Master Thesis

Strategic Sourcing: Local sourcing strategies for North American companies with manufacturing facilities in Mexico.

January 2012

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Dedication

To my family, thank you for your unconditional support!

Acknowledgements

I would like to express my gratitude to the people that contributed to the completion of this thesis:

Dr. Thomas Biedenbach, for your dedication, time, guidance and importance you gave to my work.

The five managers that participated in the study, for your accessibility, flexibility, time and contribution to my research.

Colleagues and friends, for sharing your viewpoints and enriching my understanding and knowledge.

Anabel Juárez Martínez
Summary

The local sourcing strategies have increased their importance as the North American companies expand their operation in low cost countries like Mexico, seeking for competitive advantages and cost reductions. There are current investigations on local sourcing in countries like the UK, Ireland, Italy or in industries such as the food and retail industry, however there are limited studies related to the local sourcing in the manufacturing industry in Mexico.

This is a case study created to analyze the local sourcing strategies developed by the sourcing managers of five North American companies from the manufacturing industry. The aim of the study is to identify the decisive factors to proceed with a local sourcing strategy, and to determine the activities required to develop such strategy. The selection of literature for this study illustrates the sourcing process and the sourcing strategies that are available, focusing mainly in the local sourcing strategies.

The result of combining the information retrieved from the managers with the theoretical frameworks and models used for local sourcing, is the identification of the factors used during the evaluation process of moving to a local source base, as well as to prioritize them to define the ones that are decisive. In addition, it is possible to determine the activities required in order to develop the local sourcing strategy based mainly in the managerial practices.

A proposed model for the development of local sourcing strategies is created, using the activities described by the managers and a few activities found in the models.

This study brings managerial and theoretic contributions, advising to document the local sourcing procedures and adapting the proposed model as a helping guideline for the evaluation and development of local sourcing strategies.

Key words: local sourcing, sourcing strategies, low cost country sourcing, local suppliers, manufacturing industry, Mexico.
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1 General Introduction

This chapter introduces the local sourcing topic starting from the definition of low cost countries, followed by a description of the supply chain and its initial processes of purchasing, procurement, sourcing and local sourcing. It defines the research aim and proposes two research questions. It also delimitates the area of study and provides the structure for this thesis.

1.1 Introduction and Background

In the present millennium, an increasing number of international companies have invested on expanding or relocating their operating facilities to foreign countries as a result of the global economic situation, seeking for cost reductions (Kamann & Van Nieuulande 2010, p. 64), and a more profitable operation. According to Kumar, Andersson and Rehme (2010, p. 143) companies are constantly searching for opportunities to either start operations or buy their materials from the so called low cost countries. Low cost countries (LCC) are those countries that can provide cost advantages in manufacturing, good quality, high productivity, reliability on delivery and speed, customization. In addition, they also provide a potential supplier infrastructure, transportation networks, telecommunications infrastructure and could handle new production technologies. This low cost countries are found in the growing economies and emerging markets like Brazil, Russia, India, China, Hungary, Vietnam, Mexico, and Costa Rica (Lee & Lee 2007, p. XIV).

Such is the case with Mexico, country that has had one of the highest foreign direct investments, receiving from the years 1999 to 2008 an amount of 192,831.7 millions of US dollars and from which 102,460 millions of US dollars correspond to new investments. From this amount, 46.7% has been directed to the manufacturing industry, and the United States of America is the number one country to contribute on this investment with a share of more than 50%, making it the prime commercial partner (ProMéxico 2010). Mexico, as a host for new manufacturing facilities coming from North American companies (Canada and United States of America) provides the low cost country advantages and characteristics and form the competitive priorities in the manufacturing industry (Lee & Lee 2007, pp. 15, 18) having a direct effect on the supply chain performance.

The supply chain can be defined as the interrelation of the activities involved in the provision of goods or services to the customer, which include obtaining the raw material or resources to work with, the conversion or production process, the logistics, the intermediaries management, and the final delivery of goods or services to the customer (Esteves & Barclay 2011, p. 208; Saunders 1997, p. 51).

