovation, and adaptability.
  - *IT infrastructure risk* (6%) Includes IT expenditure, quality of key access infrastructure.

- **Market Opportunity Rating**: This number, which makes up 16 percent of the GOI, includes expert third-party analysis of each country, its global competitiveness and IT market share.

Note: From “Global Outsourcing Report”, by Minevich, M. & Richter, F-J, 2005

APPENDIX C. OPERATIONALIZATION

Factor	Research question	Sub factor	Rating
• Motives	Why is your company outsourcing (part of) the manufacturing of products to international suppliers?		
	How important were the following motives in deciding to outsource manufacturing internationally?		Cost savings
			Improved cost control
			Focus on core competences
			Access to superior resources, knowledge and innovations
			Improve quality
			Get rid of problem functions
			Reduce time to market
			Gain flexibility
			Spread risks
			Copy competitors
			Turn fixed costs into variable costs
			To reduce capital invested
• Frequency	Does your company in general have short-term or long-term relations with suppliers? Explain.		
• Experience	Did previous international outsourcing experience influence the decision to outsource other component as well? Explain.	International outsourcing experience	
	Did previous international business experience influence the decision to outsource to that specific country? Explain.	International business experience	
• Asset specificity	To what level are there specific assets needed to manufacture the product?	Site specificity	See 'physical proximity'
		Physical asset specificity	The degree to which the supplier needs to invest in specialized machines, customized equipment or complex computer systems to be able to manufacture the product.
		Human asset specificity	The degree to which specialized (technological) skills and experience of the employees of the supplier are needed.
	Did the investments needed for the manufacturing of the product influence the decision to outsource?		
• Knowledge specificity		Knowledge codifiability	The degree to which knowledge, needed for manufacturing the product, can be specified, explained and documented
		Knowledge absorptive capacity	See 'knowledge' of location factors
• Strategic value of resources • Strategic value of knowledge	To what extent are the resources, needed to manufacture the product, a source of competitive advantage?	Value	The degree to which these resources enable the company to neutralize risks and exploit opportunities
		Rarity	The degree to which competitors possess and control these resources
		In-imitable	The degree to which competitors can imitate these resources to manufacture the product
		Non-substitutable	The degree to which competitors can manufacture the product with substituted resources

	Did the strategic value of these resources influence the outsourcing decision?		
• Knowledge maturity	See 'knowledge specificity'		
• Uncertainty	Is the outsourced product subject to change?	Demand uncertainty	The degree to which changes are expected in the monthly sales
		Technological uncertainty	The degree to which technologies, needed to manufacture the product, are replaced by new technologies
	Are these sales - and technology uncertainties reason for your company to pursue international outsourcing?		
• Proximity	See 'location factors' and 'frequency'	Physical proximity	See 'geographic location' of location factors
		Institutional proximity	See 'legal' and 'government policy' of location factors
		Knowledge proximity	See question 'location factors'
		Cultural proximity	See 'culture' of location factors
		Relational proximity	See 'frequency'
• Location factors	Which location factors influenced the decision to which country the manufacturing of the product is outsourced?		
	How important were the following location factors in choosing an outsourcing location?	Geographic location	Physical distance, natural resources
		Infrastructure	Transportation, ICT infrastructure
		Legal	Legalisation and enforcement, bureaucracy, corruption, protection of IPR
		Government policy	Stability of government, Free Trade Agreement, Terrorism
		Human capital	Workforce size and availability, level of education, technological skills,
		Labour costs	Compensation level
		Knowledge proximity	Knowledge base, areas of expertise
		Culture	Language, norms and values, religion
		CSR	Human rights, workplace and safety regulations, global environmental concerns
	Which of these location factors contributed most to the success of international outsourcing? Explain.		
	Which of these location factors caused the most problems? Explain.		

APPENDIX D. INTERVIEW PROTOCOL

Subject: International Outsourcing

Date:

Time:

Participant:

Introduction

1. Thank participant for agreeing to this meeting and participation in this research.
2. Short description of personal background of researcher.
3. Explain purpose of research and progress to date.
4. Explain what happens with the data obtained from the interview and the outcome of this research.
5. Confirm confidentiality of information and anonymity of participation in this research.
6. Request to record the interview for transcription.

