

**UNIVERSITY OF VAASA  
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**INTERNATIONAL PURCHASING IN SMALL AND  
MEDIUM-SIZED DANISH MANUFACTURING  
COMPANIES  
-Foreign supplier selection-**

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**ABSTRACT**

The present paper focuses on the international purchase behavior of small and medium-sized manufacturing firms activating in Denmark. The study aims to identify the internationalization patterns of the purchasing activities and to understand what the most important criteria that drive purchasing managers, when making selection decision regarding the international suppliers, are.

The theoretical part of the research is based on creating a conceptual model for purchasing activities in the international trade context, where the main motive for sourcing internationally, barriers to sourcing and strategic decisions in international purchasing are highlighted. Moreover, the paper examines the supplier assessment and selection process in order to identify the main selection criteria for international suppliers.

The practical part of the paper contains the presentation and analysis of the research findings. Over 2.000 web-mailed surveys were delivered towards previously identified Danish manufacturing SMEs that are involved in import activities. Respondents' answers have been analyzed according to their preferences on different types of products, supplier-base structures and buyer-supplier relationships.

According to the research results, the respondent firms are relatively highly involved in international purchasing. Furthermore, the primary drivers for choosing a foreign supplier have been recognized as being commitment to quality, delivery reliability and technological capability of the supplier.

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**KEYWORDS: International purchasing; importing; SMEs, Denmark**

## 1. INTRODUCTION

An increased number of manufacturing companies that are purchasing labour-intensive items turn their attention towards reducing their costs by sourcing from various geographical places. The price of goods and services purchased from the emerging or low cost countries represents an excellent reason for considering international purchasing as an efficient solution. But, according to Min (1994), a low price for materials purchased from a foreign supplier can be counterbalance by company's loose in quality standards or even financial instability. On the other hand, more technologically advanced products, which are sourced from international suppliers, can carry high purchasing costs and excessive tariffs. In these given conditions, besides the actual cost of an acquired item, it is important to evaluate how other criteria such as quality, supplier delivery accuracy and lead time are influenced if the supplier is located in a foreign country. Moreover, it is a question regarding the complexity of the purchasing process in the international trade context since factors like availability of suppliers, substitute source of supply, market uncertainty or other major changes in the international environment are able to influence the involvedness in international purchasing activities. As a consequence, it is a matter to examine these problems in order to understand what the key factors for a successful international sourcing process are.

### 1.1 Background of the study

During the last decades, purchasing has received special attention in many companies. The multitude of actions, like mergers and acquisitions, outsourcing and off shoring to low-cost countries have been considered by organizations in order to search for new ways of achieving competitive advantage. All these measures have changed the role and objective of purchasing function inside companies and increased its importance in firms' overall strategy. As a result, the complexity of the purchasing function evolved from an operational function to a strategic source of cost reduction and increased competitiveness.

Traditionally, the supply chain of the firm incorporates a network of functions such as product development, marketing, operations, distribution, finance, customer service, all involved directly or indirectly in fulfilling the customers' requests (Bozarth & Handfield 2007). But in order to fulfil these requests, firms must create value by tailoring their value propositions to clients' expectations. The activities developed inside the companies range from the procurement of raw material to the distribution of the final product to the customer and after sales service.

Lysons and Gillingham (2003: 5), define purchasing from the standpoint of its objectives: "to obtain materials of the right quality in the right quantity from the right source, delivered to the right place at the right price". In order to achieve these objectives, companies must focus on activities associated with purchasing like: selecting qualified suppliers, rating suppliers performance, negotiating contracts, comparing price, quality, lead times, services and terms of sales, evaluating the value received, predicting prices and demand modifications, etc.

As an integrant part of a company's value creation system, purchasing commands a significant position in the overall organization. De Boer, Labro and Morlacchi (2001), referring to the study of Telgen (1994), who has found out that in industrial companies, purchasing share of the total turnover typically ranges between 50-90%, stated that making decisions about purchasing and operations are the primary determinants of profitability.

The importance of purchasing function in the organization is also underlined by the increased amount of resources invested by companies in the purchasing process and as well as by the time allocated to strategic purchasing. It is already acknowledged that the goods and services purchased by companies have a key influence on costs, productivity and quality level. Therefore, the sources of supply and the amount of time and money invested in the purchasing process have a capital influence on firms' performance.

One of the most important elements of the purchasing function is the selection of suppliers. The goal of supplier selection and evaluation is to reduce the risks involved in

transactions and to maximize the total value for the buying firm. Successful supplier selection processes are dependent on a series of strategic variables like the choice between domestic and international sourcing, type and the intensity of the relationship with the suppliers, the number of suppliers from which to source (single or multiple sourcing) and finally but not the least important, the type of the products supplied.

Throughout time, many researchers have identified numerous criteria for supplier selection and assessment such as net price, quality, delivery, supplier reputation, capacity, communication systems, services or geographic location (Dickson 1966, Dempsey 1987, Weber 1991). All these criteria represent critical issues in the supplier assessment procedures in view of the fact that they measure the performance of suppliers.

The main purpose of this research is to provide empirical evidence of the procedures and criteria used by small and medium-sized Danish manufacturing companies when selecting international suppliers. In addition, the paper aims to investigate the types of relationships developed by Danish buying companies with their foreign partners as well as supplier-base structure options and types of products purchased from international suppliers.

## 1.2 Objectives and delimitations

The thesis is based on the following hypothesis: “*SMEs in a small country such as Denmark are highly import intensive and source not only from regional suppliers, but also from suppliers far across the globe (Overby & Servais, 2005)*”. As a result of the amplified interest in purchasing internationally, it becomes important to assess the sourcing practices among small and medium enterprises. In the context, the research question of the study will be:

*What are the most important selection criteria that Danish small and medium manufacturing firms consider when choosing their foreign suppliers?*

With the purpose of answering the research question, the following research objectives will be addressed:

1. To identify the challenges to international purchasing along with the main strategic options available for purchasers.

According to this objective, the paper aims to investigate the drivers and barriers to purchasing from foreign countries. Furthermore, the strategic factors behind the sourcing process such as supplier-base structure, buyer-supplier relationships and types of products supplied will be explored in order to understand the tactical decisions related to purchasing.

2. To analyse the supplier selection process and to identify the most important selection criteria in the international context.

In regards to supplier selection criteria, the aim of the study would be to describe the process of supplier selection by highlighting the most critical supplier selection criteria considered by companies when acquiring their products from international countries.

3. To investigate the international purchase behaviour of small and medium-sized Danish manufacturing companies and to find out what are the selection criteria that drive them in choosing their foreign suppliers.

The empirical objective of the study has the role to analyse the international purchasing practices developed by Danish firms. Moreover, the influence of strategic options on selection criteria will be tested in order to understand the selection decisions according to different purchasing situations.

The present study has also several limitations, which will be further described. The first limit of the paper comes from its scope. According to Talluri & Sarkis (2002), the business processes of the purchasing function within organizations include supplier evaluation and selection, negotiation of supply contracts, monitoring supplier

performance and creating an interface between company and its suppliers. Therefore, inside the core process of sourcing, the study narrows its scope by analysing only the supplier evaluation and selection process.

Secondly, the research will be limited to analyse the small and medium-sized manufacturing companies operating within Denmark in industries with NACE codes 15-37 (manufacturing). The examined entities will be small and medium-sized manufacturing firms with 10-299 employees. The main business sectors evaluated will be paper and furniture, iron and metal, manufacturing of food products and beverages, production of textile-apparel manufacturing of medical equipment, constructions and instruments industries. Because the examined business categories are not comparable due to a range of legal and technical aspects, the results of the study will be valid only on the researched industries.

### 1.3 Previous studies

Supplier selection is one of the purchasing managers' most important tasks, a fact highlighted in the large number of articles present in academic journals. However, most of the research in the business literature is focused on the domestic suppliers' selection criteria and techniques; less attention being inclined towards the selection and evaluation of international suppliers. In addition, Danish SMEs have not received much attention in the Danish business literature until now, even though they make up more than half of the Danish economy (qtd. in Holm, 2002).

A number of studies have addressed supplier selection in the light of different business situations. In an early research, Lehman and O'Shaughnessy (1974) conducted one of the first empirical studies on the relative importance of supplier selection criteria. The research consisted in a bi-national study in which differences in the degree of importance accorded by industrial purchasers from United States and United Kingdom were examined. According to the results, the type of product purchased is likely to have a significant effect on how the supplier selection decision is made.

Later, Monczka and Giunipero (1984) examined the sourcing activities of 26 large US based companies activating in different fields of business. The results of their quantitative study showed that the most important drivers for choosing a foreign supplier were lower prices overseas, international orientation and lack of products on the local market. Among the problems related to foreign purchases, the study highlighted physical distance, nationalism and lack of knowledge about foreign markets and suppliers.

In a theoretical study developed 1988, Spekman, analysed the importance of long-term buyer-supplier relationships by highlighting their role on a strategic supplier selection process. According to his findings, strong collaboration between buyers and sellers, as opposed to the idea of adversarial relations represent key factors for achieving competitive advantages. Moreover, the study revealed that in the case of strong relationships between parties, more emphasis from buyers' side is placed on non-technical and non-price related aspects of the supplier selection process.

Swift (1995), surveyed 783 managers in charge of purchases in American manufacturing firms from three main industries namely chemical, electrical, electronic and transportation equipment industries. The quantitative study aimed to determine whether there are differences in suppliers' selection criteria between respondents who prefer a single supplier and those who prefer multiple suppliers for the same type of product purchased. The outcome of the research revealed that companies with preferences for single sourcing are more concerned about the technical support and reliability of the product, less interest being accorded to the price of the purchased good.

Kannan, Hsu, Leong and Tan (2006) developed and tested a supplier selection measurement scale applicable in United States and Europe. The quantitative research was conducted on 310 respondent senior supply managers from U.S. and 115 from Europe activating in various industries. A consistent finding resulted from this study is the fact that in case of strategic purchases, buyers are looking beyond price, the ability to create value and competitive advantage enhancement being a more critical



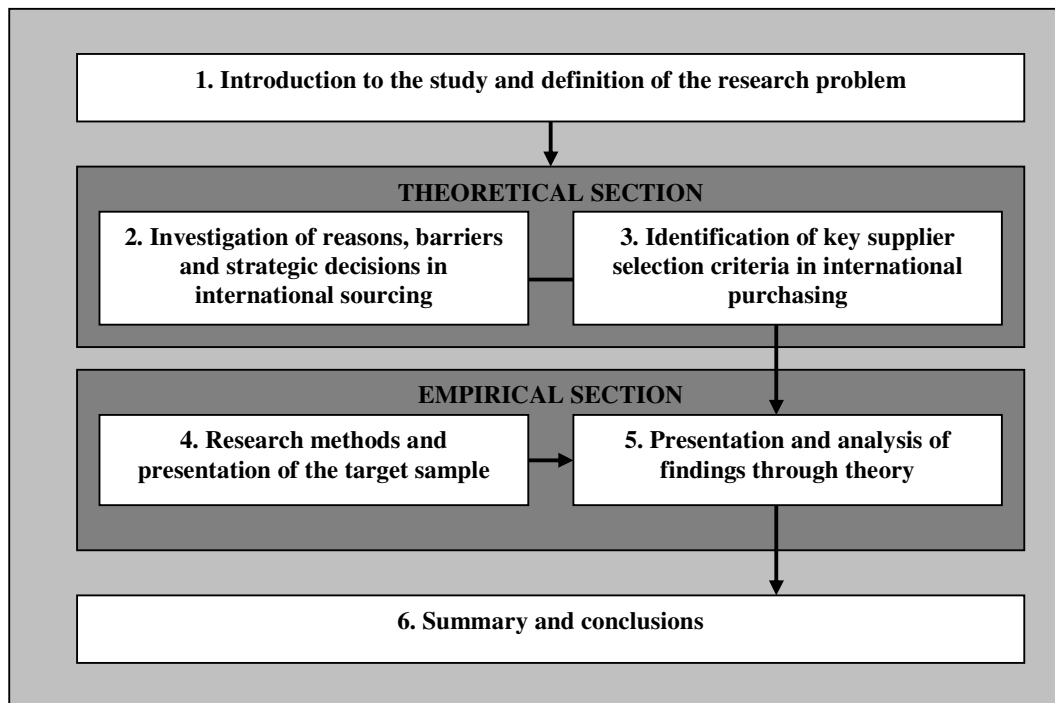
consideration. Moreover, it was revealed that price receives less significance in supplier selection than the ability of the supplier to contribute in achieving shared objectives.

Overby and Servais (2004) focused their empirical research towards small and medium-sized Danish industrial firm import behaviour. The sample of the study included 105 manufacturing firms with a person solely in charge of purchasing. The results showed that the respondent Danish firms are highly involved in international sourcing both from European Union and abroad, price and quality being the main drivers for foreign purchasing. Moreover, study suggests that Danish buying companies appear to maintain their relationships with foreign suppliers, most of them being oriented towards trustful and close cooperative interactions.

Given the above review, it seems that international purchasing research has been concentrated mainly on underlying criteria used to select supplier in different sourcing scenarios, fact that makes the supplier selection context specific and therefore difficult in standardizing selection processes. Moreover, most research has focused on large U.S. companies and thus a need of extended examination towards non-American small and medium companies is further required.

#### 1.4 Structure of the thesis

The present paper is structured into six main parts, which are outlined in the following manner. The first part represents the introduction of the thesis including background, problem description, purpose, delimitations and previous studies discussion. The second part introduces the reader to the theoretical study and aims to describe the main aspects of the international purchasing environment such as motives, barriers and strategic decisions in foreign sourcing. The third section of the study is focused on the most important supplier selection practices and criteria used in the international context. Further, the empirical part presents the methodology used in the development of the research. The fifth chapter combines the theoretical and empirical findings and will analyse the results of the study. Finally, the paper ends with study's conclusions and recommendations for further research.



**Figure 1.** Guide through the Study.

## 2. PERSPECTIVES ON INTERNATIONAL PURCHASING

The present chapter aims to investigate the theoretical background for international purchasing. It starts by presenting a conceptual distinction between the activities connected to internationalisation of purchasing activities. In addition, a review of the most common forms of sourcing developed by firms in foreign countries will be presented. The section continues by presenting the most important challenges to international sourcing, the reasons for purchasing abroad and barriers to foreign sourcing being highlighted. Finally, the chapter concludes with the description of the most important strategic decisions faced by managers in the international sourcing context.

### 2.1 Definitions and classifications of purchasing activities

In today's supply chain management real world, a multitude of terms related to firm's acquisition of material like procurement, purchasing, sourcing or outsourcing are used interchangeably while in academic literature, all these concepts are utilized in different contexts (Leenders, Fearon, Flynn & Johnson 2003: 6). Therefore, in order to avoid further confusion, a clarification regarding the definitions of previous concepts is necessary.

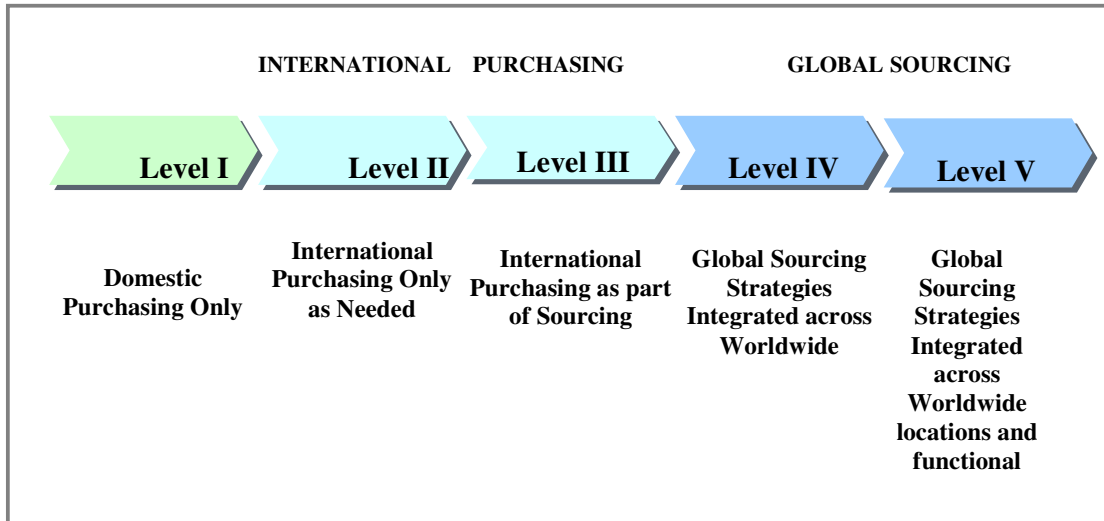
In their attempt to create a conceptual distinction between different activities related to internationalisation of sourcing activities, Knudsen & Servais (2007) define *purchasing* as "the process of buying components in the market; these have not previously been produced within the legal boundaries of the buying firm". Leenders et al., (2003: 6), consider purchasing by describing the process of buying: "learning of the need, locating and selecting a supplier, negotiating the price and other pertinent terms, and following up to ensure delivery". The same authors define *procurement* as "a broader term that includes purchasing, stores, traffic, receiving, incoming, inspection and salvage". Coming from the same idea, Leason and Gillingham (2003: 5) add that procurement is

“the process of obtaining goods and services in any way, including borrowing or leasing”.

*Sourcing* is usually used in literature in the broadest sense and is frequently interchanged with terms like procurement, purchasing or buying. However, domestic sourcing or local purchasing is defined when the buying firm and its suppliers are located in the same country. Conversely, international sourcing or purchasing refers to the acquisition of items from vendors situated in foreign countries. International purchasing is also described by Branch (2001: 3) as a very high profile international business. It is considered a fast moving market with an emphasis on purchasing value added products in order to satisfy the consumer/industrial needs found in competitive markets. According to Ellram (2001), “*outsourcing* is defined as the transfer of the production of goods or services that have been performed internally to an external party”. On the other hand, insourcing is defined as representing the relocation of the manufacturing of a component, assembly or service previously performed by other companies.

Trent and Monczka (2005), suggest that there should be a clear distinction between global sourcing and international purchasing. They consider that sourcing process reaches a global level when it involves integration and coordination of common items, materials, processes, technologies, designs and suppliers across worldwide buying, design and operating locations. Stevens (1995) indicates that integration in global sourcing involves two aspects: the internationalisation of purchasing and the adoption of a strategic orientation for all organization’s resources.

Furthermore, a continuum was constructed in order to establish the borders between international purchasing and global sourcing, and to explain the movement from domestic purchasing to integrated global sourcing.



**Figure 2.** The Five levels of sourcing. (Trent & Monczka 2005)

As described in Figure 2, the companies included in the first level of the continuum develop strictly domestic purchasing activities. In the second level, firms perform sourcing activities as a reaction to foreign suppliers' offers or because they confront with needs which no suitable domestic supplier can fulfil. Starting with the third level, organizations recognize that purchasing internationally can bring important performance enhancement and begin to develop sourcing strategies based on international options.

The last two levels concern the global sourcing phases. Companies operating at the fourth level implement sourcing strategies primarily focused on the development of sourcing contracts with suppliers that have global connections. In addition, according to Trent and Monczka (2005), buying firms situated at the highest level of sourcing, stress the integration, standardization and coordination of functional groups and activities among worldwide purchasing locations. Considering the objectives of the present paper, the element of analysis will be focused on small and medium-sized companies involved in international purchasing practices. Thus, the discussion will further concern on the organizations engaged in sourcing practices situated at the second and third levels of the continuum.

To sum up the conceptual discussion, a definition for international purchasing suitable to the study would include the process of importing goods that have not been previously manufactured inside the company from firms located in different foreign countries.

Referring to a study developed by Moxon in 1982, Knudsen and Servais (2007), developed a representative framework, which contains four specific forms of international sourcing: international purchasing, international subcontracting, foreign joint venture and controlled foreign manufacturing.

<b>Forms of international purchasing</b>			
<b>Degree of control</b>	<i>HIGH</i>	<b>International subcontracting</b>	<b>Own foreign production</b>
	<i>LOW</i>	<b>International purchasing</b>	<b>Foreign JV manufacturing</b>
		<i>LOW</i>	<i>HIGH</i>
<b>Degree of involvement</b>			

**Figure 3.** Types of international purchasing. (Knudsen & Servais 2007)

According to Figure 4, *international purchasing* is the sourcing activity with the lowest degrees of control and involvement. The buyers and suppliers are independent entities that interchange materials for money. Moreover, the arrangement may vary in different ways including whether the transaction is directly between the buyer and producer or through third parties and whether the buyers and suppliers choose a long-term collaboration.

In *international subcontracting*, the buyer has an increased degree of control on suppliers' activities and moreover is interested in developing collaborative relationships. The buying company may provide clear product specifications, technical assistance, physical equipment, raw materials and sometimes even financing for their foreign suppliers.

*Controlled foreign manufacturing*, on the other hand, is a form of international sourcing between the buying company and its subsidiary. This situation denotes that the firm decides to set up a foreign production facility to serve the local and foreign customers.

In the case of *joint venture manufacturing*, the buyer is supplied from a production facility jointly owned with the supplier. The success of the business depends on the incorporation of knowledge from both parties.

In conclusion, purchasing terminology varies according to different types of operations developed by companies. Moreover, the internationalisation of trade raises different problems on conceptualisation of different types of international sourcing activities. Therefore, a clear distinction between different terms is necessary in order to better understand a specific type of activity.

## 2.2 Challenges to international purchasing

The next section of the chapter focuses on the main drivers that lead companies in considering international purchasing when looking for sources of supply. Furthermore, the principal obstacles to international sourcing are presented and described according to their afferent risks for purchasing organizations.

### 2.2.1 Reasons for sourcing internationally

Buying overseas can have important implications during the supplier evaluation and selection process because it is generally more complex than domestic buying. There are many reasons for sourcing abroad that vary according to the specific commodity required. Though, the primarily rationale for using an international supplier is that superior value is expected to be available from that source than from a national supplier.

Initially used as a reactive response to global competitive pressures, international purchasing is now considered a proactive strategy utilized in achieving competitive advantage (Monczka & Giunipero 1984). The most important reasons for selecting an

international supplier will be further examined according to their description in the purchasing literature.

Monczka and Trent (1991), found that importing firms look forward to an improvement in four critical areas when purchase internationally: cost reduction, quality improvement, increased exposure to worldwide technology and delivery and reliability improvements.

#### Lower costs

Most studies show that the capability of a foreign supplier to deliver products at a lower overall cost than domestic supplier is a key reason to buy internationally (Carter & Narasimhan 1990; Birou & Fawcett 1994). Even though it seems surprising, a foreign supplier can produce and ship materials from the remotest places on earth at lower cost. Lower prices or cost advantage can arise from reasons like lower labour and material costs. Many companies chase low labour costs and move their attention to those countries with the most convenient wage rates. What is also true is that when evaluating labour costs, factors like productivity and quality must not be neglected.

#### Favourable exchange rates

Another source of cost advantage is represented by the exchange rate. If the local currency gets stronger it makes sense to reduce the product price of the good brought from international suppliers. On the other hand, a weaker national currency would make the foreign purchasing more expensive and less attractive (Leenders & Fearon, 2002: 547). In addition a source of reduced cost may be the equipment and processes used by international suppliers which may be more efficient than those used by domestic suppliers.



### Consistent quality

Offering high quality products has a major importance on today's competitive industrial markets. Therefore, many suppliers from countries such as Japan or Germany have achieved great success and good prestige as high quality providers, especially in the areas of consumer electronics and automobiles (Carter & Narasimhan, 1990). Furthermore, in order to attract buyers from all over the world, international suppliers are sometimes highly motivating their workforce towards accepting responsibility for adopting the "zero defects" concept.

### Faster delivery

Moreover, due to limited domestic capacity, international suppliers can deliver faster than the national ones, therefore making the products available for the buyer in the requested timeframe. But, simple availability is often requested when buyers cannot have access to the requested products in the home market (Knudsen & Servais, 2007). The supplier must also be reliable in order to satisfy the buyer's requirements regarding lead times, quantity, quality, and place.

### Unavailability of items domestically

Monczka and Giunipero (1984) identified the driving reason for international sourcing in the chemical industry as being the unavailability of the needed products in the home market. In this case, the buyers may be encouraged to adapt to the offers of the available national suppliers, fact that is not happening since research proved that industrial buyers in general are well informed regarding the foreigner suppliers' offerings (Birou and Fawcett, 1993).

Other important factors for international sourcing may include: increased number of available resources, sourcing as a reaction to competitors' practices or future intended presence in the foreign market. Giving their major importance in the context of

international purchasing, the reasons of foreign sourcing should be taken into account by managers when reviewing their company's overseas buying strategy.