As a result of opening a manufacturing facility in a low cost country as Mexico, the supply chain, has had to change and adapt to a new location and invariably has had an important impact on the performance of that particular company. This notion is driven by the quest to realize considerable savings in labor (Combs 2009, p. 38), raw materials, logistic expenditures, a supplier base expansion (Beebe, Kumar & Nicholas 2009, p. 26) and overall improvement in competitiveness (Carter, Maltz, Tingting & Maltz 2008, p. 226).
The initial part of the supply chain starts with locating and obtaining the raw materials or resources, these two activities correspond to the sourcing and purchasing actions in the procurement activities. In current literature, the term procurement could be found as a synonym of purchasing or could be found as encompassing both sourcing and purchasing. This thesis will use the latter procurement’s meaning. Purchasing refers to the buying activity, which is mainly operational and manages the flow of materials and information, while sourcing is a strategic cross-functional process that involves team members of purchasing, engineering, quality, design, manufacturing, among others and together seek for opportunities in their supplier base for cost reduction, quality improvement, production and delivery time reductions and technology development, in order to obtain competitive advantage (Monczka, Trent & Handfield, 1998, pp. 4-5).

Along with the operations initialization in Mexico, parallel efforts of exploring new opportunities for cost reductions within the materials department should take place at the planning phase of the sourcing strategy (Kumar et al. 2010, p. 144). Thus strategic sourcing is essential in order to drive cost savings (Beebe et al. 2009, p. 26) and is performed by understanding how much money is being spent in goods, materials and services, also known as “spend” (Monczka, Handfield, Giunipero & Patterson 2011, p. 160), the categories they could be grouped into by common characteristics or functions, their criticality in the production or transformation process, the current providing suppliers, the potential supplier market, the logistics involved, the delivery time and arrangements, the quality and quantity assurance and the implicated negotiations in price and conditions, as well as the contract terms (Hyland 2002, pp. 33-34; Monczka et al. 2011, p. 204). These sourcing activities are aimed towards a strategy that will realize improved competitiveness and profits to the company. In formulating such a strategy, different variables such as price, quality, delivery time, capabilities, logistics (Carter et al. 2008, p. 226), non-price variables (Kamann & Van Nieulande 2010, p. 66) and cost of capital (Bernabucci 2007, p. 41) should be carefully considered.

Once a manufacturing plant has been opened or moved to Mexico, as part of the strategic sourcing plan, it makes sense to evaluate a local sourcing strategy, which refers to the identification and development of a new local or domestic supplier base, capable of providing the materials required and complying with the company’s requirements in quality, quantity, delivery time, price and conditions in contrast to keeping the previous foreign supplier base. This evaluation should encompass a thorough analysis on the current purchasing materials, for instance their specifications, quantity usage, frequency of usage, criticality, current spend vs. potential spend, current supplier vs. potential supplier, contracts, current logistics vs. potential logistics among others. In addition, take into account the risk factor involved in changing supplier, its assessment and mitigation plan, in order to meet the objectives of this strategy (Christopher, Mena, Khan & Yurt 2011, p. 67).

To support these views, Beebe et al. (2009, p. 26) found that the supplier base in low cost countries for the firms coming from the United States of America (USA) has been increasing and the promising locations for low cost sourcing are situated in Latin America and Asia. However it is important not only to consider the cost advantages but also the logistical challenges that could be involved in the redefinition of a more competitive supply chain (Ruamsook, Russell & Thomchick 2009, p. 80).
Several authors base their research on strategic sourcing, global sourcing, sourcing in low cost countries such as Beebe et al. (2009), Carter et al. (2008), Christopher et al. (2011), Anderson and Katz (1998); and there is existent research on local sourcing for other countries, such as UK (Crone 2002), Ireland (Hewitt, Andreosso-O’Callaghan, Crone, Murray & Roper 2005), Italy (Tunisini, Bocconcelli & Pagano 2011) among others; or for other type of industries, such as for the grocery and food retail industry (Wagner, Fillis & Johansson 2005; Stamford 2010). However there is little research based on local sourcing in Mexico for the manufacturing industry. Therefore, this thesis is aimed to identify the factors and activities to be taken into account during the evaluation and development of a local sourcing strategy for the North American manufacturing companies that have established their operations in Mexico.

