

Finding optimal logistical hubs for Swedish export

- A study of selecting global locations

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Abstract

- Title:** Finding optimal logistical hubs for Swedish export
- A study of selecting global locations
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- Problem discussion:** The Swedish Trade Council is looking for improvements of current methods for helping their customers selecting locations of logistical hubs.
- Within the logistics literature there are plenty of theories about facility localisation. These theories are however usually based on company specific factors and flows of goods. A study from a non-company specific point of view would hence not only contribute to the Swedish Trade Council but also within the theoretical literature in logistics.
- The questions that arise are what theories of facility localisation that can be used for deciding where to locate logistical hubs and what criteria will the selection of logistics hubs be based on? Furthermore, which countries are to prefer when logistical hubs shall be established by Swedish companies?
- Purpose:** The purpose of this study is to identify the most important non-company specific criteria when selecting location of a logistical hub.

Furthermore the purpose is to determine the most suitable countries for logistical hubs in Africa, Americas, Middle East, and South East Asia and East Asia for Swedish export.

Method: This study is conducted through a system approach and abductive methodology. The method Analytical Hierarchy Process (AHP) is used to handle and structure the problem that involves multiple criteria.

Conclusion: The top eight non-company specific criteria when selecting a location of a logistical hub are;

- Availability and quality of Infrastructure
- Border administration
- Closeness to other major markets
- Corruption
- Frequency of on time shipments
- Human rights
- Logistical competence
- Logistical cost

The most suitable countries in Africa to locate a logistical hub in are Namibia, South Africa, and Tunisia and in Americas Canada, Chile, and USA. In Middle East Bahrain, Qatar, and UAE are the best options. In the final region, South East and East Asia, Hong Kong, Japan, Singapore, and Taiwan are the most suitable locations. If to select one location to function as a logistical hub for the entire region the following countries are recommended; South Africa in Africa, Canada in North America, United Arab Emirates in Middle East, and finally Singapore in South East and East Asia.

Key words: Logistical hub, criteria, export, trade, facility location, Supply Chain, Analytical Hierarchy Process (AHP)

Sammanfattning

- Titel:** Finding optimal logistical hubs for Swedish export
- A study of selecting global locations
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- Problemställning:** Exportrådet vill förbättra deras metoder för att hjälpa sina kunder att välja placering av logistiska hubbar.
- Inom litteratur kring logistik finns många teorier om anläggningslokalisering. Dessa teorier är dock oftast baserade på företagsspecifika faktorer och produktflöden. En studie från icke-företagsspecifikt perspektiv skulle således inte enbart bidra till Exportrådet utan även i litteratur inom logistik.
- De frågor som uppkommer är vilka teorier om anläggningslokalisering som kan användas för att lokalisera logistiska hubbar och vilka kriterier som valet av logistiska hubbar baseras på? Vidare, vilka länder är att föredra som logistiska hubbar för Svenska företag?
- Syfte:** Syftet med studien är att identifiera de viktigaste icke-företagsspecifika kriterierna vid val av lokalisering av logistiska hubbar.
- Vidare är syftet att fastställa de mest passande länderna för logistiska hubbar i Afrika, Amerikas, Mellanöstern och Sydost och Östasien för svensk export.

Metod: Studien är genomförd med ett systemteoretiskt synsätt och en abduktiv metod. Metoden Analytical Hierarchy Process (AHP) används för att hantera och strukturera problemet som involverar flera kriterier.

Slutsatser: De åtta viktigaste icke-företagsspecifika kriterierna vid val av lokalisering av en logistisk hubb är enligt följande:

- Frekvens av skeppningar i tid
- Korruption
- Logistisk kompetens
- Logistisk kostnad
- Mänskliga rättigheter
- Närhet till andra stora marknader
- Tillgänglighet och kvalitet av infrastruktur
- Tulladministration

De mest lämpliga länderna i Afrika att placera en logistisk hubb i är Namibia, Sydafrika och Tunisien och i Amerika är det Chile, Kanada och USA. I Mellanöstern är det Bahrain, Förenade Arabemiraten och Qatar. I den slutliga regionen, Sydost och Östasien, är Hong Kong, Japan, Singapore och Taiwan de bäst lämpade placeringarna. Om ett land skall väljas som logistisk hubb för hela regionen är rekommendationerna: Sydafrika för Afrika, Canada för Nordamerika, Förenade Arabemiraten för Mellanöstern och slutligen Singapore för Sydost och Östasien.

Nyckelord: Logistiska hubbar, kriterier, export, handel, anläggningslokalisering, försörjningskedja, Analytical Hierarchy Process (AHP)

Preface

The three months spent at the Swedish Trade Council office in Stockholm has been amazing. We were impeccably welcomed and introduced to the organization. The staff at the Swedish Trade Council has been very interested in our work and always keen to help us. We want to thank you all for your encouragement and for inspiring us with your interesting stories from abroad. At the Swedish Trade Council we especially want to thank our tutor Henrik Danielsson who has supported us and trusted us to independently shape the project. We would also like to thank the Commissioners and Project Leaders at the Swedish Trade Council's local offices for assisting us with their time and expertise.

We are grateful for the experts within each region at the Ministry of Foreign Affairs helping us with additional information and to validate our findings about the countries.

Our tutors at Lund University, Andreas Norrman and Oskar Henkow, have been a great support with their knowledge and experience. We also would like to thank our opponents, Johanna and Andreas, for constructive feedback.

Thank you all for your support and for a great experience!

Lund, May 12 2010

Cecilia Eskilsson & Fredrik Hansson

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1 Introduction

The Introduction chapter aims to give an overview of the study. A short introduction of the Swedish Trade Council is followed by a clarifying presentation of Logistical hubs. The problem discussion is highlighting the questions that lead to the purpose of the study. Finally, delimitations and definitions are presented.

1.1 The Swedish Trade Council

Each year, the Swedish Trade Council assists over 2 000 Swedish companies to establish or expand internationally by aiding them with information, strategic counselling and necessary help. The Swedish Trade Council which has a turnover of approximately 600 MSEK was founded in 1972 and currently has approximately 500 employees in more than 60 different markets. The Swedish Government and the Swedish enterprise sector own the Swedish Trade Council together.¹

The Swedish Trade Council assists in all phases in international business development:

- **Where:** They examine opportunities through information & knowledge and market selection.
- **How:** They support companies in choosing strategy by doing market analysis, partner search, and acquisition support.
- **Act:** They establish presence by the Swedish Trade Council's Business Support Office, company establishment, recruitment, and sourcing.
- **Grow:** They support developing businesses through sales & market support and events.

In September 2009 there was an initiative taken to establish a new business area at the Swedish Trade Council that gave special focus on logistics. The purpose of the Logistic Business Area is to develop strategic logistics solutions and offer the customer a global approach.²

1.2 Logistical hub

When discussing the term logistical hub it is referred to a location where many shipments are consolidated, meaning that all shipments go through one location, known as a hub, before being distributed. The advantages with a hub system are the

¹ Swedish Trade Council, homepage (2010-02-01)

² Henrik Danielsson, 2010-02-04

higher frequency of shipments and a higher utilization of transport modes. Logistics literature also refers to Distribution Centres (DC), where large shipments are received before being distributed. In terms of the distribution, the DC has the same qualities as a hub. The consolidation part differs since a hub not necessarily requires bulk shipments to the site. Localisation literature is mainly about facility location, where the facility might be a production facility, terminal, warehouse, or retail/service point. The localisation part remains the same although, making the theory useful when locating potential hubs.

1.3 Problem discussion

A global survey from McKinsey in 2010 discusses the rising risks within the Global Supply Chain and is based on survey results from 273 executives around the world. The main conclusions are that the risks are growing based on increased complexity of products and services, higher energy prices, and financial unpredictability. Furthermore, rising wages and differing regulatory in different geographical markets are pointed out as issues to be dealt with. However, the survey shows that relatively few of the companies have concrete action and are dealing with these issues. When comparing this with the main strategic goals for a successful Supply Chain, the main areas are cost reduction, improving customer service and getting new products to market faster.³

The survey shows that a lot of the Supply Chain issues arising are related to the geographical placements of hubs. An optimal placement deals with many of the above mentioned issues, such as high energy prices, rising wages, differing regulatory and to some extent the increasing product and service complexity. Furthermore, the localisation of hubs also helps to improve the main strategic goals and hence the localisation has a large impact on the enhancement of the total effectiveness of the Supply Chain.

Within the Swedish Trade Council's local offices the organisation holds unique competence and knowledge about the different markets and how well they are suited for being logistical hubs for Swedish export. However, the Swedish Trade Council lacks a compilation of the information regarding the different markets. Moreover the organisation is looking for improvements of the current methods of helping their customers choosing location of logistical hubs.

³ McKinsey Quarterly, homepage (2010-02-10)

Within the logistics literature there are plenty of theories about facility localisation. These theories are usually based on companies' conditions and flows of goods. Furthermore the theories are to be used for specific locations where the company is assumed to run distribution centres. A study from a general Swedish export point of view would hence not only contribute to the Swedish Trade Council but also within the theoretical literature in logistics.

Based on the problem discussion above the following questions are to be answered:

- What theories or parts of theories of facility localisation can be used for deciding where to locate logistical hubs from a general point of view (non-company specific)?
- What criteria will the selection of logistical hubs be based on?
- Which countries are to prefer when logistical hubs shall be established by Swedish companies?

These three main questions constitute the foundation of the purpose of the report, divided into two parts.

1.4 Purpose

The purpose of this study is to identify the most important non-company specific criteria when selecting location of a logistical hub.

Furthermore the purpose is to determine the most suitable countries for logistical hubs in Africa, Americas, Middle East, and South East Asia and East Asia for Swedish export.

1.5 Definitions and delimitations

The focus of this report will be on countries in Africa, Americas, Middle East, and South East Asia and East Asia. The reason for choosing these regions is the request from the Swedish Trade Council where the organisation desire further knowledge. India is included within the area of South East Asia and East Asia, since it is a big and growing market of great interest for Swedish export. Hong Kong and Taiwan is considered separate from China.⁴

In order for a country to be an interesting location when determining placements of sustainable hubs, an international port is required. If a country is landlocked, meaning that it does not have any coastal line, it is regarded as uninteresting within

⁴ Henrik Danielsson, 2010-01-18

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this study. Hence, all countries without a coastal line have been removed from the studied regions. The landlocked countries are represented in Appendix 1. In Table 1 113 countries are represented, divided into the 4 mentioned regions. In Figure 1, Figure 2, Figure 3, and Figure 4 maps of each region is shown. The report will only focus on physical products and will therefore exclude the export of services and software.

Table 1 – Countries in interesting regions⁵

Africa		South East Asia and East Asia	Americas		Middle East
Algeria	Libya	Brunei	Argentina	Guyana	Bahrain
Angola	Madagascar	Burma	Aruba	Haiti	Iran
Benin	Malawi	Cambodia	Bahamas	Honduras	Iraq
Cameroon	Mauritania	China	Barbados	Jamaica	Israel
Cape Verde	Mauritius	Hong Kong	Belize	Martinique	Jordan
Comoros	Morocco	India	Bermuda	Mexico	Kuwait
Congo(Brazzaville)	Mozambique	Indonesia	Brazil	Montserrat	Lebanon
Congo (Kinshasa)	Namibia	Japan	Canada	Nicaragua	Oman
Djibouti	Nigeria	Malaysia	Cayman Islands	Panama	Qatar
Egypt	Sao Tome and Principe	North Korea	Chile	Peru	Saudi Arabia
Equatorial Guinea	Senegal	Philippines	Colombia	Puerto Rico	Syria
Eritrea	Seychelles	Singapore	Costa Rica	Saint Christopher and Nevis	United Arab Emirates
Gabon	Sierra Leone	South Korea	Cuba	Saint Lucia	Yemen
Gambia	Somalia	Taiwan	Dominic Rep.	Saint Vincent and Grenadines	
Ghana	South Africa	Thailand	Dominica	Saint-Pierre-et-Miquelon	
Guinea	Sudan	Vietnam	Ecuador	Suriname	
Guinea Bissau	Tanzania		El Salvador	Trinidad and Tobago	
Ivory Coast	Togo		Falklands Islands	Turks and Caicos Islands	
Kenya	Tunisia		Greenland	Uruguay	
Liberia	Western Sahara		Grenada	USA	
			Guadeloupe	Venezuela	
			Guatemala	Virgin Islands	
40 countries		16 countries	44 countries		13 countries

⁵ Nationalencyklopedin, homepage (2010-01-25)



Figure 1 - Map of Africa



Figure 2 - Map of Americas



Figure 3 - Map of Middle East



Figure 4 - Map of South East and East Asia

1.6 Outline of the report

The report is divided into eight chapters; *Introduction, Framework, Method, Initial study, Initial analysis, Final study, Final analysis* and *Conclusion*. The initial chapter describes the project in general, explains the purpose with the report and provides the necessary background information. This is followed by the Framework which describes the theoretical foundations of the report. The theories in this chapter has been carefully chosen in order to give a trustworthy approach and to help answering the purpose of the report. The Method describes how the purpose of the report is intended to be answered and through which scientific approaches the main problem has been solved and viewed from. Furthermore, the study is divided into two loops before reaching the conclusion, starting with the Initial study. This means that initial empirics are gathered in order to understand and solve the problem. This information is used together with theoretical framework and analysed in the fifth chapter, the Initial analysis. It works as a funnel and delivers an important result that can be studied further and in more detail in the Final study. Here, the result from the Initial analysis is complemented by new empirics that validates the earlier information and broadens the perspective. This information is then analysed in the Final analysis which enables a general view of the logistical hub possibilities in each region. Finally, the last chapter is the Conclusion where the result and conclusions of the study is presented. The chapter also contains recommendations and suggestions for further studies. Figure 5 shows the entire outline of the report.

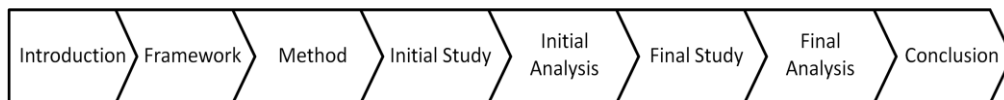


Figure 5 - The outline of the report

1.7 Key learning from Introduction

- A lot of the Supply Chain issues are related to the geographical placements of hubs.
- The Swedish Trade Council is looking for improvements of the current methods of helping their customers selecting location of logistical hubs.
- There are few theories within the logistics literature focusing on logistical hubs without company specific conditions and flow of goods.

2 Framework

The Framework chapter presents the theories that will be used to analyse the empirics. First the difference between supply chain and logistics is clarified followed by a text about how to evaluate logistics network and characteristics of logistical hubs. The Framework is then divided into three parts of how to select locations for logistical hubs; Facility network analysis, Commercial aspects of facility location, and Global aspects of successful trade. The multiple criteria method Analytical Hierarchy Process is finally presented as a method to handle and structure the location problem.

2.1 Supply chain versus logistics

The term *Supply Chain* covers all activities that are associated with the flow goods, from the raw material to the end user, embracing coordination of different operations across the supply process. Figure 6 displays the difference between logistics and supply chain. Skjott-Larsen et al (2007) argues that logistics connects a firm with its suppliers and customers and starts and ends with corporate boundaries whereas the supply chain covers the entire product flow. The tools of logistics are transport, inventory, and information which all comply for the supplier, the firm, and the customer.⁶

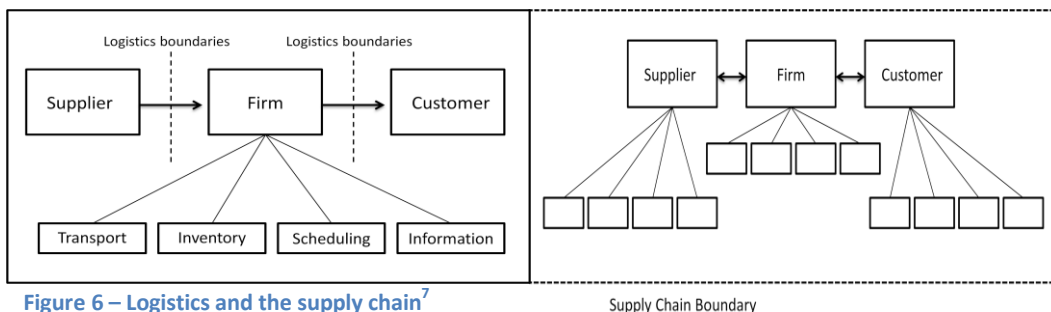


Figure 6 – Logistics and the supply chain⁷

2.2 Evaluate Logistics Network

The design of a logistics network has significant influence on the performance and cost of the supply chain. Network design tools can be used to decide where to locate warehouses, plants, and suppliers, which transport modes to use, and which plants will produce which products. It may affect component costs, lead times, and customer service level. Historically, managers have had an internal view on their network design of their supply chain. Today managers are increasingly broadening

⁶ Skjott-Larsen, T et al. (2007) p. 19-24

⁷ Ibid p. 24

the scope of their network design to a larger part of the supply chain such as their customers and suppliers.⁸

2.3 Characteristics of a logistical hub

The logistical hub has its origin from the unloader's need of frequent deliveries and to be able to offer a good transport service. At the same time the transporter wants to use their resources as much as possible, converting the flow into a direct relation between the producer and the consumer passing through a central hub. In the hub goods are unloaded, sorted, and potentially stored for additional refining before being reloaded for final transport to the receiver.⁹

The extent of the transport (ton-kilometre) is often in relation to the amount of transport relationships. The conventional system of transporting is through direct delivery, from the sender to the receiver of the good without any intermediary. The system of hubs is built differently, still between the sender and receiver of goods but with an intermediary in between. The difference between a conventional and hub transportation system is illustrated in Figure 7.¹⁰

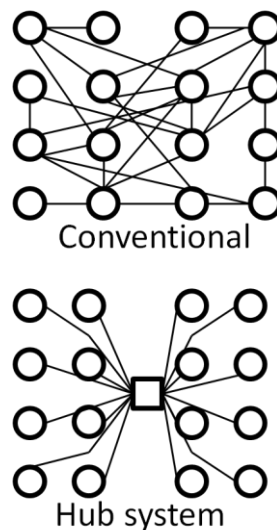


Figure 7 – A conventional and a hub transport system

Distribution Centre (DC) functions as a hub, consolidating of shipments to one location and distributing the consignments. A DC receives large bulk shipments that

⁸ Lambert, D (2008) p. 110

⁹ Lumsden, K (2006) p. 622

¹⁰ Ibid p. 625-626

are being distributed to several locations, depending on the amount of locations it serve. The focus of the DC is to send and receive goods in contrast with warehouses, where the main tasks are sending, receiving, picking, and storing. Since the 1980s there has been a significant impact on the DCs and warehouses, namely; reduction of the number of facilities, greater emphasis on flow of goods rather than their storage, and increased outsourcing of warehouses.¹¹

A DC might have several roles within the supply chain, among others being a transshipment node. Transshipment may or may not include consolidated shipments and often contains a change of transport mode. A vehicle that operates from a transshipment centre is often dedicated to specific links of the supply chain. This implies the possibility of optimization for the handled routes.¹²

Advantages of the hub system are an even traffic between the transport relationships and a high utilization of the transport mode and the carrier which results in fewer flows with maintained frequency. The frequency is reached through the carriers continuously is provided with goods from the entire region.¹³ Another advantage of a logistics hub is that it better enable manufacturers to control inventory level.¹⁴

2.4 Facility network analysis

2.4.1 Strategic facility location

In order to reach a successful strategic planning and hence minimizing the costs, decisions regarding facility locations are crucial for most companies. To calculate optimal facility locations, specific product flow for a company is often required. Input data might be demand, distance, and transport time, which only can be originated from a specific company. The establishment of a facility at a certain location usually involves ownership, which makes the choice of location into a long-term commitment. Furthermore, when owning a facility future evolvement of many different factors related to the facility must be taken into consideration, in order for the facility to remain prosperous during its planned life-time.¹⁵

¹¹ Langevin, A and Riopel, D(2005) p. 68-69

¹² Ibid p. 75

¹³ Lumsden, K (2006) p. 636

¹⁴ Liu, C.S et al. (2008) p. 2

¹⁵ Owen, S and Daskin, M (1998) p. 423-426

2.4.2 Models for facility location and capacity allocation

An article by Melo et al. (2009) reviews the area of facility location and has studied over 100 articles within the discipline. Facility location originates from operational research and when combined with supply chain management, the practical usefulness increases substantially. One frequently mentioned facility location problem within the studied articles is the p -median problem. This is about determining which p facilities that should be selected to minimize the weighted cost or distance in order to supply customer demand. The p -median problem can be further complicated if different facility setup costs are considered and the capacity per facility is unique. However, there are realistic factors that must be taken into consideration to provide useful information to make decisions. It is also interesting to include stochastic components since the future is characterized by uncertainty, especially the customer's demand and cost development.¹⁶

Network design models is a different name on the issue of placing facilities at the right locations. According to Chopra and Meindl (2004) there are two main situations where network design models are used. First, the purpose is to decide which locations that are suitable for facilities and which capacities that should be assigned. Secondly, current demand must be identified and its closeness to a certain facility determined. These decisions must be made on at least an annual basis as many factors change. To make a network design decision a set of information must be collected. This information is then used through among others network optimization models to design the facility network. Examples of necessary information are;¹⁷

- Location of supply sources and markets
- Location of potential facility sites
- Demand forecast by market
- Facility, labour, and material cost by site
- Transportation costs between each pair of sites
- Inventory costs by site as well as a function of quantity
- Sale price of product in different regions
- Taxes and tariffs as product is moved between locations
- Desired response time and other service factors

¹⁶ Melo et al. (2009) p. 401-402

¹⁷ Chopra, S and Meindl, P (2004) p.109-110

2.5 Commercial aspects of facility location

2.5.1 7 Keys to Facility Location

Site location has become an increasingly critical decision for managers of supply chain since a poor location decision can have enormous effects. Still surprisingly few leaders responsible for the location of a production facility or distribution centre know the basic principles behind deciding the location. Mentzer (2008) in Supply Chain Management Review suggests that the computers should do the facility-locating decisions. However, to get more than flat recommendations executives should look at location network analysis tools. Sensitivity analysis should be done on how underlying factors such as local tax incentives, regional infrastructure plans might affect the decision. The seven factors that affect a facility location decision are according to Mentzer;¹⁸

- Land: Investigate whether the considered area is constrained by others or a wide-open space.
- Labour: The workforce often determine the location by how likely they will be to employ.
- Capital: Many countries offer economic incentives to companies such as tax incentives and low-interest economic development loans.
- Sources of Supply: There is a tendency to build facilities near cluster of suppliers because of the need to consolidate freight.
- Production: In case of a weight-losing process, when the final product weights less than the sum of the inbound raw materials, there is naturally an economic incentive to have the production facilities as close to the supplier as possible.
- Markets: Where land, labour, and capital are cheap is rarely where the customers are located. The key is to find a balance between inexpensive location and closeness to customers.
- Logistics: The closeness to nearest port of entry, airport, major highway, or rail line is of great importance.

2.5.2 Location of distribution centre from a country's perspective

An article about Germany's suitability as a main distribution hub highlights different features that are of importance for a successful hub. A central aspect within hub localisation is that the country has very good logistical competence. Furthermore,

¹⁸ Mentzer, J (2008) p. 25-31

the infrastructure must be well developed to handle logistics, mentioned as a main hub argument in the report. Another important part of choosing location is to consider the labour and how this is related to the competence of the hired workers. The report also argues that Germany is in the heart of Europe, making closeness to other markets an important criterion. Additionally, location costs are important, taking rent, local taxes and utilities into consideration.¹⁹

2.6 Global aspects of successful trade

2.6.1 Logistical Performance Index

Every second year the World Bank conducts a research report, *Connecting to compete* and makes a global ranking regarding logistics performance, named *Logistical Performance Index* (LPI). This means that 155 countries are given a ranking based on central factors from a logistical perspective. The information has been gathered by asking those responsible for moving most of the goods around the world; the multinational freight forwarders and the main express carriers. Almost 1000 logistics professionals have answered the survey that lay the foundation of the LPI. The report takes both an international and a domestic perspective into consideration when ranking the different countries.

The LPI is based upon 6 central aspects regarding the logistics environment;²⁰

- Efficiency of the customs clearance process.
- Quality of trade and transport-related infrastructure.
- Ease of arranging competitively priced shipments.
- Competence and quality of logistics services.
- Ability to track and trace consignments.
- Frequency with which shipments reach the consignee within the scheduled or expected time.

2.6.2 Enabling Trade Index

Every year, the World Economic Forum releases *The Global Enabling Trade Report* (GETR), which has been developed to provide countries with a yardstick on how they are improving themselves regarding global trade. The report also contains an *Enabling Trade Index* (ETI), giving a quantitative display of how the different

¹⁹ Kompetenzcluster, homepage (2010-02-12)

²⁰ Arvis, J et al. (2010) p. 4

countries are doing towards each other. The ETI is divided into four sub indexes to enlighten the areas of successful trade, namely;

- Market Access
- Border Administration
- Transport and Communications Infrastructure
- The Business Environment

Market Access is about the extent to which foreign goods are welcomed into the country and the enabled access to foreign market for domestic exporters. Border Administration is about the facilitation of entry and exit of goods. The third sub index consists of information regarding the quality of the infrastructure necessary to facilitate the movement of goods within the country or across the border. The last sub index takes the quality of governance, overarching regulatory, and security environment into consideration and how this impact the importers and exporters active in the country.

The GETR refers to the pillars of enabling trade when setting up the sub indexes. There are nine pillars that constitute the four sub indexes. The information within each pillar consists of data and a central survey within the GETR. The pillars and their relations to the different sub indexes are as follows;²¹

- Domestic and foreign market access → **Market Access**
 - Efficiency of customs administration
 - Efficiency of import and export procedures
 - Transparency of border administration
 - Availability and quality of transport infrastructure
 - Availability and quality of transport services
 - Availability and use of Information and Communications Technology
 - Regulatory environment
 - Physical security
- Border Administration**
- Transport and Communications**
- The Business Environment**

²¹ Hanouz, M et al. (2009) p. 6-7

2.6.3 Aspects of International Trade

Rushton et al. (2006) represents key elements of international trade that are important to logistics and for choosing international transport mode;²²

- Trade agreements and economic unions
- Financial issues
- Terms of trade
- Documentation
- The use of freight forwarders

With trade agreements and economic unions major barriers of international trade has been broken down. The key financial issues involved are types of payment, taxes and duties, transport costs, and associated transport charges. When it comes to the third element, terms of trade, it is important to be aware of the basic methods of undertaking business when dealing with international trade. The types of documentation are also very important hence the requirements may vary according to the origin and destination of the shipment. Finally, many companies use the services of freight forwarders because of the particular complications concerning import and export documentation.²³

2.6.4 Complexities within the supply chain

There are several complexities that must be taken into consideration when handling a global supply chain. The impact from political issues, social issues, and cultures all affect the set-up and design of the supply chain to a large extent.

2.6.4.1 Political issues

The main aspects to address within the political issues are protectionism, trade liberalization (through World Trade Organization, WTO) and regional trade unions. Emerging markets often use direct control and high tariff barriers in order to encourage the local production, known as protectionism. Furthermore, the emerging markets often also offer financial agreements to enable the establishment of industries.²⁴

The main idea with regional trade unions is to provide an arrangement that enables trade without barriers among countries within the union. Instead, there are higher

²² Rushton et al. (2006) p. 374-375

²³ Ibid p. 375-379

²⁴ Skjott-Larsen, T et al. (2007) p. 402

barriers towards those countries outside the region, thereby enabling a regional self-sufficiency. European Union (EU) is the strongest regional agreement, including 27 countries and 500 million people. Other examples of regional arrangements are The North American Free Trade Agreement (NAFTA), Mercosur, and Association of Southeast Asian Nations (ASEAN).²⁵

2.6.4.2 *Social issues*

In 2000 the United Nations (UN) launched the Global Compact as a policy platform and a practical framework for companies involving three areas;²⁶

- **Human rights** protection and avoidance of abuses.
- **Labour** practices including elimination of forced labour, collective bargaining, elimination of discrimination, and abolition of child labour.
- **Environmental** support for precautionary steps, supporting development and diffusion of environmentally friendly technologies, and taking environmental responsibility.