Turn on voice recorder

International outsourcing

1. *What is your vision concerning international outsourcing?*

2. *How are outsourcing decisions made within your company?*

Motives

3. *Why is your company outsourcing (part of) the manufacturing of products to international suppliers?*

4. *How important were the following motives in deciding to outsource manufacturing internationally?*

Motives	Not -> Very important				
Cost savings	1	2	3	4	5
Improved cost control	1	2	3	4	5
Turn fixed costs into variable costs	1	2	3	4	5
To reduce capital invested	1	2	3	4	5
Access to superior resources, knowledge and innovations	1	2	3	4	5
Improve quality	1	2	3	4	5
Focus on core competences	1	2	3	4	5
Gain flexibility	1	2	3	4	5
Reduce time to market	1	2	3	4	5
Get rid of problem functions	1	2	3	4	5
Spread risk	1	2	3	4	5
Copy competitors	1	2	3	4	5

Product properties

5. *What are the characteristics of the products/components that you are outsourcing?*

6. *To what level are there specific assets needed to manufacture the product?*

Asset specificity	Low investments -> High investment					
The degree to which the supplier needs to invest in specialized machines, customized equipment or complex computer systems to be able to manufacture the product.	1	2	3	4	5	Low investment -> High investment
The degree to which specialized (technological) skills and experience of the employees of the supplier are needed.	1	2	3	4	5	Not specialized -> Specialized
To degree to which knowledge, needed for manufacturing the product, can be specified, explained and documented	1	2	3	4	5	Explicit -> Tacit

7. *Did the investments needed for the manufacturing of the product influence the decision to outsource?*

8. *To what extent are the resources, needed to manufacture the product, a source of competitive advantage?*

Strategic value of resources	Low strategic value -> High strategic value of resource					
The degree to which these resources and knowledge enable the company to neutralize risks and exploit opportunities.	1	2	3	4	5	Not valuable -> Valuable
The degree to which competitors possess and control these resources and knowledge.	1	2	3	4	5	Common -> Rare
The degree to which competitors can imitate these resources to manufacture the product.	1	2	3	4	5	Imitable -> In-imitable
The degree to which competitors can manufacture the product with substituted resources.	1	2	3	4	5	Substitutable -> Non-substitutable

9. *Did the strategic value of these resources influence the outsourcing decision?*

10. *Is the outsourced product subject to change?*

Uncertainty	Low uncertainty -> High uncertainty					
The degree to which changes are expected in the monthly sales.	1	2	3	4	5	No changes -> Frequent changes
The degree to which technologies, needed to manufacture the product, are replaced by new technologies.	1	2	3	4	5	No replacement -> Frequent replacements

11. *Are these sales - and technology uncertainties reason for your company to pursue international outsourcing?*

12. *Did previous international outsourcing experiences influence the decision to outsource other components or manufacturing processes as well? Explain.*

External environment

13. *How is the decision made to which country the manufacturing of the product is outsourced?*

14. *To which countries are the manufacturing of products being outsourced?*

15. *Did you have previous international business experience with that country? If yes, did this influence the decision to outsource to that specific country? Explain.*

16. *Which location factors influenced the decision to which country the manufacturing of the product is outsourced?*

17. *How important were the following factors in choosing an outsourcing location?*

External factors		Not -> Very important				
Geographic location	Physical distance, natural resources	1	2	3	4	5
Infrastructure	Transportation, ICT infrastructure	1	2	3	4	5
Legal	Legalisation and enforcement, bureaucracy, corruption, protection of IPR	1	2	3	4	5
Government policy	Stability of government, Free Trade Agreement, terrorism	1	2	3	4	5
Human capital	Workforce size and availability, level of education, technical skills	1	2	3	4	5
Labour costs	Compensation level	1	2	3	4	5
Knowledge	Knowledge base, areas of expertise	1	2	3	4	5
Culture	Language, norms and values, religion	1	2	3	4	5
Corporate social responsibility	Human rights, workplace and safety regulations, global environmental concerns	1	2	3	4	5

18. *Which of these location factors contributed most to the success of international outsourcing? Explain.*

19. *Which of these location factors caused the most problems? Explain.*

20. *Does your company in general have short-term or long-term relations with supplier? Explain.*

Extra

21. *Do you have suggestions regarding the optimisation of FME's outsourcing services and the way of providing support to their members?*

APPENDIX E. RESULTS QUALITATIVE RESEARCH

Motives	Average rating*
Focus on core competences	4,88
Cost savings	4,62
Gain flexibility	4,12
Spread risks	3,62
Turn fixed costs into variable costs	3,12
Access to superior resources, knowledge and innovations	3,12
To reduce capital invested	3
Improved cost control	2,88
Improve quality	2,88
Reduce time to market	2,88
Get rid of problem functions	2,12
Copy competitors	1,51

Asset specificity	Average rating
Site specificity	4,14[6]
Physical asset specificity	3
Human asset specificity	3,33

Knowledge specificity	Average rating
Knowledge codifiability	2,33
Knowledge absorptive capacity	3,44[7]

Strategic value of resources and knowledge	Average rating
Value	2,33
Rarity	3
In-imitable	1,5
Non-substitutable	1,5

Uncertainty	Average rating
Demand uncertainty	3,89
Technological uncertainty	2,44

[6] Not a representative measure since the factor geographical location is not explained by its site specificity.
[7] Knowledge absorptive capacity is measured by the factor 'knowledge' of the external location factors.

