



# **Economic assessment of select export operations using cost-effectiveness analysis:**

The case of the internationalization of a small Finnish enterprise

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Abstract:	
<p>Every investment decision is critical, and for a small enterprise such as Myontec, the importance of allocating its limited resources to the most cost-effective export operation mode is crucial for the business to thrive. The aim of this thesis is to present a method based on cost-effectiveness analysis (CEA) for evaluating the performance of three different export operation modes—<i>indirect export</i>, <i>direct-agent</i> and <i>direct-distributor</i>—available to Myontec's market entry to Sweden. The method is based on the calculation of CEA, adapted for assessment of export operations, which relates the relevant export costs of each export mode to a non-monetary outcome, i.e. export sales volume. This study was guided by the following research questions: (1) how can cost-effectiveness analysis (CEA) be utilized as an analysis tool to measure export performance?; (2) what are the different costs associated with exporting and which cost categories are relevant for Myontec's export operations to Sweden?; and (3) which export operation mode (<i>indirect export</i>, <i>direct-agent</i> or <i>direct-distributor</i>) could generate a predetermined export sales volume (<i>15 MBody Pro packages</i>) for Myontec at least cost? The case study presented effectively illustrated a methodical process in which cost-effectiveness analysis (CEA) was utilized as a tool to assess export performance, at the same time identified and categorized respective export costs based on the collected data. It was concluded with a straightforward answer to the final research question that <i>indirect export operations</i> is the most cost-effective mode for Myontec to enter the Swedish market, assuming all three alternatives are able to produce the same outcomes. While the objective was to provide a practical</p>	

recommendation, it is important to note that the results generated in the analysis are exclusively based on the data provided by Myontec, which are largely estimates. The theoretical foundations of this thesis were based on the Uppsala model of process theory and network approach and the cost types (CBA and CEA).

Keywords:	Cost-effectiveness analysis, CEA, dynamic generation cost, export performance, export operations, internationalization, SME, Myontec
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## CHAPTER 1. INTRODUCTION

*This introduction chapter addresses the rationale for conducting a study in the less researched area of cost-effectiveness analysis (CEA), which is its application in the business or commercial environment. This first part of the thesis provides a layout to aid understanding on why this thesis focused on relating the costs of export operations of a small Finnish enterprise to its non-monetary outcome—export sales volume. Hence, following an overview and a brief background on the relevance of this subject, the reader is provided with a comprehensive statement of the research problem and the objectives of the thesis, which leads to the research questions. Thereafter, the scope and limitations of the study is presented and lastly, the structure of the thesis is outlined.*

### 1.1 Background of the study

SMEs are generally disadvantaged when venturing in international markets as they lack the resources to compete head-on against large multinational companies. For Myontec, appropriate allocation of its limited resources is crucial, consequently rendering its foreign market entry decisions highly critical.

This thesis was motivated to present an evaluation tool that is aimed to assist Myontec in choosing the most cost-effective alternative for their export operations to Sweden, where resources are limited. The method was based on cost-effectiveness analysis (CEA) for evaluating the performance of three different export operation modes—*indirect export*, *direct-agent* and *direct-distributor*—by relating the relevant export costs to a non-monetary outcome, such as export sales volume.

Cost-effectiveness analysis (CEA) is a comparative method used to evaluate the costs and outcomes of projects by illustrating the tradeoffs associated with selecting one project/investment over another. It is used when the need for a project has already been established, but the question remains over the best method for achieving it. This analysis method is primarily used in health, education (Levin & McEwan, 2002; McEwan, 2012), defense policy and quite recently, applied in energy efficiency measures (Tuominen, et al., 2015). While there are a number of



studies regarding the use cost-effectiveness analysis (CEA) within the mentioned fields, materials and formal publications about the application of CEA in business areas are roughly scant to none since the cost-benefit analysis (CBA) is the preferred method in which business decisions are analyzed. This thesis relates to the less researched area of cost-effectiveness analysis (CEA) in business field, particularly, the export operations concerning a small enterprise.

## 1.2 Problem statement and objectives

Measuring the incremental effects of an export investment is quite challenging, particularly when the objective is to gauge the results in non-monetary units—i.e., outcomes that cannot be measured in financial terms. For a micro enterprise such as Myontec, reaching their target segment in new markets with the least incurred costs is crucial to the success of its internationalization efforts. In this study, Myontec's export sales volume was used as the unit of effectiveness (outcome) in analyzing the cost-effectiveness of three export operation modes to Sweden. Cost-effectiveness analysis (CEA) is a technique that relates the costs of a project, or investment to its key non-pecuniary outcomes or benefits (Cellini & Kee, 2015).

This thesis aims to increase our understanding of how cost-effectiveness analysis (CEA) can be utilized as an economic assessment tool to measure the export performance of select export operation modes—*indirect export*, *direct-agent* and *direct-distributor*—by relating the relevant export costs to a non-monetary outcome, i.e. export sales volume. This overarching aim is further specified in the following objectives:

1. To establish cost-effectiveness analysis (CEA) as an operational tool in assessing the economic perspective of export operations.
2. To identify the costs associated with different export operation modes and relate those to export sales volume using cost-effectiveness analysis (CEA).
3. To determine which export operation mode (*indirect export*, *direct-agent* or *direct-distributor*) has the best “value-for-money” for Myontec, where the outcome is measured in non-monetary terms, i.e. export sales volume.

### 1.3 Research questions

Seeking to address the mentioned empirical and theoretical research problems, the following research questions are stated:

1. How can cost-effectiveness analysis (CEA) be utilized as an analysis tool to measure export performance?
2. What are the different costs associated with exporting and which cost categories are relevant for Myontec's export operations to Sweden?
3. Which export operation mode (*indirect export*, *direct-agent* or *direct-distributor*) could generate a predetermined export sales volume (15 MBody Pro packages) for Myontec at least cost?

### 1.4 Scope and limitation of the study

The scope of this study is limited to the application of cost-effectiveness analysis (CEA) on *indirect export*, *direct-agent* and *direct-distributor* exporting modes for Myontec's prospective entry to the Swedish market. Other forms of indirect exporting (such as joint buying organization and industrial firms), as well as the own export mode, have been excluded as alternatives in the analysis, considering their viability relative to the case company's available resources and export mode preferences.

Information and data gathered from the case company, Myontec, were assumed to be correct and were used as the basis for this study. Myontec explicitly conveyed that the exporting costs they provided for this study are bold estimates and does not necessarily reflect the actual costs related to the company's exporting activities.

All monetary costs were expressed in February 2017 prices (in euros). Social impacts and economic indicators were not necessarily quantified in monetary terms nor included in the analysis. Where they were not, it was either due to difficulties in attaching monetary values to intangibles, and/or due to uncertainty. Additionally, the method used in the analysis follows the dynamic generation cost (DGC), which has an explicit formula.

The real discount rates used in this cost-effectiveness analysis is 5,79 percent, which was derived from Finland's inflation rate (as of February 2017) and nominal discount rate, which was based on February 2017 interest rates available from Suomen Pankki (Bank of Finland).

For this thesis, Myontec did not indicate a specific project timeline for which the export investment to Sweden will be analyzed. In its absence, it was assumed that the project lifetime was five years. An important caveat is therefore that, should the project lifetime change, the present values of the costs and assumed outcomes will be affected.

## **1.5 Thesis structure**

In addition to this introductory chapter, there are four chapters presenting the theoretical framework, methodology, case study, and the findings and conclusions of the study. These chapters constitute the basis of the thesis.

Chapter 2 accounts for the theoretical framework, which is divided into two sections. Firstly, the general concepts and theoretical perspectives of internationalization of SMEs are presented, followed by a discussion on the motives and barriers to international trade. Also included in the first section is an outline of the foreign operation modes—highlighting exporting operations as the base of the study—and a framework on how export performance is measured. The other half of the theoretical section is centered on cost type analysis, where cost-benefit analysis (CBA) and cost-effectiveness analysis (CEA) are introduced. The chapter ends with a narrative on the chosen cost analysis method for the study, the CEA.

Chapter 3 concerns the methodology. Here, the approach behind this research—case study—and the methods in which data was collected, are presented. Thereafter, a step-by-step process on how CEA was applied to evaluate the different export operation modes was outlined.

Chapter 4 provides a detailed account of the case study which begins with the introduction of Myontec, the case company, followed by a brief regarding its products, current market presence and export operations. From this, cost-

effectiveness analysis of *indirect export*, *direct-agent* and *direct-distributor* export operation modes are illustrated. Sub-sections detailing the process of CEA are included, such as the assumptions and value drivers used, assessment of costs, cost valuation and measurement of outcomes and finally, the calculations of cost-effectiveness ratio (CER) of the three export operation modes followed shortly by a sensitivity analysis, which is presented at the end of the chapter.

Chapter 5 provides the reader with the findings and conclusions of the thesis. The major findings and conclusions are presented based on the research objectives and questions defined on this thesis and the main findings of each mode are summarized. The chapter also acknowledges the limitations of this thesis and provides recommendations for further research. Finally, managerial implications are suggested. Following the five chapters, the semi-structured interview guide used during the interviews with Myontec, as well as the CEA calculation details are appended.

## CHAPTER 2. THEORETICAL FRAMEWORK

*The theoretical framework of this thesis is divided into two (2) main sections. The first part reveals the concepts and theories of internationalization. Here, the four different perspectives of internationalization are briefly discussed along with the rationalization for choosing only two of the perspectives—process theory and network approach—as conceptual platforms of the study. It is followed shortly by a discussion of the different motives and barriers to international trade, then the different export operation modes are reviewed and discussed in detail. The second part of this chapter presents the two main types of cost analysis—cost-benefit analysis (CBA) vs. cost-effectiveness analysis (CEA)—illustrating their similarities and differences. As the discussion focuses on CEA, the final section demonstrates the different methods in which CEA can be conducted—Unit Investment Cost (UIC), Unit Annual Cost (UAC), Dynamic Generation Cost (DGC)—and the rationale for choosing DGC as the CEA method used in this study.*

*The purpose of this literature review is to establish the current positions within the cost-effectiveness analysis fields and relate those to the concepts and theories of internationalization through this thesis.*

### 2.1 Internationalization of SMEs — Concepts and Theories

Today's organizations find themselves operating in an environment that is changing faster than ever. Despite SMEs' significance to national economic growth and world trade, little is known about how they operate and thrive in today's fast-changing markets and globalization. When competing in international markets, SMEs are generally disadvantaged as they lack resources to compete head-on against multinational companies (Knight G. , 2000). This theoretical section examines a few of the significant elements of SMEs' internationalization processes—from theories, its main drivers and barriers, operation modes, and assessment of export performance measures.

### 2.1.1 Theoretical perspectives of internationalization

There are four (4) main theoretical perspectives in which the internationalization of firms has been studied: (1) the *economic perspective* of foreign direct investment (FDI) theory; (2) the *behavioral perspective* of the internationalization process (stage) models; (3) the *relational perspective* handling network theory; and (4) the *(international) entrepreneurial perspective* based on recent research on smaller, rapidly internationalizing firms (Sandberg, 2012).

The *economic perspective* essentially covers theories on foreign direct investments (FDI) of large multinational corporations (MNC), in the context of evaluating the cost of economic transactions. This perspective does not concern individual firms and their respective behaviors, but predominantly represent a national-level view based on aggregate data. In this theory, minimized overall transaction costs is the deciding factor in which firms choose the organizational forms and location for internationalization, i.e. economic-based (Coviello & McAuley, 1999). Perhaps the most prevalent concept in this theory is the eclectic paradigm, also known as the OLI (ownership, location and internalization) framework; which is based on the firm's cost advantages within the aspects mentioned (Dunning, 1993).

In contrast, the *behavioral perspective (process theory)* is mainly focused on the development of the individual firm and its process of internationalization (Sandberg, 2012). Although there are more than a few models within this perspective, the Uppsala model of internationalization, authored by Jan Johanson and Jan-Erik Vahlne, was cited as the most influential process model in Coviello and McAuley's work (1999). The model explains a firm's internationalization process as a "*gradual acquisition, integration, and use of knowledge about foreign markets and operations, and on its successively increasing commitment to foreign markets*". Generally, process theory models revolve around the concept that firms internationalize in an incremental and small steps rather than large foreign production investments at single points in time (Johanson & Vahlne, 1977).