### 2.2.2 Barriers to international purchasing

The rapid growth in international purchasing and specialization of worldwide trade raise the question of the economic motives for international sourcing. In their attempt to internationalize their purchasing activities in foreign countries, many companies establish business relationships with partners located all over the world. As a result, due to differences in business environments and practices, a series of obstacles appear.

When trading with suppliers located in foreign countries, the importing process of goods and services becomes complicated. For this reason, the buying companies should be aware of the potential risks associated with foreign purchasing and understand the practices that can facilitate protection against them.

#### Contact with suppliers

The first step, in order to establish a future collaboration with a foreign partner, is to get in contact with him. Sometimes there are difficulties regarding contacting the suppliers due to difference in time zones, working weekdays or methods of communication. "It is not unusual to find that Middle Eastern weekend is Thursday and Friday" (Lyssons & Gillingham, 2003), and therefore the actual time for contact is reduced to just three days.

#### Lack of understanding sourcing procedures

According to Monczka et al., (1998: 375), "the major barrier to increased world wide sourcing is the lack of understanding of international purchasing procedures by buyers". Besides the need of knowledge about potential suppliers, familiarity with additional documentation is required when sourcing internationally. The most important international documentation requirements include: letters of credit, bills of landing,

import licenses, certificates of origin, dock receipts, certificate of inspection, certificate of insurance coverage, packing lists and commercial invoices.

#### Lead/delivery time or non-performance

Purchasers should anticipate additional lead times that may occur while working with international suppliers. For instance “establishing credit for first-time international buyers involves obtaining a letter of credit which may take several weeks” (Leenders et al., 2002). Delays may also be experienced due to inland carriers in foreign countries, customs’ regulations and documentation, shipment unloading or even stolen and damaged goods. Therefore, selecting the most appropriate mode of transportation and insuring oneself against transportation risks represents an important decision in sourcing internationally. The risk of non-performance appears when the supplier is not willing or is unable to perform according to an established contract. In order to protect themselves, buyers need to investigate previous trade references of the supplier and to have a second choice source of supply the will reduce the outcome of supplier’s non-performance.

#### Currency fluctuations

The threat of exchange risks appears when the payment is to be made in a long period of time because the currency amount payable according to the agreement might be superior to the amount calculated when starting the contract. A way to protect from this type of risk is by dealing in foreign currency options.

#### Credit risks

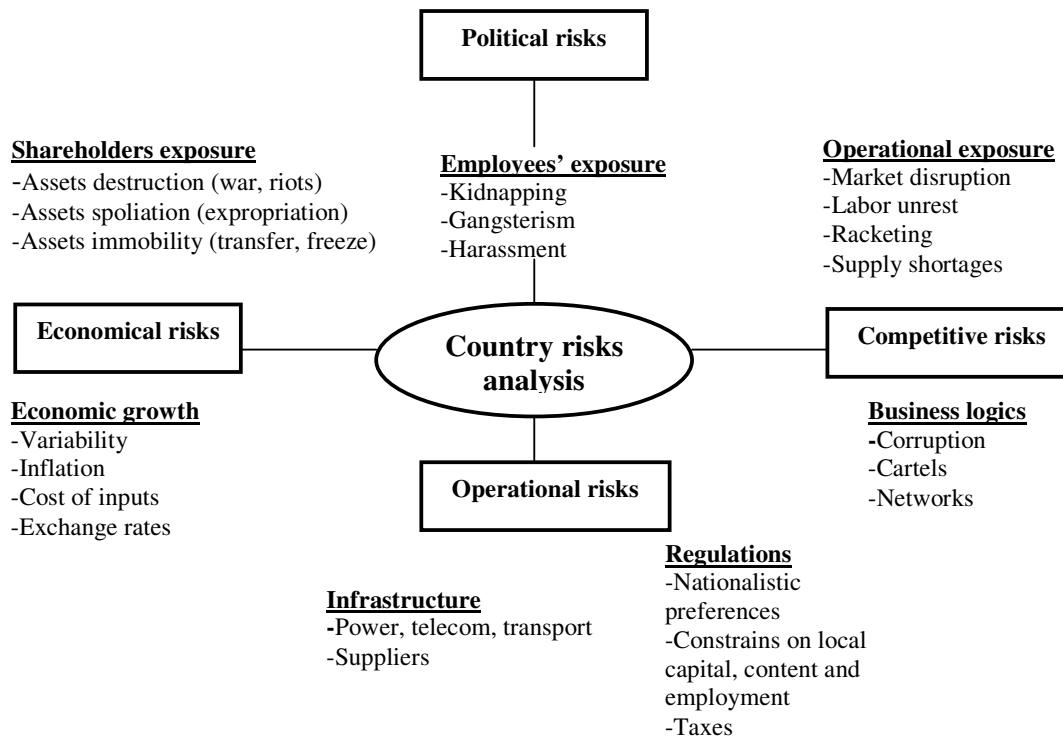
This type of risk is related to the situation in which a payment has been made and the supplier or other entity in the payment chain, for instance banks, becomes insolvent and affects the delivery of the goods. A way to avoid this situation is by delaying any payment unless the supplier is considered able to deliver.

## Legal difficulties

Risks regarding legal aspects arise if the country whose law governs the transaction is not specified in the contract. Usually, the buyer and the seller agree upon applying the law of the country in which the final agreement is made. Alternatively, it is also possible to consider the law of a third selected country as the legal supervisor of the transaction. Besides the judiciary aspects, arrangements for arbitration are recommended before entering the contract. Arbitrators are persons with technical, industry and market knowledge, which make them able to take balanced decisions on different trade cases.

To conclude the present section, a summary of the potential barriers in international environment is further presented. As mentioned before, different countries have special regulations regarding the import and export of goods. Besides these regulations, as presented in Figure 4, buying companies should be aware of the political, economical, competitive and operational environment of the host country (Lasserre, 2003: 174-176). Political crisis in supplier's country affect shareholders, employees and operations. Economical instability influences economic business drivers and endangers profitability. Competitive risks are related to the business practices in different foreign countries. Operational difficulties affect the way of doing business either through high taxation or constraints to foreign investors.

All the above-mentioned risks may lead to supply interruption and therefore a complete analysis of the country risk factors is recommended before taking the decisions regarding international sourcing.



**Figure 4.** Framework for country risk analysis. (Lasserre 2003: 175).

Once the position of purchasing in the international trade context is established and the main rationale for and barriers to sourcing are clarified, the next objectives of the chapter will be to present the main strategic choices present in international context.

### 2.3 Strategic decisions in international purchasing

The strategic decisions related to purchasing aim to provide directions on the overall objectives needed to be achieved when acquiring a good or service from external sources. They represent a guideline for purchasing departments the number of suppliers from whom the item will be purchased (single versus multiple supply sources), the importance of the supplied product (strategic versus non-strategic sourcing) and the type of relationship between parties (close working relationship versus conventional purchasing). The selected options relating the purchasing strategic decision will influence greatly the approach taken during the supplier selection and evaluation process (Monczka et al., 1998: 242). In the following, an in-depth description of the

supplier base structure, buyer supplier relationships and types of product supplied as three of the main strategic choices made in international sourcing will be provided.

### 2.3.1 Supplier-base structure

The supplier-base structure decisions consider the number of suppliers and how their interconnections are organized. For many organizations, it means relying on a smaller number of suppliers, with more cooperative and permanent ties and focused on establishing more effective materials-supply systems (Gadde & Håkansson 1993: 35).

The costs associated with a large number of suppliers for each purchased item along with new technological innovations and the compression of the product life cycles forced companies to rationalize their supplier structure strategy and to orientate towards a small but more competent group of suppliers (Spekman 1979).

According to Monczka et al., (1998: 323), "effective supplier management and development begins with the determination of the appropriate number of suppliers a firm should maintain". As a consequence, buying firms have to decide between single sourcing in which only one supplier is used to produce the items and multiple sourcing which implies several suppliers when designing their sourcing strategy.

Single sourcing decision focuses on the selection of the best-perceived supplier according to buyer's purchase requirements. Usually the collaboration between two parties is extended to longer-term relationships and even investments in supplier's production facilities in order to continually improve the supply system. Leenders et al., (2002: 262), identified several reasons for adopting a single sourcing strategy. The most important ones are represented by: difficulties in finding several good suppliers for an item because of supplier's ownership of certain essential patents or processes, consolidation of volumes due to small orders or cost reductions achieved by purchasing the entire items from one supplier; improved communication, synchronized delivery schedules, increased awareness on the supplier side which makes him more interested to please the buyer and finally, but not the least important, single sourcing represents a prerequisite to partnering.

A shortage of this policy would be the risk of dependency on the supplier's capacity and capability to successfully deliver the desired goods. Unexpected discontinuances of the supply may put in risk the purchasing company business and therefore selecting the right supplier for single sourcing is a crucial decision. Moreover, the absence of competition may lead to reliance on suppliers who try to take advantage of single source situations (Monczka et al., 1998: 338).

By adopting multiple sourcing policies, companies offer a certain purchase volume to several suppliers. As a consequence buyers expect suppliers to compete against each other on providing improvements. According to Tullous and Utecht (1992), the two reasons most frequently mentioned by the American purchasing executives for using multiple suppliers are to maintain a steady flow of materials and to increase competition among suppliers. The better-performing provider on costs, quality, technology and delivery receives a greater part of supply volume, fact that motivates each of them to improve continuously (Monczka et al., 1998: 241). Arguments for multiple sourcing arise from increased purchasing department's capability to deal with multiple sources, avoidance of supplier dependency, governmental regulations that insist on several of supply, the need to test future supplier by providing trial orders and increased unpredictability of the supply market which makes single sourcing risky.

On the other hand, potential disadvantages from adopting multiple sourcing strategies may come from companies' exposure to longer time in negotiation due to the increased number of suppliers, fact that may lead to delays and disturbances in production schedules (Berger & Zeng 2006).

### 2.3.2 Buyer-supplier relationships

The decision regarding the type of business relationship in which to be involved with the supplier is another crucial issue for purchasing companies. According to the intensity of the collaboration, the buyer considers the amount of resources needed to invest in the relation and the time spent during assessing and selecting the seller (Heide 1994).

Buyer-supplier collaborations developed during the last decades from arm's length transactions to more mutual, trust and commitment-based relationships. Previous literature on buyer-supplier relations stressed the opinion that purchasing activities are based on adversarial relationships between buyers and vendors. According to Shapiro (qtd. in Spekman, 1998) the role of adversarial model is to minimize the price of purchased goods and services. Moreover, Spekman (1988) describes this type of transactional approach as being characterized by buyers' reliance on a large number of suppliers who can be played off against each other in order to achieve price reductions. He continues by arguing that buying firms were interested in arm's length transactions based only on short-term contracts while the differences in suppliers' abilities to provide value were totally ignored.

The traditional approach to buyer-seller relationship which stresses low level of prices, short term collaboration and little shared information from both sides no longer satisfies the requirements of competitive markets (Monczka et al., 1998: 141). Burgess and Gules (1997) indicate that in general, relationships evolved towards more collaborative forms due to companies' desire to emulate the Japanese approach, which favors a collaborative relationship based on mutual benefits and trust. Lately, it became obvious for the majority of manufacturing companies that the success against increased competition depends to a high degree on their ability to build high levels of trust and cooperation with their suppliers.

In a study based on buyer-supplier relationships and sourcing of strategic components, Seppälä assumes that "a good business relationships is a relationship customized to fit the business environment and is properly managed in accordance with the factors of a particular relationship type" (2001: 44). According to the same author, there are three crucial drivers for a successful buyer-supplier relationship: strategic fit between parties' involved, joint benefits and improved economics. Only if both parties are committed to follow these principles, potential future benefits may be expected.

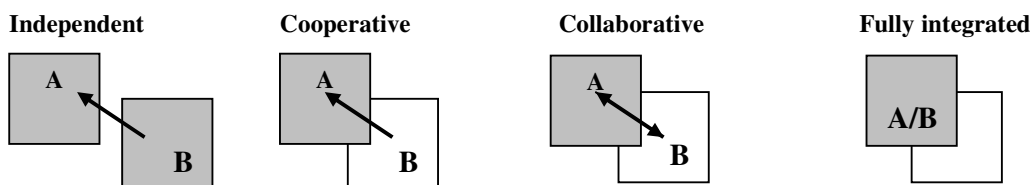
As a consequence, a new approach on buyer-supplier relationship has been raised. The partnership view considers the relationships on long-term basis, searches for



opportunity maximization and data sharing between partners while both buyer and supplier work together in order to adapt to the changing marketplace (O'Toole & Donaldson 2000).

Although, sourcing was limited in the past to passive and adversarial relations, in today's business environment a whole range of relationships is possible to be developed during the purchasing process. Numerous examples of major contributors to the understanding of the development of buyer-supplier relationships are present in previous literature. Dwyer, Schurr and Oh (1987), proposed a five-stage model by which relationships are formed (awareness, exploration, expansion, commitment and dissolution). Heide (1994), developed a typology of three different forms of governance to supplier relationship management (buyer dependence, supplier dependence and flexibility). Furthermore, O'Toole and Donaldson (2000), present and explain four individual relationship archetypes (bilateral, recurrent, hierarchical/dominant and discrete). The general idea that can be drawn from these studies is that the developing of the relations between buyers and suppliers is usually made according to a continuum where discreet relations and strategic partnerships represent the starting respectively the ending points.

According to different classification present in buyer-supplier literature, four different levels of relationship have been observed and defined in the purchasing practices: independent or discrete, cooperative or hierarchical, collaborative or recurrent and bilateral or fully integrated relationships.



**Figure 5.** Types of buyer-supplier relationships. (Seppälä 2001)

Note: A-buyer, B-supplier

### Independent relationships

In discrete relationships both buyers and suppliers act independently according to own interests. They concentrate primarily on the cost related aspects of the business in order to improve each other's efficiency. The amount of information exchanged is only limited to formal transactional aspects. Since they are based on rational and economic decisions, the transactions between buyers and suppliers are expected to have a dominant share of opportunism. Examples of these types of relationships are single and to some extent also repeated transactions (Seppälä, 2001: 46).

### Cooperative relationships

Cooperative or hierarchical relations are a common form of governance and occur especially when a dominant part, which is usually the buyer, specifies the nature of interaction between parties. Moreover, on this stage, the relationship moves from formal information exchange to informal sharing of data on ad hoc basis (O'Toole & Donaldson 2000). According to an agreement between parties, the relationship is extended to continuous interactions and durable relations.

### Collaborative relationships

A high level of trust and low level of commitment between parties characterize recurrent relationships. Mutual sharing of information and resources is facilitated by a planned agreements are present. The commitment of resources implies both parties but the funds generated by the collaboration are spent separately. For instance, mutual investments are made but usually related to efficient operation of the relationship (Spekman 1988). The focus of the relation is especially based on operational issues while the strategic decisions are taken separately.

### Fully integrated relationships

The most intensive buyer-supplier relationship implies a total integration and coordination between the companies' functions and activities. At this level there are actually no boundaries between companies and the integration process leads to the foundation of strategic alliances and joint ventures. Partners cooperate for mutual advantages achieved through openness in communication and strategic collaboration. In addition, the degree of cooperation between buyers and suppliers reaches a unique and complex level, which has the potential to offer the highest benefits in the context of performance of inter-firm relationships (O'Toole & Donaldson 2000).

As described above, ongoing buyer-supplier relationships may take different forms according to the degree of interaction between parties. Starting from rational exchange, in the case of independent relationships, they may evolve towards partnerships, which represent the highest form of integration between companies. If the differences between these to extremes of the relationship typology are obvious, difficulties in differentiating the intermediary types, namely cooperative and collaborative, may be expected. For the purpose of the present study, cooperative interactions will be understood as those types of relationships in which the buying company dominates the transaction. On the other hand, collaborative relationships will be considered those in which both parties interact in order to fulfill their goals only on operational stage, the relationship being not developed towards the alignment of the strategic levels.

### 2.3.3 Types of products

Strategic decisions in purchasing depend to a great extent on the value of the purchased item for the organization. According to their importance, buying companies establish different approaches on their suppliers' evaluation and selection, manage differently their supplier base and orientate themselves towards various types of buyer-supplier relationships.

Two main categories of goods and services are considered during the purchasing process according to their importance for the buying firm namely "strategic" and "non-

strategic” items. The first category refers to complex and costly parts and services that are indispensable in the production process. Therefore, it is necessary for the buying firm to form stable and long-term relationships with suppliers in order to assure the availability of these items on a continuous basis (Syson 1992). The latter category, concerns commodity buys, easy to be replaced and with low value within the final product.

Lehman and O’Shaughnessy (1974), assuming that the relative importance attached to various supplier attributes will differ among different categories of products, classified industrial items “on the basis of problems likely to be encountered if the product is purchased” in four groups.

Routine order products, were defined as being those having no problems associated with learning of usage and no questions regarding the functional capability. Procedural problem products are those for which there is no question about their capability but there are problems in learning to use it.

In the case of performance problem items, there may be doubt about product’s performance and technical outcome. The last category of products described was political problem products, which require large capital investments and experts involvement during the buying process.

Another approach to strategic decisions regarding the items purchased is to categorize goods according to a portfolio matrix (see Figure 6). In 1983, Kraljic, developed a portfolio model for purchasing strategies depending on two factors namely the complexity of the purchasing situation and the strategic value of the purchased items.

High	<p style="text-align: center;"><b>Bottleneck</b></p> <ul style="list-style-type: none"> <li>• Unique specifications</li> <li>• Supplier's technology is important</li> <li>• Difficult to substitute</li> <li>• Monopolistic market</li> </ul> <p style="text-align: center;"><b>Secure sourcing</b></p>	<p style="text-align: center;"><b>Strategic</b></p> <ul style="list-style-type: none"> <li>• Customized design and unique specifications</li> <li>• Supplier's technology is critical</li> <li>• Dependence on supplier</li> </ul> <p style="text-align: center;"><b>Partnership and cooperation</b></p>	
	<p style="text-align: center;"><b>Non-Critical</b></p> <ul style="list-style-type: none"> <li>• Standard specifications</li> <li>• Easy to substitute</li> <li>• Large product variety</li> </ul> <p style="text-align: center;"><b>Efficient processing</b></p>	<p style="text-align: center;"><b>Leverage</b></p> <ul style="list-style-type: none"> <li>• High effect on margin</li> <li>• Substitution is possible</li> <li>• Standard quality</li> </ul> <p style="text-align: center;"><b>Performance-based competition</b></p>	
Low	Low	Value	High

**Figure 6.** Product portfolio matrix. (Kraljic, P. & Leenders et al., 2002:245)

According to Kraljic's portfolio, purchases are classified in four major product groups, each category, requiring a specific approach towards suppliers. Next, a description of each type of items further utilized in the present study will be provided according to their characteristics described in previous literature.

#### Non-critical items

The first quadrant includes items that are perceived to have no or few technical and commercial problems from a purchasing point of view and low purchasing value. These products are frequently ordered and used and have standard specifications. They usually have low value per item, incorporate a low level of innovation and can be acquired from many sources of supply (Nellore, 2001: 126). When purchasing non-critical items, buying companies should focus on efficient processing, standardization, order volume and inventory optimization.

#### Bottleneck items

The upper-left corner quadrant contains products with a relative limited value in terms of money but with a high vulnerability regarding their supply. In general bottlenecks have unique specifications given by supplier's technological capability (Kraljic 1983).

They are procedural problem products and require supplier's assistance and training when first used. Therefore, the seller is dominant in the relationship with the buyer of the goods due to the small number of alternative sources of supply. A good way of dealing with bottleneck items is to standardize the purchases, to insure a specific delivery volume and to continually search for substituting suppliers.

#### Leverage items

In general these items have a low technical complexity and a relatively high strategic importance for the buying company. Moreover, leverage items are considered performance problem products since the technical outcome of their usage is not totally known by the buyers (Lehman & O'Shaughnessy 1974). Thus, supplier's service plays an important role in the efficiency and effectiveness of their utilization. They can be obtained from various alternatives and therefore, buyers expect competition between suppliers. In order to exploit leverage products, companies should engage suppliers in competitive biddings and short-term contracts and further to develop cooperative partnerships with the most suitable ones.

#### Strategic items

The right-upper corner quadrant includes strategic products with high value for buying company but in the same time with a high technical complexity. Besides their high importance for the buying companies, the other elements that make them different from leverage and bottleneck products reside from the fact that their requirements are customized according to buyer's specifications. Consequently, these goods are tailored to the buyer's needs and contain unique specifications. Because their availability is essential, companies have to establish close relationships with their suppliers and to focus on early supplier involvement and joint development of products (Nellore, 2001: 127).

In order to conclude the present section, it can be said that the role of purchasing is to manage and improve the performance of the suppliers by optimizing the supplier base

structure, choosing the accurate products and developing convenient relationships with the providers of needed goods. The best approach regarding these issues is the one with which the purchaser feels more comfortable and considers appropriate with the particular business field and organization.

### **3. INTERNATIONAL SUPPLIER ASSESSMENT AND SELECTION**

The second theoretical chapter introduces the most important criteria considered in international purchasing practices. It begins with an overview of the supplier selection and evaluation process by emphasising the role of selection within the overall process. Further, the chapter continues by presenting the supplier attributes and selection criteria utilized by companies in international sourcing.

Selecting a good set of suppliers represents a crucial goal for importing companies. During the last decades, the importance of supplier evaluation and selection has been intensely recognized and emphasized in business literature. Weber, Current and Benton (1991), mentioned that "in today's competitive operating environment it is impossible to successfully produce low cost, high quality products without satisfactory vendors. Thus one of the important purchasing decisions is the selection and maintenance of a competent group of suppliers".

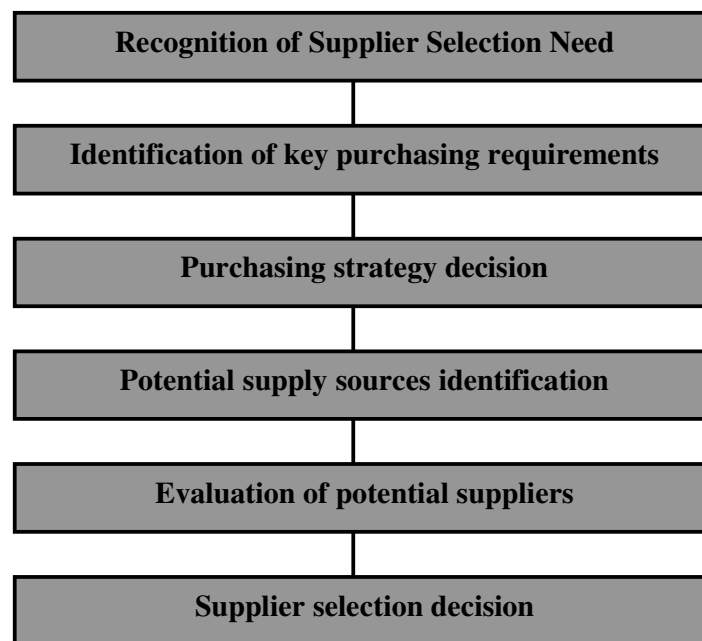
Normally, the selection decision will be taken according to purchaser's perception on supplier's ability to meet quality, quantity, delivery, price and service related objectives (Leenders, et al., 2002: 243). Additionally, factors like past experience, facilities and technical expertise, financial status, organization and management, prestige and reputation, procedural compliance, labor relations, communication and location are definitely important when the final decision is taken. As a result, the selection of the supplier is a multiple criteria decision and sourcing by only looking for low price offerings is not considered efficient sourcing anymore (Wan 2007).

#### **3.1 Supplier evaluation and selection process**

A critical function of purchasing is represented by the initial evaluation and selection of the suppliers. Many variables influence the way firms approach supplier selection process. Strategic sourcing issues like the number of suppliers for a purchased item or family of items, cost-quality performance desired balance, the type and the intensity of



relationship with the future suppliers and the value of purchased goods are critical examples of factors that need to be considered for an efficient and effective evaluation, selection and maintenance of the supply base. The final goal of the supplier evaluation and selection process is to “reduce purchase risk and maximize overall value of the purchaser”(Monczka, et al., 1998: 239). In order to achieve this goal, firms invest an important amount of time and resources that are committed to support an in-depth evaluation of qualified suppliers. Figure 7 highlights the critical actions and decisions involved in supplier evaluation and selection process.



**Figure 7.** Supplier Evaluation and Selection Process. (Monczka et al., 1998: 240)

As can be seen in Figure 7, the final decision regarding the supplier selection is only the last step in a long process of evaluation and selection. Further, each step of the process will be discussed in more details.