Location factors		Average rating
Labour costs	Compensation level	4,67
Infrastructure	Transportation, ICT infrastructure	4,49
Geographic location	Physical distance, natural resources	4,12
Human capital	Workforce size and availability, level of education, technical skills	4,12
Legal	Legalisation and enforcement, bureaucracy, corruption, protection of IPR	3,51
Culture	Language, norms and values, religion	3,51
Knowledge	Knowledge base, areas of expertise	3,48
Government policy	Stability of government, Free Trade Agreement, terrorism	2,76
Corporate Social Responsibility	Human rights, workplace and safety regulations, global environmental concerns	2,76

APPENDIX F. QUESTIONAIRE

Research: Survey International Outsourcing

Send to: 646 companies

This survey focuses on international outsourcing of manufacturing processes.

International outsourcing is defined as:

"*Transferring (part of) the manufacturing of products or components to independent international suppliers*".

Transferring manufacturing to production subsidiaries is NOT included in this outsourcing definition. Manufacturing is outsourced to third parties, so the international supplier is not part of the company.

1. According to the formulated definition, does your company engage in international outsourcing?
   - Yes
   - No, but maybe in the future
   - No, is not an interesting option for our company
   - Don't know / Prefer not to answer

2. Can you give an indication of how much is outsourced to international suppliers (% of total purchasing)?
   - 0 < 20%
   - 20 > - < 40%
   - 40 > - < 60%
   - 60 > - < 80%
   - 80 > - < 100%
   - Don't know / Prefer not to answer

3. Which manufacturing processes are outsourced to international suppliers (multiple answers are possible)?
   - Research & Development
   - Design
   - Engineering
   - Manufacturing of loose parts
   - Manufacturing of component
   - Assembly
   - Testing
   - Sales & Service

4. In general, the manufacturing of which type of components are outsourced to international suppliers?

Product properties		1 = Don't outsource									10 = Outsource
Specialized machines	Components for which specialized machines, customized equipment or complex computer systems are needed.	1	2	3	4	5	6	7	8	9	10
Specialized skills	Components for which specialized (technological) skills and experience of the employees are needed.	1	2	3	4	5	6	7	8	9	10
Specialized knowledge	Components for which knowledge is needed that are difficult to specify, explain and document.	1	2	3	4	5	6	7	8	9	10

Product properties		1 = Don't outsource									10 = Outsource
Strategic value	Component for which resources and knowledge are required that enable the company to neutralize risks and exploit opportunities.	1	2	3	4	5	6	7	8	9	10
Rarity	Components for which resources and knowledge are required that competitors don't possess nor control.	1	2	3	4	5	6	7	8	9	10
In-imitable	Components for which resources and knowledge are required that can be copied by competitors.	1	2	3	4	5	6	7	8	9	10
Non-substitutable	Components that competitors can manufacture with substituted resources.	1	2	3	4	5	6	7	8	9	10

6. *How important were the following motives in deciding to outsource manufacturing internationally?*

Motives	1 = Not important									10 = Very important
Cost savings	1	2	3	4	5	6	7	8	9	10
Turn fixed company costs into variable purchasing costs	1	2	3	4	5	6	7	8	9	10
To reduce capital invested in machines	1	2	3	4	5	6	7	8	9	10
Access to skilled (technological) labour,	1	2	3	4	5	6	7	8	9	10
Access to knowledge and innovations	1	2	3	4	5	6	7	8	9	10
Focus on core competences of the company	1	2	3	4	5	6	7	8	9	10
Gain flexibility	1	2	3	4	5	6	7	8	9	10
Spread risks	1	2	3	4	5	6	7	8	9	10
Make manufacturing capacity more flexible by increasing/decreasing when necessary	1	2	3	4	5	6	7	8	9	10

5. Which of these advantages where you able to realize by outsourcing (part of the) manufacturing processes to international suppliers?