1.2 Research Aim

This thesis aims to identify the factors and activities that the North American companies take into account during the evaluation and development of a local sourcing strategy for their manufacturing facilities established in Mexico. It is comprised within this aim the evaluation of a change of a current supplier base situated outside of Mexico to a new local potential supplier base situated inside of Mexico.

It is important to determine the main drivers on the decision making process, as well as to expose the advantages and benefits of switching suppliers. For the practitioners, this research is important in order to understand the reasons behind the evaluation of a supplier transition to a local source. This transition is a response to a dynamic economical context for the manufacturing industry on its efforts to find a better operation performance and an improved profitability in a low cost country. This research will reveal the impact of a potential new local supplier base on the supply chain and operations for the North American companies. For the academics, this research is important due to the fact that there is limited information in regards the development of local sourcing strategies for an emerging economy such as Mexico. The academics will be benefited with an insight of the practitioner side translated to new theories that will allow the researchers to have additional information regarding the use of models and current theory applied to the local sourcing.

The final objective of this thesis is to contribute to the current knowledge of both academics and practitioners by providing an insight on a real life application and adjustment of theoretical concepts and models on local sourcing strategies developed in Mexico. This contribution can serve as a knowledge base for the North American companies that are or will be opening manufacturing facilities in Mexico and its managers developing the strategic sourcing activities.
1.3 Research Questions

Based on the available literature, and the research gap identified, the research questions that will drive this research are the following:

Research Question 1:

What are the decisive factors that the North American companies evaluate in order to initiate a local sourcing strategy for their manufacturing facilities in Mexico?

This research question is designed to find out what are the factors that the North American companies study and evaluate in order to make the decision to start a local sourcing strategy for the manufacturing facilities they have established in Mexico. This will allow understanding the driving factors that benefit the company by comparing the current state to a potential future state. The current state is buying the materials from the current foreign supplier, either located in the United States, Canada or any other country but Mexico, and the potential future state would be sourcing the materials from a supplier located in Mexico.

Research Question 2:

What are the activities involved in the development of a local sourcing strategy for the North American companies with manufacturing facilities in Mexico?

This research question is designed to find out what is the action plan after the decision of initiating a local sourcing strategy has been made. This action plan will comprise the activities required for the development of the local sourcing strategy that will allow to constitute a successful execution.

1.4 Delimitations of the Study

In order to delimitate this research and keep a narrow focus on its position, the study is located in a very specific industry’s type, country and companies’ origin, as well as in a specific area of study. The industry that this research studies is only the manufacturing one, so that the investigation, comparisons and data gathered could be related to a common ground. The origin of the companies included in this study is only North America (United States of America and Canada), this way it is avoided a wider international origins that could have a different behavioral impact on the study of the companies. The specific country targeted for this research is Mexico, as host to the manufacturing facilities of the North American companies. Moreover, in regards to the area of study, this research will focus specifically on the strategic sourcing activities that these companies perform more explicitly on the local sourcing strategies. Summarizing, the four main delimitations of this research are: manufacturing industry, local sourcing strategies, North American companies, and Mexico as the country of manufacturing establishment.
1.5 Study Structure

This thesis is divided into 6 chapters. The first chapter addresses the introduction and background to the study, the research aim, the research questions, and the delimitations of the study. The literature review that covers the theoretical frame of reference for this thesis’s topic is addressed in Chapter 2. Chapter 3 includes the Research Methodology and describes the research philosophy with its epistemological and ontological considerations, the research paradigms, approach, strategies and types, as well as the research design with its sample selection and data collection. This chapter also includes the data analysis and the quality considerations for this research purpose. Chapter 4 describes empirical data by describing the industry, organizations studied and the information retrieved from the interviews. Chapter 5 discusses the analysis, including the findings based on the theoretical reference and the empirical data analysis. And finally, the Chapter 6 includes the discussions and conclusions answering the research questions as well as a description of the contribution that this research makes to the current knowledge. In addition, it also provides suggestions for further study.