In 2004 a fourth area was announced;

- **Anti-corruption** where the business should work against all form of corruption, extortion, and bribery.

For multinational corporations operating in developing countries other international organizations such as International Labour Organization, EU, World Bank, and Organisation for Economic Co-operation and Development (OECD) have defined ethical guidelines. In many multinational corporations Corporate Social Responsibility (CSR) has also become common in annual reports and mission statements. CSR implies sustainability reporting, transparency in financing reporting, and opportunities for stakeholder dialogue. The corporate strategy is the foremost influence of the supply chain and by the moves of competing supply chains.

Social issues may be a consequence of the quality of the infrastructure. Infrastructure can be divided into three; education, transport, and telecommunication. A critical issue is the education, especially when it comes to modern technology. Transport infrastructure consists of ports, airports, highways,

²⁵ Skjott-Larsen, T et al. (2007) p. 404-405

²⁶ Ibid p. 405-407

carriers, and access to international routes. In India, China, and Africa the lack of adequate transportation has been a main obstacle for economic development.²⁷

2.6.4.3 Cultures

Organizations, data collection and interpretation, institutions, education levels, and labour practices are all examples of how cultures in many ways influence the supply chain. Culture can be defined with education, national identities, management practices, relationships, and work values. It also determines the roles of organizations and the flexibility of the supply chain to respond to changes. Several dimensions influence international organizational behaviour; languages, context, task orientation and time, power and information flow.²⁸

2.7 Multiple criteria models

2.7.1 Choosing multiple criteria model

There are plenty multiple criteria models that handle complex problems.²⁹ A review of state of the art models show that the Analytical Hierarchy Process (AHP) have the highest objectivity reached. The method handles both qualitative and quantitative information at the same time when comparing with the other methods³⁰.

2.7.2 Analytical Hierarchy Process

The AHP is an approach to handle and structure complex problems that involves multiple criteria. The method starts by dividing the problem into a hierarchy, meaning that each level is divided into smaller elements. Each element can thereafter be divided further, into sub-elements. This is done until the problem is adequately structured and the core elements of the problem are defined. There is no predetermined structure of AHP; instead it is up to the user to fit the hierarchical structure with the problem, making the method very flexible.³¹

The method enables identifying and weighting selection criteria, analyzing the data collected for the criteria and accelerate the decision-making process.³² It is a general

²⁷ Skjott-Larsen, T et al. (2007) p. 405-407

²⁸ Ibid p. 408-409

²⁹ Celik, M and Topcu, Y. I (2009) p. 474

³⁰ Noci, G (1997) p. 106

³¹ Saaty, T and Wind, Y (1980) p. 642

³² The Quality Portal, homepage (2010-02-04)

way to holistically structure a problem as part of a system and relate the problem's parts according to influence.³³

AHP is very useful in cases when trying to decide an optimal option, for example selecting suppliers. When trying to find the optimal supplier it is not interesting to know which specific supplier that only offers the best service, lowest price or shortest delivery. It is instead important to consider multiple criteria and receive the best overall result in the pursuit of optimum.³⁴

Nydick and Hill (1992) divide the application of AHP into five steps when applying it to a process of choosing the optimal supplier as follows;³⁵

1. Specify the set of criteria for evaluating the supplier's proposals
2. Obtain the pair wise comparisons of the relative importance of the criteria in achieving the goal, and compute the priorities or weights of the criteria based on this information.
3. Obtain measures that describe the extent to which each supplier achieves the criteria.
4. Using the information in step 3, obtain the pair wise comparison of the relative importance of the suppliers with respect to the criteria, and compute corresponding priorities.
5. Using the results of step 2 and step 4, compute the priorities of each supplier in achieving the goal of the hierarchy.

The AHP consist of either tangible or intangible criteria. However, most criteria are intangible and thus making it important to make a pair wise comparison with other criteria. When a criterion is tangible the importance of their values must also often be pair wise compared using comparison judgements.³⁶

There are several articles that describe the AHP in more or less complex ways. If the number of evaluated factors increases, so does the complexity of the AHP model. Therefore it is important to introduce the AHP concept with a basic example that clarifies the rules and conditions associated with the process. AHP has also been used as a tool for localisation decisions earlier and hence this is described further below when the basics of AHP has been explained. Just below is an example of how

³³ Saaty, T (2007a) p. 1011

³⁴ Nydick, R and Hill, R (1992) p. 31

³⁵ Ibid p. 33

³⁶ Saaty, T (2007b) p. 964

suppliers were chosen with help of the AHP that gives a solid understanding for the method.

2.7.2.1 Using the AHP

Nydick and Hill discuss the scoring process within the AHP and present an approach that consists of setting a goal, for example finding the best supplier. This is followed by the establishment of important criteria when choosing the optimal supplier. For example A, B, C, and D are regarded as the most important criteria. The next step is to give the different criteria a weighting and this is done by the buyer in the case of finding the optimal supplier. By doing a pair wise comparison between the criteria, the weighting is achieved. For example, the buyer must compare how important quality is compared to price, delivery time and service. This is done on a scale from 1-9, where 9 is Extremely Preferred, 5 is Strongly Preferred and 1 is Equally Preferred. The result is then compiled in a matrix, see example in Table 1.

AHP	A	B	C	D
A	1	2	3	4
B	1/2	1	2	5
C	1/3	1/2	1	3
D	1/4	1/5	1/3	1

Table 1 – Example of pair wise comparison

In this case, the buyer has to make 6 decisions regarding pair wise comparison (**bold** figures) since the rest of the figures originates from them. The number of pair wise decisions that has to be made is given by the formula $n(n-1)/2$ where n is the number of criteria. To make the actual weighting, the following process is performed:

1. Sum the elements in each column
2. Divide each value by its column sum
3. Compute row averages

Through this process there is a weighting obtained for the chosen criteria. Figure 8 display the procedure where A, B, C, and D are criteria with their respective weighting. The different suppliers being evaluated are displayed in the figure as X1, X2, X3, and X4. They are given a weighting regarding how well they correspond to the above criteria. It is up to the decision maker to set scoring of how well each supplier fulfils the criteria. The process of obtaining the weightings is done in the same procedure as with the weighting of the criteria.

Thereafter the overall result must be compiled in order to find the optimal supplier. This is done by multiplying the weighting of each criterion with its corresponding supplier weighting value. For example, $A(0,240)*X1(0,349) + B*X1 + C*X1 + D*X1 =$ weighting value for the supplier. All suppliers are then compared with each other and the supplier with the highest weighting value is the most optimal, given the measured circumstances.³⁷

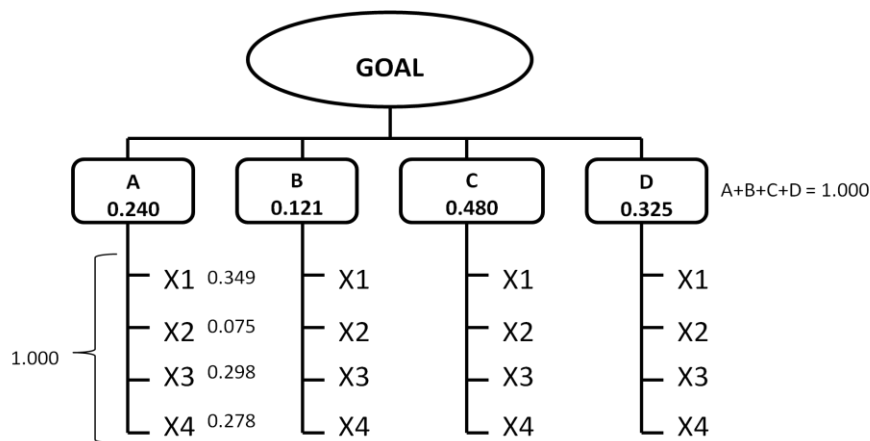


Figure 8 – AHP

2.7.2.2 Issues with the AHP

An issue to address when doing pairwise comparisons is the creation of intransitivity. For example, if A is preferred to B, B is preferred to C, but C is preferred A, this is known as intransitive. Normally, it would be assumed that A is preferred to C due to earlier assumptions. This may constitute some problems since it creates a loop-cycle. However, research shows that although the intransitivity is noticed and corrected, it does not change the overall result. Hence, effort to change results that are transitive is not justified.³⁸

An article by Noci (1997) discusses the limitations by the AHP framework explained above. He claims that it does not provide the decision makers with enough information regarding environment-related factors. This means that the completeness of the analysis remains low, unless additional information is provided. Nevertheless, AHP is the only model taking both quantitative and qualitative aspects

³⁷ Nydick, R and Hill, R (1992) p. 32-35

³⁸ Linares, P (2009) p. 492

into consideration in a supplier choosing process and maintaining a high objectivity.³⁹

2.7.3 AHP used as tool for localisation decisions

When applying AHP to localisation decision, it works just as mentioned above. A goal is proposed and this is categorized into different criteria. The criteria may be divided into attributes, breaking down the problem further. The attributes must also be weighted in order to get correct approximations. The evaluated locations have a relative score for each attribute that is used when summing up the total score.⁴⁰ Another article that discusses optimal offshore locations uses the same type of procedure. The goal is divided into three main aspects/criteria and these are in turn divided into attributes. Each proposed locations has a relative score, used when performing the AHP.⁴¹

The difference, when comparing with earlier mentioned model of AHP, is the breakdown of the problem and how it is structured. In the example of localisation decisions the criteria were divided further which was not the case in the example of the suppliers. There is no absolute way of how to set-up the AHP as long as the rules of the weighting is obeyed.

2.8 Key learning from Framework

- Logistics starts and ends with corporate boundaries whereas supply chain covers the entire product flow.
- Network design tools can be used to decide where to locate facilities and has significant influence on the performance and cost of the supply chain.
- A logistical hub is an intermediary in between the sender and receiver, consolidating shipments to one location and then distributing the consignments.
- Strategic facility location and Models for facility location and capacity allocation are Facility network analysis theories. These theories are based on company specific condition such as distance, demand, and shipped weight.
- 7 Keys of Facility Location and Location of distribution centre from a country's perspective are recommended factors and features for analyzing locations for logistical hubs such as logistics and infrastructure. These two approaches form the Commercial aspects of facility location chapter.

³⁹ Noci, G (1997) p. 105-106

⁴⁰ Min, H (1994) p. 25-31

⁴¹ Liu, L et al. (2008) p. 440-443

- Logistical Performance Index is a global ranking regarding countries logistics performance whereas Enabling Trade Index is measuring how countries are improving in global trade. Aspects of International Trade presents key elements of international trade that are important to logistics. The complexities within the supply chain are political issues, social issues such as human rights and anti-corruption, and culture. The presented aspects constitute the Global aspects of successful trade.
- The Analytical Hierarchy Process is a method to handle and structure complex problems that involved multiple criteria. The method enables identifying and weighting selection criteria, analyzing the data collected for the criteria and accelerate the decision-making process.

3 Method

In this part of the report the different methodological approaches is presented followed by a motivation of chosen methodology. The research methods, the trustworthiness of the study, and criticism of sources are also discussed as well as a description of the structure and process of the study. The chapter aims to motivate the choices made in theories, methods, empirics, and analysis.

3.1 Methodological approach

According to Arbnor and Bjerke (1997) there are three main approaches to scientific methodology when it comes to creating business knowledge. These are the analytical approach, system approach, and actors approach.⁴² The authors also discuss the difference between an explanatory creation of knowledge (explanatics) and an understanding creation of knowledge (hermeneutics). Explanatics believe that the methods applied when analysing natural sciences may be used on social sciences as well. The hermeneutics differ on this matter, arguing that there is a clear distinction between social sciences and natural sciences.⁴³ When putting the methodological approaches together with the two types of knowledge it visualizes how the different approaches differ from each other (Figure 9). The analytical approach is furthest to the left, being only explanatory when creating knowledge whereas the actors approach is located far to the right, being understanding when creating knowledge. The system approach takes both aspects into consideration, although it is more explanatory than understanding when creating knowledge.

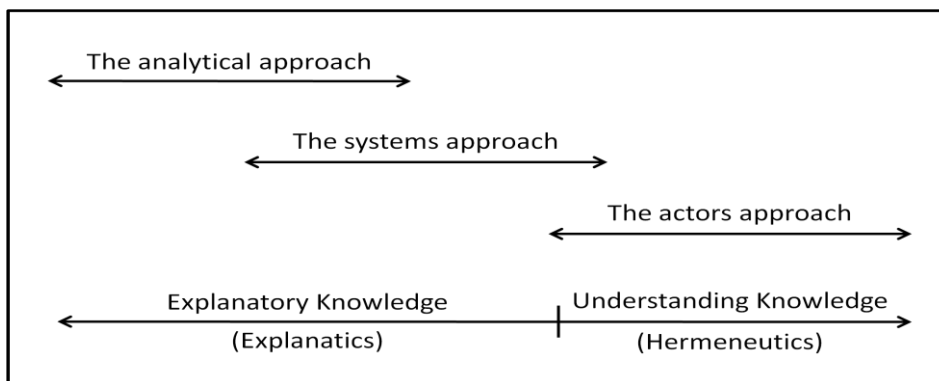


Figure 9 - The different scientific approaches⁴⁴

⁴² Arbnor, I and Bjerke, B (1997) p. 49

⁴³ Ibid p. 44-45

⁴⁴ Ibid p. 60

3.1.1 Analytical approach

The analytical approach is constituted by objective fact and that the reality is independent of its observers. Logic and mathematics both have a central role within the analytical approach, much depending on the fact that they are not subjective. The analytical approach is much about hypothesis testing, which then is verified by quantitative elements. When testing hypothesis' Arbnor and Bjerke refers to causal relations, where the causes are examined and tested in order to get a better explanation of the effects. This, in turn provides the researcher with answer to the hypothesis.⁴⁵ Furthermore, within the analytical approach the whole is a sum of its parts, hence there are no value adding collaboration between the different parts.⁴⁶ Qualitative studies are only conducted to verify and give input on the quantitative studies.⁴⁷

3.1.2 System approach

The system approach is based on the idea that the whole differs from the sum of its parts due to different synergy effects. The parts are viewed as system components, meaning that the objectivity from the analytical approach does not apply to the same extent.⁴⁸ The approach is often described as holistic compared to the more atomistic analytical approach.⁴⁹ Within the system approach it is not possible to remove certain parts or factors from the total system without risking changing the overall picture. A vital difference between the analytical approach and the system approach is the interpretation of causal relations. In the system approach it is interesting to look at forces that influence the system as a whole instead of individual relations.⁵⁰

3.1.3 Actors approach

The characteristics of the actors approach are that the world is seen as a social construction, thereby assuming that the reality is not independent from its observers. This is in contrast with the other two mentioned approaches, which has a much more objective relation to the reality.⁵¹

⁴⁵ Arbnor, I and Bjerke, B (1997) p. 81-85

⁴⁶ Ibid p. 50

⁴⁷ Gammelgaard, B (2004), p. 481

⁴⁸ Arbnor, I and Bjerke, B (1997), p. 51-52

⁴⁹ Gammelgaard, B (2004), p. 481

⁵⁰ Arbnor, I and Bjerke, B (1997), p. 64-65

⁵¹ Ibid p. 70-71

Within the actors approach it is impossible to make predictions that originates from cause and effect relations within the social reality. This is due to the fact of human beings' intentionality, something that has a big impact in these contexts. Hence, qualitative studies should be conducted to understand and map out these behaviours.⁵²

3.1.4 Chosen methodological approach

In order to fulfil the purpose of this report, a holistic view and structure of the problem is needed. To enlighten the issue of identifying hub locations, there is need of hard facts from reliable sources as well as local information from each market to make a complete and trustworthy analysis. A system approach has been chosen as scientific methodology since it enables the creation of a system view of the problem, where it is intended to investigate how different forces impact the system. This also enables the possibility of taking potential synergy effects into consideration. The general definition of the system in this study is the establishment of a model that gives guidance when deciding hub locations. The theories in the Framework (chapter 2) are the foundation of the subsystems that impact the overall system when deciding an optimal hub location. The subsystems are explained in the Initial analysis as 21 different criteria. The relations between the subsystems are that they all add different information, completing the system. Further relations might be that they affect the supply chain in different and sometimes a contradictive way. For example a criterion might argue the benefits of a more secure supply chain, which would have a definite relation with a criterion that promote focus on keeping the costs low. Some of the subsystems are acquired from the same sources, linking them together whereas some complete each other. When narrowing down the problem in the Initial analysis, the most important criteria were identified and thus constituting the subsystems of the model to give guidance when seeking suitable hub locations. The output of the system is information to the solution of a complex problem that is constituted of several dimensions.

3.2 Research methods

When conducting the research, there are different ways of treating the information, depending if the gathered information can be categorized as understanding or explanatory knowledge. Understanding knowledge (hermeneutics) will never appear as objective information, such as statistical regularities according to researcher

⁵² Gammelgaard, B (2004), p. 481

within this field. Thus, the understanding knowledge cannot be explained as quantitative research.⁵³

In the case of the system approach, it stretches over both types of knowledge, allowing the use of both mentioned knowledge types. In this study, this means that the AHP method can be applied, where quantitative data is compiled together with qualitative opinions, resulting in a quantitative result. At the same time, purely qualitative studies will be made to verify and bring forth new information to the study.

3.2.1 Quantitative and qualitative method

Quantitative method is a way of gathering empirical and quantitative data and compiling them statistically. From this data, the analysis is made with testable hypotheses. A quantitative approach does not presuppose that the researcher must participate within the studied area, which is to prefer from an objective point of view. Quantitative studies are generally made over large populations.⁵⁴

A researcher that adopts the qualitative approach is more interested in how people experience their surroundings instead of just presenting a set of statistical figures⁵⁵. Qualitative methodology often includes deep-interviews, field studies and observation of participants. This means that the qualitative methodology consists of subjective features to a certain extent and the result must be interpreted with the results.⁵⁶ When the researcher tries to describe the examined problem it means that qualitative studies often are conducted on smaller populations compared to quantitative studies.⁵⁷

The approach through the use of the AHP enables, as mentioned, usage of both quantitative and qualitative data. By gathering statistics about the different countries and information about logistics it enables a quantification of the purpose. However, the AHP may not take into consideration absolute barriers that countries may have as locations of logistical hubs such as boycott. To address the potential synergy effects and bring forth additional information, purely qualitative studies are conducted which strengthens the reasoning of the report.

⁵³ Arbnor, I and Bjerke, B (1997) p. 47

⁵⁴ Nationalencyklopedin, homepage (2010-01-19)

⁵⁵ Bell, J (1995), p. 13

⁵⁶ Wallén, G (1999), p. 74-75

⁵⁷ Nationalencyklopedin, homepage (2010-01-19)

3.2.2 Induction, deduction and abduction

Inductive and deductive methods are different ways to approach a problem. The inductive approach is to start by gathering information and empirics. When this has been done there is a construction of theories based on the information from the gathered data. The deductive method on the other hand is taking general theories and testing them against events that might take place in the future. This is known as verification and means gathering of data to test if the predictions made earlier were correct or not.⁵⁸ This cycle is to be seen in Figure 10 below.

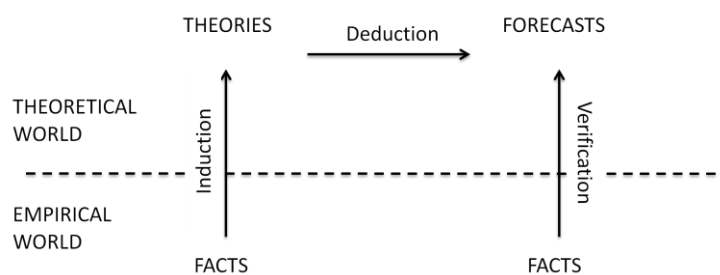


Figure 10 – Cyclical nature of the analytical approaches procedures⁵⁹

There is a third approach known as the abductive method. This method is useful when a problem cannot be approached purely through inductive or deductive methods.⁶⁰ The abductive research method offers a way of looping between theory and empirics, meaning that theories are used for empirical observations. The match between theories and empirics is then analysed at an early stage. This is followed by a second choice of theories based on the newfound results and a second analysis is performed.⁶¹

In this study the abductive method has been chosen in order to allow a looped approach towards the answering of the purpose. By conducting an initial study that deals with a large number of countries it is possible to narrow down the number of potential hub locations. Through the abductive method, new theories may be applied if necessary and new empirics gathered. This leads to a second and in this case a final analysis, which lays the foundation of the final result. Figure 11 below displays the entire process.

⁵⁸ Arbnor, I and Bjerke, B (1997) p. 91-93

⁵⁹ Ibid p. 92

⁶⁰ Spens, K and Kovacs, G (2005), p 374-375

⁶¹ Ibid p 376-378

Finding optimal logistical hubs for Swedish export

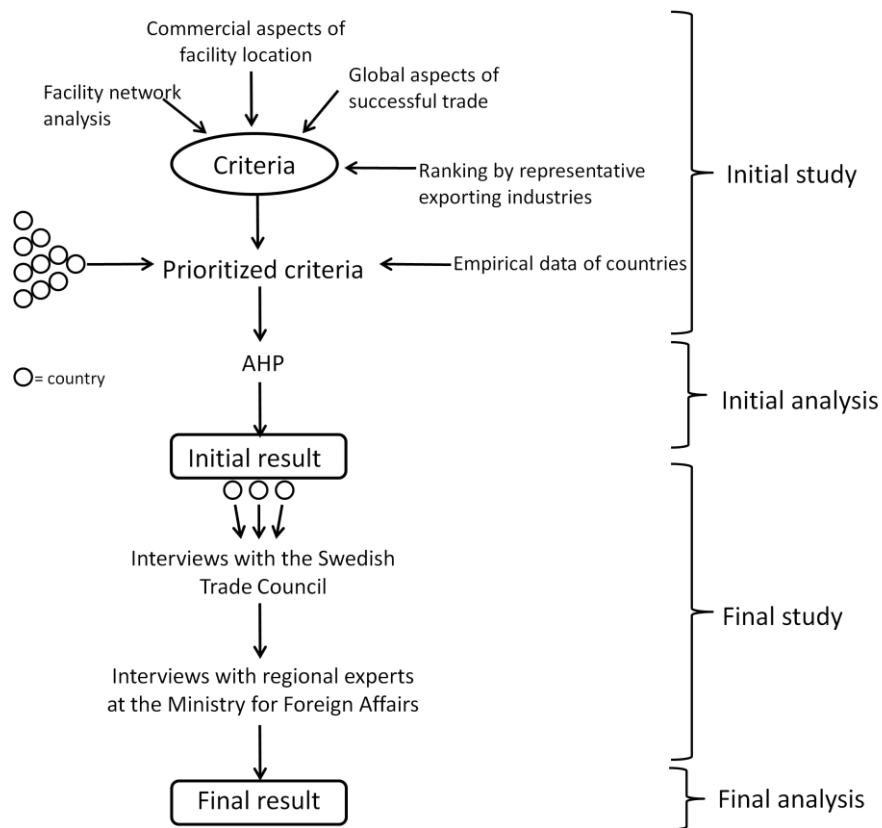


Figure 11 - The methodology of the study for each region

3.3 Techniques for collecting data

There are two main techniques of gathering data; primary information by collecting new data or secondary information by using previously collected data. According to Arbnor and Bjerke (1997) primary information can be collected through direct observations, interviews, and experiments. With the use of secondary information two problems arise. The first one is compatibility because the previously collected data might have been collected for another purpose. The other problem is the trustworthiness where the researchers can doubt the quality or correctness of the secondary material.⁶²

In the study the primary information has been collected mainly by interviews with local Swedish Trade Council offices and experts on the studied regions. The secondary information has been gathered through statistics and indexes that reinforce our criteria. Furthermore a comprehensive literature study was conducted

⁶² Arbnor, I and Bjerke, B (1997), p. 224-225

to be able to build the theoretical framework, foremost within the logistics area. The data collection methods are to be presented below.

3.3.1 Survey

A survey intends to obtain answers to the same questions from a large number of individuals to compare, describe, and relate one characteristic to another to investigate a cause-effect relationship. The aim with a survey is to gain information from a representative selection of the population that represents the population as a whole. This implies that great care has to be taken when choosing sample population to ensure that it is truly representative. Another important aspect to ensure is the wording question which makes a careful piloting necessary to make sure that all the questions mean the same to all respondents. The answers a survey can provide is to questions such as where, when, how, and what. However, it is harder to find out why.⁶³

The survey made in the Initial study in this report has been based upon the theories presented in the Framework. In order to receive representative responses the sample population has been carefully chosen. First, relevant industries have been selected (explained below) to represent the Swedish export, these being the Mineral and energy industry, Engineering products industry, Transportation industry, Electrical and telecommunication industry, and the Chemical products industry.

Within the industries, eight major companies have been contacted through their logistics division. Two global, exporting, and representative companies for each industry have been chosen and contacted and asked to rank the criteria. Especially important is that the selected companies have production in Sweden and further export the goods internationally. Within the Engineering products industry ABB and Gambro are actors and hence represents the industry. Haldex and Volvo Buses are large within its industry and thus represent the Transportation industry and Sony Ericsson and Siemens are representing companies in the Electrical and telecommunication industry. The final industry, Chemical products industry, is in the study represented by Astra Zeneca and Perstorp. A person with knowledge of the company's logistics has been asked to answer the survey, further referred to as Logistical Managers. The selection of companies has been done through a commercial selection and not from a logistical point of view. The biggest Swedish industries exporting 2008 has been measured by the value in SEK exported, not the amount of goods or weight that is common measurements used within logistics. The

⁶³ Bell, J (2005), p. 13-14

people representing the companies have been chosen and contacted for their responsibility of, or their knowledge within, the logistics area within the company. With this method there is a risk that the people contacted are not the right person to consult within the company. However, being responsible for logistics they are clearly not the wrong people.

To ensure that the survey cannot be misinterpreted, the survey has been reviewed by and discussed with Mr. Danielsson. The result of the survey is part of the in data to the AHP model and constitutes an important part of the study.

3.3.2 Interviews

According to Arbnor and Bjerke (1997) there are four types of interviews; personal interview, telephone interview, mail questionnaire, and group questionnaire⁶⁴. A great advantage of the method of interviewing is its flexibility⁶⁵. Depending on the desired sought information the interviews can be standardized or nonstructured with a low degree of standardization. Moreover the questions can be closed or open with or without fixed alternative answers.⁶⁶

There are however disadvantages of the method of interviewing, one being the fact that it is time consuming. Other problems with the technique are that the answers can be hard to analyze and there is a risk for bias in the result.⁶⁷ Interviewer and panel effects are common with the interview technique that is not desirable. The interviewer effect is when the respondent is influenced by the interviewer.⁶⁸

In our study, semi structured interviews has been made with local Swedish Trade Council offices and are to be considered as standardized as the same questions were asked. Interviews were done with external expert on the different regions from the Ministry for Foreign Affairs, also with a semi-structured approach. Each interview was made individually thus avoiding issues with panel effects. The interviews were documented by electronic recording and are presented in the report as reviews, taking all relevant information into consideration. To ensure that the information has been correctly interpreted by the authors, the reviews have been approved by the persons interviewed.

⁶⁴ Arbnor, I and Bjerke, B (1997), p. 224-225

⁶⁵ Bell, J (1995), p. 90

⁶⁶ Arbnor, I and Bjerke, B (1997), p. 224-225

⁶⁷ Bell, J (1995), p. 90-94

⁶⁸ Arbnor, I and Bjerke, B (1997), p. 226

3.4 Analysis

The analysis is divided into two stages, as the abductive method suggests, which enables a more precise final analysis. The process of the initial and final study is illustrated in Figure 11.