	1 = Did not realize									10 = Did realize
Cost savings	1	2	3	4	5	6	7	8	9	10
Turn fixed company costs into variable purchasing costs	1	2	3	4	5	6	7	8	9	10
To reduce capital invested in machines	1	2	3	4	5	6	7	8	9	10
Access to skilled (technological) labour,	1	2	3	4	5	6	7	8	9	10
Access to, knowledge and innovations	1	2	3	4	5	6	7	8	9	10
Focus on core competences of the company	1	2	3	4	5	6	7	8	9	10
Gain flexibility	1	2	3	4	5	6	7	8	9	10
Spread risks	1	2	3	4	5	6	7	8	9	10
Make manufacturing capacity more flexible by increasing/decreasing when necessary	1	2	3	4	5	6	7	8	9	10

Cost savings is for most companies the most important motive to engage in international outsourcing. In practice, however, the actual cost savings do not always match the envisioned cost savings.

6. Which cost savings did you wanted to realize in advance and which did you actually realize by outsourcing (part of the) manufacturing processes to international suppliers (multiple answers are possible)?

Cost savings	Desired	Realized	Not applicable
Costs of raw materials and other materials	◯	◯	◯
Employment costs (wages, recruitment, hiring/firing)	◯	◯	◯
Investments in R&D	◯	◯	◯
Capital goods (plant, machines, tools)	◯	◯	◯
Taxes	◯	◯	◯

7. To which countries does your company outsource manufacturing processes? Enter your top 5.
    1. Drop-down menu of countries
    2. Drop-down menu of countries
    3. Drop-down menu of countries
    4. Drop-down menu of countries
    5. Drop-down menu of countries

8. How important were the following factors in choosing an outsourcing location?

	1 = Not important									10 = Very important
Physical distance	1	2	3	4	5	6	7	8	9	10
Presence of natural resources; continuity of electricity	1	2	3	4	5	6	7	8	9	10
Presence and quality of roads, rails, (air)ports	1	2	3	4	5	6	7	8	9	10
Total costs of transportation	1	2	3	4	5	6	7	8	9	10
Stability of country (politics; strikes)	1	2	3	4	5	6	7	8	9	10
Legalisation and enforcement (customs, corruption, free trade)	1	2	3	4	5	6	7	8	9	10
Protection of Intellectual Property	1	2	3	4	5	6	7	8	9	10
Workforce size and availability	1	2	3	4	5	6	7	8	9	10
Language	1	2	3	4	5	6	7	8	9	10
Labour costs	1	2	3	4	5	6	7	8	9	10
Inflation and currency risks	1	2	3	4	5	6	7	8	9	10
Welfare level of a country	1	2	3	4	5	6	7	8	9	10
Technological knowhow and competences of workforce	1	2	3	4	5	6	7	8	9	10
Available machines, equipment and materials	1	2	3	4	5	6	7	8	9	10
Leading industries of that country	1	2	3	4	5	6	7	8	9	10

9. Which of the following location factors turned out to have a positive or negative influence on the success of international outsourcing?

	Very Negative	Negative	Neutral	Positive	Very positive
Physical distance	◯	◯	◯	◯	◯
Presence of natural resources; continuity of electricity	◯	◯	◯	◯	◯
Presence and quality of roads, rails, (air)ports	◯	◯	◯	◯	◯
Total costs of transportation	◯	◯	◯	◯	◯
Stability of country (politics; strikes)	◯	◯	◯	◯	◯
Legalisation and enforcement (customs, corruption, free trade	◯	◯	◯	◯	◯
Protection of Intellectual Property	◯	◯	◯	◯	◯
Workforce size and availability	◯	◯	◯	◯	◯
Language	◯	◯	◯	◯	◯
Labour costs	◯	◯	◯	◯	◯
Inflation and currency risks	◯	◯	◯	◯	◯
Welfare level of a country	◯	◯	◯	◯	◯
Technological knowhow and competences of workforce	◯	◯	◯	◯	◯
Available machines, equipment and materials	◯	◯	◯	◯	◯
Leading industries of that country	◯	◯	◯	◯	◯

FME International Business support her members with doing business across borders by organising outgoing missions, incoming missions, participation at international fairs, seminars, workshops and network meetings. We constantly review and develop our services to match our members' needs in order to organise concrete activities for groups of companies.