2 Literature Review

This chapter starts by explaining the supply chain goals and activities, as well as the role of sourcing in it. It also explains the meaning of strategic sourcing and describes the different sourcing strategies that can be developed in the manufacturing industry. It also includes different models from current literature that help in the evaluation and development of the local sourcing strategies. The chapter concludes with an overview of the local sourcing developed in Mexico as a low cost country.

2.1 The role of sourcing in the supply chain

The concept of supply chain in a manufacturing organization can be defined as the interrelation of activities involved in the delivery of products or services to the customer (Esteves & Barclay 2011, p. 208; Saunders 1997, p. 151 ). It is a chain because it links together the activities that are needed in order to accomplish the final goal, which is the final delivery of the goods or services (see figure 1). These activities vary from organization to organization, and start with obtaining the raw materials or the resources and the information required to start to work with, the conversion or production process, where the raw materials and/or information are transformed into the actual product or service, the logistics and movements required to bring the materials into the facility, inside of the facility and outside of the facility to the final customer, as well as the management of any intermediaries that participate in the process, such as external entities like distributors, custom brokers, third party logistic companies, etc. Each one of these activities fall into separate departments within the organization, and each department become an internal customer from the department that performs the previous activity in this process (Esteves & Barclay 2011, p. 208). Cooper and Ellram (1993, p. 14), identified the reasons to build a supply chain, which are to reduce the inventories across the departments in the organization, to improve and increase the level of service provided to the customer and to build a competitive advantage.
The management of the supply chain is the integration of business processes that optimizes the interrelations among the different areas or departments in order to deliver the goods and services from the supplier to the customer in the most effective way (Bottani & Montanari 2010, p. 2859). Therefore, the goal of the supply chain management is to optimize the resources needed to deliver the product or service to the customer with a good level of service, as well as to reduce inventories, increase cost efficiencies, increase the speed of operations and maintain a continuous improvement (Bottani & Montanari 2010, p. 2859; Cooper, Lambert & Pagh 1997, p. 2-3; Cooper & Ellram 1993, p. 19, 21).

The management activities that work together to make the products, services and information flow along the supply chain are sourcing, purchasing, inbound logistics, quality control, demand and supply planning, materials receiving, handling and storage, inventory control, order processing, production planning scheduling and control, warehousing and distribution, shipping, outbound logistics and customer service (see figure 2). By aligning, coordinating and integrating these areas it is possible to achieve a high performance supply chain and an increased competitiveness (Monczka et al. 2011, pp. 17-19).

The supply chain management itself has gained an increased importance in today’s economy due to the effect that it has on the companies’ performance and competitive advantage (Bottani & Montanari 2010, p. 2859). Managing supply chains is a
challenging and complicated task, first for the strategic design of the supply chain and second for the tactical coordination of the activities (Taps & Steger-Jensen 2007, p. 475; Aprile, Garavelli & Giannoccaro 2005, p.21). According to Gattorna (1998, p. 23), there are four key dimensions that form the strategy of a supply chain which are the sourcing strategy, the demand flow strategy, the customer service strategy and the supply chain integration strategy, and they contribute to the effectiveness of its performance and its alignment to the overall organization’s strategy.

The increased importance of the supply chain is forcing the organizations to evaluate the purchasing and sourcing strategies, as they are the first link to accomplish the supply chain goals (Monczka et al. 2011, p. 14). Therefore, this research is focused mainly on the first key dimension of the supply chain strategy which is the sourcing strategy within the procurement functions, which are a main driver for performance indicators and takes a leadership role in the design and implementation of the supply chain (Cooper & Ellram 1993, p. 22).