3.4.1 Initial Study

The Initial study is primarily quantitative, based on criteria with the purpose to screen and disqualify unsuitable hub locations. As Nydick and Hill suggest, the AHP is divided into five steps. The first one being establishment of a specification of the set of criteria when evaluating the different countries suitability as hub locations. The criteria for the initial study are based upon the three main areas from the Framework;

- Facility network analysis (Chapter 2.4)
- Commercial aspects of facility localisation (Chapter 2.5)
- Global aspects of successful trade (Chapter 2.6)

Furthermore the criteria must be given a ranking depending on how important they are. This ranking has been conducted through a survey, taking the different criteria from the three main areas into consideration.

The most important criteria were selected to be pair wise weighted for the AHP, step 2 according to Nydick and Hill. The same persons that were asked to rank the original criteria were asked to do a pair wise comparison of the final criteria. As mentioned in the Framework chapter, this means that they score the importance of a criterion relative another criterion. By putting this score into the AHP, a weighting is achieved among the final criteria that is relative, taking all final criteria into consideration towards each other. This weighting was, as the AHP suggests, multiplied with weighting of each country to attain a final result of which countries that are most suitable as hub locations.

The next step in the AHP was to gather information about the different countries, regarding how well they meet each criterion. Indexes such as LPI and ETI have been used to score the countries and all criteria except one have been scored by the use of indexes. The score on the index indicates how well each country fulfils a certain criterion. The criterion that was not scored through the use of indexes was the Closeness to other major markets. In this case an index was created by the use of countries GDP and distance data.

The fourth step in the AHP approach is the pair wise comparison of the indexes which differ somewhat compared to the one made by the Logistical Managers. They had to choose how much more important they believed that a criterion was compared to another. When doing the pair wise comparison with the indexes, the different scores are compared with each other. Through the AHP a weighting was attained for each country regarding how well they correspond to the criteria. The final step was conducted by multiplying the weighting of the criteria with the weighting of the countries, and a final weighting was achieved that display a final ranking. This ranking show which countries that are most suitable as hub locations, where the top three locations goes on to further studies in the Final study.

3.4.2 Final Study

Within the second part of the analysis, qualitative methods were added and applied upon the mostly quantitative result in order to strengthen the reasoning. The countries that passed through the Initial analysis were studied thorough by conducting interviews with each local Swedish Trade Council office in the countries concerned. The interviews were based upon all the identified criteria in the Framework, not only the top ranked ones. This enabled a validation of the Initial study and the possibility of contributing with additional information, not captured in the earlier study.

In total, thirteen interviews were conducted which were later on analysed to enlighten the choosing of suitable hub locations together with the result of the AHP. The result from the interviews with the Swedish Trade Council was further on complemented by four interviews with regional experts from different departments at the Ministry for Foreign Affairs. This enabled a general reasoning and validation of the attained result together with new input from someone who had knowledge of the chosen countries from an overall point-of-view.

The information provided in the Final study gave input regarding the divisions of the regions. This resulted in new regional definitions in the Final analysis which led to recalculation of the AHP in one region. Thereafter the regions was analysed based on the result from the AHP, complemented by information from interviews with the Swedish Trade Council and the Ministry for Foreign Affairs. This information provides the reader with both advantages and disadvantages of the suggested hub locations. In some regions it was possible to recommend a single hub whereas some regions have a result that indicates that further studies has to be conducted.

3.5 Trustworthiness

It is important to maintain a high credibility and thus making the result of the report trustworthy. When locating the optimal logistics hubs different sources of information are used and there is focus on making sure that the right things are measured. Furthermore, there is focus on a high reliability on used sources to increase the credibility. A thorough criticism of used sources is an obvious part of this, strengthening the reasoning in the report.

3.5.1 Validity

Validity implies that the selected research method is measuring what it is intended to measure. Furthermore, the result is not to be affected by anything irrelevant and the measurement shall not give any systematic defaults. A high validity is accommodated through a distinct definition of the concepts, throughout conception of the cause-effect-relationship, and through an accurate planning of experiment.⁶⁹

A procedure for assuring that measurements are correct within the systems approach is to reflect from many angles, talk to as many people as possible, and to study a large amount of secondary data.⁷⁰

By constantly reflecting over the acquired results and progress of the study the validity of the chosen method is kept high. The topic is viewed from many perspectives and by consulting knowledgeable persons, continuous feedback is received and used to enhance the validity and reasoning of the report. For example, the results from the AHP have been validated by addressing all criteria in the interviews with the Swedish Trade Council. The information from the interviews with the Swedish Trade Council have in turn been validated by the interviews with regional experts from the Ministry for Foreign Affairs.

3.5.2 Reliability

Validity requires reliability but the opposite is not necessarily the case, a high reliability does not guarantee a high validity⁷¹. Reliability refers to the trustworthiness of a measuring instrument or procedure. Different measurements of the same kind on the same object should provide the same results and values. In contrast to validity the measurement instrument is not to give any random defaults.⁷² Reliability can be assessed using several different methods. Examples of

⁶⁹ Wallén, G (1996), p. 67

⁷⁰ Arbnor, I and Bjerkne, B (1997) p. 232-234

⁷¹ Ibid p. 233

⁷² Wallén, G (1996), p. 66-67

this is alternative formulations and control questions that can be used for comparison.⁷³ In this study the latter method was used to guarantee reliability.

3.6 Criticism of sources

The literature study early showed that there is not much literature within the area of localisation of logistical hubs. However, there is plenty of research done on localisation of facilities. The Framework is built to cover many different approaches of the issue. The Facility network analysis theories that have been used are not developed for especially logistical hubs which make the fit of the theories varying and not perfect. The Commercial aspects of facility location have been published by perhaps less trustworthy sources. Additionally the article about Germany's suitability as a main distribution hub might be bias as there is a risk that the article was published to attract companies to Germany instead of presenting the important factors when establishing a successful hub. The final part of the Framework, Global aspects of successful trade, is neither developed for logistical hubs but rather logistics and trade in general.

In the survey, even though we asked the persons to rank the criteria based on what should be the most important criteria when choosing location of logistical hubs there is a risk that personal preferences has influenced the answers. Another risk is that the criteria are interpreted differently by the responders. This has been taken into consideration when presenting the criteria by giving distinct and examples taken from the Framework to describe the criteria.

The indexes used in the Initial study and analysis are from large and reliable organisations such as the World Bank, World Economic Forum, Transparency International, and Amnesty International Yearbook. ETI and LPI have appeared to differ when measuring similar criteria. An example of this is infrastructure where ETI scored Namibia and South Africa almost the same. LPI however scored South Africa much higher than Namibia. The indexes are however not measuring exactly the same aspects; LPI are scoring Quality of trade and transport-related infrastructure and ETI the Availability and quality of infrastructure. Another reason for the indexes differing could be that they are from different sources. As a method for measuring Closeness to other major markets was made there is a risk there is a better way of measuring the criterion.

⁷³ Bell, J (1995), p. 63

Apart from using the Human rights index in the Initial study, the Human rights have been hard to analyse in the different countries. This is due to the quiet reductive definition of human rights in the studied literature as protection and avoidance of abuses. Additionally it has appeared to be a hard subject for the responders of the interviews to make a statement about.

Out of the seventeen interviews held in the Final study eight interviews was personal, face-to-face, and the rest were telephone interviews. This may result in higher quality of the personal interviews compared to the telephone interviews as the interviewed persons used mimic and body language. The quality of the telephone interviews were varying with occasionally disturbances. The responder's way of answering the questions were very varying, some talking a lot about the subject and some being very short-spoken and concise. Another aspect to regard is the positions of the responders, some being Project Leaders at the local office, other being Commissioner for the country. The fact that the responders may have a tendency of promoting their country as a location of logistical hubs has been considered. Out of all the interviews, three interviews were held in English the other were held in Swedish. After compiling the Swedish interviews they were translated to English which increased the risk of misinterpretations. This risk has however been eliminated by the responder reading and approving the final compilation of the interview.

As a final part of the Final study external experts were interviewed to validate the findings from the interviews with the Swedish Trade Council local offices and to reduce the impact of subjectivity. The Ministry for Foreign Affairs was chosen as the external expert. However the Swedish Trade Council and the Ministry for Foreign Affairs are linked through the Swedish government being the owner of both organisations. Hence, the Ministry for Foreign Affairs may not be as external as the authors intended. Another aspect to consider is that lack of logistical competence of the interviewed persons. However, we still consider that the Ministry for Foreign Affairs has outstanding knowledge of countries and economies around the world and their input is therefore valuable.

Closeness to other major markets index is constituted by measuring the distance to the three largest markets within the region (measured by countries Gross Domestic Product, GDP). If the three countries' GDP are much larger compared to other countries in the region the index is very precise. On the other hand, if many countries in a region have almost the same GDP, the measurement is not as specific.

Still, it measures the closeness to the biggest markets but the weight of the index maybe have been lower since there are other relative large markets not taken into consideration.

Another aspect to consider is the establishment of the AHP model. The chosen criteria for the AHP model have been selected on the basis of eight surveys with Logistical Managers. The result was also very scattered, which would indicate that more surveys might have provided additional reliability to the study. Furthermore, seven out of eight of the different criteria have been measured through indexes from secondary sources. Although the data comes from very reliable sources, maybe there are better ways to measure some of the criteria.

3.7 Key learning from Method

- A system approach has been chosen as the scientific methodology and both quantitative and qualitative methods have been used.
- The abductive method has been used by conducting an Initial study followed by an Initial analysis. New empirics have been gathered in the Final study that leads to a second and Final analysis.
- In the Initial study a survey was made and handed out to eight representatives at companies in the biggest exporting Swedish industries. In the Final study 13 interviews were held with the Swedish Trade Council's local offices. To compliment and validate the result five regional experts were then interviewed at the Ministry for Foreign Affairs.

4 Initial study

The Initial study includes choosing and ranking the criteria. Thereafter, the indexes that the countries are being scored and weighted by are presented in this chapter.

4.1 Choosing criteria

Based on the following three sources from the Framework in chapter 2 the criteria have been selected;

1. Facility network analysis
2. Commercial aspects of facility location
3. Global aspects of successful trade

As some of the criteria from the three sources are overlapping they have been merged in to one criterion. The resulting 37 different criteria are listed in Appendix 2. The criteria being not applicable (n/a) for the study have been eliminated. They are considered to be unsuitable when making localisation decisions on a country basis. This depends on that they are company specific or depending on an exact location in a country. The criteria that are not applicable are illustrated in Appendix 3 and the reasons for them not being applicable.

Presented below are the 21 qualified non-company specific criteria to be applied when locating a logistical hub on a country basis;

Finding optimal logistical hubs for Swedish export

- Current demand (measured by GDP)
 - Closeness to other major markets
 - Labour (how likely to employ)
 - Taxes and tariffs
 - Economic incentives (tax incentives and low-interest economic development loans)
 - Location costs (rent etc.)
 - Availability and quality of infrastructure (transport and communications)
 - Logistical competences (quality and availability of logistics services)
 - Border administration (efficiency of customs, import, and export procedures)
 - Logistical cost (country based)
 - Ability to track and trace consignments/goods
 - Frequency of on time shipments
 - Availability and quality of Information and Communication Technology
 - Regulatory environment (laws etc.)
 - Physical security (crime etc.)
 - Trade agreements and economic unions (EU, WTO etc.)
 - Terms of trade (methods of undertaking business, business procedures)
 - Human rights (protection and avoidance of abuses)
 - Taking environmental responsibility (support for precautionary steps, supporting development and diffusion of environmentally friendly technologies etc.)
 - Corruption (bribery, extortion etc.)
 - Culture (languages, context, task orientation and time, power and information flow)
-
- The diagram uses three large curly brackets on the right side to group the list items into three categories:
- Facility network analysis**: Includes the first four items (Current demand, Closeness to other major markets, Labour, Taxes and tariffs).
 - Commercial aspects of successful trade**: Includes items 5 through 10 (Economic incentives, Location costs, Availability and quality of infrastructure, Logistical competences, Border administration, Logistical cost).
 - Global aspects of successful trade**: Includes items 11 through 20 (Ability to track and trace consignments/goods, Frequency of on time shipments, Availability and quality of Information and Communication Technology, Regulatory environment, Physical security, Trade agreements and economic unions, Terms of trade, Human rights, Taking environmental responsibility, Corruption, Culture).

4.2 Ranking the criteria

With a mission from the Swedish Trade Council, the Statistics Sweden has done a compilation of Swedish trade in 2008. The five major Swedish exporting industries are (as percentage of the total export value);⁷⁴

- Mineral and energy industry (19 %)
- Engineering products industry (16 %)
- Transportation industry (13 %)
- Electrical and telecommunication industry (13 %)
- Chemical products industry (11 %)

This division of the industries are according to Standard International Trade Classification (SITC) used by the Statistics Sweden for statistics arrangement⁷⁵. In Appendix 4 the division of the industries are presented. The Mineral and energy industry has been excluded from the study due to the fact that its logistics is mainly constituted by bulk shipments and is bound to certain unique ports and infrastructure⁷⁶.

Within the selected companies a person responsible for the company's logistics area has been contacted. The company representatives have been provided with the criteria and examples to prevent misunderstandings or different interpretations. They were asked to rank the criteria from 1 to 21 based on how important the criteria should be when choosing location of a logistical hub, 1 being the most important criteria. In Appendix 5 the ranking from Logistical Managers is presented. This is done to be able to get a reasonable amount of criteria to further use in the AHP. In Table 2 the summarized result from the ranking is represented. The criterion with the lowest score is the most important criterion.

⁷⁴ Swedish Trade Council, homepage (2010-02-16)

⁷⁵ Statistiska centralbyrån, homepage (2010-03-01)

⁷⁶ LKAB, homepage (2010-02-19)

	Sum:	Rank:
Closeness to other major markets	21	1
Logistical competence	48	2
Border administration	50	3
Availability and quality of Infrastructure	53	4
Corruption	66	5
Human rights	66	6
Logistical cost	67	7
Frequency of on time shipments	70	8
Availability and quality of Information and Communication Technology	88	9
Location costs	93	10
Ability to track and trace consignments	94	11
Physical security	96	12
Trade agreements and economic unions	101	13
Current demand	107	14
Taxes and tariffs	108	15
Taking environmental responsibility	112	16
Culture	117	17
Terms of trade	117	18
Economic incentives	121	19
Labour	126	20
Regulatory environment	127	21

Table 2 - Results from ranking

As there is a gap between Frequency of on time shipments, with a sum of 70, and Availability and quality of Information and Communication Technology, with 88, the top eight ranked criteria have been chosen for the Final study.

There is a risk that the criteria that should have been ranked in the top are not since the criteria usually functions well. This means that if a company normally does not have issues with for example physical security or the regulatory environment they might not regard these as important criteria. However, an extremely low physical

security or a regulatory environment that hinder establishments of companies could possibly make it difficult to place a logistical hub in the country.

4.3 Scoring and weighting the countries

In order to construct the AHP model, each country must receive a score regarding the eight criteria. This score is used to weight the countries against each other, comparing their importance to the other criteria, displaying which countries that best fulfil the specified criteria.

4.3.1 Global indexes

The data has mainly been collected through the global indexes, LPI and ETI, used to score five out of eight criteria (Availability and quality of Infrastructure, Border administration, Frequency of on time shipments, Logistical competence, and Logistical cost). As a part of the AHP, the countries' scores have been pair wise weighted against each other, giving a total weight per country for each criterion. Although the indexes is not scored from 1-9 as the AHP suggests, it does not constitute a problem. The scores can easily be scaled up to 1-9 scale and thus used in the AHP model.

In the case of Availability and quality of Infrastructure and Border administration, there are indexes from both LPI and ETI. Hence, these criteria have been pair wise weighted for each index and the average weight for the two indexes has been used. The criteria score for each country is to be found in Appendix 6.

4.3.2 Corruption

To measure the degree of corruption in each country and receive a score for the AHP model, the Corruption Perceptions Index was used. The index describes the perceived corruption of the public sector in each country. The index is measured during 2009 and is to be viewed as a snapshot of current corruption rather than a measurement of progress over time. The index has been used to score the corruption criterion and is to be seen in Appendix 7.⁷⁷

4.3.3 Human Rights

Another important criterion is the Human rights criterion, which also has to be scored in order to be used in the AHP model. The score has been gathered from the Global Peace Index, where the human rights constitute a part of this index. The Human rights index is based on an analysis of the Amnesty International Yearbook,

⁷⁷Transparency International, homepage (2010-03-09)

measuring the level of terror in each country. The index is based on data gathered during 2006 and is rated from a country under secure law where people are not imprisoned for their views to imprisonment for political activity is very extensive. The index has been used to score the Human rights criterion and is to be viewed in Appendix 8.⁷⁸ As the AHP implies, the different countries were pair wise weighted in order to receive a final weighting for all countries.

4.3.4 Closeness to other major markets

The final criterion is the Closeness to other major markets from each countries perspective. As there is no index of closeness to other major markets a method to measure this criterion was made. Information about the GDP has been gathered from International Monetary Fund⁷⁹ (IMF) regarding all countries. As the GDP does not tell how easy the market is to access the distance to the markets with the highest trade was a suggestion. However, trade is not a measure of how big the market is and as the criterion is to measure how close the country is to other major markets GDP was decided as the most accurate measurement.

With information about the GDP it is possible to rank the countries within each geographical area, resulting in a list of the largest markets per region from a country perspective, displayed in Table 3.

Region	Americas	Africa	Asia	Middle East
Largest markets	United States	South Africa	Japan	Saudi Arabia
	Brazil	Nigeria	China	Iran
	Canada	Algeria	India	United Arab Emirates

Table 3 – The largest markets per region based on GDP

The next step is to take the distances from each country to the three largest markets into consideration. The Center d’etudes Prospectives et d’informations Internationals (CEPII) is a French research centre within international economies. The CEPII have built a database regarding geographical and distance information, thereby providing the geographical location of the capital in over 200 countries. By using spherical coordinates from each country’s capital the distance between the capitals concerned have been measured and compiled in the database. In most cases, the capital equals the economic centre in the country.⁸⁰ In the case of Taiwan,

⁷⁸ Vision of Humanity, homepage (2010-03-09)

⁷⁹ International Monetary Fund, homepage (2010-03-09)

⁸⁰ CEPII, homepage (2010-03-10)

there is missing data on geographical positioning and distance to other cities. Therefore, to calculate the distance from Taiwan to the major markets, localization calculating programs has been used, designed to look up distances between different cities.⁸¹

When one of the three countries with the highest GDP is to be graded the country's size is taken into consideration in the CEPII database. This means that the distance from the country to itself has a certain value. This does however create issues when comparing large countries and does not take the advantage of being located in a country with a large market into consideration. The distance from a country to itself has therefore been changed to 0 kilometres.

Calculations of the index have been done by indexing the distance to the three major markets. These indexes has been weighted regarding how large the market is relative the two others, which results in a weighted index that measures the closeness to other major markets. The detailed description of the how to calculate the index, used distance data, GDP, and the total index are to be seen in Appendix 9.

4.4 Key learning from Initial study

- There are 21 non-company specific criteria to be applied when locating a logistical hub on a country basis.
- Eight Logistical Managers, representing companies in the biggest Swedish exporting industries, ranked these 21 criteria. The eight highest ranked criteria was; Closeness to other major markets, Logistical competence, Border administration, Availability and quality of Infrastructure, Corruption, Human rights, Logistical cost, and Frequency of on time shipments.
- To be able to analyze the countries based on these eight criteria by using the Analytical Hierarchy Process model, each country must receive a score regarding the eight criteria. Data of Availability and quality of Infrastructure, Border administration, Frequency of on time shipments, Logistical competence, and Logistical cost was collected by Logistical Performance Index and Enabling Trade Index. To measure the degree of corruption in each country the Corruption Perceptions Index was used. For Human rights the Global Pease Index based on the Amnesty International Yearbook was applied. As there is no Closeness to other major markets index a method to measure this criterion was made.

⁸¹ Mapcrow, homepage (2010-03-10)

5 Initial analysis

In this chapter, the weighting of the criteria is presented followed by the results of the weighting. The weighting is then being analysed before establishing the AHP matrix that results in the entire score and ranking of the countries in the four regions.

5.1 Weighting the criteria

As the AHP method implies, the next step in the study is for the criteria to be pair wise weighted. The Logistical Managers were asked to pair wise weight the eight criteria, which means that each criterion is to be compared with the other seven criteria adding up to a total of 28 weightings. For each comparison the respondent is to grade criteria on a 1-9 scale. In this scale 1 is Equally Preferred, 3 equals Moderately Preferred, 5 is Strongly Preferred, 7 Very Strongly Preferred, and finally 9 is Extremely Preferred. For example the respondent was asked to weight Corruption against Human rights. If Corruption is perceived as a little bit more important than Human rights the answer should be 3 on the scale. Though, if Human rights are considered to be a little bit more important than Corruption the answer should be 1 divided by the scale number, 1/3. To not make the questionnaire too complex the Logistical Managers were only presented with a scale described with words with each criterion in each end of the scale and Equally Preferred in the middle.

5.2 The result of the weighting

The ranking of the criteria changed after the responders' pair wise weighted the criteria. In Figure 12 the result and final ranking of the criteria and their weight are presented and compared to the initial ranking done by the Logistical Managers.

Final ranking	Weight	First ranking
Human rights	0,169	Closeness to other major markets
Corruption	0,16	Logistical competence
Closeness to other major markets	0,153	Border administration
Logistical cost	0,127	Availability and quality of Infrastructure
Logistical competence	0,117	Corruption
Availability and quality of Infrastructure	0,114	Human rights
Frequency of on time shipments	0,0864	Logistical cost
Border administration	0,075	Frequency of on time shipments

Figure 12 - The final ranking and weighting of the criteria compared to the initial ranking

This weighting results in Human rights having the most impact on the countries whereas Border administration will have the least.

5.3 Analyzing the weighting

The weighting of criteria done by the representatives from leading exporting Swedish companies resulted in very varying, scattered answers. In fact, on none of the pair wise weighting the responders entirely agreed on whether one criterion is more important than the other or not. To be able to analyse the answers a guideline was established to highlight the criteria with scattered weightings. Out of the eight answers (companies) on each comparison between two criteria, the most irregular answer is to be considered as an exception. Out of the seven remaining answers, a criterion is considered varying if these seven answers are outside the interval of four neighbouring numbers. An illustration of this guideline is shown in Figure 13. To further explain the guideline an example is used: a criterion is weighted by the Logistical Managers as 7, 1/5, 1/3, 3, 1/5, 3, 5, and 1/5. The most irregular weighting 7, will be removed and considered as an exception. The remaining numbers are from 1/5 to 5, an interval too wide (1/5 to 3 or 1/3 to 5 would be accepted) and hence the answers on this weighting are considered scattered.

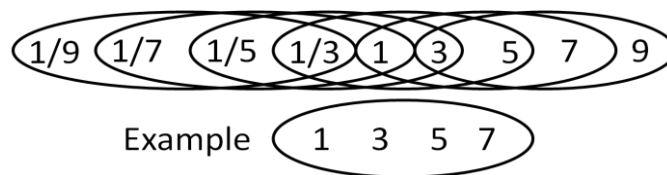


Figure 13 - Categorization of agreed weighting of criterion

The entire result of the guideline used to analyse the weighting can be seen in Appendix 10. The summarised result out of seven weightings per criteria is;

- 5 scattered weightings= Corruption
- 4 scattered weightings= Border administration
- 3 scattered weightings= Availability and quality of Infrastructure
- 2 scattered weightings= Frequency of on time shipments, Logistical cost, and Logistical competence
- 1 scattered weighting= Closeness to other major markets, Human rights

It is clear that the criterion Corruption is considered differently in different companies. In dialogues with the responding companies some of them stated that

their company clearly disaffiliate from corruption and simply would not enter a market with high corruption.

5.4 Establishment of the AHP matrix

Based on the surveys collected from the Logistical Managers, the different criteria have been given a weighting, representing their relative importance when compared to the other criteria. This is a central part of the AHP model, taking qualitative judgments and putting them in the AHP matrix. To provide a final result of suitable countries, the countries in each region are weighted regarding how well they correspond to each criterion. The weightings for each country and the weighting for the criteria are multiplied and compiled in Appendix 11, resulting in a matrix with the total weight for each country. By multiplying the weightings a final country ranking is established, displaying the most suitable countries. By ranking from the largest weight value to the smallest, a country ranking is established, providing the most suitable countries by region to place logistics hubs in. In Figure 14 the result is presented. The three top ranked countries will be studied further through interviews with local offices within the Swedish Trade Council. The reason for choosing three countries per region is due to the time restriction and is suitable for the extent of the project.

Africa		Americas		South East Asia and East Asia		Middle East	
1 South Africa	0,0545	1 Canada	0,0999	1 Japan	0,1372	1 United Arab Emirates	0,1386
2 Tunisia	0,0436	2 United States	0,0867	2 Singapore	0,1369	2 Bahrain	0,1126
3 Namibia	0,0387	3 Chile	0,0526	3 Taiwan	0,1077	3 Qatar	0,1112
4 Madagascar	0,0364	4 Panama	0,0526	4 Hong Kong SAR	0,1071	4 Oman	0,1011
5 Egypt	0,0344	5 Uruguay	0,0513	5 South Korea	0,0984	5 Kuwait	0,0932
6 Senegal	0,0340	6 Costa Rica	0,0512	6 China	0,0774	6 Saudi Arabia	0,0871
7 Ghana	0,0321	7 Argentina	0,0386	7 Malaysia	0,0673	7 Israel	0,0869
8 Congo (Brazzaville)	0,0311	8 Peru	0,0368	8 Thailand	0,0473	8 Lebanon	0,0721
9 Tanzania	0,0310	9 Brazil	0,0360	9 Vietnam	0,0471	9 Jordan	0,0631
10 Cameroon	0,0299	10 Mexico	0,0357	10 Philippines	0,0440	10 Syria	0,0446
11 Nigeria	0,0284	11 Nicaragua	0,0335	11 India	0,0406	11 Iran	0,0421
12 Guinea	0,0280	12 Dominican Republic	0,0330	12 Indonesia	0,0337	12 Yemen	0,0348
13 Algeria	0,0246	13 Haiti	0,0299	13 Cambodia	0,0276	13 Iraq	0,0314
14 Mozambique	0,0246	14 El Salvador	0,0291				
15 Kenya	0,0244	15 Jamaica	0,0281				
16 Libya	0,0235	16 Colombia	0,0279				
17 Gabon	0,0219	17 Guatemala	0,0276				
18 Angola	0,0206	18 Honduras	0,0276				
19 Sudan	0,0167	19 Ecuador	0,0272				
		20 Venezuela	0,0268				
		21 Guyana	0,0266				

Figure 14 - The result of the Initial analysis

5.5 Analysing the result

Within the region of South East and East Asia there is a major difference in the Human rights index regarding China, Hong Kong and Taiwan. Taiwan has been rated

independently in the index whereas Hong Kong has been given the same score as China. Hong Kong should have been rated independently and hence would have been ranked higher in the entire compilation from the AHP. Hence both Taiwan and Hong Kong will be studied further in the Final study.

When studying the African region, the score is quite even. It is thus difficult to say if Namibia is that much better than countries such as Madagascar, Egypt, or Senegal. South Africa and Tunisia receives a much higher final weighting, making them stand out compared to the rest of Africa. The fact that the African region delivers such an even result after South Africa and Tunisia would indicate that the countries are very evenly developed or there is insufficient knowledge of Africa from the indexes. Nevertheless, Namibia, South Africa and Tunisia are the countries that are being studied further. If additional countries would be added, there would have to be made several interviews due to the evenness in the ranking.