10. Which international outsourcing services do you prefer (multiple answers are possible)?
    - ○ Outgoing outsourcing/offshoring mission to China
    - ○ Outgoing outsourcing/offshoring mission to India
    - ○ Outgoing outsourcing mission to Eastern Europe
    - ○ Seminars concerning outsourcing and offshoring in specific countries
    - ○ Matchmaking between your company and reliable, international suppliers
    - ○ Platform for exchange of information about reliable suppliers
    - ○ Advice concerning setting up a foreign subsidiary
    - ○ Currently no interest
    - ○ Don't know / Prefer not to answer

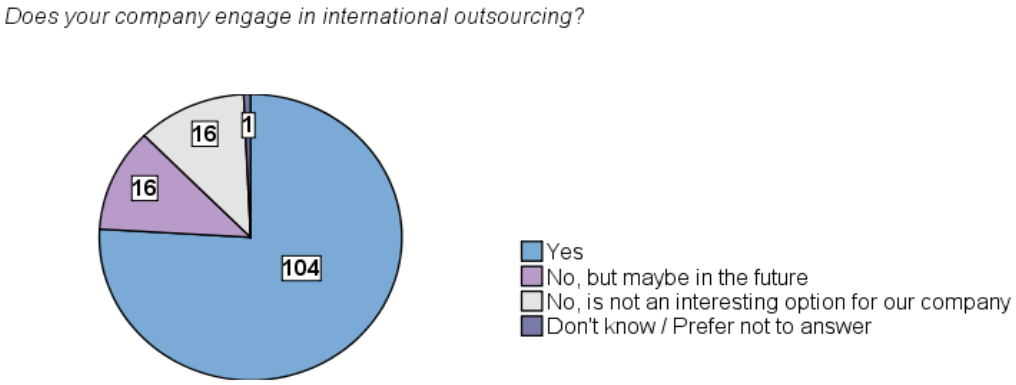
APPENDIX G. CLASSIFICATION OF THE TECHNOLOGICAL INDUSTRY

Classification	
Basis metals	• Basic iron and steel and of ferroalloys (ECSC) • Tubes • Other first processing of iron and steel and manufacturing of non-ESCS ferroalloys • Basic precious and non-ferrous metals • Casting of metals
Fabricated metal products, except machinery and equipment	• Structural metal products • Tanks, reservoirs and containers of metal, central heating radiators and boilers • Steam generators, except central heating hot water boilers • Forging, pressing, stamping and roll forming of metal; powder metallurgy • Treatment and coating of metals; general mechanical engineering • Cutlery, tools, and general hardware • Other fabricated metal products
Machinery and equipment	• Machinery for the manufacturing and use of mechanical power, except aircraft, vehicle and cycle engines • Other general purpose machinery • Agricultural and forestry machinery • Machine-tools • Other special purpose machinery • Weapons and ammunition • Domestic appliances
Electrical machinery and apparatus	• Electric motors, generators and transformers • Electricity distribution and control apparatus • Insulated wire and cable • Accumulators, primary cells and primary batteries • Lighting equipment and electric lamps • Electrical equipment
Radio, television and communication equipment and apparatus	• Electronic valves and tubes and other electronic components • Television and radio transmitters and apparatus for line telephony and line telegraphy • Television and radio receivers, sound or video recording or reproducing apparatus and associated goods
Medical, precision and optical instruments, watches and clocks	• Medical and surgical equipment and orthopaedic appliances • Instruments and appliances for measuring, checking, testing, navigating and other purposes, except industrial process control equipment • Industrial process control equipment • Optical instruments and photographic equipment • Watches and clocks
Motor vehicles, trailers and semi-trailers	• Motor vehicles • Bodies (coachwork) for vehicles, trailers and semi-trailers • Parts and accessories for motor vehicles and their engines
Other transport equipment	• Building and repairing of ships and boats • Railway and tramway locomotives and rolling stock • Aircraft and spacecraft • Motor vehicles and bicycles • Other transport equipment

APPENDIX H. RESULTS OF QUANTITATIVE RESEARCH

1. *According to the formulated definition, does your company engage in international outsourcing?*

Of the 137 companies that filled in the questionnaire 76% (n=104) stated that their company engaged in international outsourcing. Of the remaining 32 companies, sixteen replied that outsourcing will be of relevance in the future.