The first step in the supplier evaluation and selection involves the identification of the present or future need. If the present need is easy to be identified, a standard purchase requisition completed by the future user of material informs purchasing department of the specific need. In contrast, when sourcing is made in anticipation of a future material need, collaboration with other departments like research and development, production

or marketing is required to establish preliminary specifications on the type of items that will be purchased. The amount, complexity and value of the needed products or services have a crucial importance for the selection process since it determines the extent to which purchasers assess potential supply sources.

Another sensitive aspect of the evaluation and selection process is referring to the sourcing requirements, which can differ from firm to firm or industry to industry. For instance, in the case of a company that activates in a fast changing industry such as information and technology, the suppliers need also be responsive to the latest technological changes in order to provide up to date solutions. On the other hand, a firm in a slower changing industry may put pressure for instance on supplier's cost competitiveness. In consequence, a set of evaluation criteria needs to be developed by purchasers in order to have a clear guidance for requirements identification. The *Selection Criteria* section will discuss the supplier performance areas according to their critical sourcing requirements.

In order to satisfy the sourcing requirements, companies must define clear purchasing strategies that will support their decisions. Some of the various strategic options available for purchasers when reviewing the buying requirements are related to the number of suppliers contracted, their provenience (domestic or international), the types of products supplied (strategic or non-strategic), timeframe of the contact and the intensity of the relationship. There is no single strategy able to meet the requirements for all purchases. Therefore the best solution for companies is to find a combination of optimal strategic decision that will satisfy both purchasing needs and requirements.

Knowledge of supply sources represents another driver for an effective selection. Usually, buyers use various sources of information when searching for a potential supplier. An important source is represented by firm's current suppliers who may be required to deliver new purchase requirements. The benefit of this approach comes from the fact that buyers are already familiar with the existing partners and therefore saves time and resources required to evaluate and select an additional supplier. On the other side, the buying firms may never know if better suppliers are available unless other

sources are not evaluated. For that reason, many companies are continuously seeking suppliers able to meet their needs and requirements.

Information databases are another starting place for information about potential supply sources. Companies use to build, maintain and update databases of suppliers even if they do not have an immediate need for their good or service. Industrial trade shows and marketing representatives may constitute additional ways of finding potential suppliers. Buyers attending international trade shows have the possibility to interact with their foreign future suppliers and to gather information about them. By receiving visits from marketing representatives, buying companies acquire helpful sales and marketing information about prospective future partners. Additionally, trade journals, trade directories and the networks created during the past experiences can be considered good alternatives for finding the desired suppliers.

### 3.1.1 Evaluation of potential suppliers

After accumulating sufficient information on the suppliers, the available data must be filtered. The role of the initial screening in the selection process is to identify and eliminate those suppliers that are not capable of meeting purchasing needs. Since the objective of the evaluation and selection process is also to establish future contacts, it is important that buyers treat all suppliers with respect. In the end, even though they are not selected, they must be considered an important source of information in identifying trends and events that can affect purchasing strategy (Monczka, et al., 1998: 246).

Because the evaluation is a time and resources consuming activity, it should be done only for those suppliers with chances to receive orders. According to Leenders et al. (2002: 259), the most important factors considered by companies in the evaluation of their sources of supply are related to technical, managerial and financial capabilities of the suppliers. A description of these evaluating factors will be further presented.

*Technical evaluation* refers to all technological, engineering and manufacturing strengths needed by the suppliers in order to provide the desired goods and services.

The evaluation of these particular aspects stems in buyers' interest to receive high quality items in convenient delivery times on long-term bases. It is possible that a company capable of meeting present quality standards to lack capacity or space to extend if future demands asks for it. In addition, keeping the pace with the newest technological advancements represents a prerequisite especially in fast changing industries. Therefore, the evaluation should not only be focused on suppliers' current capabilities but also on his future strengths.

Besides the assessment of suppliers' operational standards, *managerial capabilities* of the future supplier should be tested before the final selection is made. In order to identify the strengths and weaknesses of supplier's management, detailed examination of company's mission, corporate values and goals, organizational structure, managerial qualifications, performance evaluation and appraisal, training and development, information systems, policies and procedures are required (Leenders et al., 2002: 260). An evaluation of this type involves personal visits to suppliers' sites made by qualified employees from the buying organization.

The analyses of supplier's *financial status* represent another indicator of his capability to respond to the needs of the buying company. Their role is to identify poor financial conditions that can lead to future problems. A good source of information about supplier's past financial performance is company's financial statement. Indicators like credit rating, profitability, capital structure, return on investment, inventory return and working capital may provide an insight of supplier's financial stability and competitive ability.

### 3.1.2 Supplier selection decision

The last step in the evaluation and selection process is the decision regarding the selected suppliers. Depending on the strategic importance of the supplier and the perceived value of the purchased items, the activities associated with the final selection can broadly vary.

In the case of routine products, it may only require the information of the supplier and the awarding of the purchase contract. On the other hand, for strategically important products, the procedures are more complex. They may require the negotiation of the contractual terms and are finalized only after specific purchasing details are agreed. Once the contract is signed, another important task for the buying firm is to evaluate the performance of the selected suppliers on continuous basis in order to ensure that they perform as anticipated. While prior-to-selection assessment represents a critical issue in the process of choosing the right supplier, post-selection evaluation can be used as an important strategic tool for supplier-base maintenance and improvement.

The next part will present a literature review on selection criteria followed by a presentation of the most important factors considered by companies when choosing foreign suppliers.

### 3.2 Selection criteria

According to a categorization proposal offered by Ellram (1990), supplier selection research can be divided as either descriptive presenting actual practices, or prescriptive, modeling how suppliers should be selected according to a given set of criteria. Prescriptive research in supplier selection focuses on methodologies used by firms when selecting their supply source. They will be further discussed in Selection Methods section of the study.

Descriptive studies have their origins back in 1966 when Dickson in his seminal paper identified 23 supplier selection criteria. According to his findings, quality, delivery and performance history were ranked as having an extreme importance when selecting suppliers. Warranties, production facilities and price received a considerable importance, while reciprocal arrangements, training aids and business past have been perceived as having a slight significance. In 1991, Weber et al. reviewed and classified 74 related articles that had been written after Dickson's study. Their findings highlight net price followed by delivery and quality as the most cited criteria in the reviewed papers, while the amount of past business warranties and claims have received the least

attention. From 1966 until our days, profound changes in political, economical, social and technological environments modified business world and consequently the international purchasing practices. Numerous themes related to supplier selection emerged from literature, especially from purchasing and supply management domain. Kannan, Hsu, Leong and Tan (2006), divided previous research made on supplier selection in three major categories regarding their primary focus: purchase environment, strategic issues and performance issues.

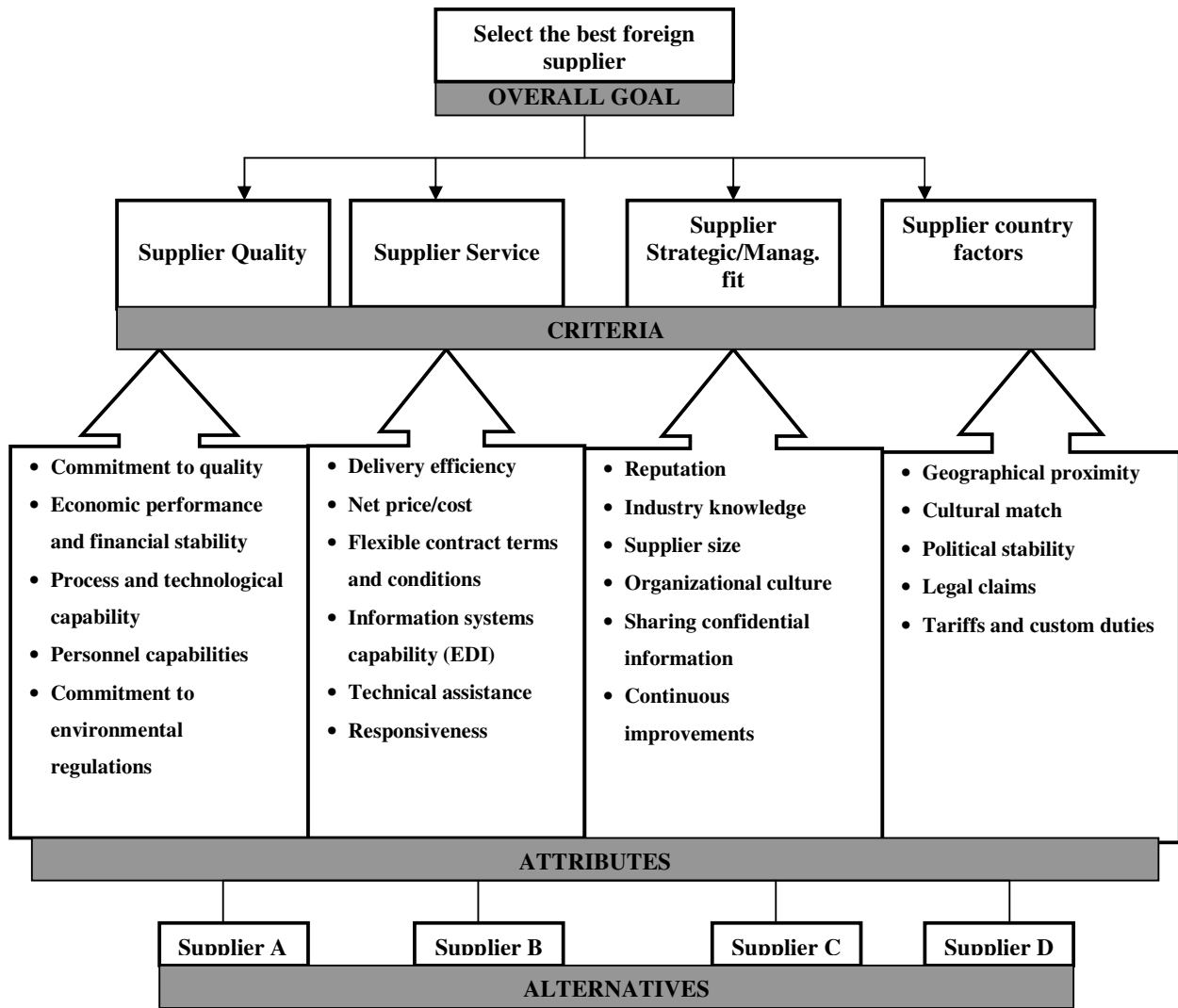
A first category of studies, focused on purchasing environment, considers transactional approach when selecting suppliers in different buying conditions. Selection criteria in various purchasing situations like import purchases (Cavusgil & Yavas 1987; Min & Galle 1991), industry focus (Lambert, Adams & Emmelhainz 1997; Pearson & Ellram 1995), international purchasing practices (Quayle 2002; Karande, Shankarmahesh & Rao 1999) or product attribute (Lehmann & O'Shaughnessy 1982) have been examined. Although variations in the importance of different criteria under different scenarios exists, the importance of quality, delivery, price of materials and services, responsiveness, and service (Kannan & Tan 2002; Wilson 1994) was considered primordial for a successful supplier selection.

The second stream of research pays attention to the strategic issues and evaluates the strategic perspectives of the supplier selection. Starting with the emergence of Supply Chain Management concept, more and more scholars and practitioners have realized that supplier selection and management was a vehicle that can be used to increase the competitiveness of the entire supply chain (Lee, Ha and Kim 2001). As a result many companies orientate their attention towards reducing the size of their supplier bases in order to manage more effectively their relationships and to coordinate more efficiently their strategic suppliers' capabilities and technologies. The focus of their studies was inclined towards the position of the buyer in the supply chain (Choi & Hartley 1996), buyer/supplier partnerships (Ellram 1990 & Spekman 1988), single versus multiple sourcing (Swift, 1995), or supply base reduction (Goffin, Szwajczewski & New 1997). The findings of the above-mentioned studies pointed once again the importance of quality, cost, delivery and services in supplier selection. In addition, they underline the

need to evaluate a larger set of criteria especially intangible ones like goal alignment between buyers and suppliers and supplier capability (Vonderembse & Tracey 1999).

A more recent tendency of research is based on the performance issues and examines the impact of supplier selection on manufacturing firms' performance (Tracey & Tan 2001; Vonderembse and Tracey 1999). According to these studies, supplier selection has a major impact on both manufacturing and business performance, but the most commonly used criteria such as cost and quality may have less importance than "soft" ones like management compatibility, goal congruence and strategic direction of the supplier (Ellram 1990).

Previous international supplier selection studies are also present in business literature. Topics such as regional purchasing behavior of Chinese (Mummalaneni, Dubas & Chao 1996), Japanese (Hirakubo & Kublin 1998), Indian (Karande et al., 1999), South African (Abratt 1986) or American (Min & Galle 1991) firms along with comparative studies on different countries stressed the differences between selection of domestic and foreign suppliers. The evaluation and selection of international suppliers were perceived to be more complicated due to uncertainties related to lack of information and additional risks associated with countries' business environment. Based on the review of the previous literature, an international supplier selection framework was constructed (see Figure 8). The criteria are structured in four general sets of attributes considered important in selection decision-making process: supplier quality, supplier service, strategic/management fit and supplier country factors. Each criterion is further decomposed into various attributes considered to influence the selection decision. Lastly, the bottom level of the framework emphasizes different alternatives available for purchasing companies.



**Figure 8.** Framework for international supplier selection. (Min 1994, Kannan et al. 2006)

### 3.2.1 Supplier Quality

Quality has constantly been identified in literature as a key supplier selection criterion. While a specific definition of quality may vary according to the purchase context, it is obvious that supplier quality represents an important issue in the evaluation and selection process (Kannan et al., 2006). In a previous study made on electronics industry, Pearson and Ellram (1995) proved that quality was the most important criterion due to its strategic importance. Additionally, Min and Galle (1991) reported



that “the leading driver to overseas sourcing is the high quality of foreign products resulting from the emphasis placed on quality-at-the-source”. But buyers not only evaluate the quality of goods and services supplied (e.g. number of defects) and they also focus their attention on the value of their suppliers (commitment to quality and environmental regulation, continuous improvement) as critical aspects in quality development and improvement.

According to previous literature classifications on supplier’s features related to quality (Min & Galle 1991; Leenders, et al., 2002; Ellram 1995 and Kannan et al., 2006) several attributes will be further described, namely supplier’s commitment to quality, economic performance and financial stability, process and technological capability, personnel capability and commitment to environmental regulations.

#### Commitment to quality

A usual concern for purchasers is whether the supplier will deliver the goods and products according to the established requirements. From the variety of aspects related to quality conformance, Deng and Wortzel (1995) identified packaging material and packaging style requirements, product styling requirements, product technical design specifications, material quality standards and product workmanship standards as being the most important.

A good way of preventing non-conformances in the quality of the supplied items for buyers is to involve in quality assurance and quality control programs even from the incipient stages of the supplier selection process. According to Lysons and Gillingham (2003: 237) quality assurance is concerned with defect prevention and includes “all the activities needed to provide adequate confidence that an entity will fulfil requirements for quality”. The same source defines quality control as dealing with defect detection and correction and relates to activities such as determining where, how and at what intervals inspections should take place and what corrective actions should be taken.

Before a new supplier is given an order, buying companies evaluate quality control and assurance programs on the suppliers’ premises. In addition, the buyer has to investigate

whether or not the potential suppliers are certified for quality assurance and if are committed for preventing quality failures. The obvious goal of the quality assurance and control programs is to have the right quality by making it right the first time and to insure this before the collaboration with the supplier starts because creating quality at its source is considered behind all quality improvement programs (Leenders, et al., 2002: 187).

#### Economic performance and financial stability

An evaluation of potential supplier's financial issues occurs almost always during the initial evaluation process. Economic performance reflects previous financial activities of the supplier while financial stability assesses his future viability (Ellram 1990). According to Monczka et al. (1998: 247) many firms consider the financial assessment as a preliminary condition that the suppliers must pass before the evaluation can begin. Selecting suppliers with financial unsatisfactory records may lead to severe risks for the buying company. Firstly, there is the probability that supplier will become insolvent, fact that will interrupt buyer's supply of materials if no other sources are available. Secondly, suppliers in poor economical conditions will not have necessary resources to invest in plants, equipment or research for a future technological or performance improvement. The third risk implied by supplier's' economic instability is that the supplier may become too financially reliant on purchaser. All these problems have to be evaluated before deciding which source of supply to choose in order to avoid future purchasing discontinuities.

#### Process and technological capability

The quality of the supplier is also determined by his technical expertise. Process capability includes the design, the methods and the equipment used to manufacture a product or deliver a service. Technological capability refers to supplier's capacity to perform efficient process activities based on his previous experience in making the product, available up-to-date production facilities, fixed/working capital to back up production and engineering competence to build up production (Deng 1995). The

ability to manufacture an economically item at the required quality level is critical (Monczka, et al., 1998: 253). Therefore, a review of supplier's production facilities may offer an understanding of their scale, equipment condition and operating environment. Many firms become involved in relations due to suppliers' unique technological capabilities (Ellram 1990). In addition, suppliers' capability to provide design support for buying firms' items may represent an important advantage considered in selection decision.

#### Personnel capabilities

The quality of the supplier is also highlighted by the aptitudes of the non-management personnel. Highly trained and motivated workforce is reflected in supplier's overall business performance. Thus, buying companies have to evaluate supplier's workforce flexibility and turnover, the relations between employees and management, the level of education and training received and the degree to which they are committed to continuous improvements before taking the final supplier selection decision (Monczka, et al., 1998: 251). In the international context, this kind of evaluations is more difficult to be made. However, the necessity of knowledge about the history of strikes and working conflicts will provide a general idea of how dedicated the supplier's workers are to fulfilling buyer's expectations.

#### Commitment to environmental regulations

Environmental considerations effect every phase of the purchasing cycle. Recent public awareness for an ideal zero environmental impact has raised the importance of environmental supply chain management. Carter and Narasimhan (1998) reported that environmental purchasing strategies are in their incipient phase on most efforts focused on avoiding violations rather than considering environmental issues in sourcing decision. Many companies integrate environmental concerns into supplier evaluation and selection process in order to minimize the impact on their customers' requirements. It is increasingly important for them to know whether or not the selected suppliers have conformed to environmental rules of the buying firm environmental responsibilities regarding transportation, use and disposal of hazardous materials and recycling design

in different industries represent important aspects followed by companies when choosing their suppliers.

### 3.2.2 Supplier Service

Another aspect emphasized in supplier selection literature is represented by supplier's service capability. According to Kannan et al. (2006), there are two ways in which suppliers' abilities concur to meet buyer's needs. Firstly, they need the capacity to meet buyer's expectations in a timely manner and respond rapidly to demand changes. The studies on supply chain management highlight also the importance of supplier responsiveness to variable buyer needs especially in an environment characterized by short product life cycles and pressure on product lead times (Vickery, Calantone & Droge 1999). Secondly, the supplier should be able to meet buyer's needs in a related way to buyer's expectations regarding price. The importance of price is frequently presented in all supplier selection studies. Even though it is evaluated as net price, cost or cost versus performance, the financial aspects of the buyer-supplier relations has an important weight in the final supplier selection decision. The indicators identified in literature (Deng & Wortzel 1995; Min & Galle 1991; Cavusgil & Yavas 1987 and Swift 1995) as being relevant for supplier service criterion are: delivery efficiency, net price and costs, contract flexibility, information systems capability, technical assistance and responsiveness.

#### Delivery efficiency

In addition to price and quality, delivery represents one of the most notable factors that influence the importers decision when selecting their suppliers. In a study comparing single versus multiple sourcing across different industries and product types, Swift (1995) concluded that delivery is one of the most important aspects of a multiple-sourcing buying situation.

When releasing orders, buying companies demand a specific quantity which needs to be manufactured in precise lead time and delivered according to a previously agreed due date. Quantity conformity refers to supplier's compliance with the predetermined order

quantity within the tolerance limits. Lead-time requirements describe the amount of time necessary for a supplier to manufacture and distribute the items; from the moment the order is received to the time products are in buyer's possession. Conformity with due dates represent the seller's ability to have the products delivered at a specific date according to a pre-established agreement. Given their importance for the buying firm, quantity, lead-time requirements and due-date compliance represent key elements of supplier's delivery performance.

#### Net price/costs

The level of price is the most frequently cited reason for developing a purchasing strategy. Traditional literature (Lehman & O'Shaughnessy 1982) describes price as a top priority and a key attribute during the implementation of a strategic sourcing plan, especially for routine products. However, more recent works have a different approach to pricing and analyze the different pricing attributes related to costs associated with the specific sourced item. Total Cost of Ownership is considered a more appropriate approach, which looks beyond the price of purchase to include many other purchase-related costs (Bhutta & Huq 2002). This approach requires that the buying company determines which costs are most important in the acquisition, possession, use and further disposition of a good or service. The evaluation of cost structure represents an important issue for purchasers since it involves a good understanding of supplier's total costs, including labor costs, material costs and manufacturing and operation costs. Having a good idea about supplier's costs structure also helps the buyer to understand the seller's efficiency in producing the required materials and on a long term to identify what are the areas of cost improvement.

Even though from the buyer's perspective the cost structure is a critical part in the supplier evaluation and selection process, the former may be reluctant in sharing this kind of information with the purchaser for several reasons. Firstly, the supplier might have a pricing strategy that would be undermined in the case of releasing information regarding his cost structure. Secondly, there is a risk that competitors will have access to the costs data, which may jeopardize supplier's competitive advantage. In consequence, buyers may approximate supplier's costs during the screening process in

order to have an estimative idea about their contribution to the final price (Leenders, et al, 2002: 260-261).

In addition, when sourcing from foreign countries, supplementary costs related to transportation, storage, handling, insurance or customs are included in the final price of the goods. As a result, the foreign supplier with the lowest price is not necessarily the most suitable when all the additional costs incurred by the international transactions are taken into account.

#### Flexible contract terms and conditions

Standard conditions regarding payment terms, transportation and insurance are supplier service attributes included in the final contract under the name of terms and conditions. In the context of international business, a sales contract including product specifications, penalty clauses, warranty conditions, time-scale and delivery arrangements accepted by both parties is used when the order has been placed (Branch 2001). Ideally, the buyer and supplier must ensure that any problems or conflicts are easily resolved to the mutual benefits of both sides. The extent to which suppliers are open to buyers' demands and the ease of contractual negotiation give the suppliers' flexibility regarding contractual terms and conditions.

#### Information systems capability

The capability to communicate electronically became a must for entering a purchasing agreement. Therefore, many buyers insist on collaborating with suppliers that are capable of using or willing to integrate electronic communication systems. An example of this type of system is represented by EDI (Electronic Data Interchange), which is a closed system that allows both buyer and seller to obtain and provide timely and accurate information (Leenders et al., 2002: 136). During the supplier selection process, purchasing managers must decide on how important is the implementation of the electronic data interchange capability and make their decision according to suppliers' ability to respond to the request.

### Technical assistance

Due to rapid technological advancement, purchased materials become more and more complex. According to requested products' sophistication, suppliers' involvement in product design, engineering service, research and development is increasingly needed (Lyons, Krachenberg & Henke 1990). Bottleneck products are a good example of supplied items in which supplier's service is critical for understanding the requirements regarding product utilization, maintenance and improvement. Therefore, supplier's aptitude to offer necessary technical support must be factored into the foreign supplier selection decision.

### Responsiveness

Frequent fluctuations in supply and demand may put buying firms in difficult positions. Thus, sudden modifications in product design, quality, quantity, delivery times or technology must be supported by appropriate responsiveness from the supply side. Supplier's capacity to adapt to buyer's changing needs may represent a competitive advantage taken in consideration by firms when selecting their supply sources (Karande et al., 1999).

### 3.2.3 Strategic/management fit

Managerial capabilities and strategic directions of the suppliers represent central selection criteria for the establishment long-term business relations. As firms become more reliant on their suppliers, these aspects imply the need for greater alignment between buyers and suppliers (Spekman 1988). Strategic/management fit criteria explore whether the strategic goals and management philosophies of the buyer and supplier are congruent. According to Kannan et al. (2006), management fit represents the extent to which each entity understands the desires and goals of the other and anticipates the situation from other's side perspective. When selecting their sources of supply, companies evaluate different characteristics of the supplier's managerial attributes like industry knowledge and experience, commitment to continuous improvements, past relationships and organizational match. By analysing these aspects,

importing firms evaluate their strategic fit with the supplier, top management compatibility as well as the compatibility between different levels and functions of the two firms.

#### Supplier's reputation

Choosing suppliers according to their reputation represent a practice used by many firms. Suppliers compete in their industries according to their value propositions. Some companies excel in quality, others in price, speed of delivery and services or in a combination of them. Based on the reputation and the prestige created over time, well-known suppliers have increased chances to establish purchasing contracts with buyer firms (Swift 1995).