In the case of Americas the result is very even behind Canada and United States of America (USA) with Chile, Panama, Uruguay, and Costa Rica on pretty much the same score. Especially Chile and Panama are close with an identical score according to Figure 14. Chile has a slightly higher score which is not visible due the fact that the scores have been rounded off. Hence all countries should have been analysed further but due to the restricted time limit this was not possible. The matter was discussed with Henrik Danielsson at the Swedish Trade Council and the decision was made to focus on the top three countries of Americas. Hence, Canada, USA, and Chile are studied in the Final study.

5.6 Key learning from Initial analysis

- The eight Logistical Managers weighted the top eight ranked criteria pair wise. This resulted in a changed ranking compared to the first ranking in the Initial study. The final ranking was; Human rights, Corruption, Closeness to other major markets, Logistical cost, Logistical competence, Availability and quality of Infrastructure, Frequency of on time shipments, and Border administration.
- The weighting among the Logistical Managers was scattered, especially the opinion regarding the importance of the Corruption criterion which was considered differently in different companies.
- The countries in each region were weighted regarding how well they correspond to each criterion. In the Analytical Hierarchy Process method the

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weighting for each country and the weighting, by the Logistical Managers, of the criteria were multiplied resulting in a total weight for each country.

- The top ranked countries that will be studied further in the Final study are; South Africa, Tunisia, and Namibia in Africa and Canada, United States, and Chile in Americas. In South East and East Asia the countries with the highest scores is Japan, Singapore, Taiwan, and Hong Kong. In the final region, Middle East, the top ranked countries is United Arab Emirates, Bahrain, and Qatar.

6 Final study

The top ranked countries from the Initial analysis are furthered studied in this chapter. Commissioners and Project Leaders from the Swedish Trade Council's local offices have been interviewed. For each region an interview has also been held with a regional expert at the Ministry for Foreign Affairs.

6.1 Interviews at Swedish Trade Council and Ministry for Foreign Affairs

After establishing the countries with the highest scores per region from the Initial analysis the next step in the study was to further evaluate the countries as locations for logistical hubs. This was done through interviews with the Swedish Trade Council local offices in each country. In Middle East the same representative was interviewed for Bahrain, Qatar, and United Arab Emirates as the office in Dubai function as a local office for all three countries. The questions asked in the interviews were based on the 21 criteria developed in Initial study. In Appendix 12 the questions are presented.

After conducting the interviews at the Swedish Trade Council complimenting and verifying interview were held with five regional experts at the Ministry for Foreign Affairs. The questions asked at the interview can be seen in Appendix 13.

6.1.1 Africa

6.1.1.1 Namibia

6.1.1.1.1 Namibia's position in Africa

When asked about Namibia's relations with the main countries that Namibia exports to, Rebecca Lilliebjelke, Country Manager of Swedish Trade Council in Namibia, replies that there is an especially long history and relation with South Africa. This relates back to the fact that Namibia earlier was under South Africa rule but now is an independent country. This means that there are strong relations, both politically and economically with well-established trade.⁸²

The buying power in Namibia is relatively high but the country has a small population of inhabitants with approximately 2.1 million people, decreasing the total

⁸² Rebecca Lilliebjelke, 2010-03-25

impact of the economy. Although, Namibia has a relatively high GDP within the region.⁸³

Namibia is a member of SADC (Southern Africa Development Community), where there is continuous reduction of different trade obstacles and tariffs⁸⁴. The vision with SADC is a common future of Southern Africa within a regional community that will improve the standards of living, economic well-being, and quality of life. The member states of SADC are; Angola, Botswana, the Democratic Republic of Congo, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, Swaziland, United Republic of Tanzania, Zambia and Zimbabwe.⁸⁵ Further benefits with the SADC are the possibility of having one entry of the goods through customs. When the goods have been imported to the SADC region, it can be moved freely without being declared. Furthermore, Namibia also has trade agreements with the EU, within the EPA (Economic Partnership Agreement).⁸⁶

6.1.1.1.2 Doing business in Namibia

The business culture in Namibia is open-minded towards the global market. When doing business in Namibia, the approach is formal and very much alike the culture in South Africa, due to their common history. Since Namibia is a relatively small market, it is important to build networks and establishing contacts. The crime rate is considered as low compared to the region, making Namibia more attractive to establish business in. The corruption rate is also relatively low and the consideration to human right is according to Ms. Lilliebjelke assumed to be high.⁸⁷

There are Export Processing Zones, enabling some exceptions regarding export tax, corporate tax, and transfer duties. The requirement in order to acquire these benefits is to establish the production of goods in Namibia.⁸⁸

Generally, there is high quality of the infrastructure and the information and communication technology in Namibia. Ms. Lilliebjelke estimates that the logistical competence in the country is good, with several of the larger international transport companies present in Namibia. The location cost in Namibia is on the same level as in South Africa. There is high unemployment rate in Namibia and the education level

⁸³ Rebecca Lilliebjelke, 2010-03-25

⁸⁴ Ibid.

⁸⁵ Southern African Development Community, homepage (2010-03-24)

⁸⁶ Rebecca Lilliebjelke, 2010-03-25

⁸⁷ Ibid.

⁸⁸ Ibid.

on higher education is low but the workforce is considered as reliable and hard working.⁸⁹

The shipped volumes to Namibia are increasing and Namibia is getting a more important role supplying other countries in Central Africa. The major port, Port of Walvis Bay, is considered as well working and able to receive many shipments.⁹⁰

According to Ms. Lilliebjelke Namibia is increasing its importance as a logistical hub and supplying parts of Central Africa through established transport corridors. These transport corridors are present within the SADC region and enable transport through road and, to some extent, rail. There are three essential corridors and the countries involved make investments to enhance the roads and railways. The trade corridors are directed north, east, and south.⁹¹

6.1.1.2 South Africa

6.1.1.2.1 South Africa's position in Africa

According to Jan Kettner, Trade Commissioner at the Swedish Trade Council in South Africa and Manager for Southern Africa, South Africa has good relations with Mozambique, Congo (Kinshasa), and Nigeria which the country exports the most to. Mr. Kettner stated that there cannot be a comparison between North Africa and Sub-Saharan Africa. This is due to the physical distance between the countries and the extreme difference between them when it comes to their structure, history, and political system. Hence Mr. Kettner thinks that North Africa should not be included in a general analysis of Africa.⁹²

South Africa is, and has been for long, the richest country in Africa and has the highest market development. The country stands for approximately 40 % of the GDP in Sub-Sahara. South Africa is a part of SADC, a collaboration that further the growth of South Africa.⁹³

6.1.1.2.2 Doing business in South Africa

The border administration in South Africa is well functioning. In South Africa taxes and tariffs through customs are an important income for the state which results in

⁸⁹ Jan Kettner, 2010-03-23

⁹⁰ Ibid.

⁹¹ Ibid.

⁹² Ibid.

⁹³ Ibid.

South Africa not being in any other big free trade agreements other than SADC. The regulatory in the customs is consistent, however through the process of SADC taxes and tariffs are being lowered and through negotiations with EU and WTO the regulatory is changing.⁹⁴

The infrastructure and the information and communication technology in South Africa are very good relative the region. The logistical competence is high in the country and the price level for logistical services is average. South Africa is a very heterogeneous country and society with an extreme diversity in wealth, in the structure of the industry, and competence. Companies should be aware of this when doing business in the country. Primarily due to the country's history, labour market and workplace conflicts are not uncommon. It is hard to find competent employees and the right people for a job. In the country there is a system called Black Economic Empowerment (BEE) with the objective to reduce the differences that Apartheid created. This means that companies need to spend both time and money to understand and follow the regulatory of the BEE system when doing business in South Africa. The general regulatory in the country does however function better with a higher quality compared to other countries in the region.⁹⁵

Because of South Africa's history, as a former British colony, the culture of how to do business follows British culture. Especially the regulatory business system is almost identical with the British. In the country there are different economic incentives such as reduced taxes and different contributions for competence development of employees. The frequency of on time shipments is according to Mr. Kettmaker very good in South Africa and there are good possibilities to track and trace goods. The physical security in the country is low as the level of crime is high. This means that it is more expensive doing business in South Africa because of the need of alarm and lifeguards to be safe.⁹⁶

6.1.1.3 Tunisia

6.1.1.3.1 Tunisia's position in Africa

Tunisia's top export nations are Libya, Algeria and Morocco⁹⁷. According to Robert Wentrup, Area Manager of North Africa at the Swedish Trade Council in Tunisia, has

⁹⁴ Jan Kettmaker, 2010-03-23

⁹⁵ Ibid.

⁹⁶ Ibid.

⁹⁷ United Nations Commodity Trade Statistics Database, homepage (2010-03-16)

good relations with all the countries, both politically and economically, and is often considered as the region's most diplomatic country. Tunisia has a small population within the region with approximately 10 million people. The country has a, for the region, high GDP per capita and a substantial middle class with good purchasing power. Tunisia is one of most competitive countries in Africa. Still, the wages are much lower than compared to Europe.⁹⁸

The most important trade agreement for Tunisia is the Association Agreement with EU that allows low tariffs and taxes. Tunisia has come very far in its negotiations with EU regarding trade and has the lowest taxes and tariffs in North Africa. The Great Arab Free Trade Area is another agreement that Tunisia is a part which focuses on trade with Arab countries.⁹⁹

6.1.1.3.2 Doing business in Tunisia

The customs handling in Tunisia is quite complicated with much paper work. In case of missing papers the shipment is often refused entry to the country. However, it is less complex than many surrounding countries, e.g. Algeria. There is a big difference between importing the goods into Tunisia and using the Free Trade Zones (FTZ), where the processes are much smoother. It is easier when a company has established itself in the country; there might be difficulties in the beginning when starting up a business.

The general infrastructure in Tunisia is very good with good roads and communications technology and is estimated to be among the top three in Africa regarding technical development. Although good conditions in terms of communicating information, there could be a control of the information flow by the government. This does not necessarily affect the business in the country but should be considered if the business is politically sensitive.¹⁰⁰

The cost of logistical services is generally lower in Tunisia than in the rest of Northern Africa. The workforce in Tunisia is well educated and competent when comparing with the region, resulting in the establishment of many call-centres and manufacturing plants. There are several economic incentives when establishing

⁹⁸ Robert Wentrup, 2010-03-16

⁹⁹ Ibid.

¹⁰⁰ Ibid.

business in Tunisia, for example tax-reductions within the FTZ and incentives when establishing export centres and manufacturing plants.¹⁰¹

When doing business in Tunisia it is very important with networks and personal relations. Business must be made on-site and cannot be conducted remotely. References are significant and having contacts within influential families in Tunisia is important as a few powerful Tunisian families own most of the Tunisian Industry. This is not unique for Tunisia; this pattern prevails in the entire Arabic region. There are, however certain rules that apply when establishing business in Tunisia. For example, a certain percentage of the capital of the company must be Tunisian. Depending on the type of business, this may differ from 30 to 50 %. These rules do not apply within the FTZ.¹⁰²

According to Mr. Wentrup, Tunisia is regarded as a very safe country. The crime rate, which is low, does not affect the possibility of doing business in Tunisia. Corruption in Tunisia exists; some business decisions could require payments making it a rather large issue. The strong concentrations of political and economical power, e.g. few influential families are dominating both business and politics is making it difficult to get a high level of business conduct in Tunisia.¹⁰³

Mr. Wentrup mentions that the country has gotten criticism for their human rights in media the last couple of years. Tunisia is working on the environmental concern but still has a long way to go, especially when comparing with countries in EU.¹⁰⁴

6.1.1.4 Africa Department of Ministry for Foreign Affairs

Britt-Marie Hartvig, Deputy Director of Africa Department at the Ministry for Foreign Affairs, was interviewed regarding Sub-Saharan Africa. At the Ministry for Foreign Affairs Sub-Sahara Africa and North Africa is divided, with North Africa being a part of the Middle East and North Africa Department of Ministry for Foreign Affairs. Hence Ms. Hartvig was only interviewed about Namibia's and South Africa's suitability.¹⁰⁵

South Africa and Namibia both have very good relations with EU although South Africa has more relations and wider cooperation due to the size of its economy. The

¹⁰¹ Robert Wentrup, 2010-03-16

¹⁰² Ibid.

¹⁰³ Ibid.

¹⁰⁴ Ibid.

¹⁰⁵ Britt-Marie Hartvig, 2010-04-20

relations with other countries in the region differ somewhat between the two countries. Ms. Hartvig explains that it might be easier to approach some African countries from a company based in Sweden rather than from a company based in South Africa, due to interregional relations. In terms of trade, South Africa has a trade agreement with EU, which would imply that the regulatory regarding customs handling is easier. An EPA-agreement is expected to be negotiated soon with Namibia, which will facilitate trade further.¹⁰⁶

The roads in Namibia are in good condition although the road system is not quite as developed as in South Africa. The frequency of air shipments is higher in South Africa compared to Namibia. Regarding the workforce, both countries have problems finding skilled labor, for example mechanics. This problem is a slightly bigger issue in Namibia than in South Africa due to the difference in population and development of the two countries. In South Africa, the BEE-system creates some restrictions that matters much when dealing with governmental procurement. The fact that South Africa is a somewhat heterogeneous country, does not affect particularly much in terms of attracting business establishment according to Ms. Hartvig.¹⁰⁷

The crime rate in South Africa is generally higher compared to Namibia. There might be an advantage of establishing in Namibia since South Africa otherwise is the obvious choice for many companies. The possibility of attracting governmental attention is thus higher and negotiations of terms and conditions for investments might be easier. On the other hand, South Africa is a more developed country and has other obvious benefits, such as access to services and more developed government structures. Another benefit of Namibia is the closeness to Angola, a country that is expanding its economy rapidly.¹⁰⁸

6.1.2 Americas

6.1.2.1 Canada

6.1.2.1.1 Canada's position in Americas

USA, Mexico and Brazil are the top countries that Canada exports to¹⁰⁹. When asked about Canada's relations with these countries, Magnus Andersson, Trade Commissioner at the Swedish Trade Council in Canada, replies that the major part of

¹⁰⁶ Britt-Marie Hartvig, 2010-04-20

¹⁰⁷ Ibid.

¹⁰⁸ Ibid.

¹⁰⁹ United Nations Commodity Trade Statistics Database, homepage (2010-03-16)

Canada's export goes to USA. Canada is also a part of North American Free Trade Agreement (NAFTA) together with Mexico and USA thus having good relations with Mexico as well. There have been some difficulties when importing from Brazil to Canada in some cases but it is hard to generalize from this.¹¹⁰

The buying power in Canada is regarded as very strong and Canada has managed well through the financial crisis.¹¹¹

6.1.2.1.2 Doing Business in Canada

The customs handling in Canada is considered as good although Canada in general requires much paper work. The customs regulation is considered as standardized and does not change suddenly. To increase the easiness of trade there are bonded warehouses in Canada, meaning that the duty and taxes of the goods does not have to be paid. The goods can be shipped to for example USA without paying taxes in both Canada and USA. Instead, taxes are paid in USA only.¹¹²

The quality and availability of the infrastructure is considered as very good in Canada, especially the road network is well developed. Canada has good logistical possibilities and the requirements of the logistical services and demands are high with short delivery time and good service. The frequency of on time shipments is high, both by sea and air and the ability to track and trace goods is good.¹¹³

The workforce in Canada is well educated and supplies high quality at a low cost. There are many other incentives for establishing business in Canada. Especially the area of Research & Development is supported by economic incentives with reduced taxes or remitted land. As long as there are job opportunities involved some type of incentives are offered in Canada.¹¹⁴

According to Mr. Andersson a typical Canadian is a mix of American and British. The business culture in Canada is also similar to the culture in Sweden. The regulatory in Canada is made up from British foundation.¹¹⁵

¹¹⁰ Magnus Andersson, 2010-03-23

¹¹¹ Ibid.

¹¹² Ibid.

¹¹³ Ibid.

¹¹⁴ Ibid.

¹¹⁵ Ibid.

The physical security in Canada is very good and the crime rate low, lower than USA. The degree of corruption is very low in Canada and does not affect the possibility of doing business.¹¹⁶

6.1.2.2 Chile

6.1.2.2.1 Chile's position in Americas

USA, Brazil and Mexico are the countries that Chile exports most to¹¹⁷. Fredrik Udd, Trade Commissioner in Chile at the Swedish Trade Council, describe Chile's relations with these countries as very good. Canada, a major market in Americas, also has solid relations with Chile. These countries all have free trade agreements with Chile and therefore the trade works well. Chile is to be considered as a very trade friendly country with good relations towards many countries. The country is not part of any specific trade unions but acts independently and has trade agreements with the most countries compared to any other country in the world. Chile is also the first country in Latin America to join OECD (Organisation for Economic Co-operation and Development).¹¹⁸

Chile is an emerging market with the highest GDP per capita in Latin America and is one of the most mature countries in this region. The annual growth of the GDP has been between 3.5 – 6 % during most of the last ten years. The purchasing power is relative strong with a quite large and wide middle class.¹¹⁹

6.1.2.2.2 Doing business in Chile

The customs handling in Chile is very open and transparent with a distinct focus on an open trade. However, the processes are somewhat bureaucratic with much paper work, which may require time consuming preparations in particular the first time a product is imported. When comparing with other countries in Latin America, Chile is better and more efficient. The processes are less time consuming if comparing with the Latin American region, especially when the trade process is well established. The regulatory regarding customs is relative consistent. The taxes and tariffs are very low, in most cases 0 % import tariff and an average import tariff below 1 %. To export products within Chile's free trade agreements the product must have Chile as

¹¹⁶ Magnus Andersson, 2010-03-23

¹¹⁷ United Nations Commodity Trade Statistics Database, homepage (2010-03-16)

¹¹⁸ Fredrik Udd, 2010-04-06

¹¹⁹ Ibid.

land of origin. In order for a product to have Chile as land of origin a value-adding activity must take place in the country.¹²⁰

The availability and quality of infrastructure is to be considered as both good and poor. Chile is a very oblong country with logistical challenges. The infrastructure around Santiago is good with good main roads but the road network around the country is often in poor condition. The Andes also constitute a difficult barrier when trying to transport by road to neighbouring countries. The quality of information and communication technology is good in densely built up areas whereas it may be less good on the countryside.¹²¹

The logistical competence is according Mr. Udd working well, with many of the major transport companies present and the frequency of on time shipments to Chile is high. The cost of transporting goods is generally high from an international perspective. There are different incentives to attract business to Chile, one them being the free trade agreements that are established with many countries. There is also a fund that support and help business economically when establishing in Chile.¹²²

The way of doing business in Chile reminds much of southern Europe, with the same type of business culture. This means that it is formal, hierarchic and a bit more flexible when it comes attending meetings on time. Social relations are important and getting to know the counterpart. In general the labour in Chile is considered as very good, hard-working and competent.¹²³

The regulatory in Chile is transparent and apparent and does not impact the way of doing business. Neither does the physical security in Chile affect business negative, Chile being the safest country in Latin America together with Uruguay. The degree of corruption is low and on the same levels as many west European countries. The human rights are well respected in Chile, especially given Chile's historical background with dictatorship.¹²⁴

In February 2010, a major earthquake hit Chile that shattered much of the infrastructure in southern parts of Chile. The railway will be restored in three to four

¹²⁰ Fredrik Udd, 2010-04-06

¹²¹ Ibid.

¹²² Ibid.

¹²³ Ibid.

¹²⁴ Ibid.

months but the roads and bridges will take at least a year to repair. This will impact the logistics negatively for the next year in southern Chile but thereafter it should be back to normal, at least within the next three years according to Mr. Udd.¹²⁵

6.1.2.3 United States of America

6.1.2.3.1 United States of America's position in Americas

Canada, Mexico and Brazil are the top countries that USA exports to¹²⁶. When asked about USA's relations with these countries, Tomas Norling, Trade Commissioner at the Swedish Trade Council in USA, replies that the relations are good with Mexico and Canada, due to the membership in NAFTA. This implies that the trade is relatively open, especially with Canada. The relations with Brazil have a much more complex dimension, much depending on the complexity of Brazil's import regulations. Apart from NAFTA there are free trade agreements with almost every country in the world, each one with their individual layout. The buying power in USA is very strong and the GDP per capita is among the highest in the world.¹²⁷

6.1.2.3.2 Doing business in the United States of America

USA's trade politics are sometimes considered as protectionist but the handling of goods is relatively easy, with transparent and clear customs. From an administrative perspective, the customs handling is not very complex and does not constitute any major trade barriers. The easiness of import and export procedures differs depending on which countries that are involved. However, Mr. Norling estimates that the customs handling is efficient and non-time consuming if comparing with most Latin American countries. The regulatory of the customs is rather standardized and is not changed very sudden or often.¹²⁸

The quality and availability of the infrastructure is very good, with well-developed roads, rail and airports. The information technology is also considered as very good, especially from a logistics perspective. The logistical competence is to be considered as high in USA with a high frequency of on time domestic transport both by road and air. The price level of logistics services is considered as relatively low, if comparing with for example Sweden, much depending on the well-developed market with a high level of competition. The labour is well educated and it is easy to employ or

¹²⁵ Fredrik Udd, 2010-04-06

¹²⁶ United Nations Commodity Trade Statistics Database, homepage (2010-03-16)

¹²⁷ Tomas Norling, 2010-03-22

¹²⁸ Ibid.

withdraw employment. There are better possibilities of attaining a low-cost workforce if comparing to Europe.¹²⁹

There are many economic incentives when establishing business in USA but this is mainly on state level rather than federal level. This differs from state to state, often with more incentives in the southern states of USA. When doing business in USA it is important to adapt to the local conditions and market demands. Being the world's largest economy, USA has many special standards and regulations that apply for USA only, constituting some problems when bringing Swedish products to USA.¹³⁰

The security in USA is to be considered as good and the level of corruption is also low, not affecting business in a negative way. The human rights are taken into consideration although some states still have death penalty and abortion is prohibited.¹³¹

Additionally, Mr. Norling mentions that it is difficult to treat USA as one nation in this type of country comparisons, since USA is very large from a geographical point-of-view, being twice as large as EU. There is for example a big difference if operating on the west coast or the east coast, depending on which markets/countries that needs to be reached.¹³²

6.1.2.4 Americas Department of Ministry for Foreign Affairs

An interview was held with the Senior Advisers at the Americas Department at the Ministry for Foreign Affairs John-Olof Dahlstein and Anders Wollter. Mr. Dahlstein and Mr. Wollter think that the Americas are too big and diverse to have one single logistical hub in Americas to provide for the entire region. From North America to the southern cone it is as long as it is from Europe to South America. Hence Americas should not be analysed as one single region but rather as North America and South America apart, or even North, Central and South. North America and to some extent Mexico is integrated as a logistical region. Central America is divided from South America in terms of roads. According to the Senior Advisers the three parts of America could be seen as three different entities in logistical terms.¹³³

¹²⁹ Tomas Norling, 2010-03-22

¹³⁰ Ibid.

¹³¹ Ibid.

¹³² Ibid.

¹³³ John-Olof Dahlstein and Anders Wollter, 2010-04-28

The geographical location of Chile is another concern of Mr. Dahlstein and Mr. Wollter if proposed as a regional hub. Chile is an open economy, none-corrupted, and with good internal infrastructure but it is a relatively small economy not bigger than the state Rio de Janeiro in Brazil. Chile could work as a logistical hub for Chile and possibly Peru and Bolivia but not for Brazil or Argentina because of the Andes that has to be crossed to reach the countries. Mr. Dahlstein and Mr. Wollter would rather recommend Brazil as a location of a logistical hub in South America as the country has the second biggest GDP in the Americas after USA and stands for a third of Latin America's GDP and half of South America's. In Central America Panama and Costa Rica are interesting countries for logistical hubs as centrally located strong and open economies with good air connections. As hubs for Americas the location is perfect for air cargo to North America and South America. This is not the case when it comes to road transport as the distances are way too long for transportation by road and the roads going south from Panama are nonexistent. Hence Mr. Dahlstein and Mr. Wollter believes that Canada and USA are interesting countries to analyse as locations for logistical hubs for North America, possibly including Mexico, and that Brazil should be added to the analysis as regards South America together with Chile.¹³⁴

The Senior Advisors are reluctant to simplistically ranking the relations of single countries with the EU. Chile has excellent and broad relations with the EU in virtue of the association agreement that has been fully in force for several years, including a free trade agreement. Brazil and USA are world powers with excellent and intense relations with the EU on all levels, including frequent political consultations. Canada has good relations with the Caribbean including Cuba, and is also proactive in South and Central America.¹³⁵

According to Mr. Wollter Brazil is the country, out of the four, that would be the hardest to import to in terms of customs handling, although the customs authority is relatively well organized. Brazil does not have a sufficiently developed network of railway and an insufficient road system. Chile is challenged by its oblong shape and the Andes. Canada and USA, which are logistically integrated, have very well developed infrastructure, especially USA which is outstanding.¹³⁶

¹³⁴ John-Olof Dahlstein and Anders Wollter, 2010-04-28

¹³⁵ Ibid.

¹³⁶ Ibid.

Well educated and relatively inexpensive qualified workforce is available in Chile and Brazil. Salaries are higher in Canada and USA but the countries have abundant access to very competent labour. The Latin American culture has in many regards more similarities with the European one than the North American, the further the South the more European it gets. The physical security is estimated by Mr. Dahlstein and Mr. Wollter to be the highest in Canada followed by Chile and the lowest in Brazil. As regards corruption, Mr. Dahlstein and Mr. Wollter refer to rankings by Transparency International and emphasise local variations and positive developments in parts of Latin America¹³⁷

6.1.3 Middle East

6.1.3.1 Bahrain

6.1.3.1.1 Bahrain's position in Middle East

Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and United Arab Emirates (UAE) are part of an economic council called Gulf Cooperation Countries (GCC), also called the Gulf State countries. Within the GCC there is a single entry custom policy and they are working towards a single currency. Through the GCC corporation the relationship between all the six countries are very good says Adnan Ahmad, Project Leader at the Swedish Trade Council in Middle East. The GCC have been negotiating free trade agreements with USA and EU for quite many years but so far nothing has been established. The trade agreements are being done by GCC rather than the independent countries that have not been active. Since the countries in GCC are young the custom regulations change quite often and there are certain regulations still being developing.¹³⁸

Bahrain is the smallest island; it covers an area of 620 square kilometres, with only one city, Manama. The general purchasing power in the country it is not as high as it is in UAE, Kuwait, and Qatar but if comparing to all the countries in Middle East it is quiet high. The population is small with approximately 700 000 inhabitants which consists mainly of foreigners. As the local population is so small in Bahrain it is hard to acquire well educated labour and the country relies on expatriates. During the seventies and eighties Bahrain was the place with the highest development in the region and it was, just like Dubai is today, the hub of the Middle East. Bahrain especially has good relations with Saudi Arabia where a lot of trade comes from.

¹³⁷ John-Olof Dahlstein and Anders Wollter, 2010-04-28

¹³⁸ Adnan Ahmad, 2010-04-29

Since Saudi Arabia is a very conservative society it can be hard for Westerners to live there hence many enterprise companies open an office in Bahrain where the lifestyle is more pro Western. Bahrain is therefore considered an entrance point for Saudi Arabia.¹³⁹

6.1.3.1.2 Doing business in Bahrain

Since GCC has single point of entry the customs regulation is the same in the different countries in the region. In GCC the import taxes are 5 % flat with exception for certain restricted products such as alcohol, tobacco or pork. There is a competition in GCC and especially between Bahrain, Qatar, and UAE as they all wants to be regional hubs for different sectors. Bahrain is trying to niche themselves as a financial market and hub in the region. There are special economic zones and also certain incentives provided in the country depending on what services the foreign companies will provide when opening financial institutes. As Bahrain is a young country the regulations are not well developed with new laws coming up and continuous updates. To promote for foreign investment they keep on changing and introducing new incentives.¹⁴⁰

The infrastructure in Bahrain is developed but as it is a very small country there is only one international airport and one port. The logistical competence is average on a regional level. The logistical costs Mr. Ahmad do not know about but the location costs are lower in Bahrain than the other countries. Generally Bahrain used to be much cheaper than UAE but with the financial crisis the prices has fallen in UAE and the countries now have more or less the same price levels.