2. *Can you give an indication of how much is outsourced to international suppliers (% of total purchasing)?*

How much	Frequency	Percentage	Cumulative
0 < 20%	52	51,0%	51,0%
20 > - < 40%	26	25,5%	76,5%
40 > - < 60%	13	12,7%	89,2%
60 > - < 80%	6	5,9%	95,1%
80 > - < 100%	1	1,0%	96,1%
Don't know/ Prefer not to answer	4	3,9%	100%
Total	102	100%	

3. *Which manufacturing processes are outsourced to international suppliers (multiple answers are possible)?*

Outsourced manufacturing processes	Frequency	Percentage
Research & Development	6	5,9%
Design	8	7,8%
Engineering	14	13,7%
Manufacturing of components	57	55,9%
Manufacturing of loose parts	72	70,6,%
Assembly	29	28,4%
Testing	11	10,8%
Sales & Service	3	2,9%

N = 102

4. *In general, the manufacturing of which type of components are outsourced to international suppliers?*

Product properties		Mean	Std. Deviation	Median
Physical asset specificity	Components for which specialized machines, customized equipment or complex computer systems are needed.	5,0	3,0	4,5
Human asset specificity	Components for which specialized (technological) skills and experience of the employees are needed.	5,0	3,0	5,0
Knowledge specificity	Components for which knowledge is needed that are difficult to specify, explain and document.	4,0	3,0	3,0

N = 82

Product properties		Mean	Std. Deviation	Median
Strategic value	Component for which resources and knowledge is required that enable the company to neutralize risks and exploit opportunities.	3,2	2,8	2,0
Rarity	Components for which resources and knowledge is required that competitors don't possess nor control.	3,5	3,0	3,0
In-imitable	Components for which resources and knowledge is required that can be copied by competitors.	3,6	2,8	3,0
Non-substitutable	Components that competitors can manufacture with substituted resources.	3,6	2,8	4,0

N = 82

5. *How important were the following motives in deciding to outsource manufacturing internationally?*

Motives	Mean	Std. Deviation	Median
Cost savings	8,7	1,8	9,0
Make manufacturing capacity more flexible by increasing/decreasing when necessary	6,4	3,0	8,0
Focus on core competences of the company	5,9	3,3	7,0
Gain flexibility	5,7	2,8	6,5
Turn fixed company costs into variable purchasing costs	5,4	2,9	6,0
Spread risks	4,9	2,9	5,0
Access to skilled (technological) labour,	4,8	2,6	5,0
To reduce capital invested in machines	4,8	3,2	5,0
Access to superior resources, knowledge and innovations	3,6	2,7	3,0

6. *Which of these advantages where you able to realize by outsourcing (part of the) manufacturing processes to international suppliers?*

Realized advantages	Mean	Std. Deviation	Median
Cost savings	8,3	1,8	9,0
Gain flexibility	6,4	2,4	7,0
Make manufacturing capacity more flexible by increasing/decreasing when necessary	6,4	2,8	7,0
Focus on core competences of the company	5,9	3,2	6,5
Spread risks	5,5	2,9	6,0
Turn fixed company costs into variable purchasing costs	5,3	3,1	6,0
To reduce capital invested in machines	5,2	3,2	5,0
Access to skilled (technological) labour,	5,1	2,8	5,0
Access to superior resources, knowledge and innovations	4,0	2,9	3,0

7. *Which cost savings did you wanted to realize in advance and which did you actually realize by outsourcing (part of the) manufacturing processes to international suppliers (multiple answers are possible)?*

Cost savings	Desired	Realised	Not applicable
Costs of raw materials and other materials	21	42	29
Employment costs (wages, recruitment, hiring/firing)	19	60	15
Investments in R&D	6	12	64
Capital goods (plant, machines, tools)	31	13	40
Taxes	7	4	69

8. *To which countries does your company outsource manufacturing processes? Enter your top 5.*

Outsourced countries	Nr. 1	Nr. 2	Nr. 3	Nr. 4	Nr. 5	Total
China	18	10	5	3	1	37
Poland	10	9	3	1	1	24
Germany	7	6	6	2		21
Czech Republic	6	3	6	1	2	18
Slovakia	4	4	2	4		14
India	5	3	3	1		12
Belgium	2	2	3		1	8
Romania	4	2	1			7
Italy		3	1	2	1	7
Hungaria	1	1	3	2		7
United States	1	3		2		6
United Kingdom		1	3		2	6
Malaysia	1	3		2		6
Vietnam		2	1	1		4
Taiwan	3				1	4
Switzerland	1	1	1	1		4
Serbia	1	1	1		1	4
France	1	1			2	4
Turkey	1	2				3
Singapore	1	2				3
Lithuania		1	1		1	3
Brazil	1	1			1	3
Thailand	2					2
South-Africa	1			1		2
Slovenia			1		1	2
Israel	1			1		2
Estonia	2					2
Denmark			1	1		2
Bosnia and Herzegovina		1	1			2
United Arab Emirates	1					1
Ukraine	1					1
Sri-Lanka			1			1
Spain		1				1
Russia				1		1
Portugal		1				1
Philippines	1					1
Peru				1		1
Norway				1		1
Macedonia		1				1
Latvia					1	1
Korea	1					1
Indonesia			1			1
Finland		1				1
Croatia		1				1
Bulgaria		1				1
Austria	1					1
Australia		1				1
Total	79	69	45	28	16	237