The *relational perspective (network approach)* identifies internationalization as a process of initiating, developing and sustaining international relationships between two or more connected business relationships—rather than on a firm-specific

advantage—to form a business network (Emerson, 1981). According to Johanson and Mattsson (1993) the strength of this approach is on its focus on the development process of business networks, and less on the existence of the international firm. The network theory, despite being criticized for being too descriptive and holistic (Björkman & Forsgren, 2000), is considered highly applicable to the internationalization of SMEs as it emphasizes in bringing the involved parties closer by establishing relationships with customers, suppliers, distributors, the industry, regulatory and public agencies (including other market actors), that are based on mutual trust, knowledge and commitment towards each other. Understanding this approach allows SMEs to use their network relationships to overcome size-related barriers that potentially limit their growth by exchanging information through their network (Coviello & McAuley, 1999).

Finally, the last theoretical perspective is the international entrepreneurial (*IE*) perspective, defined by McDougall (1989) *“as the development of international new ventures or start-ups that, from their inception, engage in international business, thus viewing their operating domain as international from the initial stages of the firm's operation”*. This theory was mostly common within small, high-tech firms which did not follow the traditionally suggested stages of internationalization (Sandberg, 2012). These firms were rather named as International New Ventures (McDougall & Oviatt, 2005) or Born Globals (Knight & Cavusgil, 1996), because they engage in exporting from inception. International entrepreneurial (*IE*) theory highlights the significance of the entrepreneur—particularly the characteristics and qualities of the individual entrepreneur—as the main driver of firm internationalization (Andersson & Wictor, 2003). Despite having a strong empirical support based on studies and findings of the behaviors of these smaller firms that internationalized upon launching, its theoretical framework is regarded to be too holistic and not always consistent (Mtigwe, 2006). Another limitation of this theory as cited by McDougall and Oviatt (2000), is its sole focus on launches of new ventures, disregarding the presence and influence of other possible innovators, such as those that are already established and experienced smaller firms.

### **Chosen combination of theoretical perspectives**

The *economic* and *international entrepreneurial (IE) perspectives* have been excluded in the theoretical framework of this paper based on topic relevance. The theories in *economic perspective* are largely dealing with economic principles designed for foreign direct investments (FDIs) of large multi-national corporations. Since this study is centered on the internationalization of Myontec, which is a micro enterprise, the theories in *economic perspective* are immaterial for this purpose. Conversely, the *IE theories* do not capture the dynamic side of the internationalization of SMEs, neglecting a vital aspect of internationalization, which is the environment surrounding the firm (Sandberg, 2012). *International entrepreneurial (IE) theories* are grounded on the perspectives of companies that are “Born Global”—internationalized upon launch—hence, impractical as a theoretical framework for this thesis since Myontec launched their operations in Finland on 2008.

For this thesis, a combination of the *behavioral (process theory)* and *relational (network approach)* perspectives were chosen and discussed in order to get a more holistic picture of the dynamics of the internationalization of SMEs (Johanson & Vahlne, 2006). These theories will allow this paper to capture the behavioral aspects of SMEs in international market entry, as well as provide models for both international relationship building and internationalization processes.

#### **2.1.1.1 Process theory - The Uppsala Model**

Although there are a number of concurrent research and innovation-related process models developed in the U.S. (Pandian & Sim, 2002), the Uppsala model is the most influential and highly utilized internationalization process model (Coviello & McAuley, 1999). The process-based view to internationalization was first proposed in 1975 by two researchers from Uppsala University in Sweden, Jan Johanson and Finn Wiedersheim-Paul, and was founded based on their empirical study of the internationalization of four Swedish firms that were initially small in size and later had grown to become larger firms. Their observations indicated two empirical starting points that laid the foundation of the Uppsala model (Björkman & Forsgren, 2000). First, the companies began to internationalize while still small; and second,



the company's ability to make decisions was affected by its limited decision-making abilities, as bounded rationality was assumed (Sandberg, 2012).

The Uppsala model of internationalization process is based on a series of incremental decisions, which is built on learning and knowledge acquisition about foreign market and operation. Johanson and Vahlne (1977) identified and labeled this decision pattern as the *establishment chain*, which involves four stages. The firm begins with (1) no regular export activities, then it initiates (2) export via intermediaries (agents), next it would set up (3) sales subsidiary, and; eventually establish (4) overseas production/manufacturing (Johanson & Vahlne, 1977).

**Figure 1: The Establishment Chain (Four-Stage Model)**



Source: (Johanson & Vahlne, 1977)

According to Johanson and Wiedersheim-Paul (1975), internationalization is the consequence of a series of incremental decisions where firms begin to initiate foreign market expansion to countries where the perceived psychic distance is low, then gradually move to more distant markets when knowledge and experience in foreign markets increase. Psychic distance is defined as *“the sum of factors preventing the flow of information from and to the market. Examples are differences in language, education, business practices, culture and industrial development”* (Johanson & Vahlne, 1977). According to Hymer (1976), this pattern is due to the liability of foreignness—the disadvantage faced by a foreign investor when venturing in unfamiliar foreign markets. This was supported by Johanson and Vahlne (2006), who revealed from their empirical observation that the psychic distance is directly correlated to the liability of foreignness.

The Uppsala model explains that expansion to foreign markets is a process, driven by gradual acquisition of knowledge while conducting business, generating the chance to take advantage of any potential opportunity arising in that market (Johanson & Vahlne, 2006). This was based on a concept cited by Penrose (1966),

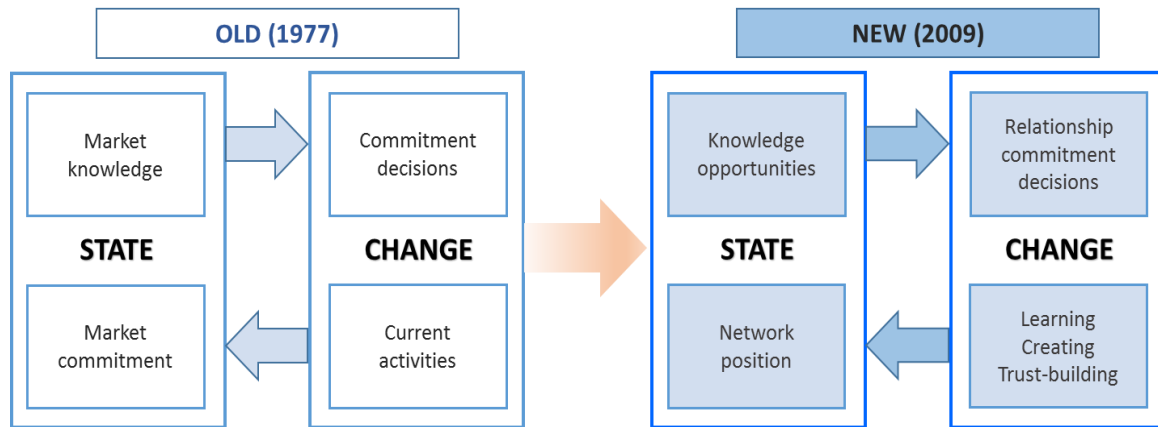
which explains that the two classifications of knowledge are acquired differently. The first type—the *objective* knowledge—can be taught, thus easier to attain; while the second one—the *experiential* knowledge—can only be learned through personal experience. Experiential knowledge is the critical kind as it cannot be so easily acquired as objective knowledge. In foreign operations, without the basic experiential knowledge to begin with, it takes longer to establish, as knowledge is developed gradually over time. Thus, international expansion takes place incrementally (Johanson & Vahlne, 1977). This finding is based on an empirical pattern that was first identified by Johanson and Wiedersheim-Paul during their case studies in 1975.

Despite its significant contributions to the broader understanding of the internationalization process of companies, the Uppsala model received several criticisms for being deterministic because its principles are bound by the evolution of time and it does not take into account the interdependencies between different countries' markets of which a firm operates under (Andersen, 1993). Many of its limitations have been traced back way before the changes in the business environment during the three last decades (since its publication), has been taken into consideration. One of its drawbacks is disregarding the management incentive and its effects on decision-making. Another is its oversight of other market entry forms, such as franchising—which is considered to be a relatively less risky entry mode with a rather bigger opportunity to develop great market coverage and control; or licensing- which requires low levels of investment and provides considerable control over the market; or strategic alliance; and some other market operations (Doole & Lowe, 2008). Some critiques also point out that the model is mostly relevant only to industries with physical products but not with service industries as services can be dynamic and more time compressed which requires initial commitments and inconsistent demands (Tykesson & Alserud, 2011).

Since the initial publication of the Uppsala model in 1977, dramatic changes have occurred within the economic and regulatory environments. Some concepts and insights that did not exist when the model was published became constructs as business environments continue to evolve, much so that the authors revisited and made a revision of the model in 2009. The change mechanisms in the updated

version are the same as the original model, except that the concept of trust-building & knowledge creation have been added (Johanson & Vahlne, 2006).

**Figure 26:** *The basic mechanism of internationalization: state and change aspects (1977 Model) vs. The business network internationalization process model (2009 version)*



Source: (Johanson & Vahlne, 1977)

The new Uppsala model became a “business network internationalization process model” (Johanson & Vahlne, 2009), where relationships and networks are taken into account more extensively. In the new model, state aspects became “knowledge opportunities”, notably considering opportunities as an important driver for foreign market entry. The second state variable is the “network position”, replacing what was “market commitment” in the 1977 model, acknowledging that establishing a position within a foreign business network is now a necessity in today’s process of internationalization. The change variables of “commitment decisions” have been updated to include relationship, appearing as “relationship commitment decisions”, and the “current activities” that used to be the outcome of the process have been replaced by “learning, creating, and trust-building” (Johanson & Vahlne, 2009). Through the modifications, the new Uppsala model recognized that the internationalization of a firm these days is about becoming an insider in a foreign business network and strengthening the current position within the network is just as critical. Thus, “*the liability of outsidership—when the firm does not have a relevant network position—rather than liability of foreignness is seen as the main barrier to internationalization*” (Sandberg, 2012).

### **2.1.1.2 Network approach to internationalization**

In the context of business studies, network theories have received an increasing amount of attention in literature, such as the published works of Möller & Halinen (1999), Carson, Gilmore & Rocks (2004), and Håkansson & Snehota (2006), in the same way that it has been developed in several disciplines other than within entrepreneurship. In this thesis, the industrial (business) network approach and the institutional network approach, have been selected due to their focus on the interrelatedness among firms in a business-to-business setting. While the industrial network approach revolves around the concept of borderless, market-as-network, the embeddedness of networks into country-based institutional contexts—as presented in the institutional network approach—fills out any gaps neglected by a borderless market-as-network concept of internationalization (Sandberg, 2012).