#### Industry knowledge

Previous experience in the specific industry is another strategic attribute in supplier selection process. The knowledge accumulated in time and the networks created represent clear advantages for experienced companies. Furthermore, intensive build up knowledge might come from the management experience (Deng & Wortzel 1995). A good way to get an insight of the industry is to approach supply companies whose managers have a long history in the specific business.

#### Supplier's size

The size of the supplying company might be a selection criterion in different circumstances. According to Lysons and Gillingham (2003: 386), the advantages of selecting large suppliers come from a greater reserved capacity able to undertake additional orders and to cope with presumptive emergencies, increased number of facilities, additional knowledge available and less danger of the supplier becoming too reliant on buyer's business. In contrast, drivers for selecting small suppliers come from a closer attention to buyer's requirement, closer relationships at executive levels and faster response to requests for special assistance. Other motives for selecting suppliers according to their size might be related to the characteristics of goods purchased or even



size of the buying company. If the orders are not quantitatively important, large suppliers might not be interested in delivering.

#### Organizational culture

Besides the formal aspect of the business relationship, informal or unwritten policies also exist in buyer supplier relationships. Inter-organizational sharing of values, norms and ideologies represent important factors of the strategic and managerial fit between companies. According to Ellram (1990), organizational culture fitting comes from intangible factors like mutual trust, common attitude for future, compatibility across levels, functions and activities of buyer and supplier firm. Even though these soft or intangible factors are difficult to be observed, similarities between companies' organizational cultures may represent the start for the development of future partnerships.

#### Sharing confidential information

The development of trust-based relationships between buyers and suppliers necessitates time and multiple mutual efforts (Kannan et al., 2006). The amount of information shared between parties is an important factor that facilitates future collaboration. Reasons for sharing private business-related data might come from supplier's willingness to prove his transparency or from his commitment to a long-term relationship. Therefore, the degree to which confidential aspects are shared between buyers and suppliers might represent an important factor in supplier selection process.

#### Continuous improvements

The commitment to improvement over time represents a managerial capability that affects the future of buyer-supplier relationship. Improvements are usually expected in quality, delivery, production facilities, technology or communication (Kannan et al., 2006). Even though they cannot be assessed from an incipient collaborative stage, the loyalty and trust expressed by supplier firm's management are important evidences of their willingness to improvements.

### 3.2.4 Supplier country factors

Besides supplier quality, service and strategic/management fit, a fourth category of criteria refers specifically to international purchasing practices. Choosing the right supplier from abroad requires a careful study of the host country aspects. These factors differentiate international purchasing from domestic supply and increase the complexity of the purchasing process. Therefore, special attention to supplier country attributes such as geographical closeness, cultural fit, political stability, legal claims, tariffs and custom duties is required in order to select the most suitable foreign suppliers.

#### Geographical proximity

Even though transportation and communication means have been consistently improved during the last decades in international purchasing distance still matters, especially in the case of products or services that need to be supplied on frequent basis (Deng & Wortzel 1995). Therefore, the physical distance between buyers and suppliers might also influence supplier selection decisions.

#### Cultural match

Similarities between buyers' and suppliers' country may have an important role in the decision-making process regarding supplier selection. Buyers usually orientate their attention towards countries with low psychic distance in order to avoid cultural barriers like language problems, business protocols or management culture (Ellram 1990). Selection decisions based on this criterion arise if buyers do not intend to deal with supplier diversity and prefer to do business with companies providing from more familiar culture.

### Political stability

The political environment of the foreign country is considered a good indicator for the business environment to which supplier's company is exposed. Depending on the country in which the supplier is located, the risk of supply interruptions due to political problems may be quite high (Leenders et al., 2003: 552). An instable atmosphere may have a crucial influence on the legal claims, foreign currency rate and exports. There are many cases in which supplier's country or third country currency needs to be utilized in commercial transactions. Therefore a special attention to foreign country political stability should be paid before selecting international suppliers.

### Legal claims

The legal system of the foreign country has an important influence on trade barriers and agreements, market access and commercial legal environment (Min 1994). Especially in the developed countries, compliance with legal specifications follows severe rules from which deviations are not acceptable. Legal specifications usually concern product compliance, health, safety and environmental regulations, import quotas and anti-dumping policies.

### Tariffs and custom duties

Countries' policy on tariffs and custom duties may vary substantially. If for example the governments of the exporting countries may have a policy that attracts buyers in order to sustain national economy, the importing countries often impose high tariffs to protect their industry. Therefore, there are many cases in which import duties will be the subject on the items purchased from abroad (Min 1994). As tariffs and custom duties may increase the total purchasing price, buyers should estimate all the additional costs when choosing their sources of supply.

### 3.3 Synthesis

During this section of the study several propositions investigated in the thesis on how different sourcing strategies may influence managers' perception regarding international suppliers' selection criteria will be presented. Moreover, a theoretical framework for the study based on international purchasing, supplier evaluation and the selection literature will be constructed.

The role of the below propositions is to identify if there is any relationship between different purchasing strategic preferences of the small and medium-sized Danish manufacturing companies and supplier selection criteria considered in international sourcing.

#### *Types of products supplied*

The types of supplied material represent the first category of strategic decision that needs to be taken in purchasing. Previous studies examined the relative importance of price, quality, delivery and service for different purchased product categories (Lehmann & O'Shaughnessy 1974; Evans, 1982 and Wilson 1994). Four types of manufactured goods have been identified based on the problems likely to be encountered if the product is purchased: routine (non-critical), procedural problem products (bottlenecks), leverage products and strategic products.

Research has shown that the relative importance attributed by purchasing managers to different categories of products has changed during the last decades. For example, the studies conducted by Lehmann and O'Shaughnessy (1974) and Evans (1982) revealed that delivery and price were the most important decision features in selecting suppliers for the majority of product categories. While a more recent study, developed by Wilson (1994), presents quality and service as being the most preferred supplier attributes. A possible explanation for the changes in managers' perceptions might be the result of the increased importance accorded during the last decades to Total Quality Management (TQM) practices. Thus it will be interesting to analyze current managers' opinion

regarding the selection criteria on different types of purchased products in small and medium-sized companies. Moreover, other selection criteria evaluated in the present study such as strategic management fit and supplier's country factors are expected to rise in importance for high risk purchasing goods such as bottlenecks and strategic products since an increased cooperation with suppliers will be required. Based on previous literature review and author's perception regarding the relative importance of different selection criteria, the following proposition has been developed:

**Proposition 1:** There are differences in supplier selection criteria between purchasing managers having dissimilar preferences for types of products supplied.

#### *Supply-base structure*

In his study conducted in 1995, Swift identified substantial differences in supplier selection criteria between purchasing managers having different strategies regarding their companies' supply-base structure. According to Swift's study, dependability (delivery efficiency, technical assistance and responsiveness) and price have been identified as being significant criteria that differentiate managers' options. Accordingly, purchasing managers with preferences for single sourcing have been perceived as considering the dependability of the supplier as more important than those who prefer multiple sourcing. In contrast, cost and price related criteria were perceived as being more significant for firms that use to buy materials from multiple sources, while those who single source stressed less the initial price aspects and emphasized more attention to total costs.

In another case-study research aiming in investigating changes in supplier base of UK manufacturing companies, Goffin et al. (1997) identified that quality performance, delivery performance and costs have been perceived in this order as having the same importance in supplier selection for both single and multiple sourcing firms, the only difference being observed regarding a higher need for communication with suppliers from companies that mainly use single sourcing as their purchasing strategy. This finding may be explained by higher awareness from the buyer companies' side in

developing close relationships with their suppliers in the case of single sourcing. Moreover, companies in the latter category might be inclined in finding suppliers that fit their long-term strategies and business visions.

According to the importance of the purchased material, a tendency to select large suppliers might also be more present among companies that use a single source of supply. Thus, a higher importance on strategic and management fit selection attributes is expected to be accorded by companies that single source, compared to those who adopt multiple sourcing policies. Regarding the supplier quality, significant differences are not anticipated in purchasing managers preferences regardless of their supplier-base structure policy. However, buyers that import from single sources are expected to pay more attention on the geographical proximity of the suppliers.

**Proposition 2:** Strategic/management fit is more important for single sourcing oriented companies than it is for companies that use multiple sources of supply.

#### *Buyer-supplier relationships*

The third independent variable utilized in the present study concerns the type of relationships intended to be developed with the supplier or, in other words, the intensity of the buyer supplier relationship. According to the strategic importance of the transaction, relationships between buyers and vendors may differ from independent (arm's length relations) to strategic partnerships (fully integrated relations). In independent or discrete relationships, firms are expected to make rationale economic decisions as autonomous actors in the marketplace. Taken into account the opportunistic behavior of the partners, it is expected that this type of relationship to be focused especially on price related advantages. Besides costs and price, due to the lack of previous experience with suppliers, a special attention in discrete relations is paid to supplier's country factors.

Once the relations evolve to more advance stages such as cooperative or collaborative, buyers may incline towards suppliers that are open to increase the communication and

to customize the offers according to buyer's requirements. At these stages, the selection criteria that guide purchasing managers in decision making are less based on price of materials or transaction costs and are more inclined towards supplier quality and supplier service.

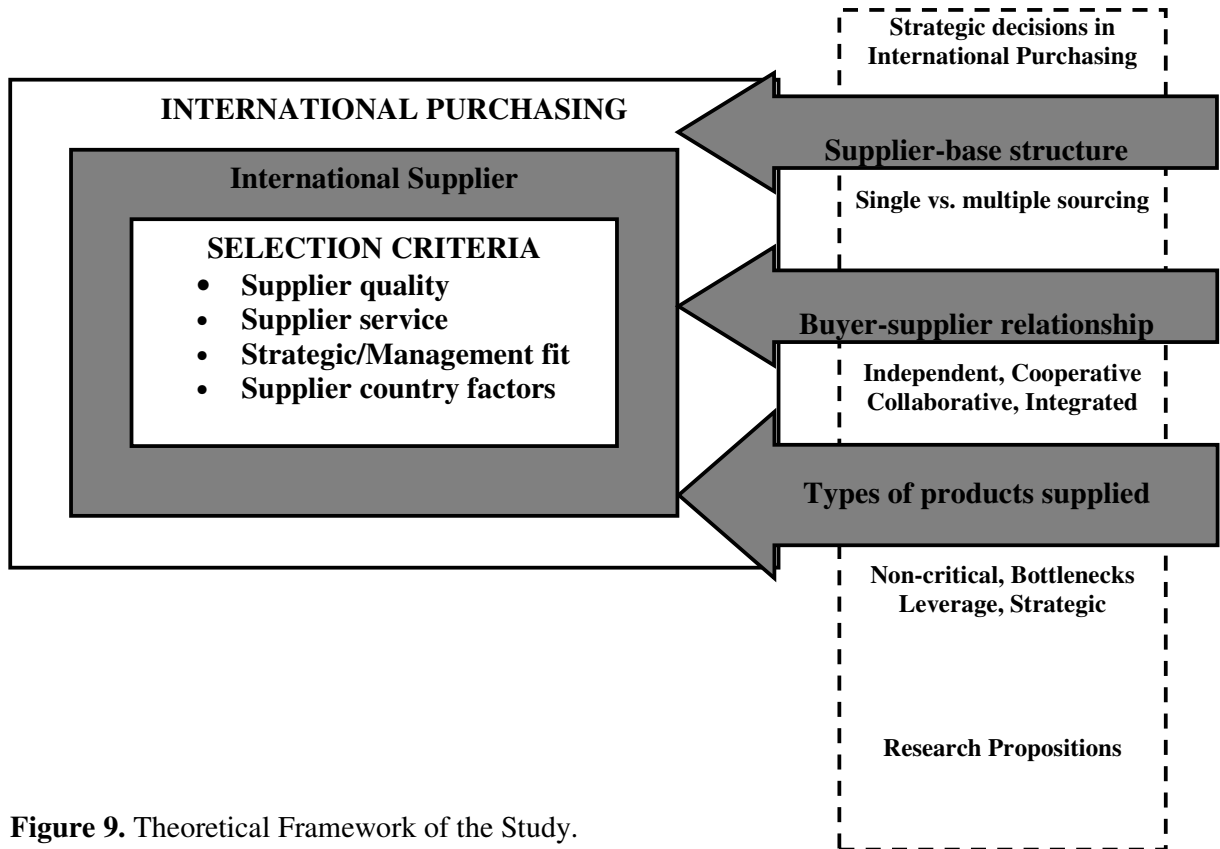
In the most advanced form of relationship between buyers and suppliers, fully integrated relationships, the price tends not to be an issue anymore and the interdependence between buyers and suppliers leads to the creation of deep bounds between parties (O'Tool & Donaldson, 2000). Ellram (1990) identified the most important selection criteria in supplier partnerships. According to her study, economical performance, financial stability, organizational culture and technology were recognized as being crucial in developing successful relationships. Therefore, companies involved in integrated relationships with their suppliers allocate an increased importance on management/strategic fit and supplier quality.

**Proposition 3:** Buying firms that develop strong inter-organizational relationships (collaborative, fully integrated) with their suppliers will rate higher supplier quality and strategic/management fit.

To conclude the theoretical part of the paper, a framework for international purchasing having as central point of investigation the evaluation and selection of foreign suppliers was created (Figure 9). The study begins by explaining the main reasons and barriers for and to purchasing from international locations and by defining the terminology used in international sourcing context. Furthermore, based on previous research, the strategic decisions that influence managers' perception on supplier selection are described. Selection criteria provide the requirements that guide purchasing managers in supplier decision-making practices.

Moreover, the project aims particularly in identifying the most important criteria considered by Danish small and medium-sized manufacturing companies when evaluating and selecting their international suppliers. According to importing companies' perception on the significance of the selection criteria, four groups of

criteria have been identified. Each category of criteria was further examined and divided into various attributes that characterize the supplier selection decision.



**Figure 9.** Theoretical Framework of the Study.



## 4. RESEARCH METHODOLOGY

The third chapter of the paper discusses the methodology of the empirical research conducted among Danish manufacturing small and medium enterprises. The purpose of the methodology chapter is firstly to present a clear picture of the methods used and secondly, to explain and justify the steps and approaches used in collecting the information in order to provide a better overall understanding. In the introductory part of this chapter, the research design and data collection will be discussed. Further in the chapter, I will initiate a discussion concerning the target survey population and the facts on which the thesis has been based. The methodology chapter will be concluded with a presentation of the validity and reliability of the study.

### 4.1 Research design

A distinction, that is most commonly drawn among business researchers, derived from the type of relationship between theory and research is based on two kinds of research strategies: quantitative and qualitative research. The primary difference between these methods comes from the fact that quantitative approach is used to convert the collected information to numbers and quantities, which is utilized for further statistical examination. On the other hand, qualitative methods engage researcher's attitude, interpretation and intuitive understanding, which are not subject to quantification and quantitative analyses (Mc Daniel & Gates, 2005: 108).

The empirical investigation conducted in the present thesis is quantitative. A survey research based on self-administrated questionnaires was used in order to collect primary data from managers responsible with purchasing activities in sampled organizations. According to Malhotra and Birks (2003: 132-133), quantitative research is used to answer specific hypotheses or research questions using techniques that seek to quantify data by applying some form of statistical analysis. One of the tools and technique associated with quantitative research is the use of surveys, which can be either based on questionnaires or structured interviews. Questionnaires can be both self-administrated

(e.g. on-line questionnaires, postal questionnaires, delivery and collection questionnaires) and interviewer administrated (telephone questionnaire and structured interview) (Saunders, Lewis & Thornhill 2003). Additionally, the form of questionnaires lies between two boundaries. At one end, there are structured questionnaires containing a series of formal questions designed to attract answers of limited response, while at the other extreme there are unstructured questionnaires where formal questions are replaced by a freer mode of investigation (Chisnall, 1997: 128).

The survey utilized in the present paper uses standardized questions, which were administrated in the same way to all respondents; fact that facilitates an easy comparison and allows the researcher to have more control over the research process. In addition, the study has an explanatory purpose, since the empirical objective was to investigate the relationship between variables (Saunders et al., 2003: 97-98). In accordance to this, three propositions were formulated and then empirically tested in the survey.

#### 4.2 Data collection and methods of analysis

According to Aaker, Kumar and Day (1995: 77), primary data is collected to address a specific research objective, where a wide range of methods ranging from experiments to surveys may be used. In this study, data was collected by conducting web survey questionnaires on 2.369 Danish companies. CD-Direct database administrated by KOB (Denmark's largest company database) containing information on all VAT registered Danish firms was used in order to construct the list of companies involved in import activities. In addition, supply chain management and international trade journals were extensively used as a secondary source of data, in order to complement the research.

In order to collect responses from targeted population, web-based survey software was utilized. The questionnaire was first documented in a standard Word format and then before launching it on the Internet, it was programmed in a web survey application (Miiled SRT). Web survey systems are software systems designed for Web questionnaires construction and delivery consisting of an integrated questionnaire designer, Web server, database and a data delivery program. The questionnaire is

constructed and then transmitted to the web server where it is further distributed. The advantage of using web-based surveys is that the user can query the server at any time for descriptive statistics on responses and graphical displays of data (Mc Daniel & Gates, 2005: 167-168).

The questionnaire was developed in English and organized in five parts. The introductory part provides demographic and socio-economical information on individual firm. Six questions were formulated in order to collect information on industry in which the companies operate, number of persons employed in purchasing departments, involvement in international sourcing operations and the intensity of purchasing. Moreover, the experience in import activities and sourcing regions are evaluated in this section.

In the second part of the questionnaire, the respondents were asked to choose up to three motives and barriers, which they considered as being important for their international sourcing operations.

The third part contains three questions related to strategic options in international purchasing. The questions present here treated aspects related to the respondents' supplier base structure, types of products purchased and types of relationships developed with their foreign suppliers.

The fourth part of the survey concerns a question of opinion for supplier selection criteria that was constructed as closed question in the form of five-point Likert scale bounded from "Not important at all" to "Extremely important". Respondents were asked to judge the extent to which they appreciate the importance of the suppliers' attributes for their companies and rank them based on their perceived significance in the process of international supplier selection.

The final section of the questionnaire contains an optional question in which the respondents interested in results are asked to indicate their contact information in order

to receive a sample of the research findings. A sample of the questionnaire is attached to the Appendix section (see Appendix 1).

When the process of data collection is ended, the role of researchers is to transform all the gathered information into a format that will permit a more detailed further analysis (Mc Daniel & Gates, 2005: 412).

The first step in this process is represented by data validation, which in present paper was secured by ensuring that all received questionnaires were administrated properly and completely.

The second stage, coding, refers to the method of grouping and assessing numeric codes to various responses to particular questions. Most questions on the survey were closed-ended and pre-coded, different numeric codes being assigned to all questions. As can be observed in Appendix 1, in order to ease the analysis of data, for each question containing interval-based answers, a numeric code has been assigned: the answer "1-5" in question two has the code 1, "6-10" has the code 2 and so on.

The last step in data examination process is represented by the statistical analysis. Frequency distribution, cross-tabulation and proposition testing were the main measurements utilized in the present paper. The role of frequency distribution analysis was to obtain a count of the amount of responses associated with different values of variables and to present these counts in percentage terms. A frequency distribution for a variable offers a table of frequency counts, percentage and cumulative percentage for all the values associated with that variable (Malhotra and Birks 1999: 448). Three types of measures were associated with frequencies: measures of location (mean- measure of central tendency), measures of variability (standard deviation- square root of variance) and measures of shape (skewness- distribution's symmetry about the mean).

Although the answers to questions related to a single variable are valuable, often questions regarding how to link that particular variable to other measure are raised.

Therefore, cross-tabulations were used in order to describe two or more variables simultaneously.

The preferred procedure for proposition testing in this paper was represented by analysis of variance (ANOVA). This type of test allows researchers to determine if one given independent factor has a significant effect on different dependent measurements under study. Although it can be used to test the differences between two means, ANOVA is more commonly used for testing hypothesis based on the differences among the means of several independent groups (Mc Daniel & Gates, 2005: 478).

#### 4.3 Target survey sample

The target population of the research consists of small and medium-sized Danish manufacturing companies. The central unit of analysis was the private firm and the focal decision process was the companies' declared importing activities. In order to identify the organizations, I used the CD-Direct database containing information on all registered companies activating in Denmark.

The initial sampling pool included all Danish incorporated, limited liability firms (A/S and Aps). The first population selection criteria limited the sample to all manufacturing companies with NACE (Nomenclature of Economic Activities) codes between 15 and 37 (manufacturing firms). Secondly, according to the European Union's definition of small and medium-sized firms in Europe that defines small companies as those having between 10 and 49 employees and medium organizations as having a workforce between 50 and 249. Therefore the list was limited to all manufacturing firms with 10-249 employees registered in Denmark. Additionally, subsidiaries of other international firms along with 50 companies registered in Denmark but activating in self-governed territories of Greenland and Faeroe Islands were excluded from the target population. A total number of 2,369 manufacturing firms matched the selection criteria and have been considered the population from which the sample was drawn.

Tables 1 and 2 present the distribution of sampled and contacted population according to the main criteria utilized in selecting the subjects of investigation. As it can be observed, an amount of 1.596 firms accounting for 67% of targeted population contains small companies (10-49 employees) having as main object of activity manufacturing of metal and iron products and machine industry equipment.

**Table 1.** Sample and contacted companies distributed according to company size. (percent and number of companies)

<b>Number of employees</b>	<b>Total sample population</b>	<b>Contacted population</b>
<b>10-19</b>	689 (29%)	537 (27%)
<b>20-49</b>	907 (38%)	792 (40%)
<b>50-149</b>	558 (23%)	455 (23%)
<b>150-249</b>	215 (10%)	178 (10%)
<b>Total number of companies</b>	<b>2.369</b>	<b>1.962</b>

**Table 2.** Sample and contacted companies distributed according to industry sector. (percent and number of companies)

<b>Manufacturing of:</b>	<b>Total sample population</b>	<b>Contacted population</b>
<b>Furniture and paper products</b> NACE codes: 21-22, 36	281 (12%)	257 (13%)
<b>Iron and Metal products</b> NACE codes: 27-28	588 (25%)	518 (26%)
<b>Food products and beverages</b> NACE code: 15	174 (7%)	121 (6%)
<b>Textiles and wearing apparel</b> NACE codes: 17-18	111 (5%)	92 (5%)
<b>Electronics</b> NACE code: 31	562 (24%)	481 (25%)
<b>Medical equipment and instruments</b> NACE code: 33	136 (6%)	101 (5%)
<b>Chemical products</b> NACE code: 24	99 (4%)	68 (3%)
<b>Construction industry products</b> NACE code: 29	207 (9%)	172 (9%)
<b>Other products</b>	211 (8%)	152 (8%)
<i>Total in %</i>	<b>100</b>	<b>100</b>
<b>Number of companies</b>	<b>2.369</b>	<b>1.962</b>

In order to contact the organizations included in the final sample, a first set of e-mails containing a cover letter was sent on March 3<sup>rd</sup> 2008. In the introductory cover letter, it was specified the research scope and objective as well as the potential benefits that the companies could gain by participating in the study (see Appendix 2). After one week, reminder e-mails have been directed towards the companies from which no response was received. Three days before the established deadline, telephone interviews were conducted with purchasing managers from randomly selected non-respondent companies in order to increase the response rate. On March 14<sup>th</sup>, the response collection process ended, no additional results being considered after the deadline.

Of the original 2369 manufacturing firms, a number of 407 companies could not be reached due to multiple reasons: 229 e-mails could not be sent either because of technical problems such as wrong submitted addresses, host server problems or currently un-existent websites; 37 e-mails have been returned due to “out of office” or “vacation”, the returning dates mentioned in the responses exceeding the deadline for the study and consequently being excluded from the sample. In addition, 138 companies notified the researcher via emails or telephone discussions their refusal in taking part in the survey. The most cited reasons for not participating were company’s policy that does not allow employees to respond the surveys, lack of time, unwillingness, outsourced purchasing functions and production facilities off shored to more cost attractive countries. Moreover, purchasing managers from 3 organizations expressed their interest in the study but mentioned that their firms already overlapped the number of 500 employees during the last year and therefore could not take part in the survey. In conclusion, the total number of companies that received the invitation to the survey and qualified for the study summed up 1.962 firms.

The amount of sent received and the response rate are further presented in Table 3. As one can see, a total of 47 completed questionnaires have been received, 43 of which represented firms that were involved in international purchasing, resulting a response rate of 2,4%. Four firms mentioned that for the moment they are not implied in any purchasing activities from abroad and thus their responses have not been taken into account.