9. *How important were the following environmental factors in choosing an outsourcing location?*

Location factor	Mean	Std. Deviation	Median
Labour costs	8,1	2,1	8,5
Available machines, equipment and materials	7,4	2,3	8,0
Total costs of transportation	6,2	2,5	7,0
Technological knowhow and competences of workforce	7,0	1,9	7,0
Workforce size and availability	6,9	2,2	7,0
Legalisation and enforcement (customs, corruption, free trade)	6,0	2,3	7,0
Stability of country (politics; strikes)	6,0	2,4	6,0
Language	6,0	2,3	6,0
Inflation and currency risks	5,6	2,7	6,0
Protection of Intellectual Property	5,1	3,0	5,0
Presence and quality of roads, rails, (air)ports	5,0	2,3	5,0
Physical distance	4,9	2,8	5,0
Welfare level of a country	4,4	2,3	4,5
Leading industries of that country	4,7	2,7	4,0
Presence of natural resources; continuity of electricity	4,0	2,7	3,0

10. *Which of the following external environmental factors turned out to have a positive or negative influence on the success of international outsourcing?*

Location factor	Negative	Neutral	Positive	Very positive
Physical distance	14 18,2%	51 66,2%	10 13,0%	2 2,6%
Presence of natural resources; continuity of electricity	2 2,6%	59 76,6%	15 19,5%	1 1,3%
Presence and quality of roads, rails, (air)ports	1 1,3%	47 61%	28 36,4%	1 1,3%
Total costs of transportation	21 27,3%	35 45,5%	18 23,4%	3 3,9%
Stability of country (politics; strikes)	1 1,3%	52 67,5%	23 29,9%	1 1,3%
Legalisation and enforcement (customs, corruption, free trade)	4 5,2%	52 67,5%	18 23,4%	3 3,9%
Protection of Intellectual Property	5 6,7%	50 66,7%	17 22,7%	3 4,0%
Workforce size and availability	2 2,6%	19 24,7%	49 63,6%	7 9,1%
Language	4 5,2%	36 46,8%	34 44,2%	3 3,9%
Labour costs	2 2,6%	17 22,1%	31 40,3%	27 35,1%
Inflation and currency risks	8 10,4%	54 70,1%	14 18,2%	1 1,3%
Welfare level of a country	4 5,2%	61 79,2%	11 14,3%	1 1,3%
Technological knowhow and competences of workforce	5 6,5%	24 31,2%	43 55,8%	5 6,5%
Available machines, equipment and materials	3 3,9%	25 32,5%	40 51,9%	9 11,7%
Leading industries of that country	3 3,9%	61 79,2%	13 16,9%	0 0%

**Very negative is deleted since no respondents filled out this answer*

11. *Which international outsourcing services of the FME do you prefer (multiple answers are possible)?*

FME Services	Frequency	Percentage
Currently no interest	33	24,6%
Platform for exchange of information about reliable suppliers	25	18,7%
Matchmaking between your company and reliable, international suppliers	20	14,9%
Outgoing outsourcing mission to Eastern Europe	16	11,9%
Seminars concerning outsourcing and offshoring in specific countries	12	9,0%
Outgoing outsourcing/offshoring mission to China	10	7,5%
Don't know / Prefer not to answer	9	6,7%
Outgoing outsourcing/offshoring mission to India	7	5,2%
Advice concerning setting up a foreign subsidiary	2	1,5%

Additional analysis

The influence of strategic value on the importance of motives for engaging in outsourcing.

MOTIVES	STRATEGIC VALUE	
	Low[8] (n=57)	High[9] (n=14)
Cost savings	8,9	7,5
Make manufacturing capacity more flexible by increasing/decreasing when necessary	6,4	5,8
Focus on core competences of the company	5,7	5,9
Gain flexibility	5,6	6,0
Turn fixed company costs into variable purchasing costs	5,2	4,9
Spread risks	4,5	5,4
To reduce capital invested in machines	4,4	4,6
Access to skilled (technological) labour	4,9	4,3
Access to superior resources, knowledge and innovations	3,0	5.4

[8] Low strategic value is rated by participants as being lower than 5
[9] High strategic value is rated by participant as being higher than 5

The influence of strategic value on the importance of location factors for choosing an outsourcing location.