#### **Industrial network theory**

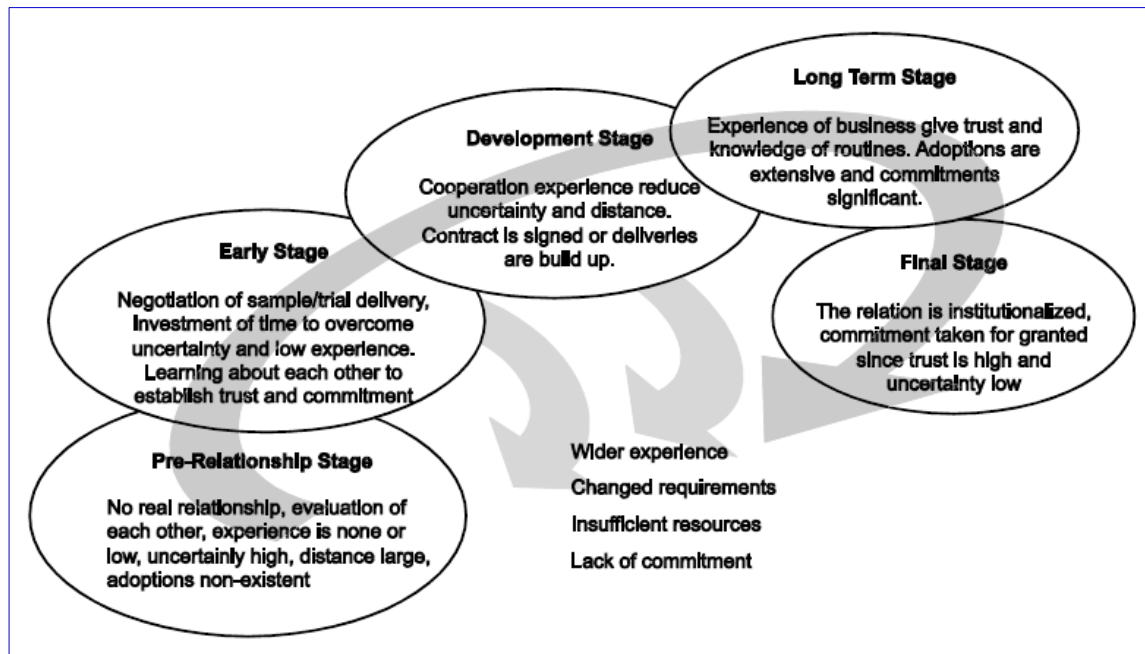
Within a globalized world, it is critical for firms to create and develop long-term and close relations not only with customers, but with suppliers, distributors and competitors alike, especially when establishing new business activities in emerging or mature markets (Johannisson, 2000). The industrial network theory deals with interrelated business relationships which constitute industrial networks—a system where firms depend on each other for production, distribution and use of goods and services, and engage in coordinated activities, forming a network of relationship (Johanson & Mattsson, 1987). It is through the interactions within these networks that the concept of borderless network, or market-as-networks, evolved (Ford, 2002; Johanson & Mattson, 1992).

According to Axelsson and Johanson (1992), internationalization is viewed as a process of initiating, developing and maintaining international business relationships in the network approach, in which to an extreme degree, blurs out the country borders (Forsgren, 2002). This concept highly opposes the Uppsala business network internationalization process model which states that dissimilarities between countries are considered barriers to new market entry (Johanson & Vahlne, 1977).

Studies conducted by the Industrial Marketing and Purchasing (IMP) on over 1,000 business relations in five European countries showed how companies had a limited number of strong business relationships with their most important customers and suppliers (Håkansson & Snehota, 1995) and how both the buyer and seller were active in initiating and maintaining the relationship (Ford et al., 2002). In addition, it indicated that building relationships take time and resources (Björkman & Forsgren, 2000; Johanson & Vahlne, 2006). In the doctoral dissertation of Sandberg (2012) regarding the internationalization process of small and medium-sized enterprises, it was mentioned that an unpublished data from IMP revealed that it takes five years on average, to build up a relationship with mutual commitment (Johanson & Vahlne, 2006).

According to Mattsson (1989), business relationships are either direct—where the connection is direct or there is principal business relationship, such as between a supplier and its customer (dyad); or indirect—include a third party, such as an intermediary (triads) (Anderson, Håkansson, & Johanson , 1994). In a business-to-business environment, building a close long-term relationship requires more than just monetary transactions, investment in time and resources are equally important. David Ford (1980), cited that buyer-seller relationships are developed based on the combination of experience, uncertainty, co-operation, commitment and mutual adaptation, and that it tends to follow a certain development stages. Sandberg's (2012) adaptation to Ford's five stages is illustrated in the figure below.

**Figure 41:** Five stages of buyer-seller relationship development (adapted from Ford, 1980)



Source: (Sandberg, 2012)

The first stage of the development process buyer-seller relationship, the pre-relationship stage concerns with the assessment of new potential suppliers. It is during this stage when buyers start collecting information on potential suppliers and evaluating to determine if a relationship can be developed (Ford, 1980). In the early stage, buyers and sellers are likely to have had minimal contact and are trying to learn about each other. It is also in this stage where the idea of exploring the potential of the relationship is initiated (Håkansson, 1982).

At the development stage, cooperation experience between buyers and sellers reduce uncertainty and distance (Ford, 1980), and during this phase, the growing communication and trust lead to increased cooperation and established common goals. In the long-term stage, adoption of buyers and sellers' on-going business routines are extensive and both parties share mutual trust and significant commitments (Anderson, Håkansson, & Johanson , 1994). In the fifth and final stage, the relationship is extensively institutionalized and habitual with commitment being taken for granted (Ford, 1980; Ford et al., 2003; Jansson, 2007b).

In Ford's original model, each stage is described based on several relationship factors, for instance how the experience, commitment and adaptations of the parties increase and how the distance and uncertainty between them are reduced (Ford, 1980). Relationship commitment develops when the parties involved view the relationship valuable enough to ensure its maintenance. Thereby, commitment and trust are key for further relationship building (Morgan and Hunt, 1994).

### **Institutional network approach**

The institutional network approach was developed by Jansson (2007a), in which he argued that the basic rules of the institutions are spread through culture, structures and routines at varying levels: micro, meso and macro levels. The micro level focuses on firm level studying, the multinational firm as an institution, while the meso level is centered on the organizational field of institutions surrounding the firm, such as the product/service market, labor market or government. Lastly, the macro level is focused on the societal institutions of the country's overall culture, political and legal systems, and business mores (Jansson H. , 2007a).

In the institutional network approach, the concept of market-as-network is viewed from a socio-economic perspective (Håkansson & Snehota, 1995; Johanson & Mattson, 1992), where the network itself is a market form of its own (Powell, 1990). Compared to the industrial network theory which neglects country borders (Forsgren, 2002), the institutional network approach recognizes country markets and discusses networking processes as determined by institutional factors influencing the network (Jansson H. , 2007a). In a comparative analysis of the Chinese, Russian, and West European markets regarding institutions and business networks, Jansson et al. (2007) pointed out the varying business practices between these markets as influenced by the differences in the institutional frameworks of the respective country markets (Sandberg, 2012).

### **2.1.2 Motives and barriers to international trade**

There are numerous reasons why a firm must internationalize. Yet the ultimate objective of every internationalizing company is to expand its business by searching new markets and expanding its client base, put in simpler words,

business growth. This growth phenomenon was illustrated by Igor Ansoff in his growth matrix, where companies can consider ways to expand via existing products or new products, and in existing markets or new markets. Kananen (2011) adapted Ansoff's growth matrix as dilemma of growth (see table below), which shows that the same growth alternatives apply to SMEs—internationalization as a strategic option for SMEs seeking to expand its existing products to new markets.

**Table 1:** *Dilemma of growth*

	CURRENT MARKET	NEW MARKET
NEW PRODUCTS	Product development	Product development for international markets
CURRENT PRODUCTS	Sales promotion	Internationalization

*Source: (Kananen, 2011) adapted from Ansoff's Growth Matrix*

### **Motives**

Motivations for internationalization are either proactive or reactive, or a combination of both. Generally, profits are the major proactive motivation for international business according to Czinkota (2012), while reactive motivations, such as competitive pressures, influence firms to respond to environmental changes.

One of the proactive motivations for expanding internationally is the existence of market opportunities abroad. These opportunities may be in the form of demand for a firm's product in foreign markets, changing trends to favor the product in foreign markets, or the absence of competition abroad, giving the firm the first mover advantage. Additionally, some products that are marketed internationally can give the sense of an international brand and make consumers feel sophisticated and cosmopolitan—increasing the brand's appeal—thus, some companies internationalize to obtain prestige in the domestic market. One more reason to go global is risk diversification, which is mainly to avoid detrimental effects of external factors that could change the market's consumption trend. Economies of scale is



also a major influence in a firm's decision to expand abroad as it allows firms to produce their products in some countries at lower costs (Universitat Pompeu Fabra Barcelona, 2014).

As for the reactive motivations, the need for foreign market expansion comes to the firm as a response to an event that presents an opportunity for profit. Reactive reasons that drive companies to internationalization include responding to market opportunity/demand it discovers abroad. With today's increasing digitalization, a scenario such as unsolicited orders from abroad through online catalogs can easily occur and provide motivation for a firm to consider exploring foreign markets. While in some cases, markets develop as part of emerging markets and has a strong potential, e.g. new segments as a result of new consumption habits, etc. Further examples of events that could trigger a reactive internationalization response are either overproduction, decline of domestic sales, and/or excess capacity, which typically occurs if the domestic market is saturated or too little (Universitat Pompeu Fabra Barcelona, 2014). A competitive strike is another strategic decision which can be categorized as reactive especially if the market expansion decision is in response to a competitor's move. Other motivations such as governmental, economic and political reasons are known to exist but are least likely as these are mostly associated as barriers. Examples of these include government incentives, lifting of international trade barriers, tariffs and high production costs and environmental regulations (Biggs, 2013).

### **Barriers**

Knowing the entry barriers to the target country is a crucial step for firms seeking to expand internationally. As Kananen (2011) pointed out, the worst pitfalls in exporting can be avoided by conducting some initial desktop search. High market demand alone cannot sustain the firm's exporting efforts unless border barriers are tackled because they make exporting extremely difficult and virtually impossible. There are two types of border barriers—artificial and natural barriers.

Artificial barriers are various border formalities meant to hinder foreign import, which include tariffs, quotas, regulations and national standards. A tariff is a tax on imports which is collected by the government in order to protect domestic

production against foreign competition. It raises the price of the good to the consumer. Nowadays though, tariffs no longer serve as significant trade barriers, since large free trade areas, such as the EU, prohibit the use of tariffs in internal trade where no tariffs can be imposed on original products. Conversely, a quota refers to the limit on the amount of a certain type of good that may be imported into the country, which can either be voluntary or legally enforced. It serves the same purpose as tariff, which is to limit imports and protect domestic producers from foreign competition by restricting the supply to a certain quantity, raising the price of the goods, thereby causing decrease in demand (Gorman, 2003). Other artificial barriers imposed to hinder imports are regulations regarding product content or quality, otherwise known as product standards, but are mainly aimed to serve as trade barriers (Kananen, 2011).

Natural barriers include culture, customs and habits. Most countries have a distinctive linguistic and cultural norms in addition to a basic political identity (Ma & Lu, 2011). Culture is a complex phenomenon that integrates pattern of human knowledge and experience through shared attitudes, values and goals and dictates the social practices that characterizes an institution or organization (Merriam-Webster, s.f.). Culture comes through in diverse customs, habits and purchasing behaviors of the customers and/or international trade partners. Understanding cultural differences is a critical aspect of international business as it could impede business transactions, negotiations or decision-making processes.

At the product level, test marketing or market research may be a more practical solution as opposed to a desktop research when examining the depth of cultural influence in the behavior of the target market.

### **2.1.3 Export operation modes**

As firms seek to expand their business activities in foreign markets, a critical issue for them is the choice of operation mode by which they would enter and penetrate foreign markets. Operation mode refers to the stage in a distribution system when a product is imported into the target country (Kananen, 2011). Decision-makers must select market-entry modes that are consistent with the organization's

internationalization strategy and the necessary resources available to the firm. This section provides an overview of different operation modes and their characteristics.

Adapted from Luostarinen and Welch (1990), the operation modes used in international business operations are grouped into three main categories: exporting, contractual and investment modes.

**Table 2:** *The major foreign operation modes*

EXPORTING	CONTRACTUAL MODES	INVESTMENT MODES
<ul style="list-style-type: none"> <li>• Indirect</li> <li>• Direct: agent/distributor</li> <li>• Own sales: office/subsidiary</li> </ul>	<ul style="list-style-type: none"> <li>• Franchising</li> <li>• Licensing</li> <li>• Management contracts</li> <li>• Subcontracting</li> <li>• Project operations</li> <li>• Alliances</li> </ul>	<ul style="list-style-type: none"> <li>• Own unit (Greenfield)</li> <li>• Acquisitions</li> <li>• Joint venture</li> </ul>

*Source: (Kananen, 2011) adapted from Luostarinen & Welch, 1990)*

However, as this thesis is concerning the exporting activities of Myontec, the discussion on this topic has been limited to the exporting modes. Export is a function of international trade where goods produced in one country are shipped and distributed to another country by means of different operation and distribution systems for future sale (Kananen, 2011). According to Luostarinen & Welch (1990), there are three major modes of exporting that are usually distinguished based on the distributors used; indirect export, direct export, and own export.