**Table 3.** Research response rate.

Sample size	<b>1.962</b>
Questionnaires returned	47
Usable questionnaires	43
Usable rate	91,4 %
Response rate	2,4 %

As the reliability of data depends on the size of the sample that is obtained, and not on the number of the surveys sent, the total number of firms considered valid for examination was 1.962. Even though the response rate can be considered relatively low, this is not an unusual fact for web-based surveys. The most serious weakness of mail data collection is the relatively low response rate (Alreck and Settle, 1985: 45). Mail surveys with rates over 30 percent are usually rare, a response rates of 5 percent or less being more common in this type of surveys (Mc Daniel & Gates, 2005: 150), which means that over nine out of ten people who are surveyed commonly may not respond.

The only question that needs to be examined is whether those who did not respond to the survey are systematically different in some important way from those who did respond because such differences lead to non-response bias. To assess whether there was any non-response bias, comparisons were made between the responses gathered during the first week and those accumulated during the second week of surveying period. Armstrong and Overton (qtd. in Swift 1995) suggested comparing the answers of late respondents to those received earlier since late respondents are similar to non-respondents. Because the present research deals with ordinal data, the goodness of fit between two different samples was examined using non-parametric “two independent sample” tests. The results of the tests show that no significant differences exist between the two groups of respondents (early respondents n=23 and late respondents n=20) on all of the subsequent variables: supplier’s commitment to quality, net price of products, ability to respond to unexpected solicitations and foreign country cultural match ratings (see Appendix 3). Therefore, it can be concluded that the sample was representative for the targeted population and non-response bias did not influence the research.



#### 4.4 Measures

The independent variables in this survey are managers' strategic sourcing preferences regarding the supplier-base structure (single vs. multiple sourcing), the intensity of buyer-supplier relationship (independent, cooperative, collaborative and fully integrated) and types of product supplied (non-critical, bottle-neck, leverage and strategic). Three questions (Q9, Q10 and Q11) were introduced in the survey in order to analyze the respondents' preferences on the above-mentioned strategic decisions (see Appendix 1). The surveyed persons were asked to choose one of the options mentioned in questions based on their organization's purchasing practices.

The dependent measures are the selection criteria and their attributes. Previous research based on literature review and actual supplier selection practices indicate that supplier quality, service and management fit represent the most relevant constructs for selection criteria practices (Kannan et al., 2006). Additionally, given the purpose of the present research, supplier's country factors have been included in order to extend the focus of the study to the international level (Min 1994). A total of 25 supplier attributes representing the selection criteria were extracted and tested. Each of the extracted attributes was grouped in four sets of criteria namely supplier quality, supplier service, strategic/management fit and foreign country factors. These criteria represented the dependent latent variables of the present study that are a set of measures that are not noticeable but are supposed to enter into the structure of a system under study. The respondents were asked to rate the supplier attributes when choosing and international supplier for the most regularly products brought from abroad (see Q12, Appendix 1).

#### 4.5 Validity and reliability

While conducting a research, it is essential to make sure that the methodology and measurements are according to scientific manners. In other words, it is critical to be acquainted whether the investigation serves its purpose or not. The following part of the chapter will describe the notions of validity and reliability in the context of the present study.

Validity represents a characteristic of a good quantification device and can be defined as the extent to which a measurement corresponds to the characteristics that exist in the phenomenon under investigation. A survey is valid to the degree that it measures what and only what it is supposed to measure. Moreover, it must not be affected by external factors that modify the results in different directions (Alreck & Settle, 1985: 64).

There are four different perspectives from which validity can be examined: face, content, criterion-related and construct (Mc Daniel & Gates, 2005: 268). The weakest form of validity is called face validity and concerns the degree to which a measurement instrument seems to assess what it is supposed to, as judged by researchers. Content validity or the representativeness of the content expresses the degree to which the investigated items represent the appropriateness of the concept under study. Criterion-related validity compares the responses obtained during the research to the future level of a variable (predictive validity) or to those that are already considered valid (concurrent validity).

The last form of validity is called construct validity and involves the comprehension of the theoretical rational that characterize the obtained measurements. Additionally, it represents a measure of how significant the survey is when tested in practice. Construct validity comprises two other types of validity namely convergent validity and divergent or discriminant validity. The former involves the measurement of a construct using different techniques in order to obtain the same information on a given concept, while the later is used to demonstrate a lack of correlation among different constructs (Kinnear & Taylor, 1996: 235).

In the present paper, the validity has been secured by using a survey for which most of the questions have been developed according to an extensive preparatory study of previous literature. Moreover, measurement models were first developed to assess the construct validity. In addition, predictive validity was assured using a model that defines the direct relationship between latent variables.

Reliability refers to the consistency with which a measure produces the same outcome with the same or comparable populations. Therefore, it can be considered the degree to which the research instruments are free from measurement and random errors and thus, provide consistent data.

Measurement errors are the result of the variation between the information being sought and what actually results from the measurement process. A measurement is not considered to be the true value of the characteristic of interest but rather an observation of it (Malhotra & Birks, 2003: 312) and as a result, the lower the measurement error is, the closer the data are to reality. Alternatively, random errors arise from random changes in respondents or measurement situations and are highly influenced by sampling techniques.

Approaches for testing reliability include three forms namely test-retest, alternative forms and internal consistency (Malhotra & Birks, 2003: 313-314). Test-retest reliability measures the stability and involves repeated measurement of the same person or group using the same scaling device under as nearly equivalent conditions as possible (Kinnear & Taylor, 1996: 234). In alternative-forms reliability, two equivalent but not identical forms of scale are constructed in order to test the same respondents at two different times. The scores from the administrations of the alternative scales are then correlated to assess reliability.

Internal consistency is another commonly used approach to evaluate reliability. It indicates how well different items measure the same issue and it is applied to several items that are summated to form a total score. Each item measures some aspects of the entire construct and should be consistent on what they indicate about the whole construct. Two types of techniques can be used in order to test internal consistency reliability: split-half and coefficient alpha. In split-half method, the examined items are divided into two halves and the resulting half scores are correlated. In order to overcome the problem of how the items are split, coefficient alpha or Cronbach's alpha is used. It represents the average of all possible split half coefficients and varies from 0

to 1, a value of less than 0.6 indicating unsatisfactory consistency reliability (Malhotra and Birks 1999: 314).

For this study, reliability tests using Cronbach's alpha were conducted in order to ensure that indicators used to measure the latent variables were free of measurement errors. Results of the analysis indicate that each of the constructs (sets of latent independent variables) can be considered to be sufficient reliable (Table 4). Internal correlation analysis can be further observed in Appendix 4.

**Table 4.** Reliability analysis.

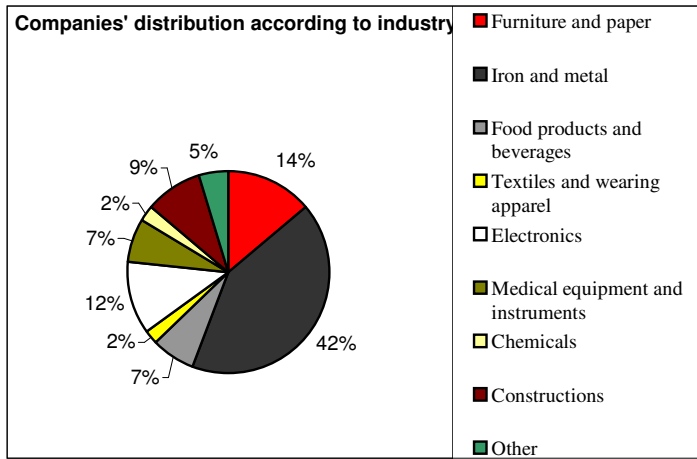
<b>Latent Variable</b>	<b>No. of indicators</b>	<b>Cronbach's alpha</b>
<b>Supplier quality</b>	7	0.689
<b>Supplier service</b>	7	0.601
<b>Strategic/Management fit</b>	6	0.726
<b>Supplier country factors</b>	5	0.727

## **5. EMPIRICAL ANALYSIS AND FINDINGS**

The empirical section of the paper intends to test theoretical findings developed during the previous three chapters by discussing and analysing the outcome of the survey used for collecting data. The first part of the chapter has a descriptive nature and aims to provide background information on the respondent population. Information regarding the main business fields of activity, number of employees, purchasing intensity and regions of purchasing are presented in this part in order to introduce the participant companies in the survey. Second part of the chapter has the role to present and explain the main reasons and barriers perceived by the respondents as being critical to their import activities. Next, the strategic options regarding products, supplier base size and types of buyer-supplier relationships are analysed according to the responses provided in the survey. Furthermore, the international supplier selection criteria and the relative importance accorded to their attributes will be discussed in detail. Finally, three proposition previously developed in the theoretical part will be tested and their results will conclude the present chapter.

### **5.1 Background information**

Since the first selection criteria to participate in this survey was based on data collection from organizations implied in manufacturing activities, it would be interesting to have an insight of the main fields of business in which the respondent companies are activating. The participants in the survey are divided across a variety of industry categories. Figure 10 below, illustrates that the respondent population activates in following business fields: Paper and Furniture 14%, Iron and Metal 42%, Manufacturing of food products and beverages 7%, Textile-apparel 2%, Electronics 12%, Medical Equipment and Instruments 7%, Chemicals 2%, Constructions 9% and other manufacturing industries 5%.



**Figure 10.** Manufacturing SMEs-Primary field of business.

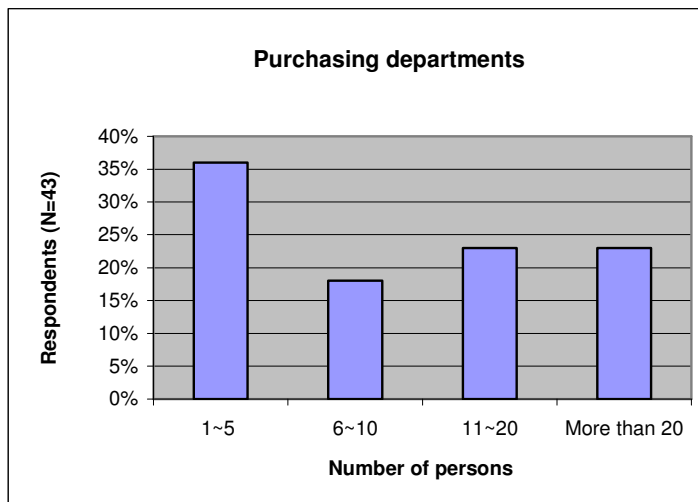
The results highlighted in Figure 10 underline the idea that the primary field of business for the examined small and medium-sized Danish manufacturing enterprises was Iron and Metal industry. The second most mentioned industry is represented by Furniture and Paper industry with 14%, while the least represented fields of business were Chemicals and Textiles-apparel industries with only 3% of the total population. To sum up, the results show that the examined manufacturing companies have a relatively high concentration towards production of metal and iron products, while the rest of business fields are relatively lower and equally represented.

The size of the company was the second criteria in selecting the targeted sample. Regarding this aspect, the respondent organizations were classified according to their total number of employees in small and medium firms. Table 5 shows that most participants (74%) represent small manufacturing companies with 10-49 employees. The remaining part of the respondents (26%) is characterized by medium organizations totalising between 50 and 249 employees.

**Table 5.** Respondent firms' distribution according to company's size.

Type of organization according to number of employees	Frequency	Percentage
<b>Small</b>	<b>32</b>	<b>74%</b>
10-19	14	32%
20-49	18	42%
<b>Medium</b>	<b>11</b>	<b>26%</b>
50-149	7	16%
150-249	4	10%
<b>Total</b>	<b>43</b>	<b>100%</b>

Further, to clarify the importance of the sourcing function in the firms' overall strategy, the respondents were asked to indicate the estimative number of employees working in their companies' purchasing departments. The answers were distributed as illustrated in Figure 11.

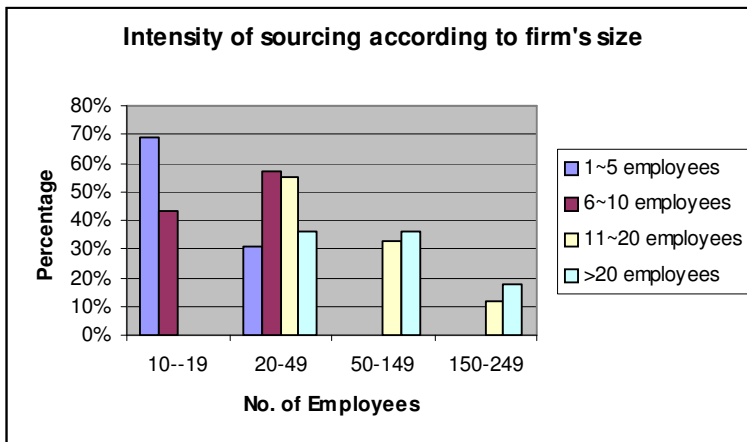
**Figure 11.** The number of persons responsible for firm's purchases.

One way to increase the strategic importance of sourcing could be to specialize the purchasing departments. The results presented in Table 13 show that about 36% of the respondent companies have between 1 and 5 employees responsible for purchasing activities, while 46% employ more than 11 persons in this function. This finding is explained by the large number of small companies participating in the survey, which might probably have not more than one person in charge for the acquisition of goods. On the other hand, 23% of the participants have more than 20 employees in purchasing

departments, which could suggest a relatively high degree of specialization on sourcing, and an important strategic consideration accorded to the procurement.

Considering the international purchasing operations developed by interviewed firms, the higher the number of personnel hired for purchasing function, the higher the company intention on specializing its purchasing professionals on international sourcing will be. The advantages of this specialization could lead to a better understanding of foreign countries features such as language skills, cultural awareness, legal and political conditions etc.

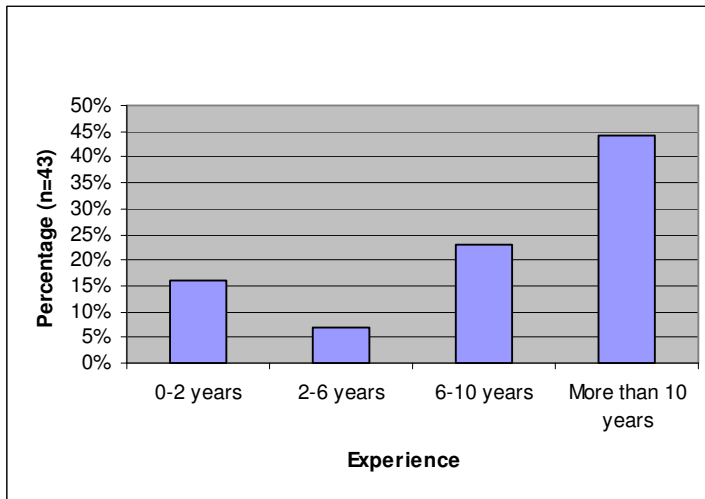
Further, the relative importance of purchasing considering the firms' size is presented. As illustrated in Figure 12, almost 70% of the respondents that mentioned one to five persons responsible with purchasing function in their companies are represented by small firms with a total number of 10-19 employees. From the point of view of the companies that hire 6 to 10 persons in purchasing, the majority of the respondents (57%) have been identified as working in small firms with 20-49 employees. Furthermore, the companies that expressed the highest amount of personnel responsible with purchasing were registered among medium organizations with 50-149 people employed.



**Figure 12.** Intensity of sourcing activities.



The purpose of the following section will be to identify for how long and from which international regions the respondents are sourcing. Generally, a high level of international experience in purchasing has been registered among the respondent companies. Even though the majority of the companies constitute small manufacturing businesses, a large number of respondents (44%) indicated more than 10 years of international sourcing experience, fact that denotes a good knowledge of importing practices and activities. Despite this fact, as illustrated in Figure 13, it is worth mentioning that 16% of the total number of firms are in the start-up phase of the international sourcing process. At this stage, companies usually test the potential sources of supply and establish the level of trust and degree of involvement necessary to optimally utilize the relationships with their international suppliers.

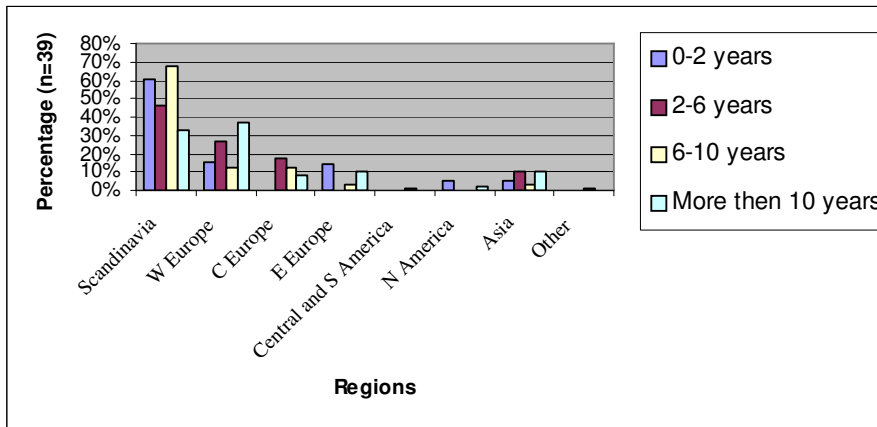


**Figure 13.** Experience in international purchasing.

Given the international orientation of many Danish manufacturing firms, in the introductory part, the survey aimed to find whether these companies import primarily from neighbouring countries or whether they are more global in their purchasing activities. Another interesting finding further examined would be the correlation between sourcing regions and international experience in purchasing.

As illustrated in Figure 14, primary sourcing regions are Scandinavia, Western Europe, Central Europe and Asia. Even though it was included in the questionnaire, Africa has not been indicated as representing a source of supply by the respondent companies and

therefore it is not present in the analysis. The results indicate that the most preferred region for sourcing is Scandinavia, regardless of their past experience in international trade activities.

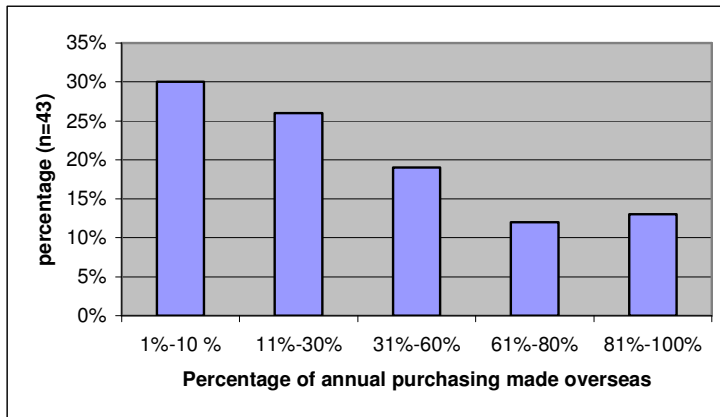


**Figure 14.** Import regions and companies' experience in international sourcing.

An exception from the above finding is made by the respondent firms, which have more than 10 years experience in international purchasing activities. These buying companies are not only looking towards Scandinavian countries (33%), but there is also an upward tendency for selecting suppliers from Western Europe (37%). Explanations for this fact could come either from their previous experience in procurement that allow them to extend the purchasing area or from the need to acquire products that are not available in neighbour countries. The attractiveness of other sourcing regions such as Central and Eastern Europe has been expressed by about 20% of the respondents. On the other hand, different regions outside Europe have been mentioned by only 10% of the respondent companies. The majority of these respondents indicated their interest in internationalising the purchasing activities; Asia representing the most indicated region for sourcing.

The intensity of the international purchasing is further presented in Figure 15. As it can be observed, an important amount of respondents (30%) prefer to source the biggest part (90%) of their needed products from suppliers located in Denmark. Hence, this seems to point out that most of the companies still consider the domestic market as

having a potential for satisfying their sourcing needs. Furthermore, only about 25 % of the sample can be considered highly import intensive firms, since they insure more than 60% of their total purchases from foreign suppliers. In consequence, it can be stated that the respondent companies are divided into three groups related to their purchasing intensity: less-import intensive firms (55%), medium-import intensive firms (18%) and highly-import intensive companies (27%).



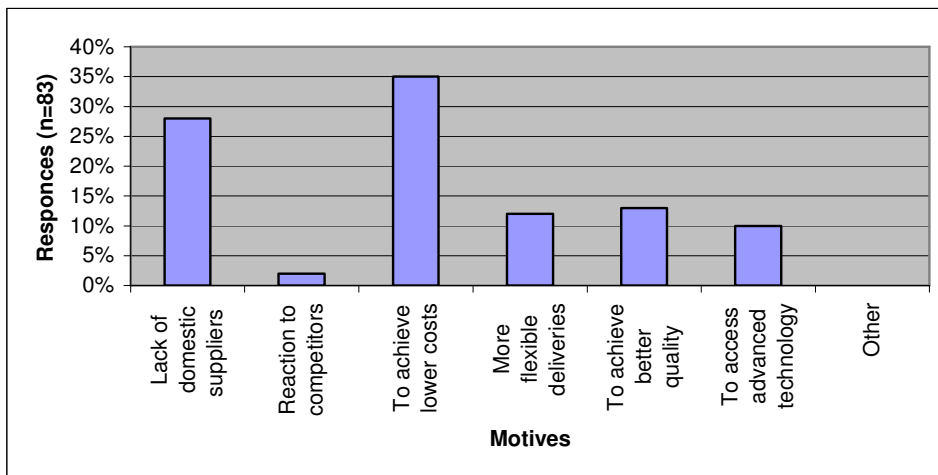
**Figure 15.** The intensity of international purchasing.

To conclude the presentation of the respondents, it can be said that the participant organizations in the survey are highly represented by small firms with 10-49 employees, activating in a large spectrum of industries but with a predominant inclination towards iron and metal business field. Moreover, the firms have a relatively high experience in international purchasing operations and a number of persons responsible for the purchasing function limited to 1-5 employees. Even though the most important regions for sourcing are Scandinavia and Western Europe, an increased internationalisation of purchasing behaviour could be observed.

## 5.2 International purchasing motives and barriers

The following part of the empirical analysis aims to identify the main reasons and barriers to international sourcing for Danish manufacturing companies.

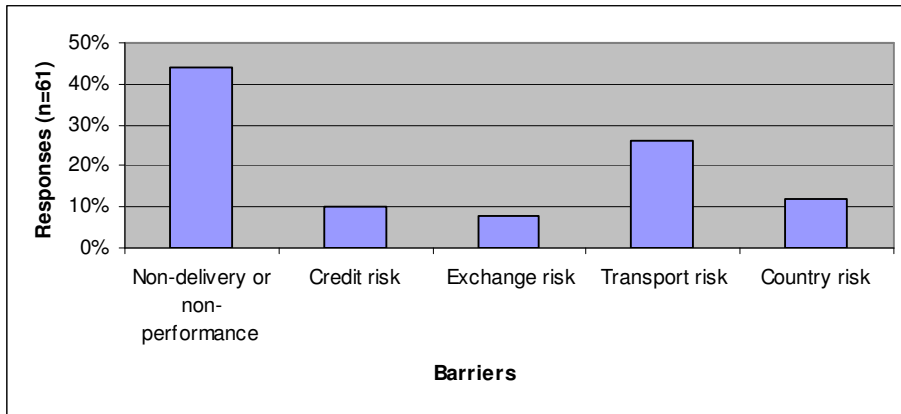
In order to examine import motives, the respondents were asked to select up to three reasons for sourcing from foreign countries. Not surprisingly, the most frequently indicated answers were “To achieve lower costs” (35%) followed by “Lack of domestic suppliers” (28%) followed by “To achieve better quality” (13%), “To obtain more flexible deliveries” (12%) and “To access advanced technology” as moderate motivators, while “As a reaction to competitors” had a very little influence upon purchasing decision.



**Figure 16.** Motives for sourcing from abroad.

The results illustrated in Figure 16 support the idea that Danish manufacturing companies choose the option of international purchasing more as a proactive reaction to their business environment, the only reactive answer among the most cited reasons being the “Lack of domestic suppliers”.

Different barriers associated with import were further measured in the survey. The intension was to identify the risks that companies are particularly exposed to when dealing with international purchasing. In question 8, the respondents could select up to three perceived obstacles that they consider critical to their companies’ import activities.



**Figure 17.** Import Risks.

The most frequently indicated risk was “Risk of non-delivery or non-performance” (44%), followed by “Transport risk” (26%), “Country risk” (12%), “Credit risk” (10%) and “Exchange risk” (8%). The former represents the risk that the supplier will not perform according to the contract (e.g. deliver the wrong or inferior goods), and is directly related to the performance of the supplier. The latter risks are dependent upon a third party and the market environment and are not directly linked to the performance of the supplier. Therefore, it can be concluded that the major barriers perceived by the respondents depend to a higher extent on supplier’s ability to deliver the right products, in the right time, at the right place and in conformity with the qualitative norms imposed by the buyer.