The terms purchasing, procurement and sourcing are often found to be used with the same meaning in discussions about the buying activities, however the three of them have different meanings and different levels. Purchasing refers to the function of buying or acquiring goods and services as a transactional activity, and it manages the flow of materials and information as an operational process, searching for the lower purchasing cost. This operational level include placing purchase orders, expediting materials, monitoring the deliveries, and dealing with daily problems on quality and quantity of the materials received, follow up on the payment to the suppliers and evaluate the suppliers’ performance. The purchasing term is often interchanged with the procurement term, however procurement involves additional activities to the purchasing transactions, such as the materials’ management including goods and services and secures that the purchasing activities achieve the appropriate service. This activity has a tactical level, and deals with the agreements with suppliers, conducting audits and certifications, quality improvement on materials, and programs dedicated to the improvement on suppliers’ performance. On the other hand, sourcing concentrates in the development of supply channels in a strategic way and it searches not only to the lowest purchasing cost, but for the lowest total cost. It has a strategic level, that covers the purchasing decisions on a long term and influence the organization’s position in the industry. Some of these decisions include establishing long term contracts, investment decisions and sourcing strategies to use such as where to source the materials. It is a joint effort of a cross functional team that includes sourcing, procurement, engineering, quality, design, manufacturing, and logistics, among others. (Monczka et al. 1998, pp. 4-5; Gattorna 1998 p. 283; Murray 2009, pp. 199-200; Van Weele 2005, pp. 232, 233).

As mentioned by Hyland (2002, p. 33), “In essence, it [sourcing] is where you set up the blueprint for your supply chain”.

Hence, it is possible to say that the purchasing activities are operational buying activities, procurement are the managerial and tactical activities that encompass purchasing activities and materials’ management, while the sourcing activities are strategic activities that search for the best supply solutions and feed the purchasing activities, and consequently the procurement activities as well (Murray 2009, pp. 199-200; Van Weele 2005, pp. 232-233).
Even though there are differences among these terms, the literature mixes them, more often they use as synonyms the purchasing and procurement terms, some literature uses the term procurement to cover all the supplier-related activities including sourcing and purchasing, however, for the purpose of this research, there will be a difference in meaning while using the terms sourcing and procurement, and the term procurement will encompass the purchasing activities.

2.2 Strategic Sourcing

The procurement and sourcing activities have grown in importance for the organizations, as they have had an evolution throughout the last century. The reason is that over the years they have transformed from a clerical function, to an administrative operation, to finally a key function, a strategic resource that stresses the importance of the supplier base of the supply chain through the capabilities of a supplier, creating value for the customer (Monczka et al. 2011, p.8; Brewer, Button & Hensher 2001, p.86; Gadde & Häkansson 2001, p. 10, 16). The supplier base refers to the number of suppliers, their characteristics and their location (Lysons & Farrington 2006, p. 391).

The area of study of this research covers the sourcing activities performed within the supply chain of the organization. Strategic Sourcing could be understood as the cycle that covers the assessment of needs of the organization in terms of supply, the design of a supply channel, the access to the adequate resources required and the assurance of the appropriate level of service (Murray 2009, p. 199). It seeks for opportunities in the supplier base related to cost reduction, upgrade in the quality, faster production, reduced delivery time, developing and adapting new technologies (Monczka 1998, pp. 4-5). It also studies the market characteristics, identifies potential suppliers, develops them, and defines a sourcing strategy for the organization on a long term basis (Lysons & Farrington 2006, p. 367).

The strategic sourcing aim is to reduce costs and obtain savings (Beebe et al. 2009, p. 26) and increase efficiency with the suppliers (Corini 2000, p. 74). As an initial step, the organization can start to categorize the products or services into commodities. A commodity is category or family of products or services that can be grouped depending on their characteristics and/or functionalities (Monczka et al. 1998, p. 187). This way, the strategies can be directed to the full commodity. Afterwards it is necessary to analyze the volume and spend by each commodity (Monczka et al. 2011, p. 160, 204).