### **2.1.3.1 Indirect export operations**

As the term implies, indirect export is when the firm is not firsthand in-charge of its foreign business activities. This type of operation uses a middleman located in the home market/country to undertake the exporting transactions (Kananen, 2011). Luostarinen & Welch (1990) indicated that a middleman may be a domestic distributor firm that specializes in foreign trade, and can either be:

- 1) an agent (export agent or export-import agent);
- 2) a commission merchant (agent);
- 3) an exporter (export firm or export-import firm);

- 4) an export corporation (established under specific legislation for exports only)

There are other indirect companies that may serve as a middleman, such as a joint export organization, publicly-owned export organizations, another industrial company acting as an agent or an exporter, a foreign owned company located in the exporting country (a purchasing unit, etc.), tourists visiting the country, and sales in domestic ships sailing in foreign waters (Luostarinen & Welch, 1990). Firms seeking to internationalize must select the most suitable option based on the company's available resources and profitability objectives. For the purpose of this thesis, the types of middleman discussed refers only to the first four types mentioned.

There are several advantages to utilizing this type of exporting mode. Firstly, it offers ease of export operations, especially for firms that has no experience or knowledge in doing business abroad, because it does not require knowledge of export-related techniques or language skills from the part of the manufacturing firm, as these are the domestic middleman's responsibilities. In this case, from the firm's point of view, indirect exporting is comparable to domestic trade. Another good reason for using this export mode is, it allows even small firms with very limited resources to broaden its foreign business without a currency risk. Additionally, it enables entry to a geographically remote, culturally distant but economically promising market, without the extra costs of developing the markets from scratch. Indirect exporting is mostly suitable for standardized, bulk products with a low degree of processing in order to maintain a certain price level and prevent unhealthy mutual competition (Luostarinen & Welch, 1990).

As with other options, indirect exporting comes with disadvantages and problems. For instance, having an additional domestic member in the distribution chain adds costs, making this mode of operation a costly export option. Another is the difficulty in getting feedback from the customers due to the numerous intermediaries which blocks the information flow. Most of the time, it is at the domestic middleman's best interests to keep foreign customers distant from the exporter in order to safeguard their own operations. With indirect exporting, the

firm has no influence or control over the export operations. The lack of direct contact with the customers hinders any development of customer or market-specific products. Finally, since the middleman is not fully responsible of the outcome of the export operations, he/she “may not be adequately cost conscious, especially if the costs have to be covered by the principal” or may sell only if demanded, since the motivation for the efforts in the exporting activities are purely subjective (Luostarinen & Welch, 1990; Kananen, 2011).

### 2.1.3.2 Direct export operations

In direct exporting, the internationalizing firm handles the exporting activities but requires a foreign middleman operating in the target country. According to Luostarinen and Welch (1990), the middleman may be:

- 1) a special distribution company for import purposes
  - a. agent (import agent, import-export agent)
  - b. commission merchant (agent)
  - c. broker
  - d. importer (specialized import house, wholesaler, retailer)
- 2) *joint buying organization*
  - a. *purchasing chain (private or public members)*
  - b. *governmental import organization (foreign trade company)*
- 3) *an industrial firm*
  - a. *local firm using our producer as a subcontractor*
  - b. *foreign or multinational firm using our producer as one of its many international subcontractors for its subsidiary network in different countries*

However for this thesis, the *joint buying organization* and *industrial firms* have been excluded as sub-alternatives of direct exporting in order to limit the scope of the study, as these alternatives are not within Myontec’s consideration as exporting modes either. Hence, discussions on direct export operation refers to **agent** (import or import-export agent), and **distributor** (commission merchant, broker and/or importer) as the foreign middleman.

The internationalizing company is more involved in direct exporting due to the direct contact with the middleman in the target country. In order to be successful in using this operation mode, the firm must allocate a dedicated and capable export personnel, whose main responsibility is to manage the export sales, marketing, planning and implementation, both at home and abroad. Also, this option requires excellent language skills and technical knowledge on exporting routines and techniques from the part of the exporter. Unlike in indirect exporting, the knowledge of the target markets and internationalization rate of the exporter increases in direct export operations (Luostarinen & Welch, 1990; Kananen, 2011).

In terms of advantages, using direct export operations shortens the distribution chain, since no domestic middleman is used, thus reducing costs and improving profitability and price competitiveness. Also, efficiency is increased as a result of shorter information channel. Moreover, the direct contact with target markets allows the exporter to have a better knowledge of the foreign market conditions, as well as its foreign distributors and end customers. As a result, the firm can adapt the products to the needs of the customers and distributors, design strategic plans to enhance the current and future operations, develop efficient and effective marketing campaigns, improve relationship with distributors and finally, develop efficient counter strategic measures against its competitors (Luostarinen & Welch, 1990).

Disadvantages of direct exporting include a high demand for advanced knowledge in international business routines and techniques, and a need for greater financial resources in order to finance the domestic activities related to exporting. Failure to meet these requirements may result in ineffective exporting operations for the firm. In general, direct exporting may be more expensive compared to indirect mode (Luostarinen & Welch, 1990).

### **2.1.3.3 Own export operations**

There is no external middleman used between the producer and final customer in own export operations. The exporter takes care of the exporting activities both in the home and target countries, often covering customs and transportation clearance. In this mode, the exporter is in direct contact with the end customer,

mostly, this export operation mode is quite efficient for export of consumer durables and tailor-made products or services (Kananen, 2011; Luostarinen & Welch, 1990).

Venturing into own export operations is quite advantageous in many ways, and one of them is obtaining accurate and instantaneous customer feedback. Since this option allows an unfiltered and direct contact with the final customer, product evaluation and feedback is immediate. This fosters development of an established, mutually beneficial relationship between the firm and its customers. Additionally, monitoring export activities for the firm is quite easy with own export mode (Luostarinen & Welch, 1990).

The challenges and problems related to this export mode is the same with direct export operations. Like direct exporting, own export operations requires a good knowledge of the target markets/country, as well as a great deal of export techniques and personnel with excellent language skills and proper know-how in exporting activities. Finally, own exporting requires a permanent presence in the target market, managing a permanent presence as well as managing the contacts can be quite costly (Kananen, 2011).

#### **2.1.4 Framework for assessment of export performance**

With the increasing liberalization of the markets and rising economic globalization, export performance has become a necessity for both emerging and developed countries in order to achieve economic growth. Export performance, as defined by Cavusgil & Zou (1994), is “*the extent to which a firm’s objectives, both economic and strategic, with respect to exporting a product into a foreign market, are achieved through planning and execution of marketing strategy*”.

In a study conducted by Roxo (2014), it was pointed out that there are three dimensions to which export performance is assessed, namely: *effectiveness*, *efficiency*, and *adaptiveness*. *Effectiveness* refers to the comparative measurement of the firm’s success against its competitors, while *efficiency* represents the outcome of the policies implemented by the firm relative to its utilized resources,

and finally, *adaptiveness* is the rate at which the firm successfully responds to the environmental changes (Walker Jr. & Ruekert, 1987).

Conversely, in terms of operationalization, export performance can be assessed either by *objective*—based on official sources such as company financial statements and reports—or *subjective*—based on personal experience of the respondent rather than facts—measures, and complemented by economic, non-economic, and generic measures (Roxo, 2014).

### **Classifications of export performance measures**

According to Katsikeas, *et al.* (2000), the economic measures of export performance can be categorized into sales-related, profit-related and market share-related, as shown in the table below:

**Table 3: Economic measures of export performance**

SALES-RELATED	PROFIT-RELATED	MARKET-SHARE RELATED
<ul style="list-style-type: none"> <li>• Export sales ratio/export intensity</li> <li>• Export sales growth</li> <li>• Export sales volume</li> <li>• Export sales transaction size</li> <li>• Export sales per employee</li> <li>• Export sales volume of new products</li> <li>• Export sales growth of new products</li> <li>• Export sales return on investment</li> </ul>	<ul style="list-style-type: none"> <li>• Export profitability</li> <li>• Export profitability growth</li> <li>• Export profit ratio</li> <li>• Export profit margin</li> <li>• Contribution on exporting to profits</li> <li>• Growth of export profit margin</li> </ul>	<ul style="list-style-type: none"> <li>• Export market share</li> <li>• Export market share growth</li> <li>• Market diversification</li> </ul>

*Source: (Roxo, 2014) Adapted from Katsikeas et al., 2000, and Sousa, 2004*

In the export performance study conducted by Roxo (2014), a number of existing literature that supports the use of multiple measures was itemized to further strengthen the theoretical structure of the different export performance measures, as illustrated below:



**Table 4:** Export performance measures used by some relevant authors

STUDY SOURCE	TYPE OF EXPORT PERFORMANCE MEASURES
SHOHAM (1998) Export Performance: A Conceptualization and Empirical Assessment. <i>Journal of International Marketing</i> . 6 (3): 59-81	<ul style="list-style-type: none"> <li>• Economic -&gt; sales-related (e.g.: export intensity; export sales)</li> <li>• Economic -&gt; profit-related (e.g.: export profit margin)</li> <li>• Economic -&gt; market-related (e.g.: export market share)</li> <li>• Generic (e.g.: satisfaction with export venture)</li> </ul>
ZOU et al. (1998) The EXPERF Scale: A Cross-National Generalized Export Performance Measure. <i>Journal of International Marketing</i> . 6(3): 37-59	<ul style="list-style-type: none"> <li>• Economic -&gt; sales-related (e.g.: export sales volume)</li> <li>• Economic -&gt; profit-related (e.g.: export profitability)</li> <li>• Economic -&gt; market share-related (e.g.: global market share)</li> <li>• Generic (e.g.: satisfaction with export venture; goal-achievement)</li> </ul>
LAGES and LAGES (2004) The STEP Scale: A Measure of Short-Term Export Performance. <i>Journal of International Marketing</i> . 12(1): 36-56	<ul style="list-style-type: none"> <li>• Economic -&gt; sales-related (e.g.: short-term export intensity improvement)</li> <li>• Generic (e.g.: satisfaction with overall performance)</li> </ul>
LAGES et al. (2005) Bringing export performance metrics into annual reports: the APEV scale and the PERFEX scorecard. <i>Journal of International Marketing</i> . 13(3): 79-104	<ul style="list-style-type: none"> <li>• Economic -&gt; sales-related (e.g.: export sales volume, export sales value)</li> <li>• Economic -&gt; profit-related (e.g.: export profit)</li> <li>• Generic (e.g.: goal achievement, satisfaction with overall performance)</li> </ul>

Source: (Roxo, 2014)

### 2.1.5 Theoretical conclusions and their significance to the study

The relevance of the theoretical perspectives discussed in this thesis relate not only the application of the process theory (the Uppsala model) and the network approach (the combination of industrial and institutional network approaches) to the internationalization of Myontec, but also validate the structure in which the company's export operations and performance are measured.

The Uppsala model explains how firms gradually intensify their activities in international market through the Establishment Chain, which proves factual in the

case of Myontec, being a small firm. This theory points that first a company gain experience from the domestic market before they enter and start to venture in foreign markets. Myontec established its business domestically first, and later started its export activities to other countries. The second stage in the establishment model indicates that firms then initiate exporting via intermediaries or agents. This is also evident in Myontec's foreign market operations strategy, being that the company utilizes agents and distributors for its current export operations.

Similarly, the network approach provides perspective on how a balance of both borderless, market-as-network view (industrial network) and a socio-economic perspective, where country markets are recognized (institutional network), can determine the success of Myontec's internationalization efforts. When establishing new business activities, it is critical for firms to create and develop long-term and close relationships with its customers, suppliers, distributors and even competitors. With Myontec's small size, it is especially challenging to expand and develop its network because it requires time and resources that may not be necessarily and readily available to them. Knowledge on the network approach and a comprehensive understanding on how a firm must invest wisely on its limited resources in order to position itself meaningfully within the network could serve as a practical application of these theories for Myontec's foreign market entry decisions.

## **2.2 Types of Cost Analysis**

There are two major categories of costs analysis, the cost-benefit analysis (CBA) and cost-effectiveness analysis (CEA). A third approach, cost-utility analysis, is often implemented as an extension of CEA (McEwan, 2012). All methods are used as tools to evaluate the outcomes and costs of interventions or programs. Figure 8 summarizes the characteristics of the different types of costs analyses, which are described in more detail below.