### 5.3 Strategic decisions in international purchasing

The role of the following section is to present and analyse the empirical findings related to the independent variables measured in the study. According to the theoretical findings presented earlier in Chapter 2.3, three main decisions need to be taken into account in purchasing activities. These decisions are related to the supplier base structure, types of the purchased product and buyer-supplier relationship. In order to measure the sourcing decisions, three questions have been constructed in the survey (Q9, Q10 and Q11). To increase the validity of the study, the respondents have been asked to indicate their supplier base structure decisions and the types of relationships developed with their foreign suppliers in accordance to the most sourced type of product

from abroad. Therefore, the analysis will start by examining the characteristics of products purchased from international sources.

#### Types of products supplied

In the next part, the results of the survey will be used in order to identify what product categories the respondents purchase from international suppliers. To map the companies' preferences regarding this issue, the respondents were asked to choose among four types of different product categories previously described in Chapter 2.2.3: critical (strategic products), bottleneck (procedural problem products), leverage or performance problem items and non-critical or routine goods.

The results in Table 6 reveal that Danish manufacturing companies are especially inclined to source non-critical products from abroad (37%), followed by bottleneck items (26%); the preferences for leverage and critical items being expressed by only 21%, respectively 16% of the total examined population. Moreover, they highlight the idea that the international purchasing among Danish firms has a relatively high concentration towards frequently ordered and easy to substitute non-critical products.

**Table 6.** Characteristics of imported products.

		Types of products			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Critical products	7	16.3	16.3	16.3
	Non-critical products	16	37.2	37.2	53.5
	Performance problem products	9	20.9	20.9	74.4
	Procedural problem products	11	25.6	25.6	100.0
	Total	43	100.0	100.0	

From the point of view of the purchasing value brought by the types of products supplied, the data in Figure 18 reveal that the majority of the products purchased internationally have a low strategic importance (63%).

<p align="center"><b>Bottlenecks</b> <b>-Procedural problem products-</b></p> <p align="center">(high complexity; low value) <b>25,6%</b></p>	<p align="center"><b>Strategic items</b> <b>-Critical products-</b></p> <p align="center">(high complexity, high value) <b>16,3%</b></p>
<p align="center"><b>Non-Critical</b> <b>-Routine items-</b></p> <p align="center">(low complexity; low value) <b>37,2%</b></p>	<p align="center"><b>Leverage</b> <b>-Performance problem items-</b></p> <p align="center">(low complexity, high value) <b>20,9%</b></p>

**Figure 18.** Product Matrix.

On the other hand, from the product complexity perspective, it can be concluded that, more than half of the respondents mentioned that the products supplied have a low degree of technological complexity.

#### Supplier base

A contributory factor in strategic sourcing could be how the supplier base structure is organized in order to provide the highest outcomes for the buying company. The analysis conducted on this matter show that more than 60% of the respondent Danish manufacturing companies indicated that the most preferred form of supplier base is represented by single sourcing.

**Table 7.** Supplier base structure decision.

		Supplier base structure			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	More than one supplier is used to produce a given product	17	39.5	39.5	39.5
	One supplier is used to produce a given product	26	60.5	60.5	100.0
	Total	43	100.0	100.0	

According to Chapter 2.2.1, developing the supplier base with a single supplier, may lead to a series of advantages. By consolidating the supply volumes, it is possible to achieve lower prices and favourable transaction costs. Additionally, by adopting this strategy, it becomes easier to develop more integrated collaborations, which lead to closer and mutual profitable relations between buyers and suppliers. Finally, the decision to supply from single vendors may be a consequence of buying firms' interest in facilitating early supplier involvement in the product development process, fact that of course may conduct to improved product quality and delivery times

The second category of respondents indicated their preferences for multiple sourcing strategies in a proportion of 39,5 %. An explanation for this choice may be related to a possible protective decision taken by buying companies in order to secure the delivery of the needed products. Moreover, it can be assumed that the respondent companies have not yet developed a sufficient degree of trust and therefore, develop their supplier base adequately.

Furthermore, the link between the preferences for supplier base structure and types of products supplied is presented. For determining if there is any association between the two variables, a Chi-Squared test for two independent samples was conducted.

**Table 8.** Chi-Square test for Supplier base over Type of products.

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	11.080 <sup>a</sup>	3	.011
Likelihood Ratio	13.161	3	.004
Linear-by-Linear Association	4.531	1	.033
N of Valid Cases	43		

a. 4 cells (50.0%) have expected count less than 5. The minimum expected count is 2.37.

Because the calculated Chi-square value (11.08) is higher than the Chi-square distribution table value (7.81) with 3 degree of freedom and 95 percent confidence, it



can be concluded that there is no significant difference between the two analyzed variables.

The results presented in Table 9 underline the idea that for all four categories of products supplied from foreign sources, the number of companies that select only one supplier is higher than the amount of companies that prefer multiple sources of sourcing.

**Table 9.** Supplier base over Type of products supplied.

**Supplier base structure \* Types of products**

Count		Types of products				Total
		Critical products	Non-critical products	Performance problem products	Procedural problem products	
Supplier base structure	More than one supplier is used to produce a given product	3	5	4	5	17
	One supplier is used to produce a given product	4	11	5	6	26
Total		7	16	9	11	43

High differences can be observed especially in the case of non-critical products where the number of respondents preferring single sources is more than double than those who use more than one supplier for the same product supplied. This finding may be explained by the fact that routine items do not usually need to be secured by additional purchasing sources. Besides that, the decision to acquire routine items from foreign suppliers and to use only single sources represents a consequence of the necessity of having the suppliers of strategic, performance and procedural problem items as close as possible to the purchasing company.

#### Buyer-supplier relationships

Another research issue concerns the relationships developed between the importers and their suppliers. As revealed in Table 10, Danish companies appear to have a relatively high relationship orientation with foreign suppliers. Around 35% of the respondent firms mentioned that their trade relationships with international suppliers are mainly

cooperative, based on suppliers' ability to meet the supply requirements. According to previous literature findings, these relationships are the most common forms of governance and take place when a dominant partner, in this case buying firms, specifies the necessary condition for establishing cooperation (O'Toole, Donaldson, 2000).

The second most mentioned type of relationship was trustful collaborations, especially based on operational issues (30%). In this case, partners are usually satisfied with the outcome of the relationship and there is no need to bring it further. Possible advantages from adopting this strategy may result from the spreading and sharing of the costs and risks of product improvements and of business in general (Ellram, 1991). Likewise, the tendency towards this type of relationship may be explicated by companies' intention to access technological expertise and reduce development and production lead times for the purchased items (Blonder & Pritzl, 1992).

**Table 10.** Supplier relationships.

		Type of relationship			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Collaborative Relationships	13	30.2	30.2	30.2
	Cooperative relationships	15	34.9	34.9	65.1
	Fully Integrated Relationships	8	18.6	18.6	83.7
	Independent relationships	7	16.3	16.3	100.0
	Total	43	100.0	100.0	

Another interesting finding depicted from Table 10 is that the majority of Danish respondent manufacturing companies engage less in the relationships situated at the two extremes of the relationship level framework (discrete 16% and fully integrated 19%). These low frequencies may be explained by a tendency of avoiding the opportunism generally present in independent, discrete relations and focusing more on collaborative and cooperative forms of governance. On the other hand, fully integrated relationships or strategic partnerships concern both operational and strategic cooperation between

parties; fact that may be affected by high transaction costs associated with time and effort required managing these collaborations.

The connection between the nature of relationships and the type of product supplied from international sources will be further analyzed. In order to check if there are significant differences between the types of relationships and types of product supplied, a Chi-Square test for two independent samples was conducted.

**Table 11.** Chi-Square Test for Supplier relationship over Types of products.

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	15.874 <sup>a</sup>	9	.070
Likelihood Ratio	18.257	9	.032
Linear-by-Linear Association	9.526	1	.002
N of Valid Cases	43		

a. 14 cells (87.5%) have expected count less than 5. The minimum expected count is 1.14.

The tabular Chi-squared value at a 0.5 level of significance and 9 degrees of freedom is 16.91 (Mc Daniel & Gates, 2005: A-21). Because the calculated value presented in Table 11 (15.87) is less than the tabular value, it can be said that there is no significant difference between the two variables.

Furthermore, Table 12, reveals that more than 50 % of the Danish manufacturing respondent companies, that source critical products, establish strong relationships with their suppliers based both on operational and strategic issues. This is considered to be a normal consequence of the efforts necessary in order to maintain the closeness and the attractiveness of the relationships with the suppliers of strategic components.

**Table 12.** Buyer supplier relationships over Types of products supplied.

**Type of relationship \* Type of product**

Count

		Type of product				Total
		Critical products	Non critical Products	Performance problem Products	Procedural problem Products	
Type of relationship	Collaborative Relationships	2	5	3	3	13
	Cooperative relationship	1	6	4	4	15
	Fully Integrated Relationships	3	4		1	8
	Independent relationships		2	2	3	7
Total		6	17	9	11	43

Concerning the non-critical products, the responses indicate a low to average strength of relationship. Only one of the respondents whose company purchases routine products from foreign sources mentioned the commitment in strong relationships with international suppliers. The explanation of this trend comes from the low attractiveness of these products due to their low value per item and large number of alternative sources of supply.

For leverage or performance problem components, that usually have a moderate to high attractiveness, as they are expected to add additional specifications that need to be respected by suppliers, no one of the respondents appears to develop close cooperative relationships with the providers of these types of products. Moreover, the companies that source these kinds of items expressed a relatively equal distribution among collaborative, cooperative and independent relationships with their international suppliers.

The highest strength of buyer-supplier relationship results when it comes to procedural problem items or bottlenecks. With the exception of one company that develops discrete relationships with the international providers of these components, the rest of the respondent sample divided relatively equally their options between the other three types of relationships. Procedural problem products have unique specifications and a high dependence on supplier's technological capability, and therefore there are a limited

number of supply alternatives available for buying firms. As a result, the findings are a consequence of the respondent firm's intention to be more open in developing strong relations with their suppliers.

#### 5.4 Supplier selection criteria

According to the theoretical findings, four sets of supplier selection criteria have been identified as critical when purchasing from international suppliers: supplier quality, supplier service, strategic/management fit and supplier country factors. Moreover, due to the multitude of aspects that influence each criterion, the four sets have been decomposed into various supplier attributes considered relevant in supplier selection process. Since these criteria have been evaluated according to different strategic sourcing preferences, they have been considered as being the dependent measures of the research. Data on supplier selection criteria has been collecting through the question number 12 in the survey (see Appendix 1). The respondents were asked to point on a 1 to 5 Likert scale (1 being not important at all, 2 being not very important, 3 being somewhat important, 4 being very important and 5 being extremely important) their perceived importance on 25 supplier attributes.

The selection criteria will be decomposed in order to examine the importance attributed by the respondents to different supplier attributes. Descriptive statistics, in Table 14, conducted on the responses present the means, the ranks, standard deviations and the skewness for each vendor attribute.

The results presented in Table 13 suggest that the respondent manufacturing companies take the decision regarding the selection of their foreign suppliers especially according to the following criteria: supplier's commitment to quality, ability to meet delivery schedules, technological capability, net price of product and process capability. Besides, the least mentioned attributes, as being important in international purchasing decision-making process were foreign country cultural match, supplier's size, organizational cultural match, geographical proximity and willingness to share confidential information.

It would seem that the findings are related to the previous research, which indicated that even though suppliers are evaluated on a multitude of attributes, the key ones that overlook the selection process are price, quality and delivery (Swift 1995). It can also be observed that Danish manufacturing companies are especially interested in acquiring highly qualitative products (mean 4.28), delivered according to the established schedule (mean 4.14) from suppliers that use unique technological capabilities (mean 3.84).

**Table 13.** Average supplier attribute importance.

Attribute	N	Minimum	Maximum	Mean	Rank	St. deviation	Skweness
Commitment to quality	43	1	5	4.28	1	0.591	-0.146
Previous economic performance	43	1	5	3.00	20	0.690	0.456
Current financial stability	43	1	5	3.12	16	0.905	-0.440
Process capability	43	1	5	3.70	5	0.638	0.354
Technological capability	43	1	5	3.84	3	0.843	-1.176
Personnel aptitudes	43	1	5	3.30	10	0.674	0.042
Environmental regulations assurance	43	1	5	3.07	18	0.768	-0.121
Ability to meet delivery schedules	43	1	5	4.14	2	0.774	-0.897
Net price of products	43	1	5	3.78	4	0.514	-0.298
Transaction costs	43	1	5	3.16	14	0.785	-0.301
Flexibility in terms and conditions	43	1	5	3.07	17	0.737	-0.486
Communication	43	1	5	3.30	9	0.860	-0.642
Technical assistance offered	43	1	5	3.28	11	0.959	-0.263
Ability to respond to unexpected solicitations	43	1	5	3.35	8	0.870	-0.762
Previous references, reputation	43	1	5	3.19	12	0.880	-0.822
Supplier's industry knowledge	43	1	5	3.40	7	0.728	-0.781
Supplier's size	43	1	5	2.67	24	0.837	-0.075
Organizational cultural match	43	1	5	2.74	23	0.875	-0.580
Willingness to share confidential information	43	1	5	2.98	21	0.988	0.204
Commitment to continuous improvement	43	1	5	3.63	6	0.725	-0.077

<b>Geographical proximity</b>	43	1	5	2.93	<b>22</b>	0.768	-0.209
<b>Foreign country cultural match</b>	43	1	5	2.53	<b>25</b>	0.882	0.216
<b>Political stability of supplier's country</b>	43	1	5	3.16	<b>13</b>	0.688	-0.222
<b>Legal claims</b>	43	1	5	3.14	<b>15</b>	0.710	-0.208
<b>Level of tariffs and custom duties</b>	43	1	5	3.00	<b>19</b>	0.845	-0.496

Although in contrast to previous studies, the net price of the purchased products (mean 3.78) has not been mentioned among the top three selection criteria. Additionally interesting findings are related to the low attributed importance to the soft or intangible selection factors such as: foreign country cultural match (mean 2.53), organizational culture match (mean 2.74) and willingness to share confidential information (mean 2.98). These findings may be explained by previous results that indicate the respondents' orientation towards Scandinavian and Western European countries when it comes to international purchasing.

Within the supplier quality composite criterion, commitment to quality was the most significant attribute. Respondents' attitudes towards this option are further presented in Table 14. Only 3 answers corresponding for 7% of the respondents mentioned this attribute as being "somewhat important", the majority of the examined sample (58%) considering quality as a "very important" issue for their international purchasing, while 35% accorded the maximum importance.

**Table 14.** Perception on commitment to quality.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat important	3	7.0	7.0	7.0
	Very important	25	58.1	58.1	65.1
	Extremely important	15	34.9	34.9	100.0
	Total	43	100.0	100.0	

The least interesting attribute related to supplier quality criteria in respondents' perception was suppliers' previous economic performance (mean 3). The risks associated to suppliers' insolvency might interrupt buyers' supply with products. But considering the relatively high number of companies who indicated preferences for non-critical products (see Table 6), that by definition do not represent a strict necessity for the manufacturers, the option of not according a high importance to this attribute is explicable.

From the supplier service criterion attributes, the ability to meet delivery schedules received the most attention with a total score of 4.14. Table 15 shows the frequencies registered in the respondents' answers. As it can be noticed, more than a half (53.5 %) of the answerers assigned a very important rating to this supplier attribute and only 32% considered it extremely important. Given the high score registered by this attribute, it can be stated that Danish manufacturing firms stress on factors, such as quantity conformity, lead-time requirements and due-date compliance in the process of international supplier selection.

**Table 15.** The perception on the ability to meet delivery schedules.

Ability to meet delivery schedules					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not important	2	4.7	4.7	4.7
	Somewhat important	4	9.3	9.3	14.0
	Very important	23	53.5	53.5	67.4
	Extremely important	14	32.6	32.6	100.0
	Total	43	100.0	100.0	

On the other side of the ranking made on supplier's service attributes is situated the flexibility regarding contractual terms and conditions, which received a final score of 3.07. By definition, this concerns the extent to which suppliers are open to buyers' demands and the ease of contractual negotiations. This decision has its possible roots in the findings related to the types of relationships developed by respondent companies with their suppliers, where 53.5% of the answers pointed that the relationships developed with foreign companies are generally based on partners' ability to meet



supply requirements. Hence, the buying companies are the dominant part in the transactions fact that facilitates a higher compliance of the suppliers to their requirements and an increased ease in contractual negotiations.

The next analysed set of supplier attributes concerns strategic/management fit between buying and supplying companies. From all six features concentrated under this category, supplier's commitment to continuous improvements scored highest in the respondents' perception with a total mean of 3.63. Even though this attribute received only four responses on "extremely important" option, the number of answers that indicated it as being "very important" reached a frequency of about 50% (see Table 16).

**Table 16.** Perception on commitment to continuous improvements.

Commitment to continuous improvement					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not important	2	4.7	4.7	4.7
	Somewhat important	16	37.2	37.2	41.9
	Very important	21	48.8	48.8	90.7
	Extremely important	4	9.3	9.3	100.0
	Total	43	100.0	100.0	

By definition, the improvements expected by the buying firms from the supplier side concern enhancements in quality, delivery, production facilities, technology and communication areas. The attributes related to them received one of the highest scores in respondents' perception. Thus it is a normal consequence that needs continuous development.

Among the strategic/management fit attributes, supplier's size was considered the least important (mean 2.67). This finding reveals that Danish manufacturing companies are interested in importing from foreign sources regardless the dimension of the supplier. Besides, the attitude towards selecting the suppliers according to their size is also related to the size of the buying firm. The demographic data on respondent companies presented in the beginning of this chapter demonstrates that 74% of the respondents are small firms with 10-19 employees. Therefore, it is somehow normal that these

manufacturing units do not stress on the size of their suppliers when making selection decisions.

Lastly, the supplier country composite criterion had received the highest number of low scores on its attributes. However, among these elements, political stability in the supplier's country has received the highest attention (mean 3.16).

**Table 17.** The perception on political stability of supplier's country.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not important	7	16.3	16.3	16.3
	Somewhat important	22	51.2	51.2	67.4
	Extremely important	14	32.6	32.6	100.0
	Total	43	100.0	100.0	

Even though the majority of the respondents indicated a relatively high inclination towards imports from Scandinavia and Western Europe, the political factors in the suppliers' country are still a good indicator of the business environment to which the supplier is exposed. Moreover, in the context of a possible future extension of their international purchasing activities, foreign country political factors are necessary to be taken into account.

To sum up this section, the findings on supplier selection criteria support other studies on their general opinion that the most important attributes in decision-making process are generally quality, price and delivery. The only notable difference is related to the order of their importance, as the results of the present study showed that price is not one of the top three motivators for international suppliers selection. Moreover, interesting findings were collected on the importance of culture-related factors, both foreign country and supplier's organizational cultures being considered as having a low importance by the respondents. Moreover, among the four sets of selection attributes identified in the theoretical chapter namely: supplier quality, supplier service, strategic/management fit and supplier country factors, the latter scored the lowest. This result

demonstrates that the respondents companies consider international purchasing as an extension of domestic purchasing activities, and consequently the practices that are adopted in order to source the needed products from local supplier are similar to those implemented in the case of international sourcing activities.

### 5.5 Testing propositions

If until now, the empirical part treated respondents' preferences for different strategic purchasing decisions and supplier attributes separately, the content of the following section deals with the analysis of the selection criteria according to different sourcing strategies adopted during the international purchasing process.

The data concerning the strategic sourcing decisions were collected through questions number 9, 10, 11 where the respondents were asked to choose one of the options related to the product types, supplier base structure and types of relationship developed with their suppliers. Moreover, question 12 was utilized to collect respondents' preferences regarding four-supplier selection criteria decomposed in 25 supplier attributes (see Appendix 1).

The answers given by each respondent were summated in order to form determine the overall perception score for the latent variables that in this case were represented by the four sets of selection criteria. The data from a first group containing seven attributes were transformed and computed together in order to find the composite response for Supplier Quality criteria. Similarly, the responses for the next three sets of attributes were further computed, the averaged scores for summated variables related to Supplier Service, Strategic/Management Fit and Foreign Country factors being obtained. Once the values of the latent variables were calculated, Cronbach's alpha test was conducted for ensuring the data reliability (See Appendix 5). As the registered value for alpha was 0.754, the results are considered reliable (Malhotra and Birks 1999: 314).

According to the findings from the theoretical part of the paper, three propositions were composed containing the relationship between selection criteria and purchasing strategic options. These statements will be further tested, the decision of acceptance or rejection being based on individual analysis of variance conducted for each category of options.

**Proposition 1:** There are differences in supplier selection criteria between purchasing managers having dissimilar preferences for types of products supplied.

In order to examine the above statement, an analysis of comparing means by the use of ANOVA was conducted. The means of the resulted summated variables were chosen as dependent measures, while the four categories of products were further selected as independent factors. In this way, the results will prove if the types of products have any effect on supplier selection criteria.

**Table 18.** Analysis of variance for different types of products supplied.

		Sum of Squares	df	Mean Square	F	Sig.
Supplier Quality	Between Groups	.257	3	.086	.532	.663
	Within Groups	6.275	39	.161		
	Total	6.532	42			
Supplier Service	Between Groups	.620	3	.207	1.158	.338
	Within Groups	6.957	39	.178		
	Total	7.577	42			
Strategic/Management fit	Between Groups	.786	3	.262	.857	.472
	Within Groups	11.919	39	.306		
	Total	12.705	42			
Foreign country factors	Between Groups	2.215	3	.738	2.853	.050
	Within Groups	10.092	39	.259		
	Total	12.307	42			

When conducting analysis of variance based on response mean, one of the most important indicators is represented by F ratio and the significance of F ratio (F probability). The closer the F Ratio to “1” the less likely that there is a significant difference between the groups. The probability of F, or p-value, shows the probability of getting a mean difference between the groups as high as what is observed by chance. The lower than 0.05 the p-value is, the more significant the difference between the

groups is, and the null hypothesis is rejected. In our case, the null hypothesis for each set of criteria is that there is no difference in the mean of responses submitted on the types of products.

As presented in Table 18, the results of the test revealed no significant differences overall in the supplier selection criteria according to product types. Surprisingly, in the case of Supplier quality and Strategic management fit, no significant differences were observed. However, the criteria related the foreign country factors ( $F=2.853$ ,  $sig.=.050$ ) were rated as a more important contributors to the choice of foreign suppliers, followed by Supplier service ( $F=1.158$ ,  $sig.=.338$ ). In order to identify which group of products differs from the others according to dissimilar preferences for foreign country factors, post hoc tests were analysed. These tests showed that there is differences in preferences between product type two (performance problem items) and product type four (critical goods) (See Appendix 6).

According to the above findings, the first proposition is rejected, the conclusion being that the types of product supplied have no major influence on foreign supplier selection criteria.

**Proposition 2:** Strategic/management fit is more important for single sourcing oriented companies than it is for companies that use multiple sources of supply.

The second proposition developed refers to respondents' preferences on the number of sources of supply used for a particular type of product. As illustrated in Table 19, the test of homogeneity of variances indicates that the significance of the test is .430. Therefore, the variances in this test are equal.

**Table 19.** Analysis of variance for different supplier-base structures and Strategic/ Management fit.

Test of Homogeneity of Variances			
strategic			
Levene Statistic	df1	df2	Sig.
.636	1	41	.430

ANOVA					
strategic					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.089	1	.089	.289	.594
Within Groups	12.616	41	.308		
Total	12.705	42			

Moreover, the results of One Way ANOVA indicate no significant relationship between Strategic and Management fit criterion and preferences for one of the two supplier-base structures ( $F=.289$ ,  $sig.=.594$ ). Therefore it can be said that supplier-base structure options have no significant influence on companies' decisions when it comes to selecting international suppliers based on the suppliers' attributes related to strategic/management fit between buyers and suppliers. As a result, the second proposition will be rejected.

**Proposition 3:** Buying firms that develop strong inter-organizational relationships (collaborative, fully integrated) with their suppliers will rate higher supplier quality and strategic/management fit.

The last proposition refers to buyer-supplier relationship and states that in the case of stronger inter-organizational activities between firms, companies will rate higher the supplier criteria related to quality and strategic and management fit.