The culture of how to do business in the Middle East differs a lot from the Swedish way of doing business. First you develop a relationship, and then you talk about business. The meeting style is also different as it is more informal than the Swedish style. As Bahrain used to be a regional hub it is exposed to global business and their business style is similar to the one in Dubai.¹⁴¹

Generally, there is a difference in the definition of corruption, what is considered as bribery in Europe is not considered as bribery in the local business culture in Middle East. An example of this is when using someone's network, relationship, or contact it is a custom to give the person a certain amount of fee. The physical security is good

¹³⁹ Adnan Ahmad, 2010-04-29

¹⁴⁰ Ibid.

¹⁴¹ Ibid.

in Bahrain according to Mr. Ahmad and the companies do not need to invest money in order to be safe.¹⁴²

6.1.3.2 Qatar

6.1.3.2.1 Qatar's' position in Middle East

As a member of GCC Qatar have good relations with the UAE, Saudi Arabia, and Bahrain¹⁴³ which are the countries Qatar export the most to¹⁴⁴. In terms of trade these countries are very united and enjoy extremely good relationships. Qatar is a very small country (with only 900 000 inhabitants) hence to import or export goods to or from Qatar it is through neighbouring UAE or Saudi Arabia. Qatar also has a good relationship with Iran, which has the second highest GDP in the region after Saudi Arabia.¹⁴⁵

In the region Qatar has the strongest purchasing power as they have one of the highest GDP per capita in the world. The majority of the population in Qatar are expatriates mostly from India, Pakistan, Sri Lanka, Iran, Egypt, Syrian, and Lebanon.¹⁴⁶

6.1.3.2.2 Doing business in Qatar

As Qatar is a very young country the regulatory is developing, a lot of regulations keep on changing, many regulations are not there at all, and new regulations are made as they come. This makes it both easier and more difficult for a company to do business in the country. With the lack of laws there are many things that fall into grey zone and become acceptable. When importing goods the regulatory can depend on the person working in the port that day. When it comes to the level of corruption however, Qatar is considered one of the best countries in the region.¹⁴⁷

In the customs Qatar has the same border administration as the other countries in the GCC with the same inspection, procedures, taxes and tariffs, and almost same kind of authorities. Doha is the main port in the country where it takes approximately two to three days to clear goods. Mr. Ahmad thinks that the logistical competence in Qatar needs to improve. The price levels of logistical services are

¹⁴² Adnan Ahmad, 2010-03-24

¹⁴³ Ibid.

¹⁴⁴ United Nations Commodity Trade Statistics Database, homepage (2010-03-16)

¹⁴⁵ Adnan Ahmad, 2010-03-24

¹⁴⁶ Ibid.

¹⁴⁷ Ibid.

however on the same level as the other countries. The country is investing a lot in the infrastructure and is looking forward to having one of the best infrastructures in the region, but is not yet as good as in UAE. When it comes to location costs it is much more expensive in Qatar compared to the other countries in the region.¹⁴⁸

The labour availability in the country is a concern since the population is small and the representation of locals is extremely low compared to the foreigner population. This makes it slightly difficult to get a hold of labour in Qatar and hence the salary level is higher relative the region.¹⁴⁹

The country is making new financial centres where certain advantages to companies within finance and banking are provided. So far, there are no FTZ in the country.¹⁵⁰

6.1.3.3 United Arab Emirates

6.1.3.3.1 United Arab Emirate's position in Middle East

Iran, Iraq, and Qatar are the countries in Middle East that UAE exports the most to¹⁵¹. UAE have good relationships with all three countries. The trade relation with Iran is especially good and has a long history of trade.¹⁵²

Only 20 to 25 % of the population in UAE are Emirates, the rest of the population are expatriates. To be an expatriate you need a job in order to live in the country. This makes the upper-middle class big in the country and eliminates the possibility of having a big lower class, hence the strong purchasing power in UAE.¹⁵³

6.1.3.3.2 Doing business in United Arab Emirates

UAE got independent in 1971 and is a very young country. The development has been at such an extreme pace that the laws and the regulations follow the development rather than the other way around. According to Mr. Ahmad UAE is one of the safest countries in the world with extremely low crime rate. In terms of business the companies will not have the extra cost to invest in securing their offices or warehouses. The level of corruption is regionally low. In terms of culture UAE is

¹⁴⁸ Adnan Ahmad, 2010-03-24

¹⁴⁹ Ibid.

¹⁵⁰ Ibid.

¹⁵¹ United Nations Commodity Trade Statistics Database, homepage (2010-03-16)

¹⁵² Adnan Ahmad, 2010-03-24

¹⁵³ Ibid.

more exposed to the Western business style than the other countries in the region hence they are more adaptable to it.¹⁵⁴

Regionally UAE has the best infrastructure and logistical industry especially with very efficient ports. When it comes to the availability of information and telecommunication infrastructure all the new technologies are available in the country but with slightly higher prices compared to Europe. In terms of the logistical cost the countries have the same price level in the entire region. If importing goods to Dubai it only takes one to two days with the right documents and with no inspection required. Jebel Ali port in Dubai is the main port where most of the goods come and is one of the top ten busiest ports in the world. In UAE there are certain FTZ, considered a separate country in terms of customs where there are no duties or taxes. In the FTZ the foreign companies can own 100 % of the company. Outside these FTZ, only 49 % can be owned and the rest has to be owned by a local partner. Apart from the economic incentives in the FTZ there are no income taxes or any other taxes on the companies in the country.¹⁵⁵

The labour in UAE is regionally more expensive mainly because of the high accommodation cost. To be able to maintain their residence in UAE, the labours are hard working.¹⁵⁶

6.1.3.4 Middle East and North Africa Department of Ministry for Foreign Affairs

Bengt G Carlsson, Advisor within the Middle East and North Africa Department at the Ministry for Foreign Affairs was interviewed regarding Bahrain, Qatar, and the United Arab Emirates. As Tunisia is a part of this region the country was added to this interview. Mr. Carlsson mentions that Tunisia has geographical closeness to EU, which Tunisia also has an association agreement with. The other three countries are members of GCC, which means several agreements with EU but so far, despite many years of negotiating, no free trade agreement. Historically Bahrain has had the position as a hub in the region but it has gradually been overtaken by Dubai.¹⁵⁷

Regarding the relations in the region, Qatar stands out with more active and dynamic political relations among the GCC countries and also has to some extent

¹⁵⁴ Adnan Ahmad, 2010-03-24

¹⁵⁵ Ibid.

¹⁵⁶ Ibid.

¹⁵⁷ Bengt G Carlsson, 2010-05-04

political relations with Israel. Otherwise Tunisia has, as many of the countries in North Africa, been more active on the international level if comparing with the GCC countries. UAE has much more business-oriented relations rather than diplomatic relations. Bahrain has a majority of Shia-muslims whereas the ruling family is Sunni. This has, in the past, created some domestic disturbance and difficulties.¹⁵⁸

The customs handling differs between the countries where GCC's procedures are generally seen as efficient whereas Tunisia's handling is more bureaucratic and time-consuming. Regarding the level of infrastructure, Mr. Carlsson claims that it is very high in the Gulf States, especially in terms of airports, ports, and communications. However, Bahrain is somewhat below the high level attained in UAE and Qatar. Tunisia is not as well developed in that area if comparing to the three countries in the Middle East.¹⁵⁹

Much of the labour is imported in the Gulf States since they have small indigenous populations, however this may incur expensive costs. Tunisia relies on the national labour force but the civic authorities can be bureaucratic and local exporters might run into difficulties. Mr. Carlsson explains that the culture of Tunisia due to French influence is much more western alike when comparing. In the Gulf States the business culture is much about patience and long-term relations as well behaving correctly according to local customs and manners. Bahrain and UAE have been more exposed to western culture in the past than Qatar.¹⁶⁰

The Gulf States are very safe and it would generally not entail a personal risk to live there. Tunisia is perhaps not as safe but it does not constitute a problem if wanting to establish there. Regarding the corruption, it is often a grey zone where, for instance, sometimes the demand for commissions or kick-backs is present, especially in the Gulf States. However, this is not regarded as corruption but instead a part of the culture. Mr. Carlsson would thus not imply that corruption normally is an issue of concern but these cultural aspects must be taken into consideration and contracts and transactions should be carefully scrutinized.¹⁶¹

Mr. Carlsson summarizes the discussion by mentioning that the Gulf States are in a good location and Dubai is an already well-established hub. Tunisia does however

¹⁵⁸ Bengt G Carlsson, 2010-05-04

¹⁵⁹ Ibid.

¹⁶⁰ Ibid.

¹⁶¹ Ibid.

access many countries and is close to Europe. The specific interest from the company should determine the location if establishing in the Gulf States or in Tunisia from a geographical point of view. Saudi Arabia is for example the largest market from a Swedish point of view. Bahrain has very good relations and communications with Saudi Arabia, thus Bahrain would be interesting if Saudi Arabia would be the main market. Establishing in Bahrain to cover the Saudi market might however lead to a negative reaction from the Saudi clients or counterparts. Tunisia would, according to Mr. Carlsson generally be preferred if choosing between countries in North Africa.¹⁶²

6.1.4 South East and East Asia

6.1.4.1 Hong Kong

6.1.4.1.1 Hong Kong's position in South East and East Asia

Hong Kong's top export nations are China, Japan and Singapore¹⁶³. According to Stefan Arenbalk, Deputy Trade Commissioner and Head of South China at the Swedish Trade Council, Hong Kong has always been the main source to the Chinese market because of the closeness and the strong relationship between the two. As Hong Kong is a place of trade a majority of the goods that are being either imported or exported to or from China are going through Hong Kong. In the past the Chinese and the Japanese have not had a strong relationship but as both countries are driven by business it is not a problem today and there is big export from China to Japan. Singapore and Hong Kong can be seen as competitors as they both function as hubs and big trading markets in Asia.¹⁶⁴

In 1997 Hong Kong was reunited with China and is working more closely with China through Closer Economic Partnership Arrangement (CEPA) which enables trade between Hong Kong and China¹⁶⁵. CEPA is a bilateral trade agreement with tariff reductions on goods that Hong Kong exports to China, an opening of the Chinese market to Hong Kong service providers, and procedures designed to facilitate bilateral exchanges of goods, capital, and people¹⁶⁶.

¹⁶² Bengt G Carlsson, 2010-05-04

¹⁶³ United Nations Commodity Trade Statistics Database, homepage (2010-03-16)

¹⁶⁴ Stefan Arenbalk, 2010-03-26

¹⁶⁵ Ibid.

¹⁶⁶ China Perspectives, homepage (2010-04-06)

With an aspiration to be a great trading market Hong Kong is generally working towards free trade and has few protectionist regulations. Hong Kong is a rich place with every fourteenth person being a dollar millionaire. Hence the inhabitants have a very strong purchasing power.¹⁶⁷

6.1.4.1.2 Doing business in Hong Kong

Hong Kong is ranked as one of the easiest places in the world to do business in. The state functions as a trading market and is very business focused. Hong Kong and China are completely different places when it comes to doing business according to Mr. Arenbalk. One thing that differs is the border administration which is complicated in China. When entering China with a boat there is a risk that problems occur and the goods denied to enter the country. That is the reason for many companies unloading the shipments in Hong Kong and then entering China. Apart from the logistical aspect the reason for having a part of the business in Hong Kong when doing business in China is the structure of business with beneficial regulations in Hong Kong. Hence many of the Chinese companies have their base in Hong Kong. Because of the big flow of goods passing through from Hong Kong to China the border administration is relatively efficient.¹⁶⁸

The infrastructure in Hong Kong is very good with well functioning network of roads and public transports. The port is enormous and one of the world's biggest. Hong Kong also functions as a flight hub with one of the world's largest airports. Since Hong Kong has been a logistical hub the last decades the logistical competence is very high. The location costs in the state are slightly higher compared to the region.¹⁶⁹

The biggest economic incentive of doing business in Hong Kong is the ease of doing business in the state. Additionally there are low taxes with a company tax at approximately 17 % and the personal tax is also at the highest 17 %.¹⁷⁰

When Hong Kong returned to China 1997 there was a clause about the system not changing for 50 years. That is the reason the regulatory is still very much British and it is also well functioning. The physical safety in Hong Kong is very high and the level

¹⁶⁷ Stefan Arenbalk, 2010-03-26

¹⁶⁸ Ibid.

¹⁶⁹ Ibid.

¹⁷⁰ Ibid.

of crime is low. Mr. Arenbalk has never had any problems regarding corruption in Hong Kong.¹⁷¹

6.1.4.2 Japan

6.1.4.2.1 Japan's position in South East Asia and East Asia

China, Korea, and Hong Kong are the top countries that Japan exports to¹⁷². Japan has a complicated history with China and Korea since Japan earlier had the occupation power of both countries says Sonny Söderberg, Project Leader at the Swedish Trade Council in Japan. Because of this, there is still some lingering resentment towards the Japanese in the Chinese and Korean society. However, in terms of trade and economy the three countries are becoming more and more interdependent. When it comes to technology transfer Japan can be restrictive particularly to China. In general though, Japan has well functioning economic collaboration with China, Korea and Hong Kong.¹⁷³

The purchasing power in the country is one of the world's strongest. Japan is the second biggest global economy and a Japanese household has approximately 1.5 MSEK in savings. According to Mr. Söderberg WTO and ASEAN are the main agreements affecting the trade in Japan. The availability and quality of the infrastructure, information and communication technology is world leading and the transportation system is well developed and quick.¹⁷⁴

6.1.4.2.2 Doing business in Japan

When asking Mr. Söderberg about the Japanese culture and how it affects doing business he explained that it is very complex. Doing business in Japan requires personal relationships, teamwork, and trust. This takes time at first as a relationship must be developed between the parties. Once the relationships exist they are very strong, there are rarely any problems and a Japanese person seldom leaves a long lasted business relationship.¹⁷⁵

Japan is not good at attracting foreign investment to start new business in the country as they do not have economic incentives for that. When it comes to green-

¹⁷¹ Stefan Arenbalk, 2010-03-26

¹⁷² United Nations Commodity Trade Statistics Database, homepage (2010-03-16)

¹⁷³ Sonny Söderberg, 2010-03-17

¹⁷⁴ Ibid.

¹⁷⁵ Ibid.

field setups there are however tax reductions, loans without amortization, and beneficial agreements.¹⁷⁶

The border administration is very well functioning in Japan with well working systems, customs, regulations, and efficient handling of logistics and documentation. However there are certain goods with particular high requirements which make the process time consuming for import of goods such as provisions and drugs. In general though Mr. Söderberg believes Japan to be more time efficient than for example China and Korea. The import tax in Japan has one of the lowest general import rates with a mean between 2 and 2.5 %.¹⁷⁷

The logistical competence in the country is high, especially within Just-in-time deliveries, but the price level is also higher than in other Asian countries. The costs for landing the airplanes on the international airports and to unload in docks are often high. With Japan's world leading technology there are great possibilities to trace, get status, calculate when the goods pass the customs etc. Mr. Söderberg do not believe that Japan has any FTZ but mentions bonded warehouses which are buildings or other secured area in which dutiable goods may be stored without payment of duty. When it comes to location and labour the cost level is relatively high compared to other countries in the region. The labour is however very competent, willing to work hard, and loyal. The level of crime in Japan is extremely low, together with Singapore Japan has the lowest criminality in Asia.¹⁷⁸

6.1.4.3 Singapore

6.1.4.3.1 Singapore's position in South East and East Asia

Malaysia, Indonesia, and Hong Kong are the top countries that Singapore exports to¹⁷⁹. When asked about Singapore's relations with these countries Knut Ngo, Consultant at the Swedish Trade Council in Singapore, replies that the relations are relatively good. Especially, the relations with countries within the ASEAN are very good. The cooperation between Singapore and Malaysia is very close as well as the cooperation with Indonesia. Hong Kong and Singapore both position themselves as logistics and financial centres, making them competitors. Singapore's relations with

¹⁷⁶ Sonny Söderberg, 2010-03-17

¹⁷⁷ Ibid.

¹⁷⁸ Ibid.

¹⁷⁹ United Nations Commodity Trade Statistics Database, homepage (2010-03-16)

the major markets, Japan and China are described as good, with many business delegations between the countries.¹⁸⁰

ASEAN is the most important trade union for Singapore, enabling important cooperation with Malaysia, Thailand, Indonesia, Philippines and Brunei. There is a continuous development of the trade procedures within ASEAN. Goods from Sweden to these countries often enter through Singapore, which is part of Singapore's strategy. To export goods directly to these markets could be more expensive compared to sending them via Singapore.¹⁸¹

6.1.4.3.2 Doing business in Singapore

Singapore has a very strong purchasing power through a well-developed market, in fact the most developed in South East Asia. The inhabitants are well educated and with relative high salaries.¹⁸²

The time through customs is relatively quick, with highly developed procedures and standardized approach, making Singapore attractive as a hub. The FTZ located in Singapore also make the state attractive from a logistical point of view. The level of taxes and tariffs are relatively low for the region although certain items, such as cars and alcohol are expensive to import.¹⁸³

With a highly developed infrastructure and information and communication technology Singapore is able to receive a high frequency of shipments both by air and sea. The logistical competence is high with many logistics companies present in Singapore, resulting in high competitiveness and lower prices. The lack of land-area in Singapore is driving the location cost upwards. The labour is well educated, multi-cultural, reliable, and hard-working. To attract new businesses to Singapore, there are many incentives such as tax reductions, part of employees salary is paid by the government, and subsidies within certain industries.¹⁸⁴

The culture in Singapore is according to Mr. Ngo very western, making it easier to conduct business without any special procedures to take into consideration. Compared to other countries in the region there is less need of established business relations and a high degree of transparency. The regulatory is very alike the British

¹⁸⁰ Knut Ngo, 2010-03-24

¹⁸¹ Ibid.

¹⁸² Ibid.

¹⁸³ Ibid.

¹⁸⁴ Ibid.

system, not having any impact on the possibility of doing business. Regulatory restrictions are not common and most regulatory changes are often made in order to benefit economic interests. Singapore is considered to be a very safe country with a low crime rate, having no negative impact on business. The degree of corruption is low, thus being a good country to conduct business in.¹⁸⁵

6.1.4.4 Taiwan

6.1.4.4.1 Taiwan's position in South East and East Asia

Taiwan is an island with special background due to its history with China and is not, from a Swedish perspective, to be regarded as a country but instead as a market, according to Jens Wernborg, Head of the Taipei office at the Swedish Trade Council. The political history of Taiwan is important to understand when working in the region. Until year 2000 the same party ruled Taiwan, with the ambition and goal of uniting China and Taiwan as one China. Between 2000-2008, the present opposition party (DPP) ruled Taiwan, which believed that Taiwan and China are to be treated as separate independent states. In 2008 the power switched back to the former opposition and more integration and cooperation friendly politics, which lead to, increased trade between Taiwan and Mainland China, both by air and sea. This increased trade has enabled trade straight to Mainland China from the island of Taiwan that earlier had to go by Hong Kong. The benefits of this are that labour and costs related to the harbour is lower in Taiwan than in Hong Kong. Although there has been significant progress on trade relations, there is much to be done on a political level. ECFA (Economic Cooperation Framework Agreement) will probably be signed this summer, which roughly is the same as a free trade agreement. This will further enable and facilitate trade between Mainland China and Taiwan.¹⁸⁶

In terms of living expenses on Taiwan, they are quite low with cheap food and cloths, although not as low as China. Wages, transports, rents, and accommodation are low and significantly lower than Singapore and Hong Kong.¹⁸⁷

6.1.4.4.2 Doing business on Taiwan

The customs handling is relative efficient, on the same level as Korea and Japan which is more efficient than China. Taiwan works in the same way as Hong Kong, meaning that Taiwan has its own regulatory system and currency etc. The

¹⁸⁵ Knut Ngo, 2010-03-24

¹⁸⁶ Jens Wernborg, 2010-04-29

¹⁸⁷ Ibid.

infrastructure on Taiwan is very good, with high-speed trains, well-developed roads and large airports and harbours. The information technology is on a high level on Taiwan and the logistical competence is high on Taiwan since logistics always has been an essential part of the trade. The business culture is more western when comparing with Japan. Many of the people have American education, which affects the business culture. Otherwise, the culture is very Chinese with many traditions. The crime rate is low in Taiwan, making it a safe location.¹⁸⁸

There are presence of FTZ and bonded warehouses on Taiwan. Mr. Wernborg mentions that many changes have taken place after the change of regime but there are still many changes to come. The possibility to conduct trade between Mainland China and the island of Taiwan are expected to further increase with the current regime's politics. If there would be a change in regime, the current opposition would not change what has been done. The mind-set from the opposition would rather be to engage a trade union between China and Taiwan. It should however be taken into consideration that there might be a change of political orientation if the opposition would win the next election.¹⁸⁹

6.1.4.5 Department for Asia and the Pacific Region of Ministry for Foreign Affairs

According to Lars Andreasson, Director of Department for Asia and the Pacific at the Ministry for Foreign Affairs, EU is not a well-known concept in Asia where they rather focus on the independent members of the union. Singapore's relation with EU are excellent, as the free trade agreements that are being discussed with ASEAN have stagnated Singapore are negotiating independently. Japan is a bit more complicated as there are some technical questions that need to be negotiated and solved when importing for example cars. Generally Japan, Hong Kong, and Singapore have good relations with EU. With Taiwan EU do not have a political relation because EU recognises one China. Likewise no country in Asia has a political relation with Taiwan as it is perceived as a part of China. The new government in Taiwan stopped the confrontational politics towards Beijing and the relation between Taiwan and China is getting better and better. The political relation between Japan and China is quite problematic mainly due to historical reasons. This is however not a problem when it comes to economic and commercial relations.¹⁹⁰

¹⁸⁸ Jens Wernborg, 2010-04-29

¹⁸⁹ Ibid.

¹⁹⁰ Lars Andreasson, 2010-05-03

Mr. Andreasson thinks that there may occur language problems when doing business in Japan and Taiwan, problems that do not exist in Hong Kong or Singapore. In terms of business culture it is also more difficult to do business in Japan compared to Hong Kong and Singapore because of the cultural gap between Swedish business culture and Japanese with strong relationship orientation. Swedish companies should be aware of the time it takes to build relations, especially when there is a shift in the person representing the company since personal relations are very important. Mr. Andreasson believes Hong Kong to be the easiest state to do business in when it comes to business culture as it is still very influenced by Britain. Singapore is more Asian but as the country since the sixties has been a trade nation they have a long history of relations with other countries which makes it an easy place to do business in. The Singaporeans are also extremely efficient. Another favourable characteristic of Singapore is that it is one of the most secure countries in the world and hence has the highest physical security of the four states being compared. Singapore's corruption is also very low and better compared to Hong Kong, Japan, and Taiwan.¹⁹¹

When it comes to geographical location Hong Kong and Taiwan is located very central between North Asia and the Indian Ocean. Singapore is also a natural hub whereas Japan is distantly located.¹⁹²

Mr. Andreasson is surprised that China with Shanghai is not top ranked in the study. Shanghai is developing to become the world's biggest port when it comes to both tonnages and number of containers. However the city is not a hub when it comes to flights where it rather is the end station. The reason for Shanghai being after Hong Kong in development is the lack of a functioning regulatory system.¹⁹³

6.2 Key learning from Final study

- Africa; Namibia is a member of SADC, it has a low crime rate, the shipped volumes to the country is increasing, and there are Export Processing Zones that enables trade. However Namibia has a small population and thus a small local market. South Africa on the other hand is the richest country in Africa hence a well developed country, is also a part of SADC, and has a British business culture. The country does have a high crime rate and the BEE system creates restrictions. Tunisia has an association agreement with

¹⁹¹ Lars Andreasson, 2010-05-03

¹⁹² Ibid.

¹⁹³ Ibid.

EU and has FTZ but when doing business in the country there is an importance of networks and having contacts within influential families.

- Americas; Canada has advantages of being member of NAFTA, having bonded warehouses, a well developed infrastructure, high logistical competence, and a similar business culture to Swedish. Chile has good relations and is trade friendly, the level of corruption is low, and the customs handling is open and transparent. The country does however have disadvantages with its distantly geographical location from Europe and Sweden, it is an oblong country and the Andes constitute logistical challenge. Additionally the earthquake in 2010 shattered much of the infrastructure. USA is the world's biggest economy, is also part of NAFTA, has efficient and transparent customs, a well developed infrastructure, and has high logistical competence. Aspects to consider when doing business in USA is that there are different regulations in different states and special standards are often required.
- Middle East; Bahrain, Qatar, and UAE are all have the advantage of being members of GCC. The three countries are also young which results in developing regulations in all countries. Bahrain has good relations with Saudi Arabia and is considered an entrance point for the country. Bahrain does however have a very small population and has some domestic disturbance. Qatar also has a small population but has the advantage of having especial good political relations. In UAE there are FTZ, high logistical competence, well developed infrastructure, and a Western business style.
- South East and East Asia; Hong Kong is a gateway to China through CEPA, is easy to do business in, has well developed infrastructure, and has high logistical competence. Japan is the second biggest global economy and the presence of bonded warehouses is another advantage in Japan. However the culture in the country is very different from Swedish, it takes time to built relationships to do business and there could be potential language problems. Singapore has good relations within ASEAN, the country has FTZ, high logistical competence, low crime, and a Western business culture. There are also FTZ and bonded warehouses on Taiwan and the general price level is low. EU does however not have any political relation with Taiwan and there is a risk that the current politics towards Mainland China could change if there is a new government.

7 Final analysis

In this part of the report the findings about the different countries and regions from the Final study are being analysed. The analysis is based on the Framework, the findings in the Initial analysis, and the Final study.

7.1 Comparing the countries in each region

7.1.1 Changing Tunisia's regional position

Africa is a big continent with a great physical distance between the north and the south part of the region. North Africa differs from the rest of Africa with Arabic countries and different cultures. Furthermore North Africa is geographically linked to Middle East. Mr. Kettner and Ms. Hartvig hence consider North Africa to be closer related to the Middle East region with more similar countries and cultures compared to Sub-Saharan Africa. Therefore Tunisia is beyond going to be a part of the analysis of the Middle East region.

The removal of a country from the ranking does not change the order of the countries and as mentioned in the Initial analysis, the scores in Africa are very even. Hence, there is no need to recalculate the AHP when countries are removed from a region since the ranking remains intact. Further studies should be conducted before adding more countries to the analysis apart from South Africa and Namibia.

7.1.2 Africa



Figure 15 - Map of Africa with the analysed countries in dark grey

Figure 15 shows the map of Africa and with Namibia and South Africa locations highlighted. The figure reveals that the suggested locations both are located in the south of Africa, which might constitute some problems if planning to distribute to entire Africa by road for example. Africa is a large continent and it should be taken into consideration that there might be difficulties to distribute to distant and landlocked parts of Africa unless transporting by airplane. South Africa and Namibia are however the most suitable hub locations based on the selected criteria.

	Availability and quality of Infrastructure	Border administration	Closeness to other major markets	Corruption	Frequency of on time shipments	Human rights	Logistical competence	Logistical cost
Africa								
Namibia		-				+		
South Africa	+	+	+	+	+	-	+	+

Table 4 - A comparison between Namibia and South Africa regarding the indexes together with advantages and disadvantages mentioned in the interviews

South Africa is the most preferable country in Sub-Saharan Africa when deciding where to locate a logistical hub as seen in Table 4 when comparing the indexes. Much of the benefits that South Africa enjoys are linked to the fact that it is Africa’s largest economy and hence being a rather well developed country. Namibia on the other hand has a small population and thus a small local market. The infrastructure is better in South Africa, with higher quality and a developed road network. Many logistics features is also high, the indexes display that South Africa has a higher Frequency of on time shipments, Logistical competence, and Logistical cost. Bringing products into the country is considerably easier compared to Namibia where it according to LPI is difficulties with border administration. Also, according to Transparency International the corruption is a bigger issue in Namibia than in South Africa. No interviews have, however, mentioned this as an apparent problem. Both countries have the advantage of being members of SADC.