**Table 5: Characteristics of different types of cost analysis**

METHOD	COSTS	EFFECTS	EVALUATION QUESTION
Cost-benefit analysis (CBA)	Monetary units	Monetary units	Are the benefits worth the costs?
Cost-effectiveness analysis (CEA)	Monetary units	Non-monetary units	Comparisons of programs with same objective
Cost-utility analysis (C/U) <i>*mostly used in health</i>	Monetary units	Utility and QALYs or DALYs	Comparison of interventions with different objectives

Source: (Polinder, Toet, Panneman, & van Beeck, 2011)

### **Types of cost analyses based on timing**

According to Boardman, et al. (2006) and Levin & McEwan (2001), cost analysis can be performed at any point in the policymaking process. Depending on the timing, these cost analyses can be classified as:

- 1) **Ex ante** (or prospective) – conducted prior to the program/project; is most useful for making resource allocation decisions.
- 2) **Ex post** (or retrospective) – conducted at the end of the project. Provides information about total program costs and benefits upon the program's completion; most useful for reviewing the efficiency of a particular project.
- 3) **In medias res** (or current year or snapshot analysis) – conducted at some point during the implementation. It provides data on whether the program's current benefits are worth the costs.

Each of these analysis varies from the other based on their respective usefulness, particularities and limitations. For instance, estimating the costs and benefits is quite difficult in an ex ante analysis since they have not yet occurred. Thus, the probability of having less accurate results may be fairly high due to a significant number of assumptions required on this type of analysis. In contrast, in an ex post analysis, costs and outcomes are largely known and typically estimated accurately. Nonetheless, the dilemma with this type of analysis is on the proper attribution of costs and benefits to the program, as the observed results may have been an outcome of programs or projects other than the one being analyzed (Cellini & Kee, 2015).

### 2.2.1 Cost-Benefit Analysis (CBA)

Cost-benefit analysis (CBA) is a method used to make business and economic-based decisions on one or more options to select the optimal alternative. It takes into account not only the financial costs of the alternatives, but also the tangible and intangible benefits (Cost-Benefit Analysis, s.f.). It is defined by Boardman, *et al.* (2006), as a policy assessment method that quantifies the value of policy consequences (usually called results or impacts) in monetary terms to all members of society. A CBA considers all of the costs and benefits to society as a whole, thus it calculates net social benefits (*NSB*) for each policy alternative with a simple formula of net social benefits equal social benefits (*B*) minus social costs (*C*):

$$NSB = B - C$$

Benefits measured in CBA of human investments are usually additional earnings received by participants, tax revenues by the government, or in the form of averted monetary costs to the society such as reduced crime rate. Once incremental benefits (*B*) are calculated, the value  $B - C$  represents the net social benefits of the program or intervention. With CBA, it is imperative to use the net present value (NPV) of any estimated costs and benefits since these are often distributed unevenly throughout time (McEwan, 2012). Formula for calculating NPV of costs and benefits:

$$NPV = \sum_{t=0}^n \frac{B_t}{(1+r)^t} - \sum_{t=0}^n \frac{C_t}{(1+r)^t},$$

where the benefits (*B*) or costs (*C*) may be received or incurred immediately, at  $t=0$ , or up to  $n$  years in the future (McEwan, 2012).

The main purpose of CBA is to aid effective decision making when markets fail. CBA is used in order to identify the most efficient program, policy or project (including the status quo) by which society's resources are allocated efficiently when resources are scarce (Levin & McEwan, Cost-Effectiveness Analysis, 2nd edition, 2001). However, there are two arguments against the use of CBA, according to Boardman, *et al.* (2006). One argument states that there is no theoretical basis for making trade-offs between one person's benefits and another person's costs,

disputing the fundamental assumptions of CBA. The other argument concerns public policy participants' disagreement on specific areas in CBA, such as the manner of monetizing the costs and benefits, identifying the program's results and recognizing whether they are costs or benefits, and how trade-offs are made between the present and the future.

### 2.2.2 Cost-Effectiveness Analysis (CEA)

Cost-effectiveness analysis (CEA) is quite comparable to cost-benefit analysis (CBA), as both represent economic evaluations of alternative resource allocation and share the same method of measuring costs. However, unlike CBA, the incremental effects in CEA are expressed in non-monetary units (Levin, 1983; Levin & McEwan, 2002).

According to Levin (1983), CEA is a form of economic analysis used to make a comparative assessment of alternative projects by considering their relative costs and outcomes or, alternatively, identify the option which, for a given cost, maximize the desired results (European Commission, 2009). It is expressed in ratio, which represents the tradeoff between each program's costs—in monetary value—and each program's outcomes in specific non-pecuniary units (Levin, 1983; Levin & McEwan, 2001). The cost-effectiveness ratio (CER) can be obtained by dividing the costs incurred by the project with the specified unit of effectiveness, as follows:

$$\text{Cost-Effectiveness Ratio} = \frac{\text{Total Cost}}{\text{Units of Effectiveness}}$$

Cost-effectiveness analysis is commonly used in the fields of education and health services because the program effects or outcomes in these areas cannot be expressed in monetary values. In health, for instance, the outcomes may include clinic enrollment or attendance, health incidents averted, life-years saved, or improved quality of life. Levin (1983) and Levin and McEwan (2001) provide excellent examples of cost-effectiveness ratios and how to interpret them. However, CEA is not limited to these fields. In a recent study conducted by Touminen, *et al.* (2015), cost-effectiveness analysis (CEA) has been used as an economic appraisal method to assess the energy efficiency in buildings, where they presented a CEA-

based method and a tool for comparing the costs of an energy efficiency improvement with its effects in terms of reduced energy use.

CEA's main objective is to identify and place a monetary value on the costs of a program and relate these costs to specific non-monetary measures of program effectiveness, in order to find out which option either yields the maximum effectiveness achievable for a given amount of spending, or the alternative that could achieve a stipulated level of effectiveness at least cost (Cellini & Kee, 2015). Through the combination of information on effectiveness and costs, decision-makers can determine which program provides a given level of effectiveness at the lowest cost or, conversely, which project provides the highest level of effectiveness within a given cost. However, it is important to note that CEA is not designed to be used as the sole basis for decision making, rather, as a complementary tool in which the data from such analyses can be incorporated into a certain decision-making framework.

A cost-effectiveness analysis will usually take place in four stages (Tuominen, et al., 2015; European Commission, 2009):

1. Definition of objectives and choice of the quantities measured.
2. Cost assessment. As a rule, only direct monetary resources are included, although other costs can also be monetized and included, and the net present value (NPV) method is used to calculate present value for the costs.
3. Measuring impacts, meaning the physical quantities of the desired outcomes.
4. Calculating unit cost for outcomes by dividing costs with impacts. The cost per unit output and impact is measured through the simple division of costs by outcomes.

*“Thus CEA makes the relationship between inputs and outputs explicit, that is, the value for money one gets from the project in terms of the desired outcomes”* (Tuominen, et al., 2015).

### CEA Methods

There are several methods for conducting CEA, however this paper will cover only the three (3) most common methods according to the European Commission (2009), OECD (2007) and Tuominen, *et al.* (2015), as follows:

1. **Unit Investment Cost (UIC)** - the simplest and most common method, it is the ratio of total investment costs to a specified effect achieved in the first year after completing an investment:

$$UIC = \frac{I}{E_1}$$

where the total investment cost  $I$  is divided with the effects  $E_1$  achieved in the first year of operation.

This indicator though, has a couple of drawbacks. First, it does not account for operation and maintenance (O&M) costs. One can easily give an example that a more expensive device is preferred due to low operating and maintenance costs. Second, it does not account for differences in projects with different lifetimes. Despite the possibility that a more expensive device will serve longer than a cheaper one, the UIC will always give preference to the latter.

2. **Unit Annual Cost (UAC)** - is a more sophisticated indicator compared to UIC as it takes into consideration the annualized values for investment costs as well as operation and maintenance (O&M) costs and the outcomes. It is calculated as the sum of annualized capital costs and annual O&M costs, divided by the average outcome expressed in physical units. Capital costs are annualized using discounting and for O&M costs and outcomes average annual values are used. It is defined as:

$$UAC = \frac{C_{avg} + I_{annual}}{E_{avg}}$$

where  $C_{avg}$  is the average annual O&M cost,  $E_{avg}$  is the average annual effect achieved and  $I_{annual}$  is the annualized investment cost defined as:

$$I_{annual} = I \frac{d}{1 - (1 + d)^{-n}}$$

where  $I$  is the total investment cost,  $d$  is the discount rate and  $n$  is the lifetime of the project. UAC, compared with UIC, gives good estimates of the true long term average costs when the effects are distributed evenly over the lifetime of the project.

One major drawback of UAC is failing to account for the time value of the effects or outcomes, even though it does that for the costs. In other words, while the costs are discounted, the effects are not.

3. **Dynamic Generation Cost (DGC)** - is a ratio between discounted costs and discounted benefits of the project. Its structure is similar to that of the cost-benefit ratio only that the outcomes are not monetized, but are expressed in physical units. DGC is expressed by equation:

$$DGC = \frac{\sum_{n=0}^N \frac{I_n + C_n}{(1+d)^n}}{\sum_{n=0}^N \frac{E_n}{(1+d)^n}}$$

Where:

- $I_n$  - investment expenditure
- $C_n$  - O&M cost
- $E_n$  - effect (outcome) for year  $n$
- $d$  - discount rate
- $N$  - lifetime of the investment

Dynamic generation cost attempts to overcome the drawbacks of the previously presented methods. DGC is recommended by the OECD (2007) as the ideal measure of cost-effectiveness. It has all advantages of UAC and is also sensitive to changes in the distribution of the project effect over time. Therefore DGC gives the best estimate of long-run average costs and it is the CEA method selected for use in this paper.



### 2.2.3 CEA as analysis method for measuring export performance

The most widely-used method for assessing the costs and benefits of a project is cost-benefit analysis (CBA), which attempts to measure the benefits and costs of a project in financial terms. Assigning monetary values allow decision-makers to identify the maximum amount that the organization is willing to pay for the project. Because CBA uses monetary values for all costs—revenues and effects of the project—and sums them up into net present value (NPV), it generates a single figure which signifies the definitive net sum total of all the attributes of the project. A positive NPV indicates that the net effects are beneficial, and the project should be undertaken. Nonetheless, considering the assessment of export performance in terms of sales-related measures, the CBA method has two major drawbacks:

1. CBA gives, as a result, a single number that answers the yes-or-no question of whether a given project should be undertaken.
2. CBA requires that all outcomes of the project be given monetary values. This analysis type proves to be valuable if the interest of the study is the same. However, this thesis is more focused on measuring the performance of export operations in terms of export sales volume by finding out how economical one export operation mode is at reaching its goals compared to the other.

Unlike CBA, cost-effectiveness analysis relates the costs incurred to non-monetary outcomes. Therefore, the method suggested in this paper is based on CEA rather than CBA. Additionally, out of the number of methods for conducting CEA, dynamic generation cost (DGC) is the one that is recommended by the OECD (2007) as the ideal measure of cost-effectiveness. It has all advantages of UAC, while being sensitive to changes in the distribution of the project effect over time, thus DGC gives the best estimate of long-run average costs. Myontec's internationalization to Sweden is a prospective project, therefore an *ex ante* cost-effectiveness analysis (CEA) using the dynamic generation cost (DGC) method was adapted for this thesis.

## CHAPTER 3. METHODOLOGY

*This chapter provides a brief presentation of case study as the research method employed, followed by an insight on the data collection process. Thereafter, an overview as well as detailed descriptions of the steps involved in conducting the cost-effectiveness analysis of export operations (relative to the methods used) is given. Both qualitative and quantitative strategies are applied in this thesis. The purpose of this methods section is to describe how the defined research problem was analyzed and related to the relevant methods.*

### 3.1 Case study

Case studies are usually preferred over other research methods because of its capability to process a wide range of data sources such as documents, observations, interviews, etc.—covering both qualitative and quantitative information—which gives the in-depth knowledge of certain situation/phenomenon (Yin, 2009).