LOCATION FACTORS	STRATEGIC VALUE	
	Low (n=54)	High (n=14)
Labour costs	8,4	6,8
Available machines, equipment and materials	7,4	7,2
Total costs of transportation	6,0	6,2
Technological knowhow and competences of workforce	6,7	7,4
Workforce size and availability	6,8	6,2
Legalisation and enforcement (customs, corruption, free trade)	5,9	6,0
Stability of country (politics; strikes)	5,8	6,5
Language	5,8	6,5
Inflation and currency risks	5,4	6,0
Protection of Intellectual Property	4,8	5,6
Presence and quality of roads, rails, (air)ports	4,9	4,9
Physical distance	4,8	4,8
Welfare level of a country	4,4	4,3
Leading industries of that country	4,3	6,4
Presence of natural resources; continuity of electricity	3,8	4,7

The influence of asset – and knowledge specificity on the importance of motives for engaging in outsourcing.

MOTIVES	ASSET – AND KNOWLEDGE SPECIFICITY					
	Physical asset specificity[10]		*Human asset specificity*[11]		*Knowledge specificity*[12]	
	Low (n=38)	*High (n=30)*	*Low (n=37)*	*High (n=31)*	*Low (n=48)*	*High (n=22)*
Cost savings	9,0	8,0	9,0	8,6	9,2	7,8
Make manufacturing capacity more flexible by increasing/decreasing when necessary	6,6	6,2	6,6	6,4	6,8	5,7
Focus on core competences of the company	5,6	6,1	5,6	6,5	5,8	6,6
Gain flexibility	5,8	5,6	5,8	5,8	5,9	5,6
Turn fixed company costs into variable purchasing costs	5,4	5,5	5,2	5,5	5,2	5,3
Spread risks	4,8	5,2	4,4	5,4	4,8	4,6
To reduce capital invested in machines	4,2	5,3	4,7	4,7	4,4	5,2
Access to skilled (technological) labour,	5,1	5,0	4,5	5,8	4,9	5,0
Access to superior resources, knowledge and innovations	2,8	5,0	3,0	4,3	2,7	5,3

[10] Low physical asset specificity means that the company outsources components for which non-specialized machines, - equipment or - computer systems are needed. Low = rated below 5. The refers holds for high physical asset specificity: rated higher than 5.
[11] Low human asset specificity means that the company outsources components for which specialized (technological) skills and experience of the employees of the supplier is needed. Low = rated below 5. The refers holds for high human asset specificity: rated higher than 5.
[12] Low knowledge specificity means that the company outsources components for which non-specialized knowledge is needed which is easy to specify, explain and document. Low = rated below 5. The refers holds for high knowledge specificity: rated higher than 5.

The influence of asset – and knowledge specificity on the importance of location factors for choosing an outsourcing location.

LOCATION FACTOR	ASSET – AND KNOWLEDGE SPECIFICITY					
	Physical asset specificity		*Human asset specificity*		*Knowledge specificity*	
	Low (n=38)	*High (n=30)*	*Low (n=35)*	*High (n=31)*	*Low (n=45)*	*High (n=22)*
Labour costs	8,5	7,6	8,4	8,1	8,8	7,1
Available machines, equipment and materials	6,8	8,1	7,3	7,6	7,5	7,5
Total costs of transportation	5,9	6,4	6,5	5,8	6,0	6,5
Technological knowhow and competences of workforce	6,9	7,4	6,7	7,4	7,0	7,1
Workforce size and availability	7,2	6,6	6,7	7,2	7,2	6,8
Legalisation and enforcement (customs, corruption, free trade)	5,9	6,2	5,9	6,0	6,1	6,1
Stability of country (politics; strikes)	5,8	6,2	5,9	6,1	6,1	6,1
Language	6,0	6,3	5,5	6,5	6,1	6,1
Inflation and currency risks	5,6	5,7	5,7	5,5	5,5	6,1
Protection of Intellectual Property	4,9	5,4	4,7	4,9	4,7	5,7
Presence and quality of roads, rails, (air)ports	4,8	5,2	5,4	4,9	4,9	5,2
Physical distance	4,6	5,3	5,2	4,9	4,6	5,9
Welfare level of a country	4,6	4,2	4,8	4,0	4,6	3,9
Leading industries of that country	4,3	5,0	5,2	4,0	4,4	4,8
Presence of natural resources; continuity of electricity	3,6	4,4	4,1	3,9	3,7	4,4