There are benefits with Namibia that South Africa does not enjoy to the same extent. The Human rights index was regarded as the most important criterion to take into consideration when establishing hub location. South Africa scores low on this index and Namibia receive a high score, making Namibia more attractive if Human rights would be a central aspect when deciding hub location. South Africa has problems with a high crime rate, which may affect the physical security of the employees. Namibia however does not suffer from this problem since the country

has a relative high physical security. Furthermore, the BEE-system in South Africa requires time and money to be spent for companies to understand and follow the regulations. If there is business to be done with the government, this is an aspect that must be taken into consideration. Otherwise, South Africa has a well functioning regulatory system, which is an important aspect of global successful trade according to World Economic Forum. Another beneficial aspect is that the country is influenced by a British business culture, making it easier for Swedish companies to act on the market.

Benefits with Namibia are the possibility of getting economic incentives and the Export Processing Zones if producing in the country. Another beneficial aspect is that the largest port is expanding, enabling increased trade to central Africa. These aspects are to be considered for companies if the main market lies within central Africa. Although, the recommendation when locating a hub in Sub-Sahara Africa is to place it in South Africa unless specific conditions apply that Namibia corresponds to.

7.1.3 Americas



Figure 17 - Map of North America and Central America with the analysed countries in dark grey



Figure 16 - Map of South America with the analysed country in dark grey

Figure 17 and Figure 16 above describes how the region Americas has been divided into two regions; the first one consists by North America and Central America and the second one by South America. Americas is an enormous region and there would be major difficulties in supplying the entire region from one location. Unless all shipments were to go by airplane this would be very time-consuming.

If analysing the geographical locations, North America consists of three large countries with substantial economies compared to the rest of the countries in the region. From a geographical point of view, there are no problems to supply the region from Canada or USA. With coast in both west and east directions, there are no problems to receive and ship goods from both Europe and Asia. The size of the two countries must however be taken into consideration as the distance to customers can vary a lot depending on where to establish a facility in the countries. Analysis of the indexes when removing countries that are part of South America would suggest Panama or Costa Rica to be the third suggested hub location. However, further studies should be done to determine which one of them being the most suitable.

Chile's geographical location is a bit more difficult, being located in the southwest of South America. If receiving goods from Europe and Sweden, there are major difficulties in terms of going by boat. The shipment would have to round the southern tip of South America, adding additional shipment-time and costs. Furthermore the natural barrier constituted by the Andes is a problem if transporting to the east of Chile. Brazil has a bit more advantageous location in terms of receiving goods from Europe compared to Chile and is also the second largest market in Americas. Although Brazil was mentioned as interesting location by Mr. Dahlstein and Mr. Wollter at the Americas Department, it is important to remember that Brazil did not do especially well in terms of fulfilling the most important criteria when choosing hub location. If Brazil is not a desired market in South America, Brazil may not be the best location to distribute from if the ranking of the criteria is prioritized. Brazil does however score high on the logistical indexes, Frequency of on time shipments, Logistical competence, and Logistical cost. This implies that there is high potential in Brazil if they would get on track with the corruption and consideration regarding human rights.

Finding optimal logistical hubs for Swedish export

	Availability and quality of Infrastructure	Border administration	Closeness to other major markets	Corruption	Frequency of on time shipments	Human rights	Logistical competence	Logistical cost
Americas								
Canada	+	+		+	+	+	+	+
Chile			-	+		+		
USA	+		+					

Table 5 - A comparison between Canada, Chile, and USA regarding the indexes together with advantages and disadvantages mentioned in the interviews

Although Americas should be divided into two regions a comparison of the three countries in Americas is presented in Table 5. This is done due to the lack of an obvious second candidate, without conducting further studies, in South America that Chile could be compared to. The level of infrastructure, information technology, and logistical competence in USA and Canada are essential aspects when choosing hub locations. Both countries are also part of NAFTA. They score quite evenly on many criteria but Canada is the most preferred country in many cases, especially based on the logistical indexes. Chile suffers from being oblong and with the Andes along the country. Also, Chile does not have an as developed infrastructure and information technology compared to Canada and USA. The recent earthquake has also shattered the infrastructure in the south, making Chile questionable as hub location for the next few years.

Border administration is on a high level in all countries with Chile slightly behind Canada and USA. Chile is still better compared to the rest of Latin America with open and transparent customs handling. Chile also has the advantage of having good relations and being trade friendly. The country’s beneficial taxes and tariffs make it interesting to conduct trade from. However, the demand of value-adding activity in Chile, to enjoy the benefits of the trade agreements, does constitute a large obstacle if only interested in hub activity. In Canada, the bonded warehouses are an advantage when exporting to a third country.

The similarity between the Canadian and the Swedish business culture is an advantage when conducting business and this matter in terms of reducing the complexity of the supply chain. Canada’s high physical security is important whilst Chile is the safest country in Latin America, as the security is an important pillar of successful trade.

Finding optimal logistical hubs for Swedish export

Special standards and regulations often apply for the market in USA. This constitutes some problems on a national level but also on a regional basis, which may incur additional cost but not affect the possibility of distributing goods. USA is however a large country with many states and the regulatory may differ and USA alone may constitute a logistical challenge.

USA is the world's biggest economy and by far the largest market in Americas, which is important when choosing where to distribute. Canada does however score higher on many indexes and the closeness to USA would make it more attractive as hub location compared to USA. The location of customers should probably determine whether to be located in USA or Canada. Given an even localisation of the customers in both USA and Canada, Canada is to prefer as hub location.

Regarding South America, it does constitute some difficulties when choosing location. Analysis of the indexes show that Uruguay would be a plausible location since it is behind Chile in the ranking. Chile has good scores on many of the important criteria but is distantly located, whereas Uruguay has a better geographical position. Brazil was mentioned as an interesting location but does not score high on the most important criteria but has good potential, as the many of the logistical indexes are high. Brazil is also the largest market in South America. However, to be able to make any detailed assumptions further studies must be made, focusing on South America alone.

7.1.4 Middle East and North Africa



Figure 18 - Map of Middle East and North Africa with analysed countries in dark grey

When establishing a new region where new countries are added, the AHP calculations had to be remade since new countries are compared to each other. A new ranking has been made for the Middle East and North Africa region and is displayed in Table 6. It shows that there is no obvious change in ranking from the Middle East region, meaning that the countries from North Africa would be unsuitable as hub locations for the Middle East and North Africa region. Tunisia, who had a favorable ranking in the African region, does not have a score high enough to be suggested as a hub location.

Middle East and North Africa	
United Arab Emirates	0,1127
Bahrain	0,0892
Qatar	0,0890
Oman	0,0857
Kuwait	0,0755
Israel	0,0748
Saudi Arabia	0,0665
Lebanon	0,0608
Jordan	0,0555
Tunisia	0,0522
Syria	0,0399
Egypt	0,0386
Iran	0,0378
Yemen	0,0322
Libya	0,0300
Algeria	0,0299
Iraq	0,0279

Table 6 – The new ranking for the Middle East and North Africa region

In the map of Figure 18 Middle East and North Africa is presented. In the Middle East Bahrain is the country closest to other major markets compared to Qatar and UAE, mainly by bordering Saudi Arabia in the middle of the country which has the highest GDP in the Middle East. The advantage is however small as Bahrain, Qatar, and UAE are located very close to each other and all the three countries are neighbouring Saudi Arabia.

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	Availability and quality of Infrastructure	Border administration	Closeness to other major markets	Corruption	Frequency of on time shipments	Human rights	Logistical competence	Logistical cost
Middle East and North Africa								
Bahrain			+					
Qatar				+	+	+		
Tunisia				-				
UAE	+	+				+	+	+

Table 7 - A comparison between Bahrain, Qatar, Tunisia and UAE regarding the indexes together with advantages and disadvantages mentioned in the interviews

Due to the same situation as in Americas the four countries are being compared in Table 7, as Tunisia without further studies does not have a country in North Africa to be compared to. According to the comparison between the countries, based on the indexes, the most suitable country to locate a hub in Middle East and North Africa is UAE. The country has the best infrastructure both by measuring Availability and quality of transport infrastructure according to ETI and Quality of trade and transport-related infrastructure by LPI. Furthermore, it is easier to import products into the country compared to Bahrain, Qatar, and Tunisia since UAE has the smoothest border administration according to the World Bank. On the contrary, Tunisia was mentioned in the interview as a quite bureaucratic country where the custom handling could be time consuming. According to ETI and LPI Qatar is however scored slightly below Tunisia. This is interesting since the GCC countries are suppose to have the same custom procedures which would indicate that they should have the same score in the Border administration index. The logistical features of UAE are the best out of the four countries with the highest Logistical competence and the lowest logistical costs. Qatar does however exceed UAE when it comes to the Frequency of on time shipments scored by LPI.

Qatar is also the country with the highest score from Transparency International indicating that the level of corruption is low. The corruption, that was the most scattered weighted criterion by the Logistical Managers, is significant higher in Tunisia compared to the other countries in the region. This could mean that the companies having anti-corruption in their CSR would not locate a hub in Tunisia. The most important criterion according to the Logistical Managers, Human rights, is the highest in Qatar and in UAE, both countries having the same score in the Global Peace Index. Hence these two countries have an advantage if Human rights are highly prioritized when choosing where to be located.

One problem that arose during the interviews is when establishing a hub in Tunisia or UAE 100 % foreigner ownership is not allowed. The ownership issue is however solved by the presence of FTZ where local ownership is not required. They also offer many advantages in terms of border administration and agile and flexible supply chain.

Bahrain does not have many advantages as a location of a hub compared to the other countries apart from being closest to other major markets as presented in Table 7. A disadvantage that arose in the interviews was the countries' somewhat domestic disturbance that could make the country a bit unstable in comparison. In comparison to Tunisia the three Gulf State countries have disadvantages of having new regulations that keep on changing. They are all part of the GCC but Qatar stands out as the country with especially good political relations. Tunisia's association agreement with EU makes the country attractive as a logistical hub for Swedish export. However, the importance with personal relations and the influential families is a disadvantage for Tunisia. Generally UAE has an advantage over the other countries and is the recommended country in Middle East and North Africa as it already is an established hub and financial centre in the region with a more western business culture.

An alternative to supply the entire region Middle East and North Africa from countries in the Middle East would be to divide it into two regions. The Middle East region would thus be supplied by the same countries and UAE still being the most favorable country. The map of the Middle East region and the suggested locations is displayed in Figure 19 below.



Figure 19 - Map of Middle East with the suggested locations countries in dark grey



Figure 20 - Map of North Africa with analysed country in dark grey

If the North Africa region would be supplied by one country, Tunisia would be the most favourable location. However this region would be considered as small as it only consists of five countries.

7.1.5 South East and East Asia



Figure 21 - Map of South East and East Asia with analysed countries in dark grey

Figure 21 display the map of South East and East Asia and the countries that are interesting as potential hub locations, Hong Kong, Japan, Singapore, and Taiwan. In the case of South East and East Asia, all suggested countries are very qualified and have good scores on the indexes. When analysing the map, Singapore has a centralized position, close to many of the smaller countries in the region. Hong Kong and Taiwan are close to China whereas Japan has the most remote location when comparing the region. This may inflict additional shipping time and costs if distributing to the entire region. Singapore's disadvantage is not being located close to the biggest markets, having the lowest score of the four countries on the Closeness to other major markets index as seen below in Table 8.

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	Availability and quality of Infrastructure	Border administration	Closeness to other major markets	Corruption	Frequency of on time shipments	Human rights	Logistical competence	Logistical cost
South East and East Asia								
Hong Kong	+					-		
Japan					+	+		
Singapore	+	+	-	+			+	+
Taiwan			+	-		+		

Table 8 - A comparison between Hong Kong, Japan, Singapore, and Taiwan regarding the indexes together with advantages and disadvantages mentioned in the interviews

Both Hong Kong and Singapore are trading markets and logistical and financial centres in South East and East Asia making the states easy to do business in with influences by the Western business culture. Their history as logistical hubs is one of the main reasons for the high scores on the infrastructure. Singapore has adjusted its regulatory to ease trade and conducting business, which has provided them with the highest scores not only on the Border administration but also the Logistical competence and Logistical cost. Japan has a more complex business culture where time needs to be invested as the business culture is more relationship oriented. There are also differences in language which is not as big issue in Singapore or Hong Kong. Otherwise, Japan is a strong candidate, especially when considering the Frequency of on time shipments and Human rights. Additionally the country had bonded warehouses. Japan is also one of the largest economies in the region which a huge potential market.

Taiwan is also an interesting alternative as it has a good location relative the surrounding major markets, the country has the highest score of Closeness to other major markets. Advantage for Taiwan as a logistical hub is that the general price level is lower than Hong Kong and Singapore and the country has FTZ and bonded warehouses. Taiwan has increased its importance regarding trade with China the last few years and shipped volumes to China are increasing as the new politics are being practiced. However, when considering Taiwan as a logistical hub several aspects must be taken into consideration. Taiwan has issues with corruption, which might create difficulties when establishing and conducting business. Furthermore, Taiwan's current politics towards Mainland China may change with a new government and this could have significant impact on trade. Taiwan mainly competes with Hong Kong in terms of supplying the Chinese market. Hong Kong still is in favour due to its

western business culture and history as logistical hub although Taiwan is becoming an increasingly interesting alternative.

In the interview with Mr. Andreasson at the Asia Department, China was mentioned and especially Shanghai as an interesting location. The Shanghai region is expanding quickly and the port of Shanghai is growing. Although China has not made the top five suggested locations, there might be locations, such as Shanghai that would be very suitable and interesting for further studies.

As seen in Table 8 above, Singapore is without any doubts the country that scores highest on several criteria. Furthermore, Singapore has a history as a logistical hub, which is preferable when choosing location. The only negative aspect is the distance to the major markets in the region, especially China and Japan. Still, if seeking a hub to supply the entire region from one location, Singapore is to be recommended. The presence of FTZ in Singapore, the country's low crime, and good relations in ASEAN are also advantages that further strengthen Singapore's position as the most suitable hub in the region.

7.2 Top eight non-company specific criteria

Regarding theoretical contributions, there has been a development of a model that can handle a multiple decision making process in the area of hub localisation. The use of AHP as a tool for localisation decisions has been used in earlier studies hence not being new information within the theoretical area. The contribution lies within deciding where to locate a logistical hub on a country basis and without company conditions or flows of goods. A literature study within the area of facility location resulted in 21 criteria that are important when selecting where to locate the hub. The uniqueness in this study was the general approach and establishment of non-company specific criteria, which has not been done in earlier studies. The 21 criteria were ranked which resulted in the top eight most important non-company specific criteria for selecting country of logistical hubs;

- Availability and quality of Infrastructure
- Border administration
- Closeness to other major markets
- Corruption
- Frequency of on time shipments
- Human rights
- Logistical competence
- Logistical cost

If comparing with the theories presented and used to attain the 21 criteria, the LPI is the main theory, being the source of the five of the top eight criteria (Availability and quality of infrastructure, Border administration, Frequency of on time shipments, Logistical competence, and Logistical cost). The importance of Closeness to other major markets, Corruption and Human rights is hence the contribution and development of that theory. The five criteria are however also a part of the other theories. Availability and quality of Infrastructure and Logistical competence are factors of Location of distribution centre from a country's perspective and ETI whereas Border administration is a criterion in ETI. The criterion Closeness to other markets is a merge of the Models for facility location and capacity allocation's Location of markets and Location of distribution centre from a country's perspective that emphasis of the importance of making closeness to other markets an important criterion. Both Corruption and Human rights are from the theory about Complexity within the supply chain. Using Corruption and Human rights as criteria in localisation theories on country basis are hence a new approach and contribution to the area of localisation theories.

When a company is deciding about entering a country or market, there should be a company specific analysis made in order to receive as precise result as possible. The above mentioned criteria definitely provide good guidance when making decisions although it is important for a company to decide how much the different criteria matter to them.

7.3 Company specific conditions

Even though some countries in the different regions stands out as more suitable as locations of logistical hubs than others an important factor when choosing location is what markets the company intend to reach. An example of this is the South East and East Asian region where both Singapore and Hong Kong are established logistical hubs. If the company would like to approach China, Hong Kong is a gateway and if the intended markets are Malaysia or Indonesia Singapore is a closer and hence better alternative location. Another aspect to regard is the size of the country to approach. For large countries such as Brazil, China, and USA the location in the country can be of significant importance as well as where to be located when distributing to these big countries. Using China as an example, Hong Kong is suitable as a logistical hub for the southern part of the country whereas Taiwan may be a potential hub for northeast of China.

Additionally, the selection of location should also depend on what kind of goods the company provides. The weight of the good can determine the use of freight and thus the location of the hub. Heavy goods are more expensive to distribute by air and the logistical hub should hence be located close to the end markets to be able to be transported by road. The lead time is also of great importance where spare parts and critical components may have to be distributed quickly. The attributes of the goods consequently affects the choice of freight and the choice of freight should be considered when selecting location of logistical hubs. This can be illustrated with Panama and Costa Rica that are possible locations of logistical hubs for Americas with their central location for air freighted goods. However, the locations would be extremely inefficient and expensive as logistical hubs for goods distributed by road. South America is a problematic continent when it comes to road freight because of the Andes and a restricted network of roads. Depending on what countries to reach there might be a need of several logistical hubs in the region if road is the intended transport mean to use. The features of the distributed goods and the distance from the logistical hub to the destination markets are consequently an important aspect when selecting location of logistical hubs.

The different criteria for selecting location of logistical hubs are furthermore unequally important to different companies. This was shown in the Initial study where the Logistic Managers gave extremely scattered weightings of the criteria. An example of different prioritizing was corruption where some companies had non-corruption as a part of the companies' CSR and hence would not locate logistical hubs in countries where corruption occur. Other companies did not perceive corruption to be an important criterion. As there was such a big difference in the companies' perception on what is important when selecting location it is hard to give a general conclusion for the Swedish Trade Council. The company wanting to select location of a logistical hub needs to analyse the company's unique features and adjust the weightings of the criteria to its needs. The effect of the adjustments on the criteria may result in different suitable countries than the ones proposed.

7.4 Key learning from Final analysis

- Because of similar culture and that it is geographically linked North Africa and Tunisia is recommended to be a part of the Middle East changing the region to Middle East and North Africa.
- South Africa is the most preferable country in Sub-Sahara Africa, having higher scores in all indexes apart from human rights which are better in

Namibia. Many of the advantages in South Africa are linked to the fact that it is Africa's largest economy and a well developed country.

- Americas is recommended to be divided into two regions; the first one consists by North America and Central America and the second one by South America.
- In North America Canada is stronger on many of the indexes compared to USA.
- For South America it is difficult to give suggestions as the highest ranked country Chile has a disadvantage in geographical location.
- The most suitable country to locate a logistical hub in Middle East and North Africa is UAE which already is an established hub and financial centre in Middle East.
- If the North African region would be considered separate, Tunisia would be the most favourable location.
- If selecting one country to supply for South East and East Asia the recommended country is Singapore which has many advantages from already being a logistical hub in the region. The countries only disadvantage is the lower score on Closeness to other major markets.
- The theoretical contribution of the study is the top eight non-company specific criteria when selecting location of logistical hubs; Availability and quality of infrastructure, Border administration, Closeness to other major markets, Corruption, Frequency of on time shipments, Human rights, Logistical competence, and Logistical cost.
- When a company is selecting location of logistical hubs there should also be a company specific analysis. Consideration must be taken to what markets the company intend to reach, what kind of goods the company provides and the distance from the logistical hub to the destination markets.

8 Conclusion

The final chapter covers a conclusion of the entire study. Furthermore, the result is discussed and potential difficulties with the study are presented. Based on this reasoning recommendations for further studies is given.

The purpose of this study is to identify the most important non-company specific criteria when selecting location of a logistical hub. The theoretical framework consists of three main approaches of facility localisation and trade; Facility network analysis, Commercial aspects of facility location, and Global aspects of successful trade. These approaches resulted in 21 criteria applicable for general export (non-company specific).

Within each of the four major Swedish exporting industries two global and representative companies was contacted. At these companies the Logistical Managers were asked to rank the 21 criteria based on how important the criteria should be when choosing location of a logistical hub. The result was as follows;

1. Closeness to other major markets
2. Logistical competence
3. Border administration
4. Availability and quality of Infrastructure
5. Corruption
6. Human rights
7. Logistical cost
8. Frequency of on time shipments
9. Availability and quality of Information and Communication Technology
10. Location costs
11. Ability to track and trace consignments
12. Physical security
13. Trade agreements and economic unions
14. Current demand
15. Taxes and tariffs
16. Taking environmental responsibility
17. Terms of trade
18. Culture
19. Economic incentives
20. Labour
21. Regulatory environment

The Logistical Managers were then asked to weight the top eight criteria pair wise according to the multiple criteria decision making model Analytical Hierarchy Process (AHP). The ranking of these eight criteria changed after the weighting with the result;

1. Human rights
2. Corruption
3. Closeness to other major markets
4. Logistical cost
5. Logistical competence
6. Availability and quality of Infrastructure
7. Frequency of on time shipments
8. Border administration

Hence, Human rights had the most impact on the selection of countries whereas Border administration had the least impact.

The theoretical contribution of this study is the top eight non-specific criteria to be used when selecting countries for logistical hubs. The new approach and contribution of this model is the use of Corruption and Human rights as criteria in localisation theories.

The second part of the purpose was to determine the most suitable countries for logistical hubs in Africa, Americas, Middle East, and South East Asia and East Asia for Swedish export. Firstly, in the Initial study the data containing indexes for each criterion and all the countries in each region were gathered. By using AHP the country specific data together with the weighting of the criteria was used to attain a compiled ranking of the countries taking all the criteria into consideration. This resulted in most suitable countries per region to place a logistical hub into. The regions are presented below (in alphabetical order);

Africa;

Namibia
South Africa
Tunisia

Americas;

Canada
Chile
United States of America (USA)

Middle East;

Bahrain

Qatar

United Arab Emirates (UAE)

South East and East Asia;

Hong Kong

Japan

Singapore

Taiwan

In the Final study the thirteen countries suitability as locations for logistical hubs was further evaluated. This was made through interviews with the Swedish Trade Council's local offices in these countries. The findings from these interviews were complimented and verified by interviews with regional experts at the Ministry for Foreign Affairs.

In the Final analysis there were a change of how the regions were defined and which countries being part of them. Tunisia and North Africa became a part of the Middle East and North Africa region which it is geographically linked to and have a similar culture to instead of the rest of Sub-Saharan Africa. Since new countries were added to the region of the Middle East and North Africa, the ranking changed and the AHP calculations had to be remade, however not changing the earlier result from the Middle East region. The Americas is an enormous region and there would be major difficulties in supplying the entire region from one location. Hence Americas has been divided into two regions; first North America together with Central America and second into South America, which are recommended to be analysed separately.

In North America Canada arose as the location with the most favourable characteristics as a location of a hub. According to the criteria of a suitable logistical hub in the AHP Chile would be the best country in South America. However, Chile is distantly located for export from Europe and Sweden. It is difficult to give recommendations for South America based on information in this study. Further studies, with focus on South America must be conducted if conclusions are to be made.

The recommended country in Africa to locate a logistical hub in is South Africa, much because of its size as Africa's largest economy and hence being a rather well developed country with regionally high scores on many of the indexes. In Middle East the analysis showed that UAE is the most suitable country, not surprisingly since it already is the logistical hub and financial centre of the region. This was the result

regardless if North Africa was part of the Middle East region or not. If North Africa were to be handled as a separate region, Tunisia would according to the study be the country to prefer. In the final region, South East and East Asia, Singapore was determined as the most suitable country and hence is recommended as a logistical hub for the region.

The study constitutes a useful compilation of the evaluated regions from a logistical perspective for the Business Area Logistics at the Swedish Trade Council to use. The method of using the eight criteria and adjusting the weighting of them to the specific company can improve the organisation's methods of helping their customers to select localisation of logistical hubs. Furthermore, the result can be used by the organisation to better understand the needs of company specific analysis and the importance of emphasis on highlighted criteria such as Corruption and Human rights.

8.1 Discussion and suggestions for further studies

Eight Logistical Managers ranked and weighted the criteria used in the study. The opinions regarding the criteria's importance were extremely shattered as the ranking and weightings differed between the Logistical Managers. The Logistical Managers came from eight different Swedish companies and four different industries. Perhaps, a more unified view or other conclusions is to be found if conducting a bigger study with more responders. It would have been interesting to see if the scattered weighting maybe depended on the fact that it was eight different companies or the four different industries. Or do the Logistical Managers personal opinions affect the result, depending on more respondents to achieve a more reliable result. Another interesting aspect would be to also ask people with other positions within the companies, perhaps within strategy, that also are involved in the decision making process of localisation other than the Logistical Managers.

An interesting outcome of the study was the changed ranking of the criteria after the Logistical Managers were to weight the criteria pair wise. Human rights being ranked as the most important criteria were rather surprising since it initially was not ranked among the top five. It would be interesting to investigate if the suggested countries would change if adding more criteria than the eight to the AHP method and to further study how big impact the weighting of the criteria had on the result.

One factor that has been excluded in the study that is of great importance when selecting location of logistical hubs is the transportation cost from Sweden to the

location (Transport cost to site in the Framework). Because of the complexity of this criterion, that would differ depending on chosen transport modes and exactly where in the countries to reach, it has not been regarded. This would however be a criterion of high importance for a company when selecting location of logistical hubs and a recommended factor to study if evaluating the regions more closely. The infrastructure from Sweden to the locations is also extremely important and a factor that affects the transportation costs.

The result of this report is to be used as an introduction of how to determine what criteria to use for selecting location of logistical hubs and initial information about the recommended countries. To be able to give more specific recommendations and conclusions there need to be further studies of the different regions. A similar study has been done in *GCC Entering the GCC market. Entry barriers and choice of location* by Peter Abdon, also suggesting UAE as the most suitable location.

It is ascertained that the study *Finding optimal logistical hubs for Swedish export* is a general analysis. Hence the result is to be used as a basis for selecting logistical hubs which needs to be complemented with company specific features and conditions. It may not be enough for a company to hire a third party logistics provider but rather to do an analysis of the specific company to obtain an optimal supply chain.