Monczka et al. (1998, p. 4) states that “The focus of strategic sourcing management involves integrating supplier capabilities into organizational processes to achieve a competitive advantage through cost reduction, technology development, quality improvement, cycle time and delivery capabilities to meet customer requirements”. This integration is accomplished by incorporating the different functional departments into a cross-functional group that works jointly for a common organizational goal (Monczka et al. 2011, p. 118). The strategic sourcing decisions are taken by the top management of the organization and are more focused on those products and services that are critical or could represent a bottleneck for the operations of the company (Lysons and Farrington 2006, p. 367). Corini (2000, p. 74) expresses his perspective on this topic as “World Class organizations view strategic sourcing not as a temporary initiative but as a way of life”.
According to Monczka et al. (2011, p. 205), the strategic sourcing process is formed by five steps. Step one is to build the team with assigned responsibilities and a work plan, step two is to do a market research and understand the available supplier base, step three is to develop the strategies and define the sourcing approach, step four is working on the agreements for the contract negotiation and step five involves the supplier relationship management (see figure 3). Most of these steps are straight forward except for the third one, the development of the strategy. This step needs further explanation in order to learn what are the available sourcing strategies and which of them suits better the organization’s needs. Therefore the next section covers the sourcing strategies and describes their main objectives and how they can be developed.

![General Strategic Sourcing Process](image)

**Figure 3. General Strategic Sourcing Process**

### 2.3 Sourcing strategies:

According to Kraljic (1983, p. 110), "A company's need for a supply [sourcing] strategy depends on two factors: (1) the strategic importance of purchasing in terms of the value added by product line, the percentage of raw materials in total costs and their impact on profitability, and so on; and (2) the complexity of the supply market gauged by supply scarcity, pace of technology and/or materials substitution, entry barriers, logistics costs or complexity, and monopoly or oligopoly conditions." He developed a matrix that attempts to classify and position the products or services according to their external risk on supply or supply market complexity, meaning the available number of suppliers, and the internal impact they have in the organization, referring to the profit or value and importance (Kraljic 1983, p. 110; Cousins et al. 2008, p. 47-49) as shown in figure 4. The supply market and its complexity is external to the organization (Cousins et al. 2008, p. 48) and refers to the place where the required products or services can be bought, it involves the group of sellers and the economic conditions for such items (Lysons & Farrington 2006, p. 369). The impact on the business or organization is concerned with the impact of profit, value, cost or importance of the products or services on the operations (Cousins et al. 2008, p.49).

With Kraljic’s matrix, it can be determined the classification of the products or services. When they have a low impact on business and low supply risk, they are routine items that can be standardized, substituted and have many competitive suppliers. When the products and services have a low impact on business and high supply risk, they are bottleneck items, normally specified materials that could have issues of production scarcity due to the reduced number of capable suppliers. If the products or services have a high impact on business and low supply risk, they become leverage items, which as well have several suppliers but have a higher importance because of their cost and flow management. And finally, the products or services with high impact on business and
high supply risk, which are the critical or strategic items, which have a unique specification, high costs or high importance on the transformation process and have few capable suppliers (Kraljic 1983, p.111).

![Kraljic product and service positioning matrix](source.png)

Figure 4. Kraljic product and service positioning matrix

The items classification is useful in order to formulate its sourcing approach (Cousins et al. 2008, p.47). The strategic sourcing strategies are planned and defined to match the organization’s strategy and achieve a high performance in terms of quality, time, cost and service (Saunders 1997, p.18). They are very much focused on different activities related to the suppliers such as their assessment, development and performance measurement to assure the sourcing strategy’s objectives are accomplished (Saunders 1997, p. 18). The sourcing strategies are generally made by families of goods or services, also called commodities, and they influence the relationship held with the suppliers (Van Weele 2005, p. 161). On the view of Cousins, Lamming, Lawson and Squire (2008, p.47), “a firm can organize its supply process using a variety of sourcing strategies”, therefore it can be assumed that the sourcing strategy “categories”, are not necessarily exclusive of one another.

There are different sourcing strategies and the evaluation of the diverse alternatives depends on the organizational strategy. They should meet the requirements that the company has, as well as increase and sustain its competitive advantage in order to improve the overall organization’s performance (Lysons & Farrington 2006, p. 58). Every sourcing strategy has a risk. The supply risk that needs to be considered is related to the availability of products and services from the supplier, the cost of switching supplier, number of potential suppliers and the organizations position in the supply market. Supply risk can be lowered by having several suppliers (Van Weele 2005, p. 149). In general, the strategic sourcing strategies should be aligned with the requirements of the organization and they are chosen in accordance of the firm’s strategy, the risks and cost exposure the products and services have, the supply market
conditions and the overall impact to the organization (Cousins et al. 2008, p. 57). The sourcing strategies found in the literature are described in the following subsections.