**Table 20.** Analysis of variance for buyer-supplier relationships.

**ANOVA**

		Sum of Squares	df	Mean Square	F	Sig.
Supplier quality	Between Groups	.419	3	.140	.892	.454
	Within Groups	6.113	39	.157		
	Total	6.532	42			
Supplier service	Between Groups	.508	3	.169	.934	.434
	Within Groups	7.069	39	.181		
	Total	7.577	42			
Strategic/Management fit	Between Groups	.263	3	.088	.275	.843
	Within Groups	12.442	39	.319		
	Total	12.705	42			
Foreign country factors	Between Groups	.589	3	.196	.654	.586
	Within Groups	11.718	39	.300		
	Total	12.307	42			

However, as presented in the Table 20, no significant differences have been registered for none of the four supplier selection criteria. The relatively low values for F ratio and the high values its significance prove that neither one of the four selection criteria are not especially influence by decisions related to the type of relationship developed with the foreign supplier. As a consequence, the last proposition will be rejected.

In conclusion, no significant differences were identified among respondents' preferences for different supplier selection criteria with regards of product types, supplier base structure and buyer-supplier relationship even though a relationship between product types and supplier's foreign country criterion did surface. Therefore, the findings suggest that strategic options in purchasing are not critical elements in final decisions taken on international supplier selection.

## **6. SUMMARY AND CONCLUSIONS**

The final chapter of the Thesis has the role to conclude the paper. In this section, a summary of the study will be provided containing the main discussed issues. Moreover, the research conclusions will be further presented underlining the main findings of the study. In addition, the contribution of the study and the managerial implications will be emphasized. The final part of the section will contain suggestions for further research and studies.

### **6.1 Summary**

The main purpose of the paper was to investigate the selection criteria and their relative importance perceived by small and medium manufacturing companies when choosing international suppliers. The case country was Denmark, which is perceived as a small-developed nation with a long tradition in international trade. In order to introduce the supplier selection process in the companies' overall purchasing strategy, the international sourcing process was examined alongside with its challenges and strategic options.

At first, a theoretical background was constructed having as one of the objectives the identification of the main motives for international purchasing along with the potential barriers to sourcing from foreign countries and the strategic options available for purchasers in international context. Among the main reasons for purchasing from abroad, lower costs, favorable exchange rates, consistent quality, faster delivery and availability on domestic market have been identified. In regards to barriers, the theory recognized risk of non-delivery, supplier's non-performance, currency fluctuations, credit risks and legal difficulties as being the main constrains perceived by companies when sourcing from foreign countries. Further, the strategic options in international purchasing were discussed. During this section, the paper presented three types of decisions considered critical to sourcing, namely: type of products supplied, supplier-base structure and buyer-supplier relationships. According to theoretical findings, four categories of products have been identified based on their value brought to buying firm



and difficulties in utilization: non-critical or routine items, bottlenecks or procedural problem products, leverage or performance problem products and strategic or critical goods. Regarding the supplier base size, two types of strategies were identified, namely single and multiple sourcing. Buyer-supplier relationships were further discussed, a classification based on the degree of interaction between parties dividing relationships in: independent, cooperative, collaborative and fully integrated.

The second theoretical objective referred to the process of supplier selection and focused especially on the key selection criteria in international context. According to this, four supplier selection criteria have been identified as critical to companies when choosing their source of supply from abroad: supplier quality, supplier service, strategic/management fit and foreign supplier country. Each set of criteria was further divided in different attributes, a total set of 25 supplier attributes being identified.

The last objective of the paper refers to the empirical part and deals with the investigation of the international purchasing behaviour of the small and medium-sized Danish manufacturing companies. In order to answer this objective, a quantitative research was conducted on 43 manufacturing firms located in Denmark. The results identified the main reasons and barriers to international purchasing from Danish companies' perspective. Moreover, the experience in foreign sourcing and intensity of sourcing were examined. Related to the strategic options, the results of the survey identified the respondents' preferences upon types of products sourced, supplier-base structure and relationships with foreign suppliers. Finally the research investigated the relative importance of each set of supplier selection criteria, the most important supplier attributes related to these criteria being recognized.

In addition to these issues, the paper tried to identify if there is any relationship between the strategic options related to purchasing and selection criteria. Based on that, three propositions were developed and tested according to survey's results. The results of the tests proved that the decision of selecting international suppliers is not influenced by any of the three sourcing strategic options.

## 6.2 Conclusions

The first research issue is focused on the internationalisation process of the purchasing activities amongst Danish manufacturing firms. Similarly to the observations made in previous studies, the results in the present paper demonstrate that international purchasing practices represent a common activity among Danish small and medium organizations (Overby & Servais 2005). No less than 91.4% of the respondent firms stated that for the moment are acquiring a part of their material from abroad, fact that suggest a high import intensity from their side.

The regional widespread of the import areas showed that even though a large part of the goods are purchased from neighbouring countries, an average of about 10% of the sourcing activities are concentrated towards countries from outside Europe. This concentration towards geographically close and culturally similar countries represents a consequence of the relatively small physical distance between Denmark and its foreign neighbours and also of the country's economy historical dependence upon international trade (Overby & Servais 2005).

Biemans and Brand (1995), in their attempt to emphasize the continuous increased importance of purchasing as a strategic tool in gaining competitive advantage, stressed that the traditional practices in which sellers take the initiative have been replaced by relationships in which the buyers proactively search for suppliers in order to fulfil their needs. In this paper, tendency to purchase from international located sources, was explained not only by reactive factors like unavailability of the purchased product on the domestic market, but especially by proactive reasons such as low costs, superior quality flexible delivery achievements, and access to technology. Moreover, the findings support the results of the previous studies made on American manufacturing companies regarding the international purchasing motives (Monczka & Trent 1984; Min & Galle 1991; Birou & Fawcett 1993); the five main reasons for international sourcing being almost similar. Table 21 summarizes the ranking results of the three preceding papers according to the perceived importance accorded by previous examined

companies on international purchasing motivators along with the results of the present paper.

**Table 21.** International sourcing reasons across studies.

Study/Test/Year/No. of firms	Importance (Rank)				
	Lack of domestic suppliers	Lower costs/prices	Lead time/deliveries	Higher quality	Access to technology
Monczka and Giunipero, 1984 (26 US firms)	5	1	2	3	4
Min and Galle, 1991 (141 US firm)	3	2	5	1	4
Birou and Fawcett, 1993 (149 US firms)	2	1	9	5	4
Present study, 2008 (43 Danish firms)	2	1	4	3	5

As illustrated in the above table, the importance of lower price available from foreign sources has persisted over time as a major motivator for sourcing internationally. Moreover, it can be also observed that the significance of supply unavailability in domestic country differs, delivery's role is somewhat different, whilst higher quality and access to technology have not registered major differences between U.S. and Danish companies.

Moreover, the findings related to the risks perceived by the importing Danish firms proved that the major barriers to international sourcing are highly dependent on supplier's performance and less on third-party entities or market environment fact that denotes a close correlation between successful international sourcing practices and supplier's capabilities.

According to Nellore (2001: 127), in the case of strategic components, without integrated development, there will be a fall in competitiveness instead of a continuous improvement of the product's performance. As regards the characteristics of the internationally purchased products, the results indicate that the more important the imported item, the more probable Danish firms are to consider the alignment of their strategic and managerial decisions with those of their international suppliers; fact that may further lead to the development of strong buyer-supplier relationships and even vertical integration.

In terms of supplier-base structure, the findings showed that the majority of the respondents aim to have as few suppliers as possible, preferably one, for a single type of product. Surprisingly, further evaluation of this category of respondents revealed that the inclination of these firms towards a close collaboration at the strategic levels with their foreign suppliers was not supported. This result may be explained by a continually search of new sources of supply; fact that does not allow a long term and close relationship with current suppliers. Furthermore, Danish importing companies with preferences for multiple sourcing emphasized a predilection towards the economic aspects of purchasing transaction by specifying the net price and costs as being main drivers in foreign supplier selection.

The examination of the third strategic option related to international purchasing practices exposed interesting evidence of relationship intensity between the Danish importers and their suppliers. According to previous studies made on Danish importer's purchasing behaviour (Overby & Servais 2005), in the situations when price is a motivating factor, there is less incentive to invest in relationship building. Similarly, in present findings, it appears that in the case of independent and collaborative relationships developed with foreign suppliers, the respondent companies appreciate the price of products acquired and the transaction cost as highly important supplier attributes. Once the relationships evolve, the material aspects are overlooked and their place is taken by quality related and strategically fit between partners.

The second research issue concerned the selection criteria considered by Danish importers when selecting their foreign suppliers. The analysis of the responses based on firm's recognized importance accorded to different supplier attributes revealed that the order of preferences among Danish importers for supplier selection criteria is: supplier quality, supplier service, strategic/management fit and foreign country factors.

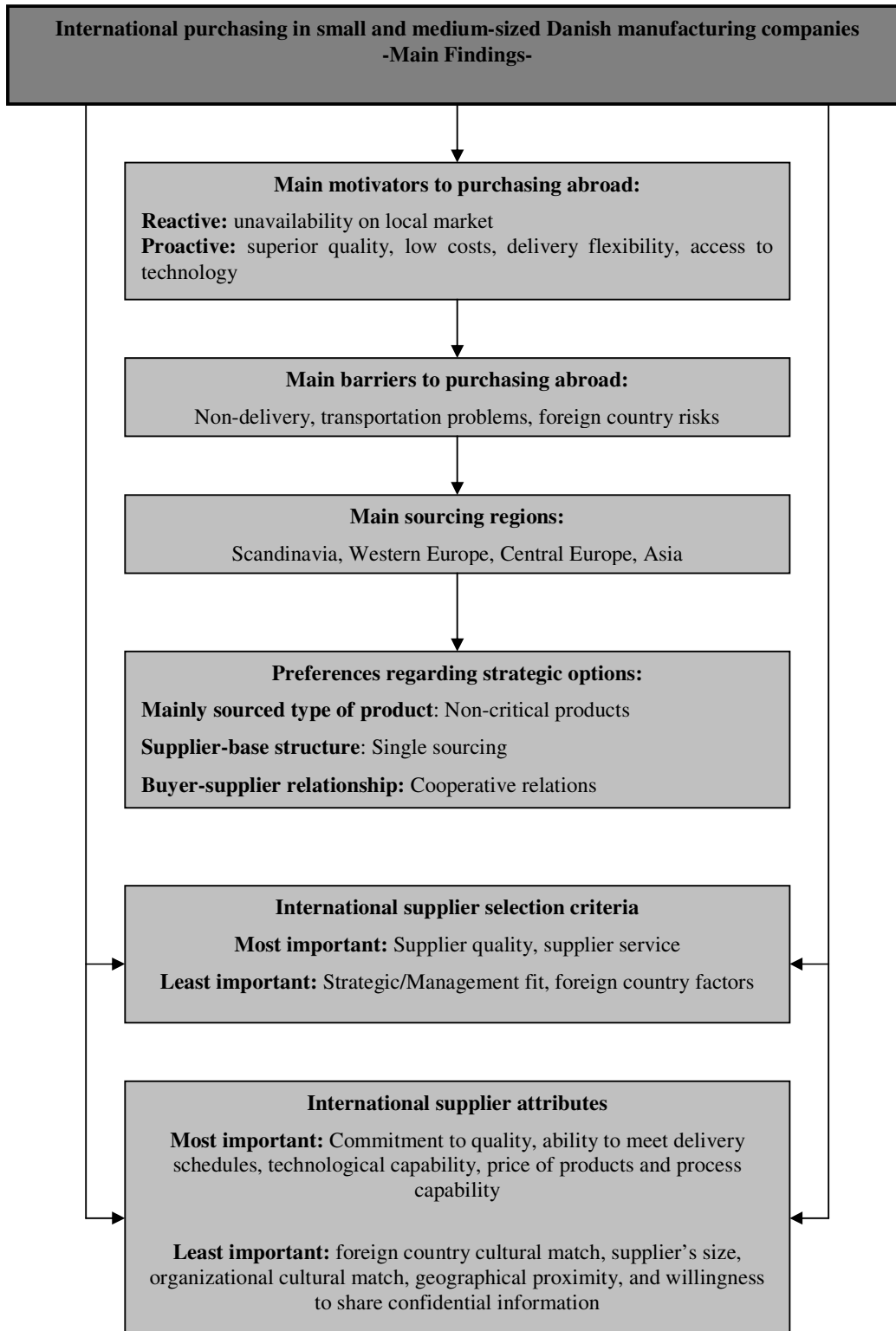
Previous research on this topic indicates that regardless the multitude of attributes utilized on the evaluation of the relative importance of supplier selection criteria, the top 3 dominant during the selection process are: price, quality and delivery (Monczka & Trent 1984; Min & Galle 1991; Birou & Fawcett 1993). The results collected during the present study shown that when selecting a supplier, Danish SMEs are motivated by the quality of product, ability to meet delivery specifications and technological capability of the supplier, in this order. Supplier's commitment to quality represents the supplier attribute that Danish importers mentioned most frequently as having an extremely important role in selection process. The only exception was registered among the importers of critical products who stated that the ability to meet delivery schedules represents a primordial criterion.

As it could be observed during the research, the price element was missing from the top three contributors to the selection of the international suppliers. Due to the industrial aspect of the activities developed by the respondent firms, its role has been taken by the supplier's technological capability. Thus, it can be argued that supplier's ability to keep pace or to develop leading technology represents an extremely important criterion in supplier selection (Monczka, Trent & Handfield, 1998: 281).

Danish manufacturing importers have also indicated that some of the least important supplier attributes considered during the process of selection were foreign country cultural match, supplier's size, organizational cultural match and geographical proximity. Therefore, it can be said that apparently, the cultural aspects along with geographical distance and company's size of the foreign suppliers are low motivators for the small and medium Danish importers when searching for potential sources of supply.

In conclusion, this study has exposed a number of similarities between small and medium Danish importing companies' and importers in large countries such as U.S. regarding the preferences on international purchasing practices. For instance, these companies are proactively motivated to purchase from international sources, the main reasons for finding international suppliers being similar. However, the findings also highlighted a number of unexpected dissimilarities, the most important of them being that price of the acquired goods was not considered a crucial criteria in international supplier selection. Moreover, the results indicated that Danish manufacturing companies register a relatively high intensity towards importing especially from regional suppliers, but also from suppliers located all over the world.

Figure 19 summarizes the main finding of the study by presenting the main reasons and perceived barriers to international sourcing along with the respondents' preferences regarding sourcing regions, strategic options and international supplier attributes and selection criteria.



**Figure 19.** Main research findings.

### 6.3 Research contribution

The major contribution of the study is the empirical evidence gathered on international purchasing generally and supplier selection process particularly. Through the theoretical investigation, a conceptual model for international purchasing activities has been examined. Moreover, the empirical investigation had the role to explain the theoretical findings with the help of a quantitative investigation conducted on 43 small and medium sized Danish importing firms.

### 6.4 Managerial implications

Despite its limitations, the present study may represent a source of further directions for both Danish importing companies and exporting firms located in other countries.

The results of the study may have interesting implications for purchasing managers or executives responsible with purchasing activities within Danish firms. In order to meet the challenges present on international markets, purchasers need to adapt and organize their sourcing activities by considering the most convenient strategic options available. Moreover, a well-defined and efficiently managed set of criteria to select and evaluate suppliers may enable firms to improve their manufacturing performance. According to the study's findings, an appropriate set of supplier attributes considered in selection process would go beyond the lowest price and would include elements such as commitment to quality, lead time-delivery efficiency and process-technological capability. In these conditions, once it becomes clear for suppliers that they are judged on well-defined criteria, their attention to details and level of effort are likely to increase substantially, fact that leads to enhanced performance.

From the point of view of foreign exporting companies, the paper provides interesting insights on Danish small and medium manufacturers' purchasing behaviour that could help in a successful development of future contacts. According to paper's results, these importers should not neglected as possible customers taken into account the intensity of their purchasing activities. Moreover, the international orientation of such companies, recommends small and medium Danish companies as feasible partners.



## 6.5 Future research

The findings of the study not only reveal important managerial implications, but also point out a number of important directions for future research. Since the international marketing literature provides a limited the amount of empirical work within the area of international purchasing, the possibilities to conduct further research on this specific topic are many.

Further work could be conducted for example on other industries than those included in the present study. By including a large number of industries in a future study, the results could be easier generalized. Furthermore, a future project could treat the supplier selection and supplier management issues on large importing companies activating in countries bigger than Denmark in order to see if the findings resulted from this study are supported.

Moreover, since the results of the present study revealed that the strategic options in purchasing are not influencing the decisions related to suppliers' selection, a good priority for a future research could be the identification of the main drivers that lead purchasers in stressing different suppliers attributes when selecting their international sources of supply.

Finally, an interesting extension of this paper would be an evaluation of the contribution brought by an effective supplier assessment and selection process to buying firm's overall performance.

## LIST OF REFERENCES

- Aaker, D. A., V. Kumar & G. S. Day. (1995). *Marketing Research*. 5<sup>th</sup> Edition. New York (US): John Wiley and Sons. 782p. ISBN 0-471-55254-2.
- Abratt, R. (1986). Industrial buying in high tech markets. *Industrial Marketing Management* 15:4, 293-298.
- Alreck, P. & R. B. Settle (1985). *The Survey Research Handbook*. Homewood Illinois(US): Richard D. Irwin Inc. 429p. ISBN 0-256-03174-6.
- Barney, J.B. (1995). Looking inside competitive advantage. *Academy of Management Executive* 9:4, 49-61.
- Berger, P.D. & A.Z. Zeng (2006). Single versus multiple sourcing in presence of risk. *Journal of the Operational Research Society*. 57, 250-261.
- Bevilacqua, M. & A. Petroni (2002). From traditional purchasing to supplier management: a fuzzy logic-based approach to supplier selection. *International Journal of Logistics*, 5:3, 235-255.
- Biemans, W. G. & M. J. Brand (1995). Reverse marketing: A synergy of purchasing and relationship marketing. *International Journal of Purchasing and Materials Management*, 31(3), 29– 37.
- Birou, L.M. & S.E. Fawcett (1993). International purchasing: Benefits, Requirements and Challenges. *International journal of Purchasing, Materials and Management*. 29:2, 28-37.
- Blonder, H.K. & R. Prizl (1992). Developing strategic alliances: a conceptual framework for successful co-operation. *European Management Journal*. 10:4, 412-421.

Bozarth, C. & R.B. Handfield (2007). *Introduction to operations and supply chain management*. 2<sup>nd</sup> Edition Upper Saddle River, New Jersey (US): Pearson Prentice Hall. 551p. ISBN 0-139-44620-6.

Braglia, M. & A. Petroni (2000). A quality assurance-oriented methodology for handling trade-offs in supplier selection. *International Journal of Physical Distribution & Logistics Management*. 30:2, 96-111.

Branch, A. (2001). *International Purchasing and Management*. London(UK): Thomson Learning. 342p. ISBN 1-861-52511-7.

Burgess, T.F., H.K. Gules & M. Tekin (1997). Supply-chain collaboration and success in technology implementation. *Integrated Manufacturing Systems*. 8:5, 323.

Carter, J. & R. Narasimhan (1990). Purchasing in the International Market Place: Implication for Operations. *Journal of purchasing and Material management*. Summer, 2-11.

Cavusgil, S.T. & U. Yavas (1987). Supplier selection in international markets: a study of Saudi importers. *Industrial Marketing and Purchasing*. 2:2, 19-28.

Chisnall, P.M. (1997). *Marketing Research*. 5<sup>th</sup> Edition, London(UK): McGraw-Hill Book Co. Ltd. 437p. ISBN 0-077-09175-2.

Choi, T.Y. & J.L. Hartley (1996). An exploration of supplier selection practices across the supply chain. *Journal of Operations Management*. 14:4, 333-43.

Choy, K.L., W.B. Lee & V. Lo (2002). An intelligent supplier management tool for benchmarking supplier in outsourcing manufacturing. *Expert Systems with Applications*. 22, 213-224.

Coase, R.H. (1937). The nature of the firm. *Economica*. 4, 386-405.

De Boer, L., E. Labro & P. Morlacchi (2001). A review of methods supporting supplier selection. *European Journal of Purchasing and Supply Chain Management* 7. 75-89.

Degraeve, Z., E. Labro & F. Roodhooft (2000). An evaluation of vendor selection models from a total cost of ownership perspective. *European Journal of Operational Research*. 125, 34-58.

Dempsey, W.A. (1978). Vendor Selection and the Buying Process. *Industrial Marketing Management*. 257-267.

Dickson, G.W. (1966). An analysis of supplier selection systems and decisions. *Journal of Purchasing*. 2, 5-17.

Dwyer, F.R., P.H. Schurr & S. Oh (1987). Developing buyer-seller relationships. *Journal of Marketing*. 51:2,11-27.

Dyer, J.S., P.C. Fishburn, R.E. Steuer, J. Wallenius & S. Zionts (1992). Multiple Criteria Decision Making, Multi-attribute Utility Theory: The Next Ten Years. *Management Science*. 38:5, 645-54.

Ellram, L.M. (1990). The supplier selection decision in strategic partnerships. *Journal of Purchasing and Materials Management*. 26:1, 8-15.

Ellram, L.M. (1991). A managerial guidance for the development and implementation of purchasing partnerships. *International Journal of Purchasing and Materials Management*. 31:2, 9-16.

Ellram, L.M. (1995). Total cost of ownership. An analysis approach for purchasing. *International Journal of Physical Distribution and Logistic Management*. 25:8, 4-23.

Ellram, L. & C. Billington (2001). Purchasing leverage considerations in the outsourcing decision. *European Journal of Purchasing and Supply Management*. 7, 15-27.

European Union Companies' Classification (2008). European Commission, Policy Areas [online]. EU, 2008. [cited 9.03 2008]. Available from World Wide Web: [http://ec.europa.eu/enterprise/enterprise\\_policy/sme\\_definition/index\\_en.htm](http://ec.europa.eu/enterprise/enterprise_policy/sme_definition/index_en.htm).

Evans, R.H. (1982). Product involvement and industrial buying. *Journal of Purchasing and Materials Management*. 18(2), 23-8.

Gadde, L. & H. Håkansson (1993). *Professional Purchasing*. London(UK): Routledge. 186p. ISBN 0-415-07933-0.

Gelderman, C.J. & A.J. van Weele (2003). Handling measurement and strategic issues in Kraljic's portfolio model – results of explorative case studies. *European Journal of Purchasing and Supply Management*.

Goffin, K., M. Szejczewski & C. New (1997). Managing suppliers: when fewer can mean more. *International Journal of Physical Distribution & Logistics Management*. 27(7), 422-436.

Gupta, S. & V. Krishnan (1999). Integrated components and supplier selection for a product family. *Production and Operation Management*. 8(2), 163-182.

Heide, J.B. (1994). Interorganisational governance in marketing channels. *Journal of Marketing*. 58(1), 71-85.

Hirakubo, N. & M. Kublin (1998). The relative importance of supplier selection criteria: the case of electronic components procurement in Japan. *International Journal of Purchasing & Materials Management*. 34(2), 19-24.

Holm, M.J. (2002). Challenges for Danish Small and Medium-sized Manufacturing Enterprises – An Exploratory Study in Knowledge Management. *Working paper, Department of Management, politics and Philosophy*, Copenhagen Business School.

Holt, D.G. (1998). Which contractor selection methodology? *International Journal of Project Management*. 28, 443-452.

Kannan, V.R. & K.C. Tan (2002). Supplier selection and assessment: their impact on business performance. *Journal of Supply Chain Management*. 38(4), 11-22.

Kannan, V.R., C. Hsu, G.K. Leong & K. Tan (2006). Supplier selection construct: instrument development and validation. *The International Journal of Logistics Management*. 17(2), 213-239.

Karande, K., M.N. Shankarmahesh & C.P. Rao (1999). Marketing to public and private sector companies in emerging countries: a study of Indian purchasing managers. *Journal of International Marketing*. 7(3), 64-83.

Kinney, T.C. & J.R. Taylor (1996). *Marketing Research: An Applied Approach*. 5<sup>th</sup> Edition. New York (US): McGraw-Hill, Inc. 888p. ISBN 0-07-912252-3.

Knudsen, M.P. & P. Servais (2007). International Sourcing. A conceptual clarification for future research. *University of Southern Denmark, Department of Marketing & Management*.

Kolodner, L. (1993). *Cased-based Reasoning*. Morgan Kaufman, San Mateo, CA.

Kraljic, P. (1983). Purchasing Must Become Supply Management. *Harvard Business Review*. 61, 109-117.

Lambert, D.M., R.J. Adams & M.A. Emmelhainz (1997). Supplier selection criteria in the healthcare industry: a comparison of importance and performance. *International Journal of Purchasing & Materials Management*. 33(4), 16-22.