For this thesis, semi-structured interviews have been used because the use of this kind of interview reduces the risk of bias on the interviewee's answers, since it does not convey possible alternatives. The interviews were conducted in English.

### 3.2 Data collection

This research involved two separate stages of data collection. Firstly, data was collected from the studied company, Myontec. The primary data was collected through a series of semi-structured interviews conducted with the Sales and Marketing Director of Myontec, David Gambarte. Secondly, the data gathered through the interview was paralleled and balanced with some secondary data (official documents, magazine and catalogues, as well as website information). The secondary data used in this research was gathered from official documents provided by the company (some of that not available for the public) then combined with some public website information.

### **3.3 Main steps involved in CEA of export operations**

Consistent with the mentioned stages of conducting cost-effectiveness analysis (CEA) in the theoretical chapter of this paper, the same steps were applied in relating cost-effectiveness analysis in assessing the performance of different export operation modes.

#### ***Step 1: Definition of objectives and parameters***

Every project involves a goal, a span of stakeholders and a party that is either directly or indirectly affected by its costs and results. Since the goal of conducting CEA is to assess the impact of a project or investment relative to its costs incurred, it is important to set the objectives and parameters before embarking with the analysis.

The scope of the analysis have been limited to the assessment of the performance measure of three export modes—*indirect export*, *direct-agent* and *direct-distributor*—of Myontec's prospective export operations to Sweden.

#### ***Step 2: Cost assessment — Identifying and categorizing costs***

Costs can be the major make or break factor when exporting. For internationalizing firms, making a definite statement about the cost of exporting is as intricate as specifying the length of a string. Identifying the costs associated with exporting is a fundamental step when planning to venture in foreign markets. In a series of interviews conducted by Sweetman (2005) with a few CEOs in the technical sector, the costs associated with exporting were identified and categorized as follows:

**Table 6:** Costs associated with exporting, as identified by CEOs

HUMAN RESOURCES	MARKETING	TRANSPORTATION
<ul style="list-style-type: none"> <li>• Salaries</li> <li>• Accommodation</li> <li>• Living expenses</li> <li>• Travel for overseas sales staff</li> <li>• Retainers</li> <li>• Commissions</li> <li>• Training fees for agents and distributors</li> <li>• Administration services required at home</li> <li>• Product warranties, service contracts, returns and after-sales service costs</li> </ul>	<ul style="list-style-type: none"> <li>• Trade fairs</li> <li>• Sales trips</li> <li>• Entertaining overseas buyers</li> <li>• Websites</li> <li>• Brochures</li> <li>• Videos</li> <li>• Advertising</li> <li>• Direct mail and telemarketing</li> <li>• Press relations</li> </ul>	<ul style="list-style-type: none"> <li>• Airfreight or shipping</li> <li>• Export documentation</li> <li>• Ground-based transport on either side</li> <li>• Loading</li> <li>• Unloading</li> <li>• Warehousing</li> <li>• Special packaging for transit</li> <li>• Cargo insurance</li> </ul>
FINANCIAL	COMMUNICATIONS & PROFESSIONAL FEES	OVERSEAS OFFICE
<ul style="list-style-type: none"> <li>• Import duties</li> <li>• International banking/exchange fees</li> <li>• Credit checks</li> <li>• Credit insurance</li> </ul>	<ul style="list-style-type: none"> <li>• Couriers</li> <li>• Telecoms</li> <li>• Translators</li> <li>• Legal tax advisors</li> </ul>	<ul style="list-style-type: none"> <li>• Deposits</li> <li>• Staff</li> <li>• Rent</li> <li>• Operation costs</li> <li>• Local taxes</li> </ul>

Source: (Sweetman, 2005)

However, in CEA terms using the dynamic generation cost (*DGC*) method, the relevant cost categories are investment costs (*I*), and operation and maintenance (*O&M*) costs. Thus, for this analysis, the involved in export operation costs have been categorized as investment (*I*) and operation and maintenance (*O&M*) costs, and subsequently adjusted for time-value.

### **Step 3: Measuring outcomes—export sales volume as unit of effectiveness**

Although some export-marketing literatures might argue that assessing export performance is so complex and that it is more suitable to build a scale based on a set of different variables, some researchers state that it is possible to measure export performance with a single variable (see **Table 3** for reference). In analyzing the cost-effectiveness of Myontec's prospective export operation modes, Myontec elected export sales volume as the unit of effectiveness (benefit/outcome) for the CEA.

#### **Step 4: Choosing the discount rate used for the analysis**

Discount rate has several definitions in finance. One of which refers to it as the interest rate that the Federal Reserve Bank charges to depository institutions that take loans from the Fed's discount window (Accounting Tools- Accounting Dictionary, s.f.). Another definition states that it is the rate used by pension plans and insurance companies for discounting their liabilities. However, the most commonly used meaning of discount rate—and the one used in this thesis—refers to it as the interest rate used in discounted cash flow (DCF) analysis to determine the present value of future cash flows (Investopedia - Discount Rate, s.f.). In other words, it is the interest rate needed to earn on a given amount of money today, to end up with a given amount of money in the future.

In order to account for the time-value of money, the costs in the cost-effectiveness analysis for this thesis have been discounted to their present value. This is due to the idea that a euro today is worth more than a euro tomorrow, given that the euro today has the capacity to earn interest. It is therefore important to use a realistic discount rate set by the firm, or at least a very close estimate. According to McEwan (2012), from an applied standpoint, the discount rate is often mandated by the CEA sponsoring organization. However, for this case study, Myontec has not set a specific discount rate for the CEA of its export operations.

According to the recent CEA study on energy efficiency in buildings by Tuominen, *et al.* (2015), US NREL recommended that when knowledge of a specific investor is unavailable the default discount rate is set at 10 percent. The recommendation however, is mostly applicable within the energy industry. Other assumptions such as in the published work of Cellini & Kee (2015) on CEA, recommend that in the absence of the involved organization's specifications on discount rate, a base rate of 2 to 3 percent should be used, while testing for sensitivity of the project to higher rates of 5 to 7 percent.

For this thesis, a real discount rate was used and derived from the formula explained by Tuominen, *et al.* (2015), which is calculated by subtracting the inflation rate from the nominal discount rate. Based on Suomen Pankki's (Bank of Finland) interest rates, *"The penalty rate is the reference rate plus 7 percentage points in*

*accordance with the Interest Rates Act*” (Bank of Finland- Interest Rates, 2017). Finland’s February 2017 inflation rate was 1.2 percent (Statistics Finland- Consumer price index, 2017). Hence, the discount rate used for the analysis in this thesis was 5,79 percent.

#### **Step 5: Calculating unit cost for outcomes by dividing costs with impacts**

The final step taken was to compute for the cost-effectiveness ratio (CER) for CEA by dividing the discounted costs with outcomes. The result is expressed in “euros per package of MBody Pro sold” or “euros per unit of sale”. Since the study is concerning the comparison of multiple projects—*indirect export*, *direct-agent* and *direct-distributor* as export operation modes—the CE ratio was calculated separately for each operation mode.

## **CHAPTER 4. CASE STUDY: COST-EFFECTIVENESS ANALYSIS OF MYONTEC'S EXPORT OPERATIONS TO SWEDEN**

*In this chapter, a more comprehensive view of the case company is presented starting from the company background, products offered and a partial view of its foreign market operations strategy. Additionally, this section discusses the methodical process and the results of the cost-effectiveness analysis in full detail. This section aims to provide the analysis using the data and methods discussed in the previous sections.*

### **4.1 Company background – Myontec**

Myontec Ltd. is a Finnish start-up company engaged in the business of smart wearables. Currently, it has ten (10) employees working in two locations: Kuopio, where most employees and the R&D team are, and Helsinki, which is the site for its marketing and sales teams.

The company was founded in Kuopio, Finland by a group of colleagues who wanted to explore the future of wearables. It was established in 2008 as a spin-off from Mega Electronics, which evolved from the idea of taking the traditional Electromyography (EMG) off from laboratory conditions and converting the technology into a wearable. EMG is a diagnostic procedure which records the electrical activity of the muscles (Electromyography, 2016).

Myontec's breakthrough came into light when they successfully turned EMG into a wearable technology and started production of compression shorts with embedded sensors that would pick-up electrical activities of the lower body muscle groups: the quadriceps, hamstrings and glutes. It was called Myontec MBody, the first product to utilize EMG in real-time sports performance analysis, regardless of the environment or the type of sport. Soon the name Myontec would be heard by the innovation industry when two years later, The New York Times listed Myontec smart garment as the third most significant innovation in 2012 (The New York Times Magazine - 32 Innovations That Will Change Your Tomorrow, 2012). Since then, milestones were marked.

In 2014, the company launched the industrial manufacture of their smart garment—the MBody, and won the Wearable Technology Innovation World Cup 2014, for the Sports and Leisure category (Innovation World Cup Series - Hall of Fame, 2014). Myontec identified the following major challenges they are currently facing which is greatly centered on their product: (1) users found it challenging to interpret the transmitted data due to the complexity of the software, which covers comprehensive information about muscle activity; and (2) high price tag of their product. Myontec is aware that in order for their business to thrive, these major hurdles must be addressed.

#### 4.1.1 Products

Myontec currently offers three product categories (smart shorts) and a solutions rental to their muscle monitoring software;

- **Mbody AllSport (at 620€ +VAT)** – The first ever wearable product, which enables the measurement & analysis of muscle performance. MShorts—the world's first intelligent garment which collects information on your muscles. AllSport model is designed for all training situations - no matter the sport or the environment.
- **Mbody Bike&Run (at 660€ +VAT)** – The design of the Bike&Run model is focused on enhancing the cycling experience, especially for the duathletes/triathletes. The high-performance triathlon padding ensures that you have all the possibilities to utilize the shorts in any sport or training activity possible.
- **Mbody 6Channel** – Myontec top solution: Mbody shorts with 6 EMG channels. The Mbody 6Channel completes the lower body circle by adding the gluts data to the existing hamstrings and quadriceps. The product works with the Muscle Monitor -software and it is the most expected solution from our top customers. Mbody AllSport 6Channel is sold only in packages

##### **Mbody 6 Channels Pro Basic at 3.500€ (+VAT):**

- 4 x Mbody 6Channel AllSport shorts
- 2 x MCell Smart (6 channel)
- Muscle monitor 2.0



- **The Muscle Monitor** – is a software which was created and designed to suit the needs of professionals who are searching for deeper knowledge and accuracy of muscle activity. It offers a complete breakdown of human biosignals and allows to conduct the most accurate and objective analyses of performance and biomechanics, providing the keys for further advancement and evolvement. It is offered via perpetual license or rentals.

#### **4.1.2 Target segment**

Market segmentation is a crucial step for any business looking to optimize their go-to-market strategy. Currently, Myontec is focusing on professional sports teams, elite athletes, rehabilitation clinics, universities (research departments); and sports enthusiasts, albeit very few in number, as their target segments.

#### **4.1.3 Current market presence and export operations**

Myontec is currently present in 18 countries—Belgium, Brazil, Canada, China (mainland), Finland, France, Germany, Greece, Italy, Russia, South Korea, South Africa, Spain, The Netherlands, Turkey, UK, Ukraine, and USA, mainly through resellers. Myontec uses direct export through distributors, as mode of export operations to these countries. Interestingly, they have no presence in Sweden, Denmark or Norway, despite these markets' wide market potential. Myontec's absence from the rest of the Nordic countries was one of the motivations of this study.

### **4.2 Cost-effectiveness analysis of Myontec's export operations**

This section presents the methodical process used for analyzing the cost-effectiveness of the different export operations for Myontec. To set the parameters of the analysis, the applied assumptions were itemized first, before proceeding with the assessment and classification of the costs involved. This was followed by a brief illustration on how export sales volume was determined as the unit of effectiveness for the cost-effectiveness analysis. Accounting for the time-value of money is undeniably crucial in the process of CEA, hence, discussed under the valuation

section are the present values of both costs and the investment outcome—export sales volume—as unit of effectiveness. Then a presentation of the results of the CEA calculations as cost-effectiveness ratio (CER) per export mode and finally a sensitivity analysis concludes the analysis section of this study.