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10 Appendix

List of landlocked countries			
Afghanistan	Central African Republic	Luxembourg	Serbia
Andorra	Chad	Macedonia	Slovakia
Armenia	Czech Republic	Malawi	Swaziland
Austria	Ethiopia	Mali	Switzerland
Azerbaijan	Hungary	Moldova	Tajikistan
Belarus	Kazakhstan	Mongolia	Turkmenistan
Bhutan	Kosovo	Nepal	Uganda
Bolivia	Kyrgyzstan	Niger	Uzbekistan
Botswana	Laos	Paraguay	Vatican City
Burkina Faso	Lesotho	Rwanda	Zambia
Burundi	Liechtenstein	San Marino	Zimbabwe

Appendix 1 - Landlocked countries¹⁹⁴

	Facility network analysis		Commercial aspects of facility location		Global aspects of successful trade			
	Strategic facility location	Models for facility location and capacity allocation	7 keys to facility location	Location of distribution centre from a country's perspective	Logistical Performance Index	Enabling Trade Index	Aspects of International Trade	Complexities within the Supply Chain
	Owen, S & Daskin, M (1998)	Melo et al (2009), Chopra, S & Meindl, P (2004)	Mentzer, J (2008)	Kompetenzcluster homepage	Arvis, J et al (2010)	Hanouz, M et al (2009)	Rushton et al (2006)	Skjøtt-Larsen, T et al (2007)
Factors								
Demand	X	X						
Distance to facility site	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Transport time	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Location of supply sources	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Location of other markets		X		X				
Location of potential facility sites	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Labour		X	X	X				
Transportation costs between each pair of sites	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Inventory costs by site	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Sale price of product in different regions	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

¹⁹⁴ Central Intelligence Agency, homepage (2010-02-22)

Finding optimal logistical hubs for Swedish export

Taxes and tariffs		X		X				
Desired response time (service)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Transport cost to site	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Volume at point	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Transportation rate to point	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Access to land	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Economic incentives			X					
Closeness to airport, port of entry, rail line etc.	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Location costs				X				
Border administration					X	X		
Availability and quality of infrastructure				X	X	X		
Logistical cost					X			
Logistical competences				X	X	X		
Ability to track and trace consignments					X			
Frequency of on time shipments					X			
Transparency of border administration						X		
Availability and quality of Information and Communications Technology						X		
Regulatory environment						X		
Physical security						X		
Trade agreements and economic unions							X	X
Types of payment	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Terms of trade							X	
Documentation							X	
Human rights								X
Taking environmental responsibility								X
Corruption								X
Culture								X

Appendix 2 - Choosing criteria

Finding optimal logistical hubs for Swedish export

Criteria being not applicable	Reason
Transport time	Dependent on specific location rather than on a country basis
Location of supply sources	Company specific and not applicable on a country basis
Location of potential facility sites	Company specific and not applicable on a country basis
Transportation costs between each pair of sites	Dependent on specific location rather than on a country basis
Inventory costs by site	Dependent on type of products and not applicable on a country basis
Sale price of product in different regions	Product specific and not applicable on a country basis
Desired response time (service)	Company specific and not applicable on a country basis
Transport cost to site	Dependent on specific location rather than on a country basis
Volume at point	Company specific and not applicable on a country basis
Transportation rate to point	Dependent on specific location rather than on a country basis
Access to land	Dependent on specific location rather than on a country basis
Closeness to airport, port of entry, rail line etc.	Dependent on specific location rather than on a country basis
Types of payment	Not possible to generalize on a country basis

Appendix 3 - Not applicable criteria

Engineering product industry

- Power-generating machinery and equipment
- Machinery specialized for particular industries
- Metalworking machinery
- General industrial machinery and equipment, and machines

Transportation industry

- Road vehicles (including air-cushion vehicles)
- Other transport equipment

Electrical and telecommunication industry

- Telecommunication and sound-recording and reproducing apparatus and equipment
- Electrical machinery, apparatus and appliances, and electrical parts thereof

Chemical products industry

- Organic chemicals
- Inorganic chemicals
- Dyeing, tanning and colouring materials
- Medical and pharmaceutical products
- Essential oils and resinoids and perfume materials; toilet, polishing and cleansing preparations
- Fertilizers
- Plastics in primary forms
- Plastics in non-primary forms
- Chemical materials and products¹⁹⁵

Appendix 4 - SITC¹⁹⁶

¹⁹⁶ United Nations, homepage (2010-03-02)

Finding optimal logistical hubs for Swedish export

	Engineering products industry		Transportation industry		Electrical and telecommunication industry		Chemical product industry	
	Jonas Lindström, Logistical Manager ABB AB	Mikael Redin, Distribution Centre Manager Gambro AB	Dan Ingeklint, Logistics Manager Haldex AB	Thomas Laanemets, Supply Chain Manager Volvo Busses	Bosse Nyberg, Manager Logistics Support Sony Ericsson Mobile Communications AB	Sven-Olov Asp, Logistics Manager at Siemens AB	Jens Lamberth, Global Category Manager Astra Zeneca AB	Niklas Backman, Logistics Manager Business Group Specialty Intermediates at Perstorp AB
Ability to track and trace consignments	7	21	8	7	16	1	19	15
Availability and quality of Information and Communication Technology	5	13	9	5	15	7	18	16
Availability and quality of Infrastructure	2	5	13	1	14	9	2	7
Border administration	6	3	10	8	3	14	3	3
Closeness to other major markets	1	2	5	2	4	4	1	2
Corruption	14	4	2	10	12	5	6	13
Culture	13	12	20	21	17	13	9	12
Current demand	12	19	4	15	18	17	21	1
Economic incentives	8	18	21	20	1	19	16	18
Frequency of on time shipments	9	11	7	3	20	2	10	8
Human rights	11	1	3	16	13	3	8	11
Labour	21	17	19	11	7	15	17	19
Location costs	15	14	12	17	5	11	15	4
Logistical competence	3	6	14	4	6	6	4	5
Logistical cost	4	10	11	19	2	10	5	6
Physical security	16	15	1	12	10	21	7	14
Regulatory environment	20	7	15	18	11	16	20	20
Taking environmental responsibility	17	20	6	9	9	20	14	17
Taxes and tariffs	18	16	18	14	8	12	13	9
Terms of trade	19	8	16	13	21	18	12	10
Trade agreements and economic unions	10	9	17	6	19	8	11	21

Appendix 5 - Ranking criteria

Finding optimal logistical hubs for Swedish export

Appendix 6 - Global indexes

Availability and quality of infrastructure															
Africa			America			Middle East			South East Asia and East Asia						
ETI	Score (of maximum 7)	LPI	Score (of maximum 5)	ETI	Score (of maximum 7)	LPI	Score (of maximum 5)	ETI	Score (of maximum 7)	LPI	Score (of maximum 5)				
Algeria	3.88	Algeria	2.05	Argentina	2.99	Argentina	2.75	Bahrain	4.31	Bahrain	3.35	Camodia	2.71	Camodia	2.12
Benin	2.44	Angola	1.69	Brazil	2.99	Bahrain	2.4	Israel	3.88	Iran	2.35	China	4.48	China	3.54
Cameroon	2.95	Benin	2.48	Canada	5.58	Brazil	3.1	Jordan	3.78	Iraq	1.73	Hongkong	5.15	Hongkong	4
Egypt	3.9	Cameroon	2.1	Chile	4.05	Canada	4.03	Kuwait	3.57	Israel	3.6	India	3.98	India	2.91
Gambia	3.8	Comoros	1.75	Colombia	3.31	Chile	4.12	Oman	4.12	Jordan	2.69	Indonesia	3.24	Indonesia	2.54
Ghana	3.26	Congo (Brazzaville)	1.62	Cuba Rica	3.61	Colombia	2.99	Qatar	4.08	Kuwait	3.33	Japan	4.77	Japan	4.19
Ivory Coast	2.93	Congo (Kinshasa)	2.27	Dominican Republic	3.45	Cuba Rica	2.55	Saudi Arabia	3.65	Lebanon	3.05	Malaysia	4.55	Malaysia	3.5
Kenya	3.3	Djibouti	2.33	Ecuador	3.1	Cuba	1.9	Syria	3.44	Oman	3.06	Philippines	2.99	Philippines	2.57
Madagascar	2.72	Egypt	2.22	El Salvador	2.87	Dominican Republic	2.34	UAE Arab Emirates	5.14	Qatar	2.75	Singapore	5.14	Singapore	4.22
Madawi	2.58	Eritrea	1.35	Gabon	3.24	Ecuador	2.38			Saudi Arabia	3.27	South Korea	4.55	South Korea	3.62
Mali	2.24	Gabon	2.09	Ghana	2.59	El Salvador	2.44			Syria	2.45	Taiwan	4.65	Taiwan	3.62
Mauritius	4.44	Gambia	2.17	Honduras	3.46	Gabon	2.37			UAE Arab Emirates	3.31	Thailand	4.39	Thailand	3.16
Morocco	3.95	Ghana	2.52	Jamaica	3.79	Guayana	1.99			Yemen	2.35	Vietnam	2.59	Vietnam	2.55
Mozambique	2.54	Guinea	2.1	Mexico	3.12	Haiti	2.17								
Namibia	4.71	Guinea Bissau	1.55	Nicaragua	2.81	Honduras	2.31								
Nigeria	2.49	Ivory Coast	2.37	Parana	4.65	Jamaica	2.07								
Senegal	3.45	Kenya	2.14	Peru	3.02	Mexico	2.95								
South Africa	4.11	Liberia	2	United States	5.54	Nicaragua	2.23								
Tanzania	2.35	Libya	2.18	Uruguay	2.83	Parana	2.63								
Tunisa	4.21	Madagascar	2.63	Venezuela	2.88	Peru	2.65								
		Mauritius	2.29			United States	4.15								
		Mozambique	2.04			Uruguay	2.38								
		Namibia	1.71			Venezuela	2.44								
		Nigeria	2.43												
		Senegal	2.64												
		Sierra Leone	1.61												
		Somalia	1.5												
		South Africa	3.42												
		Sudan	1.78												
		Tanzania	2												
		Togo	1.82												
		Tunisa	2.35												

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Border Administration															
Africa			America			Middle East			South East Asia and East Asia						
ETI	Score (of maximum 7)	LPI	Score (of maximum 5)	ETI	Score (of maximum 7)	LPI	Score (of maximum 5)	ETI	Score (of maximum 7)	LPI	Score (of maximum 5)				
Algeria	3.24	Algeria	1.97	Argentina	3.35	Argentina	2.63	Bahrain	5.17	Bahrain	3.05	Cambodia	3	Cambodia	2.28
Benin	2.97	Angola	1.75	Brazil	3.51	Bahamas	2.38	Israel	5.25	Iran	2.22	China	4.43	China	3.16
Cameroun	3.07	Benin	2.38	Canada	5.64	Brazil	2.37	Jordan	4.62	Iraq	2.07	Hongkong	5.89	Hongkong	3.83
Egypt	3.78	Cameroon	2.11	Chile	5.31	Canada	3.71	Kuwait	3.52	Israel	3.12	India	3.94	India	2.7
Gambia	3.63	Comoros	1.96	Colombia	3.55	Chile	2.93	Oman	4.23	Jordan	2.31	Indonesia	3.75	Indonesia	2.43
Guinea	3.45	Congo (Brazzaville)	2.02	Costa Rica	4.31	Colombia	2.5	Oman	4.63	Kuwait	3.03	Japan	5.63	Japan	3.79
Ivory Coast	2.55	Congo (Kinshasa)	2.6	Dominican Republic	3.8	Costa Rica	2.61	Saudi Arabia	4.61	Lebanon	3.27	Malaysia	4.65	Malaysia	3.11
Kenya	2.77	Djibouti	2.25	Ecuador	2.8	Cuba	1.79	Syria	3.17	Oman	3.38	Philippines	3.72	Philippines	2.67
Madagascar	3.26	Egypt	2.11	El Salvador	3.9	Dominican Republic	2.51	United Arab Emirates	5.24	Dubai	2.25	Singapore	6.49	Singapore	4.02
Mali	3.06	Eritrea	1.5	Guatemala	4.07	Ecuador	2.32			Saudi Arabia	2.91	South Korea	5.28	South Korea	3.33
Mauritania	2.67	Gabon	2.23	Guatemala	3.14	El Salvador	2.48			Syria	2.37	Taiwan	5.15	Taiwan	3.35
Mauritius	4.62	Gambia	2.38	Honduras	3.42	Guatemala	2.33			United Arab Emirates	3.49	Thailand	4.48	Thailand	3.02
Morocco	4.21	Guinea	2.35	Venezuela	3.59	Guatemala	2.02			Vietnam	2.46	Vietnam	3.28	Vietnam	2.89
Mozambique	3.21	Guinea	2.34	Malawi	3.87	Haiti	2.12								
Namibia	3.47	Guinea Bissau	1.89	Nicaragua	3.38	Honduras	2.39								
Nigeria	2.98	Ivory Coast	2.16	Paraguay	4.22	Paraguay	2								
Senegal	3.54	Kenya	2.23	Peru	3.93	Malawi	2.55								
South Africa	4.12	Liberia	2.28	United States	5.98	Nicaragua	2.24								
Tanzania	3.77	Libya	2.15	Uruguay	4.15	Paraguay	2.76								
Tunisia	4.67	Madagascar	2.35	Venezuela	2.25	Peru	2.5								
		Mauritius	2.71	United States	3.88										
		Mozambique	1.95	Uruguay	2.71										
		Namibia	1.88	Venezuela	2.06										
		Nigeria	2.17												
		Senegal	2.45												
		Serra Leone	2.17												
		Somalia	1.33												
		South Africa	3.22												
		Sudan	2.02												
		Tanzania	2.42												
		Togo	2.4												
		Tunisia	2.43												

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Frequency of on-time shipments (LPI)							
Africa		America		Middle East		South East Asia and East Asia	
	Score (of maximum 5)		Score (of maximum 5)		Score (of maximum 5)	Score (of maximum 5)	
Algeria	2.81	Argentina	3.82	Bahrain	3.85	Cambodia	2.84
Angola	3.01	Bahamas	3.46	Iran	3.26	China	3.91
Benin	3.49	Brazil	4.14	Iraq	2.49	Hong Kong	4.04
Cameroon	3.16	Canada	4.41	Israel	3.77	India	3.61
Comoros	3.23	Chile	3.8	Jordan	3.39	Indonesia	3.46
Congo (Brazzaville)	4	Colombia	3.52	Kuwait	3.7	Japan	4.26
Congo (Kinshasa)	3.2	Costa Rica	3.71	Lebanon	3.97	Malaysia	3.66
Djibouti	2.67	Cuba	2.41	Oman	3.94	Philippines	3.83
Egypt	3.31	Dominican Republic	3.85	Qatar	4.09	Singapore	4.23
Eritrea	2.21	Ecuador	3.55	Saudi Arabia	3.78	South Korea	3.97
Gabon	2.87	El Salvador	3.63	Syria	3.45	Taiwan	3.95
Gambia	3.15	Guatemala	3.52	United Arab Emirates	3.94	Thailand	3.73
Ghana	2.67	Guyana	2.7	Yemen	3.48	Vietnam	3.44
Guinea	3.1	Haiti	3.02				
Guinea Bissau	2.91	Honduras	3.83				
Ivory Coast	2.73	Jamaica	2.82				
Kenya	3.06	Mexico	3.66				
Liberia	3.08	Nicaragua	3.21				
Libya	2.98	Panama	3.76				
Madagascar	2.9	Peru	3.38				
Mauritius	2.91	United States	4.19				
Mozambique	2.4	Uruguay	3.06				
Namibia	2.38	Venezuela	3.05				
Nigeria	3.1						
Senegal	3.52						
Sierra Leone	2.33						
Somalia	1.38						
South Africa	3.57						
Sudan	3.09						
Tanzania	3.33						
Togo	3.02						
Tunisia	3.57						

Logistical Competence (LPI)							
Africa		America		Middle East		South East Asia and East Asia	
	Score (of maximum 5)		Score (of maximum 5)		Score (of maximum 5)	Score (of maximum 5)	
Algeria	2.24	Argentina	3.03	Bahrain	3.36	Cambodia	2.29
Angola	2.02	Bahamas	2.69	Iran	2.65	China	3.49
Benin	2.64	Brazil	3.3	Iraq	2.1	Hong Kong	3.83
Cameroon	2.53	Canada	3.99	Israel	3.5	India	3.16
Comoros	2.26	Chile	2.94	Jordan	2.49	Indonesia	2.47
Congo (Kinshasa)	2.93	Colombia	2.75	Kuwait	3.11	Japan	4
Congo (Brazzaville)	2.42	Costa Rica	2.8	Lebanon	3.73	Malaysia	3.34
Ivory Coast	2.57	Cuba	1.88	Oman	2.37	Philippines	2.95
Djibouti	2.17	Dominican Republic	2.42	Qatar	2.57	Singapore	4.12
Egypt	2.87	Ecuador	2.6	Saudi Arabia	3.33	South Korea	3.64
Eritrea	1.88	El Salvador	2.66	Syria	2.59	Taiwan	3.65
Gabon	2.31	Guatemala	2.74	United Arab Emirates	3.53	Thailand	3.16
Gambia	2.37	Guyana	2.25	Yemen	2.35	Vietnam	2.89
Ghana	2.42	Haiti	2.46				
Guinea	2.68	Honduras	2.57				
Guinea Bissau	1.56	Jamaica	2.32				
Kenya	2.28	Mexico	3.04				
Liberia	2.16	Nicaragua	2.31				
Libya	2.28	Panama	2.83				
Madagascar	2.4	Peru	2.61				
Mauritius	2.43	United States	3.92				
Mozambique	2.2	Uruguay	2.59				
Namibia	2.04	Venezuela	2.53				
Nigeria	2.45						
Senegal	2.73						
Sierra Leone	1.53						
Somalia	1.33						
South Africa	3.59						
Sudan	2.15						
Tanzania	2.38						
Togo	2.45						
Tunisia	2.36						

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Logistical Cost (LPI)							
Africa		America		Middle East		South East Asia and East Asia	
	Score (of maximum 5)		Score (of maximum 5)		Score (of maximum 5)	Score (of maximum 5)	
Algeria	2.7	Argentina	3.15	Bahrain	3.05	Cambodia	2.19
Angola	2.38	Bahamas	2.69	Iran	2.44	China	3.31
Benin	2.65	Brazil	2.91	Iraq	2.2	Hong Kong	3.67
Cameroon	2.69	Canada	3.24	Israel	3.17	India	3.13
Comoros	2.56	Chile	2.74	Jordan	3.11	Indonesia	2.82
Congo (Brazzaville)	2.33	Colombia	2.54	Kuwait	3.12	Japan	3.55
Congo (Kinshasa)	2.56	Costa Rica	2.64	Libanon	2.87	Malaysia	3.5
Djibouti	2.5	Cuba	2.32	Oman	2.31	Philippines	3.4
Egypt	2.56	Dominican Republic	2.59	Qatar	2.92	Singapore	3.86
Eritrea	1.63	Ecuador	2.86	Saudi Arabia	2.8	South Korea	3.47
Gabon	2.29	El Salvador	2.18	Syria	2.87	Taiwan	3.64
Gambia	2.54	Guatemala	2.16	United Arab Emirates	3.48	Thailand	3.27
Ghana	2.38	Guyana	2.31	Yemen	2.24	Vietnam	3.04
Guinea	2.43	Haiti	3.17				
Guinea Bissau	2.75	Honduras	2.67				
Ivory Coast	2.44	Jamaica	2.82				
Kenya	2.84	Mexico	2.83				
Liberia	2.33	Nicaragua	2.63				
Libya	2.28	Panama	2.87				
Madagascar	3.06	Peru	2.75				
Mauritius	3.24	United States	3.21				
Mozambique	2.77	Uruguay	2.77				
Nambia	2.2	Venezuela	3.05				
Nigeria	2.84						
Senegal	2.75						
Sierra Leone	2.33						
Somalia	1.33						
South Africa	3.26						
Sudan	2.11						
Tanzania	2.78						
Togo	2.42						
Tunisia	3.36						

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Corruption (Transparency International)							
Africa		America		Middle East		South East Asia and East Asia	
	Score (of maximum 10)		Score (of maximum 10)		Score (of maximum 10)		Score (of maximum 10)
Algeria	2.8	Argentina	2.9	Bahrain	5.1	Brunei	5.5
Angola	1.9	Barbados	7.4	Iran	1.8	Cambodia	2
Benin	2.9	Brazil	3.7	Iraq	1.5	China	3.6
Cameroon	2.2	Canada	8.7	Israel	6.1	Hong Kong	8.2
Cape Verde	5.1	Chile	6.7	Jordan	5	India	3.4
Comoros	2.3	Colombia	3.7	Kuwait	4.1	Indonesia	2.8
Congo (Brazzaville)	1.9	Costa Rica	5.3	Lebanon	2.5	Japan	7.7
Djibouti	2.8	Cuba	4.4	Oman	5.5	Malaysia	4.5
Egypt	2.8	Dominica	5.9	Qatar	7	Philippines	2.4
Equatorial Guinea	1.8	Dominican Republic	3	Saudi Arabia	4.3	Singapore	9.2
Eritrea	2.6	Ecuador	2.2	Syria	2.6	South Korea	5.5
Gabon	2.9	El Salvador	3.4	United Arab Emirates	6.5	Taiwan	5.6
Gambia	2.9	Guatemala	3.4	Yemen	2.1	Thailand	3.4
Ghana	3.9	Guyana	2.6			Vietnam	2.7
Guinea	1.8	Haiti	1.8				
Guinea Bissau	1.9	Honduras	2.5				
Ivory Coast	2.1	Jamaica	3				
Kenya	2.2	Mexico	3.3				
Liberia	3.1	Nicaragua	2.5				
Libya	2.5	Panama	3.4				
Madagascar	3	Peru	3.7				
Malawi	3.3	Puerto Rico	5.8				
Mauritania	2.5	Saint Lucia	7				
Mauritius	5.4	Saint Vincent and the Grenadines	6.4				
Morocco	3.3	Suriname	3.7				
Mozambique	2.5	Trinidad and Tobago	3.6				
Namibia	4.5	United States	7.5				
Nigeria	2.5	Uruguay	6.7				
Sao Tome and Principe	2.8	Venezuela	1.9				
Senegal	3						
Seychelles	4.8						
Sierra Leone	2.2						
Somalia	1.1						
South Africa	4.7						
Sudan	1.5						
Tanzania	2.6						
Togo	2.8						
Tunisia	4.2						

Appendix 7 - Corruption index

Finding optimal logistical hubs for Swedish export

Human rights (Global Peace Index)							
Africa		America		Middle East		South East Asia and East Asia	
	Score (of maximum 5)		Score (of maximum 5)		Score (of maximum 5)		Score (of maximum 5)
Algeria	2.5	Argentina	4	Bahrain	4	Burma (Myanmar)	1
Angola	2.5	Brazil	2	Iran	2	Cambodia	2.5
Botswana	4	Canada	4.5	Iraq	1	China	2.5
Burkina Faso	3	Chile	4.5	Israel	2	Hong Kong	2.5
Cameroon	3	Colombia	2	Jordan	3	India	2
Central African Republic	1.5	Costa Rica	5	Kuwait	4	Indonesia	3
Chad	2	Cuba	3	Lebanon	2.5	Japan	5
Congo (Brazzaville)	3.5	Dominican Republic	3	Oman	5	Malaysia	3.75
Congo (Kinshasa)	1	Ecuador	3	Qatar	4	North Korea	2
Egypt	2.5	El Salvador	3	Saudi Arabia	2.5	Philippines	2
Equatorial Guinea	3.5	Guatemala	2.5	Syria	2.5	Singapore	4.5
Ethiopia	2	Guyana	4	United Arab Emirates	4	South Korea	4
Gabon	2.5	Haiti	2.5	Yemen	2	Taiwan	5
Ghana	3.5	Honduras	2.5			Thailand	2
Ivory Coast	2	Jamaica	3			Vietnam	3.5
Kenya	2	Mexico	3				
Libya	3	Nicaragua	4.5				
Madagascar	4	Panama	5				
Malawi	3.5	Paru	4.5				
Mali	4	Trinidad and Tobago	4				
Mauritania	3.5	United States of America	3				
Morocco	3	Uruguay	5				
Mozambique	3	Venezuela	2.5				
Namibia	4						
Nigeria	2						
Rwanda	3						
Senegal	3						
Somalia	1						
South Africa	2.5						
Sudan	1						
Tanzania	3.5						
Tunisia	3						
Uganda	2						
Zambia	3.5						
Zimbabwe	2						

Appendix 8 - Human rights index

Finding optimal logistical hubs for Swedish export

Appendix 9 - Closeness to other major markets index

Closeness to other major markets														
Africa							Americas							
	ZAF	Index	NGA	Index	DZA	Index	Weighted index	USA	Index	BRA	Index	CAN	Index	Weighted Index
Algeria	7448	0,22	3106	5,15	0	10,00	4,23	8403	0,10	2353	6,81	9081	0,08	0,74
Angola	2458	6,77	2115	6,70	5194	3,92	6,03	1534	8,19	5556	2,46	2268	7,52	7,59
Benin	4520	4,06	568	9,11	3376	6,05	6,16	3340	6,06	3463	5,30	3905	5,73	5,96
Botswana	256	9,66	4290	3,30	7263	1,49	5,60	2668	6,86	5798	2,13	3367	6,32	6,36
Burkina Faso	5332	3,00	1028	8,40	2766	6,76	5,65	6794	1,99	0	10,00	7366	1,95	2,76
Burundi	2492	6,73	2826	5,59	5240	3,86	5,65	737	9,13	7366	0,00	0	10,00	8,33
Cameroon	3753	5,07	763	8,81	3773	5,58	6,38	8081	0,48	3018	5,90	8798	0,39	0,99
Cape Verde	7200	0,54	3396	4,70	3581	5,81	3,18	3815	5,51	3756	4,90	4540	5,04	5,41
Central African Republic	3508	5,39	1373	7,86	3948	5,38	6,17	3291	6,12	4909	3,34	4024	5,60	5,81
Chad	4455	4,15	917	8,57	2995	6,49	6,14	3035	6,42	3763	4,89	3611	6,06	6,25
Comoros	2224	7,08	4619	2,79	6847	1,98	4,44	2372	7,21	4506	3,88	3046	6,67	6,84
Congo, Republic of	2765	6,37	1740	7,28	4744	4,44	6,18	4355	4,87	3779	4,87	5089	4,44	4,83
Djibouti	4459	4,14	3946	3,84	4893	4,27	4,08	3049	6,41	5599	2,40	3755	5,90	5,98
Egypt	6217	1,83	3415	4,67	2719	6,82	3,98	3343	6,06	3453	5,31	3942	5,69	5,96
Equatorial Guinea	3893	4,89	631	9,02	3730	5,63	6,38	3005	6,46	5780	2,15	3698	5,96	6,00
Eritrea	4714	3,81	3513	4,52	4272	5,00	4,33	4042	5,24	2752	6,26	4623	4,95	5,31
Ethiopia	4038	4,70	3478	4,57	4751	4,44	4,59	2306	7,28	4665	3,67	3007	6,72	6,89
Gabon	3540	5,35	1010	8,42	4110	5,19	6,28	2936	6,54	5455	2,59	3653	6,01	6,12
Gambia, The	6531	1,42	2642	5,88	3253	6,19	4,03	2326	7,26	4913	3,33	3057	6,66	6,83
Ghana	4645	3,90	913	8,57	3498	5,90	5,88	3038	6,42	6842	0,71	3609	6,06	5,84
Guinea	6165	1,90	2513	6,08	3577	5,81	4,20	3118	6,33	5244	2,88	3842	5,60	5,95
Guinea-Bissau	6332	1,68	2514	6,07	3347	6,08	4,18	3339	6,07	4438	3,97	4075	5,55	5,82
Ivory Coast	5123	3,27	1397	7,82	3445	5,97	5,39	5673	3,32	3172	5,69	6403	3,01	3,52
Kenya	2873	6,23	3489	4,55	5494	3,57	5,03	3182	6,25	3615	5,09	3760	5,89	6,11
Lesotho	406	9,47	4807	2,50	7794	0,87	5,10	3251	6,17	3543	5,19	3838	5,81	6,05
Liberia	5521	2,75	2003	6,87	3672	5,70	4,79	4276	4,96	2541	6,55	4827	4,73	5,09
Libyan	6701	1,20	2692	5,80	1030	8,79	4,56	3498	5,88	3300	5,52	4101	5,52	5,81
Madagascar	2124	7,21	5416	1,55	7762	0,91	3,84	0	10,00	6794	0,78	737	9,19	9,05
Malawi	1434	8,12	3911	3,89	6512	2,37	5,34	8488	0,00	2284	6,90	9155	0,00	0,66
Mali	5801	2,38	1700	7,35	2905	6,60	5,01	3303	6,11	3606	5,10	3967	5,67	5,98
Mauritania	6834	1,02	2690	5,80	2787	6,74	3,97							
Mauritius	3057	5,98	6405	0,00	8539	0,00	2,59							
Morocco	7613	0,00	3115	5,14	945	8,89	3,86							
Mozambique	438	9,42	4782	2,53	7646	1,05	5,14							
Namibia	1182	8,45	3696	4,23	6775	2,07	5,51							
Niger	5208	3,16	737	8,85	2595	6,96	5,91							
Nigeria	4505	4,08	0	10,00	3106	6,36	6,53							
Rwanda	2656	6,51	2824	5,59	5142	3,98	5,58							
São Tomé and Príncipe	3697	5,14	1001	8,44	4095	5,20	6,20							
Senegal	6682	1,22	2747	5,71	3195	6,26	3,91							
Seychelles	3735	5,09	5574	1,30	7129	1,65	3,03							
Sierra Leone	5889	2,27	2250	6,49	3557	5,83	4,50							
South Africa	0	10,00	4505	2,97	7448	1,28	5,59							
Sudan	4618	3,93	2845	5,56	3755	5,60	4,87							
Swaziland	299	9,61	4726	2,62	7623	1,07	5,26							
Tanzania	2319	6,95	3600	4,38	5874	3,12	5,18							
Togo	4587	3,98	724	8,87	3417	6,00	6,03							
Tunisia	7214	0,52	3093	5,17	643	9,25	4,18							
Uganda	2938	6,14	2983	5,34	5077	4,06	5,37							
Zambia	1142	8,50	3597	4,39	6396	2,51	5,69							
Zimbabwe	926	8,78	3991	3,77	6760	2,08	5,52							
							Middle East							
	SAU	Index	IRN	Index	ARE	Index	Weighted index							
Bahrain	425	7,16	1056	5,54	427	7,98	6,85							
Iran	1305	1,28	0	10,00	1279	3,94	4,72							
Iraq	993	3,37	692	7,07	1384	3,44	4,57							
Israel	1436	0,42	1589	3,29	2100	0,05	1,24							
Jordan	1336	1,08	1490	3,70	1991	0,56	1,79							
Kuwait	535	6,43	775	6,73	836	6,04	6,42							
Lebanon	1498	0,00	1469	3,79	2110	0,00	1,21							
Oman	1210	1,92	1510	3,62	439	7,92	3,96							
Qatar	486	6,76	1159	5,10	304	8,56	6,68							
Saudi Arabia	0	10,00	1305	4,48	775	6,33	7,33							
Syrian Arab Republic	1414	0,56	1405	4,07	2024	0,41	1,64							
United Arab Emirates	775	4,83	1279	4,60	0	10,00	6,04							
Yemen	1063	2,90	2367	0,00	1466	3,05	2,01							