Lasserre, P. (2003). *Global Strategic Management*. Palgrave Macmillan, London (UK). 454p. ISBN 0-230-00836-4.

Lee, E.K., S. Ha & S.K. Kim (2001). Supplier selection and management system considering relationships in supply chain management. *IEEE Transactions on Engineering Management*. 48(3), 307-318.

Lee, M. S., Y.H. Lee & C.S. Jeong (2003). A high-quality-supplier selection model for supply chain management and ISO 9001 system. *Production Planning & Control*. 14(3), 225-232.

Leenders, M.R., H.E. Fearon, A. Flynn & P.F. Johnson (2002). *Purchasing & Supply Management*. 12<sup>th</sup> Edition. New York (US): The McGraw-Hill Companies, Inc. 743p. ISBN 0-072-37060-2.

Lehmann, D.R. & J. O'Shaughnessy (1974). Differences in attribute importance for different industrial products. *Journal of Marketing*. 38, 36-42.

Lehmann, D.R. & J. O'Shaughnessy (1982). Decision criteria used in buying different categories of products. *Journal of Purchasing and Materials Management*. 18(1), 9-14.

Lyons, T.F., A.R. Krachenberg & J.W. Henke Jr. (1990). Mixed Motive Marriages: What's Next for Buyer-Supplier Relations?. *Sloan Management Review*. 31(3), 29-36.

Lysons, K. & M. Gillingham (2003). *Purchasing and Supply Chain Management*. 6<sup>th</sup> Edition. London(UK): Pearson Education Limited. 780s. ISBN 0-273-65764-2.

Malhotra, N.K. & F.B. Birks (1999). *Marketing Research: An Applied Approach*. 3<sup>rd</sup> Edition. Upper Saddle River N.J. (US). 763p. ISBN 0-273-65744-5.

Mandal, A. & S.G. Deshmukh (1994). Vendor selection using interpretive structural modeling (ISM). *International Journal of Operations & Production Management*. 14(6), 52-59.

Mc Daniel, C. & R. Gates (2005). *Marketing research*. 6th Edition. Hoboken, NJ (US): John Wiley & Sons Inc. 617p. ISBN 0-471-65765-4.

Min, H. & W.P. Galle (1991). International purchasing strategies of multinational US firms. *International Journal of Purchasing and Materials Management*. 27, 9-18.

Min, H. (1994). International Supplier Selection: A Multi-attribute Utility Approach. *International Journal of Physical Distribution & Logistics Management*. MCB University Press Limited. 24(5), 24-33.

Monczka, R. & L.C. Giunipero (1984). International Purchasing; Characteristics and implementation. *Journal of Purchasing and Material Management*. 20(3), 9-19.

Monczka, R. & R.J. Trent (1991). Global Sourcing: A Development Approach. *International journal of Purchasing, Materials and Management*. 27(2), 2-8.

Monczka, R., R.J. Trent & R. Handfield (1998). *Purchasing and Supply Chain Management*. International Thomson Publishing. Cincinnati, Ohio(US): South-Western College Pub. 776p. ISBN 0-538-81495-0.

Motwani, J., M. Youssef, Y. Kathawala & E. Futch (1999). Supplier selection in developing countries: a model development. *Integrated Manufacturing Systems*. MCB University Press, 154-161.



Moxon, R.W. (1975). The motivation for investment in offshore plants; The case of US electronic industry. *Journal of International business Studies*. 6(1), 51-66.

Mummalaneni, V., K.M. Dubas & C. Chao (1996). Chinese purchasing managers' preferences and trade-offs in supplier selection and performance evaluation. *Industrial Marketing Management*. 25(2),115-24.

Nellore, R. (2001). *Managing Buyer-Supplier Relations. The winning edge through specification management*. London (UK): Taylor & Francis Group.196p. ISBN: 0-415-25303-9.

O'Toole, T. & B. Donaldson (2000). Relationship governance structures and performance. *Journal of Marketing Management*. 16, 327-341.

Overby, W. & P. Servais (2005). Small and medium-sized firms' import behaviour: The case of Danish industrial purchasers. *Industrial Marketing Management*. 34, 71– 83.

Pearson, J.N. & L.M. Ellram (1995). Supplier selection and evaluation in small versus large electronics firms. *Journal of Small Business Management*. 33(4), 53-65.

Poppo, L. & T. Zenger (1998). Testing alternative theories of the firm: transaction cost, knowledge-based, and measurement explanations for make-or-buy decisions in information services. *Strategic Management Journal*. 19, 853-77.

Porter, M.E. (1990). New global strategies for competitive advantage. *Planning Review*, May/June 18, 3.

Qu, Z.H. & M. Brocklehurst (2003). What will it take for China to become a competitive force in offshore outsourcing? An analysis of the role of transaction costs in supplier selection. *Journal of Information Technology*. 18, 53-67.

Quayle, M. (2001). Purchasing in the UK and Switzerland: an empirical study of sourcing decisions. *European Business Review*. 13(1), 42-59.

Roodhooft, F. & J. Konings (1996). Vendor selection and evaluation: An activity based costing approach. *European Journal of Operational Research*. 96, 97-102.

Satty, T. H. (1994). How to make a decision: the analytic hierarchy process. *Interfaces*, 24(6), 19-43.

Saunders, M., L. Philip & A. Thornhill (2003). *Research Methods for Business Students*. 3rd ed. London (UK): Financial Times Prentice Hall. 504 p. ISBN 0-273-65804-2.

Schary, P. B. & T. Skjøtt-Larsen (2001). "*Managing the Global Supply Chain*". Second Edition, Copenhagen Business School Press, Copenhagen, Denmark.

Seppälä, T. (2001). *Buyer-Supplier Relationships and Sourcing of Strategic Components*. Turku School of Economics and Business Administration, Turku: Kirjapaino Grafia Oy. ISBN 951-564-039-3.

Spekman, R.E. (1979). Environmental uncertainty and buying group structure: An Empirical Investigation. *Journal of Marketing (pre-1986)*. 43(2), 54.

Spekman, R.E. (1988). Strategic supplier selection: understanding long term relationships. *Business Horizons*. 31(4), 75-81.

Stevens, J. (1995). Global Purchasing in Supply Chain. *Purchasing and supply management*, January 1995, 28-37.

Swift, C.O. (1995). Preferences for single sourcing and supplier selection criteria. *Journal of Business Research*. 32(2), 105-111.

Syson, R. (1992). *Improving Purchase Performance*. Pitman Publishing, London.

Tracey, M. & C.L. Tan (2001). Empirical analysis of supplier selection and involvement, customer satisfaction, and performance. *Supply Chain Management*. 6(4), 174-88.

Trent, R.J. & R.M. Monczka (2005). Achieving excellence in global sourcing. *MIT Sloan Management Review*. 47, 1.

Tombazos, C.G., X. Yang & D. Zang (2005). A Neo Heckschel-Ohlin model of trade with endogenous production patterns. *The Economic Record, Special Issue*. 81, 71-81.

Tullous, R & R.L. Utecht (1992). Multiple or Single Sourcing? *The Journal of Business & Industrial Marketing*. 7(3), 5.

Vickery, S., R. Calantone & C. Droge (1999). Supply chain flexibility: an empirical study. *Journal of Supply Chain Management*. 35(3), 16-24.

Vonderembse, M.A. & M. Tracey (1999). The impact of supplier selection criteria and supplier involvement on manufacturing performance. *Journal of Supply Chain Management*. 35(3), 33-9.

Wan, L.N. (2007). An efficient and simple model for multiple criteria supplier selection problem. *European Journal of Operational Research*. 186, 1059–1067.

Weber, C. A., J.R. Current & A. Desai (1998). Non-cooperative negotiation strategies for vendor selection. *European Journal of Operational Research*. 108, 208-223.

Weber, C.A., J.R. Current & W.C. Benton (1991). Vendor Selection criteria and methods. *European Journal of Operation Research*. 2-18.

Weber, C.A. & L.M. Ellram (1993). Supplier selection using multi-objective programming: A decision support system approach. *International Journal of Physical Distribution & Logistics Management, Bradford*. 23(2), 3-12

Williamson, O.E. (1981). The economics of organization: the transaction cost approach. *American Journal of Sociology*. 87, 548-77.

Williamson, O.E. (1985). The Economic Institutions of Capitalism. *Free Press*, New York, NY.

Wilson, E.J. (1994). The relative importance of supplier selection criteria. *International Journal of Purchasing & Materials Management*. 30(3), 35-41.

**APPENDIX 1****Survey questionnaire on International Purchasing 2008****PART ONE - BACKGROUND QUESTIONS**

***Q1. Please indicate the industry that best describes your company:***

- A. Paper and furniture
- B. Iron and metal
- C. Manufacturing of food products and beverages
- D. Textiles-apparel
- E. Electronics
- F. Medical equipment and instruments
- G. Chemicals
- H. Construction industry products
- I. Other, please specify \_\_\_\_\_

***Q2. How many employees work in your company's purchasing department?***

- A. 1-5 (1)
- B. 5-10 (2)
- C. 10-20 (3)
- D. 20 or more (4)

***Q3. Is your company currently involved in international sourcing operations?***

- A. Yes
- B. No (*Please skip to Question 14*)

***Q4. For how long time has your company been purchasing from international sources?***

- A. 0-2 years (1)
- B. 2-6 years (2)
- C. 6-10 years (3)
- D. More than 10 years (4)

**Q5. What percentage of your annual purchasing is made overseas?**

- A. Less than 10% (1)
- B. 10%-30% (2)
- C. 31%-60% (3)
- D. 61%-80% (4)
- E. More than 80% (5)

**Q6. How is your foreign purchasing distributed across the following regions?**

**Central Europe:** the Czech Republic, Hungary, Poland, Slovakia and Slovenia.

**Eastern Europe:** Albania, Belarus, Bosnia-Herzegovina, Bulgaria, Croatia, Estonia, Latvia, Lithuania, Macedonia, Moldova, Romania, Russia, Turkey, Ukraine, Serbia and Montenegro.

**Region****Percentage (%)**

- A. Scandinavia
- B. Western Europe
- C. Central Europe
- D. Eastern Europe
- E. Central and South America
- F. North America
- G. Africa
- H. Asia
- I. Other (please specify)\_\_\_\_\_

**PART TWO- MOTIVES FOR AND BARRIERS TO INTERNATIONAL PURCHASING****Q7. Which of the following alternatives do you consider as motives to source from foreign countries?**

**(Please select up to three factors)**

- A. Lack of domestic suppliers
- B. Reaction at competitors' practices
- C. To achieve lower prices

- D. To obtain more flexible deliveries
- E. To achieve better quality
- F. To access advanced technology
- G. Other (Please specify)\_\_\_\_\_

***Q8. Which of the following alternatives do you consider as barriers to source from foreign countries?***

**(Please select up to three factors)**

- A. Risk of non-delivery or non-performance (our supplier delivers wrong or inferior goods or not deliver on time)
- B. Credit risk (our supplier or other parties in the payment chain, such as banks, may become insolvent)
- C. Exchange/currency risk
- D. Transport risk (the goods might be stolen or damaged during transport)
- E. Country risk (changes in government regulations will prevent or restrict our ability to receive goods)
- F. Other (Please specify)\_\_\_\_\_

### **PART THREE- STRATEGIC DECISIONS IN INTERNATIONAL PURCHASING**

***Q9. Please choose the alternative that best describes the types of products, which are mostly brought abroad by your company.***

- A. Non-critical products- there are no questions regarding the functional capability and nor problems associated with how to use the product
- B. Procedural problem products- there are no questions regarding the functional capability but there are problems concerning the technical usage-initial training needed
- C. Performance problem products- raise questions regarding functional capability but there are no problems associated with technical usage- extended technical service needed
- D. Critical products- require supplier's involvement in product's design and represent a source of competitive advantage for our company

***Q10. Which of the following alternatives best describe your company's supplier base for the products sourced from international suppliers?***

- A. One supplier is used to produce a given product (single sourcing)
- B. More than one supplier is used to produce a given product (multiple sourcing)

***Q11. Which of the following alternatives best describes the level of your company's relationship to foreign suppliers of these products?***

- A. Mainly based on rational, economic decisions
- B. Generally based on supplier's ability to meet supply requirements
- C. Trustful relations to the supplier based especially on operational issues
- D. Close cooperative relations based both on operational and strategic issues

#### **PART FOUR- INTERNATIONAL SUPPLIER SELECTION CRITERIA**

***Q12. Please rate the importance of the following supplier attributes when choosing an international supplier for these products.***

*(1 being not important at all, 2 being not very important, 3 being somewhat important, 4 being very important and 5 being extremely important)*

**1      2      3      4      5**

Supplier quality

- A. Commitment to quality
- B. Previous economic performance
- C. Current financial stability
- D. Process capability
- E. Technological capability
- F. Personnel aptitudes
- G. Commitment to environmental regulations

Supplier service

- H. Ability to meet delivery schedules
- I. Net price of products
- J. Transaction costs
- K. Flexibility in terms and conditions



- L. Communication (including electronic data interchange EDI)
- M. Technical assistance offered
- N. Ability to respond to unexpected solicitations

Supplier's management attitude and strategic fit

- O. previous references, reputation
- P. supplier's industry knowledge
- Q. supplier's size
- R. organizational cultural match
- S. willingness to share confidential information
- T. commitment to continuous improvement

Supplier's foreign country

- U. geographical proximity
- V. foreign country cultural match
- W. political stability of supplier's country
- X. legal claims
- Y. level of tariffs and custom duties

***Q13. Please indicate your position/title within your company.***

***Q14. Thank you for your time. Your answers are very valuable for my study. If you are interested in receiving a copy of the study results please fill out the fields below. This information will be handled strictly confidentially***

Name:

Company:

Business area/ Department:

Telephone:

E-mail:

## APPENDIX 2

### -Survey Cover Letter-

#### RESEARCH ON INTERNATIONAL PURCHASING IN SMALL AND MEDIUM-SIZED DANISH MANUFACTURING COMPANIES

Dear Respondent,

I am inviting you to participate in a research project aiming to study Danish manufacturing companies' preferences in international purchasing. This study is being conducted by Liviu Lupu, Master's Degree student in International Business at the University of Vaasa, Finland and the results of the survey will be evaluated and analyzed in the empirical part of the final Master's Thesis project *International purchasing in small and medium-sized Danish manufacturing companies- Foreign supplier selection*.

The objective of the survey is to provide empirical evidence of the procedures and criteria used by small and medium-sized Danish manufacturing companies when selecting suppliers from different international environments. The potential benefits to your company from participating in the study reside from the identification of the key factors necessary for a successful international sourcing process. The results of the research may also be helpful to increase your understanding of how to effectively select your foreign suppliers based on different strategic decisions.

Please take some time and fill up the questionnaire. The estimated time for completing the survey is between 5 and 8 minutes. Your participation in this study is completely voluntary.

The information about your company has been collected through the CD-Direct Database available at Copenhagen Business School library. The sample population was chosen according to several criteria: geographical location (Denmark), number of employees (10-299) and type of activity (manufacturing- NACE codes 15-37). The

selected organizations have been invited to participate in the research. Since the validity of the results depend on obtaining a high response rate, your participation is crucial to the success of this study.

Please answer all questions and if you are not sure of an answer, please provide your best estimate. Your responses will remain strictly confidential and specific figures will not be presented individually or together with the name of your company. If you would like a copy of the results please indicate so at the end of the questionnaire. Your copy will be submitted not later than May 2008.

If you have any questions regarding the survey and its content, please do not hesitate to contact the author. The deadline for filling in the survey is March 14<sup>th</sup> 2008.

To begin the survey, please click the following link:

<http://viehe.cc.uwasa.fi/miiledSRT/answerSurvey?action=startSurvey&id=ZKyZjrtmBk7V5r3Vw/yicC/kxLgiR6419+NLUqI0pw=&r=850>

Thank you in advance for your time and effort towards this study.

Sincerely,

Liviu Lupu

Name of researcher: Liviu Lupu  
Telephone number: 0045 28533628  
Email address: liviu.lupu@uwasa.fi  
University of Vaasa  
Wolffintie 34  
FI-65101 VAASA, Finland

## APPENDIX 3

### Mann-Whitney Tests for: Commitment to quality, net price of products, ability to respond to unexpected solicitations and foreign country cultural match

Note: tests are based on the actual rank of the responses

#### Commitment to quality

Ranks

	Groups of respondents	N	Mean Rank	Sum of Ranks
Commitment to quality	1	23	23.22	534.00
	2	20	20.60	412.00
	Total	43		

Test Statistics<sup>a</sup>

	Commitment to quality
Mann-Whitney U	202.000
Wilcoxon W	412.000
Z	-.781
Asymp. Sig. (2-tailed)	.435

a. Grouping Variable: Group1= early respondents; Group 2= late respondents

Significance of test is 0.435, therefore no statistically significant differences between the two groups have been registered.

#### Net price of products

Ranks

	Groups of respondents	N	Mean Rank	Sum of Ranks
Net price of products	1	23	22.74	523.00
	2	20	21.15	423.00
	Total	43		

Test Statistics<sup>a</sup>

	Net price of products
Mann-Whitney U	213.000
Wilcoxon W	423.000
Z	-.516
Asymp. Sig. (2-tailed)	.606

a. Grouping Variable: Group 1= early respondents; Group 2= late respondents

Recorded significance of test is 0.606, therefore no statistically significant difference between group 1 and 2 have been registered.

### Ability to respond to unexpected solicitations

**Ranks**

	Groups of respondents	N	Mean Rank	Sum of Ranks
Ability to respond to unexpected solicitations	1	23	23.30	536.00
	2	20	20.50	410.00
	Total	43		

**Test Statistics<sup>a</sup>**

	Ability to respond to unexpected solicitations
Mann-Whitney U	200.000
Wilcoxon W	410.000
Z	-.791
Asymp. Sig. (2-tailed)	.429

a. Grouping Variable: Group1= early respondents; Group 2= late respondents

Significance of test is 0.429, thus no statistically significant difference exist between the two groups.

### Foreign country cultural match

**Ranks**

	Groups of respondents	N	Mean Rank	Sum of Ranks
Foreign country cultural match	1	23	22.15	509.50
	2	20	21.83	436.50
	Total	43		

**Test Statistics<sup>a</sup>**

	Foreign country cultural match
Mann-Whitney U	226.500
Wilcoxon W	436.500
Z	-.091
Asymp. Sig. (2-tailed)	.928

a. Grouping Variable: Group 1= early respondents; Group 2= late respondents

Significance of test is 0.928, thus no statistically significant difference exist between the two groups.

**APPENDIX 4**

## R E L I A B I L I T Y   A N A L Y S I S   -   S C A L E   ( A L P H A )

**Supplier Quality**

## Correlation Matrix

	COMMITME	PREVIOUS	CURRENT	PROCESS	TECHNOLO	PERSO	ENVIRON
COMMITME	1.0000						
PREVIOUS	.3840	1.0000					
CURRENT	.1159	.2546	1.0000				
PROCESS	.2370	.2634	.1900	1.0000			
TECHNOLO	.1580	.1438	.3697	.3492	1.0000		
PERSONNE	.4186	.2379	.1861	.3841	.4658	1.0000	
ENVIRONM	.1277	.1323	.3027	.1720	.0672	.2543	1.0000

N of Cases = 43.0

Reliability Coefficients      7 items

Alpha =      .6892

**Supplier Service**

## Correlation Matrix

	ABILITY	NET_PRIC	TRANSACT	FLEXIBILITY	COMMUNIC	TECHNIC	ABIL
ABILITY	1.0000						
NET_PRIC	.3096	1.0000					
TRANSACT	.0303	.2634	1.0000				
FLEXIBIL	.0204	-.0234	.3506	1.0000			
COMMUNIC	.1023	.1464	.1017	.1914	1.0000		
TECHNICA	.3824	-.0236	-.0618	.2750	.3570	1.0000	
ABIL	.2432	-.0458	-.0154	.1841	.3013	.4798	1.0000

N of Cases = 43.0

Reliability Coefficients      7 items

Alpha =      .6014

**Strategic/Management Fit**

## Correlation Matrix

	REPUT	SUPPLIER	SIZE	ORGANIZA	WILLINGN	CONT.IMP
REPUTAT	1.0000					
SUPPLIER	.1426	1.0000				
SIZE	.3428	.3723	1.0000			
ORGANIZA	.4033	.2744	.4034	1.0000		
WILLINGN	.4161	.5095	.2210	.4611	1.0000	
CONT. IMP	.1112	.2854	.1488	.2217	.2871	1.0000

N of Cases = 43.0

Reliability Coefficients 6 items

Alpha = .7301

**Supplier country factors**

## Correlation Matrix

	TARIFFS	LEGAL	POLITIC STAB	FOREIGN CULT	PROXIMITY
TARRIFS	1.0000				
LEGAL	.3175	1.0000			
POLITIC STAB	.2868	.4889	1.0000		
FOREIGN CULT	.3512	.3342	.4417	1.0000	
PROXIMITY	.3667	.2802	.2924	.3725	1.0000

N of Cases = 43.0

Reliability Coefficients 5 items

Alpha = .7279

**APPENDIX 5**

## R E L I A B I L I T Y   A N A L Y S I S   -   S C A L E   ( A L P H A )

## Correlation Matrix

	Foreign C.	S.quality	S.service	Strat/Manag fit
Foreign C.	1.0000			
S.quality	.2522	1.0000		
S.service	.5055	.5454	1.0000	
Strat./Manag fit	.4529	.2305	.6896	1.0000

N of Cases = 43.0

Item Variances	Mean	Minimum	Maximum	Range	Max/Min
Variance	.2329	.1550	.3031	.1481	1.9550
.0058					

Reliability Coefficients      4 items

Alpha = .7547                      Standardized item alpha = .7630



**APPENDIX 6**

**Multiple Comparisons**

Tukey HSD

Dependent Variable	(I) prod type	(J) prod type	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
QUALITY	1	2	-.0960	.16714	.939	-.5445	.3524
		3	-.1730	.15711	.691	-.5946	.2486
		4	.0221	.18178	.999	-.4657	.5098
	2	1	.0960	.16714	.939	-.3524	.5445
		3	-.0770	.18029	.974	-.5608	.4068
		4	.1181	.20215	.936	-.4243	.6605
	3	1	.1730	.15711	.691	-.2486	.5946
		2	.0770	.18029	.974	-.4068	.5608
		4	.1951	.19394	.747	-.3254	.7155
	4	1	-.0221	.18178	.999	-.5098	.4657
		2	-.1181	.20215	.936	-.6605	.4243
		3	-.1951	.19394	.747	-.7155	.3254
SERVICE	1	2	-.2207	.17598	.597	-.6929	.2515
		3	-.1508	.16543	.799	-.5947	.2931
		4	-.3277	.19140	.331	-.8413	.1859
	2	1	.2207	.17598	.597	-.2515	.6929
		3	.0699	.18983	.983	-.4395	.5793
		4	-.1070	.21285	.958	-.6781	.4642
	3	1	.1508	.16543	.799	-.2931	.5947
		2	-.0699	.18983	.983	-.5793	.4395
		4	-.1769	.20421	.822	-.7248	.3711
	4	1	.3277	.19140	.331	-.1859	.8413
		2	.1070	.21285	.958	-.4642	.6781
		3	.1769	.20421	.822	-.3711	.7248
strategic	1	2	-.1133	.23035	.960	-.7314	.5048
		3	-.1264	.21653	.936	-.7074	.4547
		4	-.4014	.25052	.389	-1.0737	.2708
	2	1	.1133	.23035	.960	-.5048	.7314
		3	-.0130	.24848	1.000	-.6798	.6537
		4	-.2881	.27860	.731	-1.0357	.4595
	3	1	.1264	.21653	.936	-.4547	.7074
		2	.0130	.24848	1.000	-.6537	.6798
		4	-.2751	.26729	.734	-.9923	.4422
	4	1	.4014	.25052	.389	-.2708	1.0737
		2	.2881	.27860	.731	-.4595	1.0357
		3	.2751	.26729	.734	-.4422	.9923
COUNTRY	1	2	.126	.2120	.933	-.442	.695
		3	-.199	.1992	.751	-.734	.336
		4	-.563	.2305	.086	-1.181	.056
	2	1	-.126	.2120	.933	-.695	.442
		3	-.325	.2286	.493	-.939	.288
		4	-.689*	.2564	.050	-1.377	-.001
	3	1	.199	.1992	.751	-.336	.734
		2	.325	.2286	.493	-.288	.939
		4	-.364	.2459	.460	-1.024	.296
	4	1	.563	.2305	.086	-.056	1.181
		2	.689*	.2564	.050	.001	1.377
		3	.364	.2459	.460	-.296	1.024

\*. The mean difference is significant at the .05 level.