#### **4.2.1 General assumptions and value drivers used in the analysis**

The variables that were considered in monetizing the costs and measuring the export performance are listed below as assumptions and value drivers used for this case study:

##### **Assumptions and Value Drivers:**

- Costs provided by Myontec are bold estimates covering operation and maintenance costs incurred for its overall exporting activities
- Investment costs were excluded because the involved export operations have not incurred investment costs
- Direct allocation method was used for cost allocations among 18 countries where the firm currently exports
- Lifetime of the project/investment is 5 years; calculations start at year 1
- Discount rate used was 5.79% (see methodology for the calculation)
- Inflation and other economic factors were not considered in the cost and outcomes projections
- Myontec's export sales target value for the export investment to Sweden was 50.000€.
- MBody Pro basic package was used as baseline product for export sales volume measurement; price is currently 3.500€

#### **4.2.2 Assessment of costs associated with different export modes**

The cost figures used in this analysis are bold estimates provided by Myontec. During the valuation process, the company's exporting activities within 18 countries were taken into consideration. Hence, overhead costs were apportioned using direct allocation method in order to arrive at a more realistic cost estimation.

The table below illustrates the cost categories involved and the estimated amount (in euros), with respect to the each mode of export operations—*indirect export*, *direct-agent* and *direct-distributor*.

**Table 7: Valuation of exporting costs**

Costs involved	Indirect	Direct - Agent	Direct - Distributor	Cost estimates*	Allocated costs**
Salaries		X	X	420.000 €	23.333 €
Accommodation		X	X	10.000 €	556 €
Travel for overseas sales staff		X	X	40.000 €	2.222 €
Retainers		X			2.333 €
Commissions	X	X			5.833 €
Admin fee services required at home country	X				500 €
Warranties. returns and after-sales service	X	X	X	5.000 €	278 €
Trade fairs	X	X	X	20.000 €	1.111 €
Sales trips		X	X	50.000 €	2.778 €
Websites	X	X	X	1.000 €	56 €
Brochures	X	X	X	2.000 €	111 €
Videos	X	X	X	1.000 €	56 €
Press relations	X	X	X	5.000 €	278 €
Airfreight or shipping	X	X	X	3.000 €	167 €
Export documentation		X	X	500 €	500 €
Ground-based transport on either side	X	X	X	1.000 €	1.000 €
Import duties		X	X	5.000 €	278 €
International banking/exchange fees		X	X	1.000 €	1.000 €
Couriers	X	X	X	100 €	100 €
Translators			X	1.000 €	1.000 €
Legal tax advisors		X	X	2.000 €	111 €
Foreign operation costs	X	X	X	1.000 €	56 €

\*General cost estimates provided by Myontec

\*\*Direct allocation method was used to distribute Myontec's export costs among 18 countries with exporting activities; used estimates for costs not covered by Myontec

### 4.2.3 Export sales volume as unit of effectiveness

Choosing a relevant outcome for the evaluation of Myontec's export investment decision is critical. In the case of the company's internationalization to Sweden, export sales volume was chosen as the performance measure since it is a causal effect of the investment. Consequently, from the cost-effectiveness analysis (CEA) standpoint, it is therefore the unit of effectiveness by which the exporting costs

have been measured against in order to determine the cost-effectiveness of the different export modes.

For the purpose of this thesis, the estimated sales target value provided by Myontec was 50.000 € for its export operations to Sweden. To gauge export performance, Myontec's MBody Pro basic package, currently priced at 3.500 €, was selected as the product benchmark, as it is the starter pack for both of their Pro Sports and Health care segments. Hence, the target export sales volume used for this analysis is **15 packages of MBody Pro** per year, and was calculated as:

$$\text{Export sales volume} = \frac{\text{Myontec's sales target value}}{\text{Price of MBody Pro basic package}}$$

#### **4.2.4 Cost valuation and outcomes measurement per export mode**

When money is allocated for a certain purpose, it is important to acknowledge that an alternative in which that same money can be spent on, is forgone. This “loss”, otherwise known as opportunity cost, should be recognized during cost analysis because money has an opportunity cost. For instance, one could take a 100 € today and invest it to earn more money in the future. Even without inflation, that 100 € today is worth more to a person or organization than the same 100 € promised to that person or organization, one or ten years later.

The concept of time value of money has been applied in the cost-effectiveness analysis performed in this thesis, where the costs (operation and maintenance costs) were converted to their present values—or their equivalent value at the beginning of the project/investment, in year 1. However, instead of an actual interest rate that the money earns, the calculation method of CBA and CEA uses a discount rate to compute the present value of costs. The choice and computation of the 5,79 percent discount rate used for this analysis was discussed in the methodology section.

Using the dynamic generation cost (DGC) formula, export costs were discounted to their present values per year. Total exporting costs for each export operation mode was calculated by summing all operation and maintenance costs associated with

the respective exporting mode (as indicated in the cost assessment section above) throughout the estimated 5-year lifetime of the export investment using the formula below:

$$PV\ of\ costs = \frac{Costs_1}{(1+d)^1} + \frac{Costs_2}{(1+d)^2} + \frac{Costs_3}{(1+d)^3} + \frac{Costs_4}{(1+d)^4} + \frac{Costs_5}{(1+d)^5}$$

For the calculation of outcomes, a constant unit of effectiveness—15 packages of MBody Pro basic—per year was used, resulting to a total of 75 packages of MBody Pro as target export sales volume over the 5-year export investment lifetime.

The table below shows the present values of costs incurred by the select export operation modes, discounted at 5,79 percent discount rate, as well as the outcomes which are outlined per year.

**Table 8:** Monetized costs in present value terms and outcomes

CEA Component	Detail	Year 1	Year 2	Year 3	Year 4	Year 5
<b>Costs</b>	Indirect	9.022 €	8.528 €	8.062 €	7.620 €	7.203 €
	Direct - Agent	35.437 €	33.498 €	31.664 €	29.931 €	28.293 €
	Direct- Distributor	33.074 €	31.264 €	29.553 €	27.935 €	26.406 €
<b>Outcome</b>	Target export sales volume	15	15	15	15	15

#### 4.2.5 Calculation of cost-effectiveness ratios for CEA

Table 9 below provides a summary of the cost-effectiveness analysis of the relevant export operation alternatives for Myontec's internationalization to Sweden. It reports the respective costs in present values using a 5,79 percent discount rate. The outcomes used to measure the three export modes are the same—75 packages of MBody Pro sold throughout the 5 years of investment lifetime—as they are based on the specified unit of effect chosen by Myontec (15 packages of MBody Pro). One of the objective of this thesis was to measure the cost-effectiveness of the relevant export operation modes against a single performance measure in order to determine which alternative is most cost-effective, thus, the same unit of effectiveness was used for the CEA of *indirect export*, *direct-agent* and *direct-*

*distributor* export modes. The summary of results also include the costs incurred by each alternative, in relation to the total outcome of the investment, as well as the explicit cost incurred (in euros) for every package of MBody Pro sold.

**Table 9:** Cost-effectiveness summary of Myontec's export operation alternatives

EXPORT MODES	Total Cost (PV at $d = 5,79\%$ )	Total Outcomes (Mbody Pro pack)	Cost per total outcome (75)	Cost per Mbody Pro package sold
Indirect export	40.435 €	75	539 €	7,19 €
Direct - Agent	158.825 €	75	2.118 €	28,24 €
Direct - Distributor	148.232 €	75	1.976 €	26,36 €

By simply by looking at either the aggregate costs of each export mode or the cost-effectiveness ratios (CER) of both total or per unit outcomes, it is clear that *indirect export* is the most cost-effective export mode, **assuming that the outcomes are equal across the export operation modes tested in this thesis**—an export sales total of 75 packages of MBody Pro.

The cost-effectiveness ratio (CER) is the total cost of each export investment option to Myontec divided by the number of MBody Pro packages sold (75), which is about 539 € for *indirect export*, 2.118 € for *agent (direct)* and 1.976 € for the *distributor (direct)* export operations. Converted further into per unit of outcome/effect measurement, the cost-effectiveness analysis (CEA) yielded ratios of 7,19 €, 28,24 € and 26,36 € for every package of MBody Pro sold, for *indirect export*, *direct-agent* and *direct-distributor* exports, respectively. Indirect export produced the lowest CE ratio given that it incurred the lowest cost.

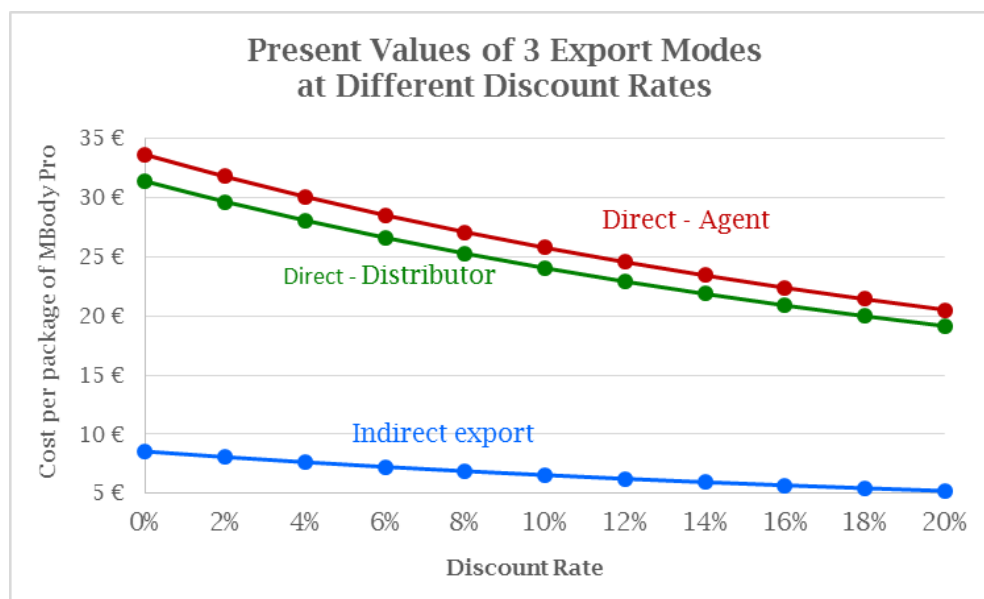
#### 4.2.6 Sensitivity analysis

Because cost analyses (both CBA and CEA) rely heavily on assumptions and estimates that are oftentimes best guesses, it is critical that these studies are supplemented with sensitivity analysis—a technique used to determine the extent in which the outcome of the analysis is controlled by the assumptions and value drivers used (Investopedia - Sensitivity Analysis, s.f.).

There are multiple known techniques for assessing whether different variables may invalidate the conclusions of a cost analysis. The simplest and most common type of sensitivity analysis—also the one used for this case study—is the partial analysis (Cellini & Kee, 2015), otherwise called as one-way sensitivity analysis by McEwan (2012). This approach varies one assumption/parameter—which is the discount rate for this thesis—at a time, holding all else constant, and at which the CER is recalculated.

In the assessment of cost-effectiveness of different export modes, there are several uncertain assumptions and parameters, such as the cost estimates and allocation, the projected outcome of 50.000 € worth of export sales volume or the sales of 75 MBody Pro packages, and evidently, the discount rate. The sensitivity analysis performed for this study used discount rate as the change variable. In order to find out if there would be any significant change in the cost-effectiveness ratio (CER), the three export modes—*indirect*, *direct-agent* and *direct-distributor*—were laid across different discount rates at 2 percent increments. Looking at Figure 4 below, it is evident that despite different discount rates, the cost-effectiveness ratio (CER) yielded the same results—*indirect export* being the most cost-effective operation mode for Myontec, assuming all other value drivers are held constant.