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Closeness to other major markets							
South East and East Asia	JPN	Index	CHN	Index	IND	Index	Weighted index
Brunei Darussalam	4260	2,71	3896	2,54	4773	1,84	2,53
Cambodia	4409	2,46	3351	3,58	3445	4,11	3,19
China	2098	6,41	0	10,00	3785	3,53	7,78
Hong Kong	2891	5,06	1976	6,22	3763	3,56	5,43
India	5848	0,00	3785	2,75	1722	7,06	2,14
Indonesia	5792	0,10	5221	0,00	4998	1,45	0,21
Japan	0	10,00	2098	5,98	5848	0,00	6,90
Korea	1157	8,02	956	8,17	4693	1,98	7,38
Malaysia	5329	0,89	4355	1,66	3842	3,43	1,55
Myanmar	4782	1,82	3234	3,81	2344	5,99	3,26
Philippines	3000	4,87	2850	4,54	4757	1,87	4,36
Singapore	5326	0,89	4485	1,41	4154	2,90	1,38
Taiwan	2104	6,40	0	10,00	4389	2,50	7,66
Thailand	4613	2,11	3304	3,67	2920	5,01	3,20
Vietnam	3673	3,72	2331	5,54	3007	4,86	4,72

Largest markets (Sum of GDP for 2008 and 2014)	
Africa	% of sum of GDP
Total GDP South Africa (ZAF)	626345 43,3%
Total GDP Nigeria (NGA)	458422 31,7%
Total GDP Algeria (DZA)	363118 25,1%
Sum of all GDP	1447885
Americas	
Total GDP United States of America (USA)	31860777 82,1%
Total GDP Brazil (BRA)	3728523 9,6%
Total GDP Canada (CAN)	3212956 8,3%
Sum of all GDP	38802266
Middle East	
Total GDP Saudi Arabia (SAU)	1070813 43,2%
Total GDP Iran (IRN)	790151 31,9%
Total GDP United Arab Emirates (ARE)	618818 25,0%
Sum of all GDP	2479782
South East and East Asia	
Total GDP Japan (JPN)	10702317 40,5%
Total GDP China (CHN)	12610796 47,7%
Total GDP India (IND)	3115016 11,8%
Sum of all GDP	26428129

To calculate the weighted index the relative closeness to each market has been indexed, with 10 as the highest score. This means that for example Japan receives 10 when rating the closeness to the Japanese market. The scoring is made relative the farthest distance to the market, in the case of Japan it is India with a distance of 5848 km to the Japanese market. The relative distance to the three major markets creates three indexes per country. To receive the weighted index (used in the AHP), each index is weighted regarding how large the market is relative the two others. See example below:

$$\text{Weighted index (Japan)} = (\text{Index 1}) \cdot (\text{Relative market size 1}) + (\text{Index 2}) \cdot (\text{Relative market size 2}) + (\text{Index 3}) \cdot (\text{Relative market size 3})$$

$$= 10 \cdot 0,405 + 5,98 \cdot 0,477 + 0 \cdot 0,118 = 6,90$$

Finding optimal logistical hubs for Swedish export

	Availability and quality of infrastructure	Border administration	Closeness to other major markets	Corruption	Frequency of on time shipments	Human rights	Logistical cost	Logistical competence
Corruption	ABB: 5	ABB: 5	ABB: 1	ABB: 1	ABB: 5	ABB: 1	0.33	ABB: 3
	Astra: Astra	Astra: Astra	Astra: Astra	Astra: Astra	Astra: Astra	Astra: Astra	Astra: Astra	Astra: Astra
	Zenecca: 1	Zenecca: 1	Zenecca: 1	Zenecca: 1	Zenecca: 5	Zenecca: 1	Zenecca: 5	Zenecca: 5
	Gambrö: 0.33	Gambrö: 3	Gambrö: 3	Gambrö: 1	Gambrö: 3	Gambrö: 5	Gambrö: 0.2	Gambrö: 3
	Haldex: 7	Haldex: 7	Haldex: 5	Haldex: 1	Haldex: 5	Haldex: 0.33	Haldex: 5	Haldex: 5
	Perstorp: 5	Perstorp: 5	Perstorp: 5	Perstorp: 1	Perstorp: 7	Perstorp: 7	Perstorp: 5	Perstorp: 7
	Siemens: 1	Siemens: 1	Siemens: 1	Siemens: 1	Siemens: 0.33	Siemens: 1	Siemens: 1	Siemens: 1
	Sony: Sony	Sony: Sony	Sony: Sony	Sony: Sony	Sony: Sony	Sony: Sony	Sony: Sony	Sony: Sony
	Ericsson: 0.2	Ericsson: 0.2	Ericsson: 0.2	Ericsson: 1	Ericsson: 1	Ericsson: 1	Ericsson: 0.14	Ericsson: 0.14
	Volvo: 0.2	Volvo: 0.33	Volvo: 0.2	Volvo: 1	Volvo: 0.2	Volvo: 0.2	Volvo: 0.33	Volvo: 0.2
Frequency of on time shipments	ABB: 0.2	ABB: 3	ABB: 0.2	ABB: 0.2	ABB: 1	ABB: 0.33	0.2	ABB: 0.2
	Astra: Astra	Astra: Astra	Astra: Astra	Astra: Astra	Astra: Astra	Astra: Astra	Astra: Astra	Astra: Astra
	Zenecca: 0.2	Zenecca: 0.2	Zenecca: 0.14	Zenecca: 0.2	Zenecca: 1	Zenecca: 0.33	Zenecca: 0.2	Zenecca: 3
	Gambrö: 3	Gambrö: 0.33	Gambrö: 0.33	Gambrö: 0.33	Gambrö: 1	Gambrö: 0.2	Gambrö: 0.2	Gambrö: 0.33
	Haldex: 5	Haldex: 5	Haldex: 0.2	Haldex: 0.2	Haldex: 1	Haldex: 0.14	Haldex: 0.2	Haldex: 1
	Perstorp: 0.33	Perstorp: 0.14	Perstorp: 0.2	Perstorp: 0.14	Perstorp: 1	Perstorp: 1	Perstorp: 0.33	Perstorp: 0.14
	Siemens: 3	Siemens: 5	Siemens: 3	Siemens: 3	Siemens: 1	Siemens: 1	Siemens: 3	Siemens: 3
	Sony: Sony	Sony: Sony	Sony: Sony	Sony: Sony	Sony: Sony	Sony: Sony	Sony: Sony	Sony: Sony
	Ericsson: 0.2	Ericsson: 0.2	Ericsson: 0.2	Ericsson: 1	Ericsson: 1	Ericsson: 0.14	Ericsson: 0.2	Ericsson: 0.2
	Volvo: 0.33	Volvo: 3	Volvo: 1	Volvo: 5	Volvo: 1	Volvo: 3	Volvo: 5	Volvo: 3
Human rights	ABB: 3	ABB: 3	ABB: 0.33	ABB: 1	ABB: 3	ABB: 1	1	ABB: 1
	Astra: Astra	Astra: Astra	Astra: Astra	Astra: Astra	Astra: Astra	Astra: Astra	Astra: Astra	Astra: Astra
	Zenecca: 3	Zenecca: 3	Zenecca: 3	Zenecca: 1	Zenecca: 3	Zenecca: 1	Zenecca: 3	Zenecca: 3
	Gambrö: 0.2	Gambrö: 5	Gambrö: 5	Gambrö: 5	Gambrö: 5	Gambrö: 1	Gambrö: 5	Gambrö: 5
	Haldex: 7	Haldex: 7	Haldex: 5	Haldex: 3	Haldex: 7	Haldex: 1	Haldex: 5	Haldex: 5
	Perstorp: 5	Perstorp: 1	Perstorp: 1	Perstorp: 0.14	Perstorp: 1	Perstorp: 1	Perstorp: 5	Perstorp: 1
	Siemens: 1	Siemens: 3	Siemens: 1	Siemens: 1	Siemens: 1	Siemens: 1	Siemens: 1	Siemens: 1
	Sony: Sony	Sony: Sony	Sony: Sony	Sony: Sony	Sony: Sony	Sony: Sony	Sony: Sony	Sony: Sony
	Ericsson: 0.2	Ericsson: 1	Ericsson: 0.33	Ericsson: 1	Ericsson: 7	Ericsson: 1	Ericsson: 0.14	Ericsson: 0.2
	Volvo: 0.2	Volvo: 0.33	Volvo: 0.2	Volvo: 5	Volvo: 0.33	Volvo: 1	Volvo: 3	Volvo: 0.33

Finding optimal logistical hubs for Swedish export

	Availability and quality of infrastructure	Border administration	Closeness to other major markets	Corruption	Frequency of on time shipments	Human rights	Logistical cost	Logistical competence
Logistical cost	ABB: 3	ABB: 7	ABB: 1	ABB: 3	ABB: 5	ABB: 1	ABB: 1	ABB: 5
	Astra 1	Astra 0,2	Astra 0,14	Astra 0,2	Astra 0,33	Astra 0,33	Astra 1	Astra 1
	Zeneca: 3	Zeneca: 0,33	Zeneca: 0,33	Zeneca: 0,33	Zeneca: 0,33	Zeneca: 0,2	Zeneca: 0,2	Zeneca: 1
	Gambrö: 5	Gambrö: 3	Gambrö: 0,33	Gambrö: 0,2	Gambrö: 5	Gambrö: 0,2	Gambrö: 1	Gambrö: 0,33
	Hallex: 5	Hallex: 0,2	Hallex: 0,33	Hallex: 0,2	Hallex: 5	Hallex: 0,2	Hallex: 1	Hallex: 3
	Persbörp: 5	Persbörp: 0,2	Persbörp: 1	Persbörp: 0,2	Persbörp: 3	Persbörp: 0,2	Persbörp: 1	Persbörp: 0,2
	Siemens: 0,33	Siemens: 3	Siemens: 0,33	Siemens: 1	Siemens: 0,33	Siemens: 1	Siemens: 1	Siemens: 0,33
	Sony 7	Sony 5	Sony 7	Sony 7	Sony 5	Sony 7	Sony 1	Sony 7
	Ericsson: 0,33	Ericsson: 0,2	Ericsson: 0,2	Ericsson: 3	Ericsson: 0,2	Ericsson: 0,33	Ericsson: 1	Ericsson: 0,2
	Volvo: 1	Volvo: 5	Volvo: 1	Volvo: 0,33	Volvo: 5	Volvo: 0,33	Volvo: 0,2	Volvo: 1
Logistical competence	ABB: 1	ABB: 3	ABB: 0,33	ABB: 0,2	ABB: 5	ABB: 0,33	ABB: 0,2	ABB: 1
	Astra 1	Astra 3	Astra 0,33	Astra 0,2	Astra 5	Astra 1	Astra 5	Astra 1
	Zeneca: 3	Zeneca: 1	Zeneca: 0,33	Zeneca: 0,33	Zeneca: 3	Zeneca: 0,2	Zeneca: 0,2	Zeneca: 3
	Gambrö: 5	Gambrö: 3	Gambrö: 0,2	Gambrö: 0,2	Gambrö: 1	Gambrö: 0,2	Gambrö: 0,33	Gambrö: 1
	Hallex: 3	Hallex: 7	Hallex: 0,2	Hallex: 0,14	Hallex: 7	Hallex: 1	Hallex: 5	Hallex: 1
	Persbörp: 3	Persbörp: 5	Persbörp: 1	Persbörp: 1	Persbörp: 0,33	Persbörp: 1	Persbörp: 3	Persbörp: 1
	Siemens: 0,14	Siemens: 5	Siemens: 0,2	Siemens: 7	Siemens: 5	Siemens: 5	Siemens: 0,14	Siemens: 1
	Sony 0,33	Sony 3	Sony 0,2	Sony 5	Sony 0,33	Sony 1	Sony 3	Sony 1
	Ericsson: 0,33	Ericsson: 3	Ericsson: 0,2	Ericsson: 7	Ericsson: 0,33	Ericsson: 3	Ericsson: 0,14	Ericsson: 1
	Volvo: 0,33	Volvo: 3	Volvo: 0,2	Volvo: 5	Volvo: 0,33	Volvo: 3	Volvo: 5	Volvo: 1

Finding optimal logistical hubs for Swedish export

Appendix 11 - Final weighting

Countries	Criteria	Availability and quality of Infrastructure		Weight		Border Administration		Weight		Proximity to other major markets		Weight		Corruption	Frequency of on-line shipments		Human rights		Logistical Competence	Logistic Cost		TOTAL SCORE
		EMI	ETI&LP (MI)	EMI	ETI&LP (MI)	Weight	ETI&LP (MI)	Weight	ETI&LP (MI)	Weight	ETI&LP (MI)	Weight	ETI&LP (MI)		Weight	ETI&LP (MI)	Weight	ETI&LP (MI)		Weight		
Africa		0.054	0.027	0.040	0.114	0.028	0.022	0.031	0.075	0.012	0.153	0.023	0.160	0.023	0.086	0.018	0.169	0.025	0.117	0.025	0.127	0.025
Algeria		#####	0.017	#####	0.114	#####	0.076	0.017	0.075	0.026	0.157	0.029	0.086	0.028	0.160	0.023	0.086	0.018	0.169	0.025	0.127	0.021
Angola		0.034	0.028	0.031	0.114	0.034	0.026	0.030	0.075	0.023	0.153	0.023	0.160	0.026	0.086	0.028	0.169	0.025	0.117	0.025	0.127	0.021
Burkina Faso		#####	0.016	#####	0.114	#####	0.023	0.030	0.075	0.023	0.153	0.023	0.160	0.026	0.086	0.028	0.169	0.025	0.117	0.025	0.127	0.021
Cameroon (Brazzaville)		0.068	0.033	0.050	0.114	0.067	0.026	0.044	0.075	0.035	0.153	0.023	0.160	0.026	0.086	0.028	0.169	0.025	0.117	0.025	0.127	0.021
Egypt		#####	0.028	#####	0.114	#####	0.031	0.031	0.075	0.023	0.153	0.023	0.160	0.026	0.086	0.028	0.169	0.025	0.117	0.025	0.127	0.021
Ghana		0.043	0.046	0.028	0.114	0.047	0.036	0.041	0.075	0.011	0.153	0.024	0.160	0.026	0.086	0.028	0.169	0.025	0.117	0.025	0.127	0.021
Guinea		#####	0.028	#####	0.114	#####	0.035	0.035	0.075	0.011	0.153	0.023	0.160	0.026	0.086	0.028	0.169	0.025	0.117	0.025	0.127	0.021
Guinea Coast		0.033	0.039	0.036	0.114	0.023	0.028	0.028	0.075	0.011	0.153	0.023	0.160	0.026	0.086	0.028	0.169	0.025	0.117	0.025	0.127	0.021
Ivory Coast		0.044	0.029	0.037	0.114	0.026	0.031	0.028	0.075	0.017	0.153	0.023	0.160	0.026	0.086	0.028	0.169	0.025	0.117	0.025	0.127	0.021
Kenya		#####	0.031	#####	0.114	#####	0.027	0.027	0.075	0.014	0.153	0.023	0.160	0.026	0.086	0.028	0.169	0.025	0.117	0.025	0.127	0.021
Madagascar		0.028	0.051	0.040	0.114	0.040	0.036	0.030	0.075	0.010	0.153	0.023	0.160	0.026	0.086	0.028	0.169	0.025	0.117	0.025	0.127	0.021
Mozambique		0.025	0.026	0.025	0.114	0.038	0.021	0.030	0.075	0.018	0.153	0.023	0.160	0.026	0.086	0.028	0.169	0.025	0.117	0.025	0.127	0.021
Namibia		0.114	0.018	0.066	0.114	0.048	0.016	0.032	0.075	0.022	0.153	0.023	0.160	0.026	0.086	0.028	0.169	0.025	0.117	0.025	0.127	0.021
Nigeria		0.024	0.042	0.033	0.114	0.031	0.028	0.030	0.075	0.027	0.153	0.023	0.160	0.026	0.086	0.028	0.169	0.025	0.117	0.025	0.127	0.021
Niger		0.049	0.052	0.050	0.114	0.051	0.041	0.046	0.075	0.010	0.153	0.023	0.160	0.026	0.086	0.028	0.169	0.025	0.117	0.025	0.127	0.021
Senegal		#####	0.019	#####	0.114	#####	0.023	0.023	0.075	0.016	0.153	0.023	0.160	0.026	0.086	0.028	0.169	0.025	0.117	0.025	0.127	0.021
South Africa		0.079	0.093	0.086	0.114	0.079	0.081	0.080	0.075	0.023	0.153	0.023	0.160	0.026	0.086	0.028	0.169	0.025	0.117	0.025	0.127	0.021
Tanzania		0.022	0.025	0.023	0.114	0.037	0.039	0.038	0.075	0.019	0.153	0.023	0.160	0.026	0.086	0.028	0.169	0.025	0.117	0.025	0.127	0.021
Tunisia		0.084	0.048	0.086	0.114	0.111	0.040	0.075	0.075	0.011	0.153	0.023	0.160	0.026	0.086	0.028	0.169	0.025	0.117	0.025	0.127	0.021
America																						
Argentina		0.030	0.047	0.038	0.114	0.028	0.047	0.037	0.075	0.006	0.153	0.023	0.160	0.026	0.086	0.028	0.169	0.025	0.117	0.025	0.127	0.021
Brazil		0.030	0.067	0.048	0.114	0.033	0.034	0.033	0.075	0.010	0.153	0.023	0.160	0.026	0.086	0.028	0.169	0.025	0.117	0.025	0.127	0.021
Canada		0.144	0.126	0.135	0.114	0.128	0.117	0.122	0.075	0.082	0.153	0.023	0.160	0.026	0.086	0.028	0.169	0.025	0.117	0.025	0.127	0.021
Chile		0.067	0.053	0.060	0.114	0.108	0.085	0.086	0.075	0.007	0.153	0.023	0.160	0.026	0.086	0.028	0.169	0.025	0.117	0.025	0.127	0.021
Colombia		0.039	0.039	0.039	0.114	0.033	0.040	0.036	0.075	0.024	0.153	0.023	0.160	0.026	0.086	0.028	0.169	0.025	0.117	0.025	0.127	0.021
Cuba		0.050	0.037	0.044	0.114	0.061	0.046	0.053	0.075	0.029	0.153	0.023	0.160	0.026	0.086	0.028	0.169	0.025	0.117	0.025	0.127	0.021
Cuba Pinar		0.044	0.029	0.036	0.114	0.041	0.040	0.040	0.075	0.048	0.153	0.023	0.160	0.026	0.086	0.028	0.169	0.025	0.117	0.025	0.127	0.021
Dominican Republic		0.033	0.030	0.031	0.114	0.023	0.032	0.026	0.075	0.019	0.153	0.023	0.160	0.026	0.086	0.028	0.169	0.025	0.117	0.025	0.127	0.021
Ecuador		0.027	0.032	0.029	0.114	0.023	0.032	0.026	0.075	0.034	0.153	0.023	0.160	0.026	0.086	0.028	0.169	0.025	0.117	0.025	0.127	0.021
El Salvador		0.037	0.030	0.033	0.114	0.051	0.032	0.041	0.075	0.024	0.153	0.023	0.160	0.026	0.086	0.028	0.169	0.025	0.117	0.025	0.127	0.021
Guatemala		0.021	0.019	0.023	0.114	0.024	0.022	0.023	0.075	0.032	0.153	0.023	0.160	0.026	0.086	0.028	0.169	0.025	0.117	0.025	0.127	0.021
Haiti		#####	0.028	#####	0.114	#####	0.022	0.022	0.075	0.032	0.153	0.023	0.160	0.026	0.086	0.028	0.169	0.025	0.117	0.025	0.127	0.021
Honduras		0.046	0.028	0.039	0.114	0.020	0.035	0.035	0.075	0.043	0.153	0.023	0.160	0.026	0.086	0.028	0.169	0.025	0.117	0.025	0.127	0.021
Lebanon		0.057	0.021	0.038	0.114	0.034	0.022	0.028	0.075	0.039	0.153	0.023	0.160	0.026	0.086	0.028	0.169	0.025	0.117	0.025	0.127	0.021
Mexico		0.033	0.068	0.045	0.114	0.063	0.042	0.043	0.075	0.024	0.153	0.023	0.160	0.026	0.086	0.028	0.169	0.025	0.117	0.025	0.127	0.021
Nicaragua		0.025	0.025	0.025	0.114	0.023	0.029	0.029	0.075	0.031	0.153	0.023	0.160	0.026	0.086	0.028	0.169	0.025	0.117	0.025	0.127	0.021
Panama		0.095	0.041	0.088	0.114	0.057	0.054	0.042	0.075	0.029	0.153	0.023	0.160	0.026	0.086	0.028	0.169	0.025	0.117	0.025	0.127	0.021
Peru		0.030	0.042	0.036	0.114	0.045	0.040	0.042	0.075	0.012	0.153	0.023	0.160	0.026	0.086	0.028	0.169	0.025	0.117	0.025	0.127	0.021
Uruguay		0.026	0.038	0.032	0.114	0.054	0.051	0.045	0.075	0.029	0.153	0.023	0.160	0.026	0.086	0.028	0.169	0.025	0.117	0.025	0.127	0.021
United States		0.142	0.135	0.138	0.114	0.124	0.115	0.119	0.075	0.101	0.153	0.023	0.160	0.026	0.086	0.028	0.169	0.025	0.117	0.025	0.127	0.021
Venezuela		0.027	0.032	0.030	0.114	0.015	0.023	0.019	0.075	0.031	0.153	0.023	0.160	0.026	0.086	0.028	0.169	0.025	0.117	0.025	0.127	0.021
Middle East																						
Bahrain		0.137	0.106	0.121	0.114	0.162	0.082	0.127	0.075	0.148	0.153	0.023	0.160	0.026	0.086	0.028	0.169	0.025	0.117	0.025	0.127	0.021
Iran		#####	0.023	#####	0.114	#####	0.033	0.033	0.075	0.068	0.153	0.023	0.160	0.026	0.086	0.028	0.169	0.025	0.117	0.025	0.127	0.021
Israel		0.092	0.134	0.113	0.114	0.173	0.089	0.138	0.075	0.021	0.153	0.023	0.160	0.026	0.086	0.028	0.169	0.025	0.117	0.025	0.127	0.021
Jordan		0.084	0.082	0.068	0.114	0.105	0.042	0.073	0.075	0.026	0.153	0.023	0.160	0.026	0.086	0.028	0.169	0.025	0.117	0.025	0.127	0.021
Kuwait		0.069	0.102	0.086	0.114	0.049	0.080	0.089	0.075	0.127	0.153	0.023	0.160	0.026	0.086	0.028	0.169	0.025	0.117	0.025	0.127	0.021
Oman		0.115	0.077	0.096	0.114	0.077	0.131	0.104	0.075	0.051	0.153	0.023	0.160	0.026	0.086	0.028	0.169</					

Appendix 12 - Interview questions for the Swedish Trade Council's local offices

1. How are the relations between your country and the three countries that your country exports the most to in the region (according to data from UN)?
2. How are the relations between your country and the three countries that has the highest GDP in the region (according to data IMF)?
3. How is the general demand in your country when it comes to purchasing power?
4. What trade unions/agreements are the most significant for your country?
 - 4b. What are the advantages and disadvantages with these agreements?
5. How does your country's border administration work?
 - 5b. Do the custom requires a lot of documentation and administrative work?
 - 5c. Are the procedures for importing or exporting the smoothest?
 - 5d. Approximately how long does the procedures take?
 - 5e. Are the custom regulations consistent?
6. On what level are the taxes and tariffs for the customs in your country?
7. How is the availability and quality of infrastructure in your country?
8. How is the availability and quality of information and communication technology in your country?
9. How is the logistical competence in your country?
10. On what price level are the logistical services in your country?
11. On what price level are the location costs in your country?
12. How do you perceive the labour in your country?
13. What economic incitements for attracting new business exist in your country?
14. How do you perceive the frequency of on time shipments in your country?
15. What are the possibilities to track and trace consignments when the goods are being transported within your country?
16. How do you do business in your country?
 - 16b. Are there any special procedures when doing business in your country?
 - 16c. How are the procedures when doing business in your country compared to other countries in the region?
17. How does the culture in your country affect business?
18. How does the regulatory work in your country?
 - 18b. How does the regulatory affect doing business in the country?
19. How is the physical security in the country?
 - 19b. How does the physical security affect business in your country?
20. What level of corruption exists in your country?
 - 20b. How does the corruption affect business and trade in the country?
21. How do you perceive the level of human rights in your country?
22. To what extent is your country taking environmental responsibility?

Finding optimal logistical hubs for Swedish export

Appendix 13 - Interview questions for the Ministry for Foreign Affairs

1. Which of the three countries has best relations with EU?
2. Which of the three countries has best relations with other countries in the region?
3. Which of the three countries is the easiest to import to from a customs handling perspective?
4. How is the infrastructure in the countries relative each other?
5. How is the labour in the countries relative each other?
6. Are there any cultural differences between the three countries that affects doing business or trade?
7. How is the physical security in the three countries relative each other?
8. How is the lever of corruption in the three countries relative each other?
9. How would you compare the countries geographical location relative each other? (to be able to provide goods within the region)