Figure 42: Sensitivity analysis — different discount rates



## CHAPTER 5. FINDINGS AND CONCLUSIONS

*In this final chapter of the thesis, the major findings and conclusions are outlined, where the research questions are addressed based on the results of the analysis. The chapter also acknowledges the limitations of the results of this thesis, considering that cost analyses (CBA and CEA) are generally assumptions-based, and provides recommendations for further research. Lastly, managerial implications are suggested. The purpose of this chapter is to reach a conclusion based on the results of the analysis from the previous chapter, and address the research problems defined in the introduction.*

### 5.1 Major findings and conclusions

As specified in the introduction, the rationale for this research stems from a strong interest in finding a method which can assess the economic perspective of export operations by relating the costs incurred to its causal effect (not in financial terms). Therefore, this thesis aims to address the following research questions previously defined at the beginning of the study: (1) how can CEA be utilized as an analysis tool to measure export performance; (2) what are the different costs associated with exporting and which cost categories are relevant for Myontec's export operations to Sweden; and (3) which export operation mode—*indirect export*, *direct-agent* or *direct-distributor*—could generate a predetermined export sales volume—*15 MBody Pro packages*—for Myontec, at least cost.

This thesis effectively illustrated a methodical process in which cost-effectiveness analysis (CEA) can be utilized as an analysis tool to assess export performance. By identifying and categorizing the costs associated with the different export operation modes and relating them to the defined investment outcome (export sales volume), the cost-effectiveness ratio (CER) presented definitive results which are expressed in “euros per MBody Pro package sold”. Although CEA is mostly popular as an assessment tool within the areas of education and health (since it measures the outcomes in physical units and not in monetary terms), and hardly in the business and commercial settings (where results are preferably measured in financial terms), this thesis demonstrated how cost-effectiveness analysis (CEA) can



be applied in the business environment, in particular, the analysis of export operation modes.

Addressing the second research question, the relevant exporting costs for Myontec's export operations to Sweden have been identified and categorized based on the data provided by the case company. General categories such as human resources, marketing, transportation, financial, communications, professional fees and overseas office costs were characterized. Applying the CEA method used in this thesis—dynamic generation cost (DGC)—these cost categories were regrouped into (1) investment costs; and (2) operation and maintenance costs (O&M costs). Since none of the three export modes utilized investment costs, the costs used in this thesis' CEA are O&M costs. Additionally, to account for the time value of money, they were discounted to their respective present values in order to achieve realistic results, i.e. cost-effectiveness ratios (CER).

Lastly, this study provided a straightforward answer to the final research question: which export operation mode could achieve the specified performance measure (*export sales volume of 15 MBody Pro packages*) at least cost, or in simpler words, which option has the best “value-for-money”. Based on the results of the analysis in this thesis, *indirect export* operations is the most cost-effective mode for Myontec to enter the Swedish market, with the assumption that all three alternatives are able to produce the same outcomes (export sales volume of 15 MBody Pro packages). According to the results of the analysis, which was calculated at 5,79 percent discount rate in the previous chapter, the *direct-agent* mode yields the highest cost rate of 28,24 € per package of Mbody Pro sold, while *direct-distributor* costs 26,36 € per package of Mbody Pro sold. Both options appear to be relatively expensive since *indirect export* resulted in an extremely low CER of 7,19 € per package of Mbody Pro sold. Objectively, the analysis indicate that ***indirect export operations is the most cost-effective exporting method to Sweden for Myontec***, and thus can potentially achieve the export sales volume of 15 MBody Pro packages, at least cost.

## 5.2 Limitations of results and areas for further research

The results of this analysis bring into question the cost-effectiveness of indirect export operations, relative to the other export operation modes analyzed for this thesis. This section addresses the critical limitations of the findings relevant for further research, and explains the main drivers of the debatable results.

Firstly, the results of the analysis conducted in this thesis does not provide a conclusive evidence that indirect export operations provides the most “value-for-money” for Myontec’s entry to the Swedish market. There are several significant limitations to take into account when interpreting the results of this analysis. Most importantly, **this is not a complete cost-effectiveness analysis**. There are many export costs that were not included in the analysis, due to uncertainty and dependency on the data supplied by Myontec, resulting in a likely underestimation of the investment/project costs, thereby affecting the resulting cost-effectiveness ratios. Another limitation is the scope of the analysis, which is restricted to the costs and outcomes of the export operations, in particular, the use of export sales volume as standard unit of measurement for the cost-effectiveness of the three alternative export modes. There are a number of export performance measures which were not captured by this analysis, and using an alternate export performance measure as an outcome, may have rendered different results.

The results of this study identify several areas for future research. To fully address the cost-effectiveness of export operations, the same formula could be executed using a more practical and applicable performance measure such as the export sales ratio/export sales intensity or sales growth, instead of export sales volume, which was used in this thesis. This way, the outcomes are assessed in more applicable terms relative to the actual results of each export mode. The cost identification and categorization conducted in this study is inconclusive, and it is suggested that a primary analysis be conducted to better estimate the relevant costs of the different export modes. Overall, the accuracy and practicality of the costs used to assess each export mode relative to the defined outcomes are significant drivers in the validity and relevance of cost-effectiveness analysis (CEA), and further

research on these values is needed and an optimal study would be a logical extension of this work.

### 5.3 Managerial implications

This thesis offers managerial implications regarding the importance of understanding that there is no clear decision rule when evaluating one alternative in cost-effectiveness analysis—in this case, the assessment of export performance of different operation modes using CEA. The decision-maker for Myontec's export operations must use his own judgment as to whether the calculated cost per package of MBody Pro sold in this analysis is sufficiently low and if the outcomes projected are realistic enough to merit implementation. Theoretically, when two or more alternatives are evaluated against the same units of effectiveness, which for this study was export sales volume, the export operation mode with the lowest CE ratio should be adopted, with the assumption that the projects/investment alternatives are of approximately the same scale, as noted earlier. However, while it seems simple and straightforward, these decision rules should not serve as the only consideration in making policy recommendations as there are several other critical aspects, such as social and economic impacts, quality of business networks, etc., that should be taken into account.

One of the important considerations for Myontec before moving forward with the results of this analysis is to consider the scope and limitations of the study, as well as the reliability of data assumptions used in the calculations, which may vary significantly from actual export costs. However, Myontec can utilize CEA as a method in decision making regarding optimal allocation of its resources by **assessing their actual export costs relative to a desired specific performance measure.**

Applying the relevance of the theoretical perspectives of process theory, the Uppsala model appear to be a valid and a significant guideline for Myontec's foreign market strategy. As the firm operates in the second stage of internationalization, where they are utilizing intermediaries, such as agents and distributors, whenever

Myontec is ready to move to the next stage in the Establishment Chain, setting up a sales subsidiary is the obvious step.

Another significant decision factor for Myontec to look into, before choosing the export mode entry, is the importance of finding, developing and sustaining strong business relationships as a way to become an insider in the foreign market business network. This is when the theoretical concept of network approach is attested. It is critical for firms to establish and develop long-term, trusted and close relationships with its network—customers, suppliers, distributors and even competitors. Smaller firms, such as Myontec, manage their international expansion through their relationships. It is therefore imperative that Myontec finds the right international counterpart, an intermediary or a customer directly, who is trustworthy. Finding the right actor in the foreign market and building a long-term and committed relationship with him/her is just as critical as aspect of choosing the most cost-effective export mode of export operation.

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## **APPENDICES**

### **APPENDIX A: SEMI-STRUCTURED INTERVIEW GUIDE FOR CASE FIRM**

#### **I- Background information**

- a. Name of the firm:
- b. Respondent, position:
- c. Are we allowed to save your contact information?      Yes ( )    No ( )
- d. Turnover (EUR) 2016:
- e. Number of employees as of 2016:
- f. Number of export markets:
- g. Share of turnover exported in 2016:

#### **II- About the company**

- a. What are the most important milestones of your company's history?
- b. What is your business model?
- c. What is your core business/product?
- d. Who are your target customers?
- e. Who are your primary competitors?
- f. What are your company's strengths and weaknesses?
- g. What are the major challenges faced by the company?
- h. What would you consider as your competitive advantage?

#### **III- International Business Operations**

- a. Which countries are you currently exporting to?
- b. When did you start exporting?
- c. Do you have any presence in the Nordic countries?
- d. What are the reasons for this?
- e. How much do you export relative to your total sales volume?
- f. What export operation modes or channels have you used to enter foreign markets?
- g. What were the major drivers/motivations for the company's decision to export?

## APPENDIX B: CALCULATIONS

### *Detailed export operation costs per export mode*

<b>Export Operation Costs</b>	<b>INDIRECT</b>	<b>AGENT</b>	<b>DISTRIBUTOR</b>
Salaries	0 €	23,333 €	23,333 €
Accommodation	0 €	556 €	556 €
Travel for overseas sales staff	0 €	2,222 €	2,222 €
Retainers	0 €	2,333 €	0 €
Commissions	5,833 €	1,167 €	0 €
Admin services required at home country	500 €	0 €	0 €
Warranties, returns and after-sales service	278 €	278 €	278 €
Trade fairs	1,111 €	1,111 €	1,111 €
Sales trips	0 €	2,778 €	2,778 €
Websites	56 €	56 €	56 €
Brochures	111 €	111 €	111 €
Videos	56 €	56 €	56 €
Press relations	278 €	278 €	278 €
Airfreight or shipping	167 €	167 €	167 €
Export documentation	0 €	500 €	500 €
Ground-based transport on either side	1,000 €	1,000 €	1,000 €
Import duties	0 €	278 €	278 €
International banking fees	0 €	1,000 €	1,000 €
Couriers	100 €	100 €	100 €
Translators	0 €	0 €	1,000 €
Legal tax advisors	0 €	111 €	111 €
Operation costs	56 €	56 €	56 €
<b>TOTAL</b>	<b>9,544 €</b>	<b>37,489 €</b>	<b>34,989 €</b>
Discount rate	<b>5.79%</b>		

*COSTS: Detailed calculation of present value of costs per export mode*

<b>INDIRECT EXPORT</b>	<b>YEAR</b>				
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
O&M costs	9,544 €	9,544 €	9,544 €	9,544 €	9,544 €
Discount factor	1.06	1.12	1.18	1.25	1.33
Present value	9,022 €	8,528 €	8,062 €	7,620 €	7,203 €

<b>DIRECT - AGENT</b>	<b>YEAR</b>				
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
O&M costs	37,489 €	37,489 €	37,489 €	37,489 €	37,489 €
Discount factor	1.06	1.12	1.18	1.25	1.33
Present value	35,437 €	33,498 €	31,664 €	29,931 €	28,293 €

<b>DIRECT - DISTRIBUTOR</b>	<b>YEAR</b>				
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
O&M costs	34,989 €	34,989 €	34,989 €	34,989 €	34,989 €
Discount factor	1.06	1.12	1.18	1.25	1.33
Present value	33,074 €	31,264 €	29,553 €	27,935 €	26,406 €

*OUTCOME: Detailed calculation of present value of outcomes for all export modes*

<b>OUTCOME</b>	<b>YEAR</b>					<b>TOTAL</b>
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	
Target export sales volume	15	15	15	15	15	<b>75</b>

### *Sensitivity Analysis Calculations*

#### CER per total outcome (75 packages of Mbody Pro sold)

Discount rate	Indirect	Direct-Agent	Direct-Distributor
0%	539.14 €	2,117.66 €	1,976.42 €
2%	509.37 €	2,000.75 €	1,867.31 €
4%	482.15 €	1,893.80 €	1,767.50 €
6%	457.18 €	1,795.75 €	1,675.99 €
8%	434.25 €	1,705.66 €	1,591.90 €
10%	413.12 €	1,622.69 €	1,514.46 €
12%	393.63 €	1,546.12 €	1,443.01 €
14%	375.61 €	1,475.33 €	1,376.94 €
16%	358.91 €	1,409.76 €	1,315.73 €
18%	343.42 €	1,348.89 €	1,258.93 €
20%	329.01 €	1,292.31 €	1,206.12 €

#### CER per package of Mbody Pro sold

Discount rate	Indirect export	Direct-Agent	Direct-Distributor
0%	8.56 €	33.61 €	31.37 €
2%	8.09 €	31.76 €	29.64 €
4%	7.65 €	30.06 €	28.06 €
6%	7.26 €	28.50 €	26.60 €
8%	6.89 €	27.07 €	25.27 €
10%	6.56 €	25.76 €	24.04 €
12%	6.25 €	24.54 €	22.90 €
14%	5.96 €	23.42 €	21.86 €
16%	5.70 €	22.38 €	20.88 €
18%	5.45 €	21.41 €	19.98 €
20%	5.22 €	20.51 €	19.14 €