2.3.1 Insourcing (make) vs. outsourcing (buy) strategies

This sourcing strategy category is concerned with the decision of making or buying the product or service and it involves an analysis on the availability of manufacturing capability and capacity (Gattorna, 1998, p.27). The manufacturing capability is related to the feasibility of making the product or service, of having the knowledge and skills to do it. The manufacturing capacity is related to the volume handling and availability of internal resources. The decision between insourcing and outsourcing is based on an analysis of internal and external costs. The outsourcing strategy will decide which products or services will be sent outside of the company for manufacturing or performance and will focus on the design and assembly (Van Weele 2005, p.139). In other words, which products and services will be bought externally because they include non-core activities and could be produced more efficiently and effectively outside of the organization (Gadde & Håkansson 2001, p. 122, 127) The insourcing strategy is related to an in-house production, and it is mainly adopted when the organization has the means to produce or transform the products or services inside its own facility and wants to make the most out of the capacity utilization of its machinery and equipment. Commonly, these products or services are decided to be made in house to protect their technology and technical solutions owned by the organization and demands high activity coordination (Gadde & Håkansson 2001, pp.122-123, 128). Overall, the decision process between making or buying the products or materials relies on the following questions: does the company has the design capability? Does the company have the manufacturing capability? Is the company competitive with these materials’ production? If the answer to any of these questions is no, then the best solution is to outsource the materials. If the answer is yes, it is recommendable to keep these processes inside of the company (Lysons & Farrington 2008, p. 393).

2.3.2 Partnership vs. competitive bidding strategies

This sourcing strategy category considers the possibility to create a partnership with a supplier on specific products or services, or decides to keep them served by a competing supplier base (Van Weele 2005, p. 161). The partnership sourcing involves a long term collaborative relationship of buyer and supplier with mutually agreed objectives for the supply process. Companies deciding for this strategy are usually looking for lower acquisition costs, reducing the number of suppliers, stronger relationship and integration with the supplier and a joint effort on technological developments. This strategy is recommended for items that have a high spend on the organization, high impact and high risk due to a restricted market (Lysons & Farrington 2008, p.409-412). Therefore this strategy would be for the “critical items”. The partnership strategy enhances the willingness and sharing among two companies to work together on the demand and supply of a specific commodity and/or strategic and critical products or services (Van Weele 2005, p. 161). The competitive bidding strategy tenders the commodity to a set of approved suppliers and choses the most convenient (Van Weele 2005, p. 161). Lysons and Farrington (2008, p. 411) call it a “traditional” relationship, where the organization and supplier act in their own interest, the companies look for the best unit
price with the intention of developing only a short term relationship. This strategy can be combined with the multiple sourcing strategy and can be recommended for “routine or non-critical” items.

### 2.3.3 Single sourcing vs. multiple sourcing strategies

This sourcing strategy category deals with the decision of buying a same product or service from one single supplier or several suppliers (Van Weele 2005, p. 161) and it is concerned with the involvement with the suppliers as well as their number (Gadde & Håkansson 2001, p. 156). The single sourcing strategy is normally developed when the organization is trying to reduce indirect costs and attempts to reduce the supplier base to work more closely with one of them, developing it to assure its good performance and a closer relationship (Gadde & Håkansson 2001, p. 156-157). Multiple sourcing has a lower supply risk, meaning that the product or service could be bought from any of the sources available (Van Weele 2005, p. 161) and tries to avoid a strong dependence on an individual supplier and increase reliability on suppliers’ delivery. This strategy also attempts to obtain price and service improvements by having the suppliers compete among them (Gadde & Håkansson 2001, p. 156-157) and ensure the items’ supply (Monczka et al. 2011, p. 247).

### 2.3.4 Local sourcing vs. global sourcing strategies

This sourcing strategy category is concerned on the decision of where to buy the products or services. In accordance to (Lin, Kuo & Chen 2006, p. 425), the contrast between global and local is mainly driven by the delivery lead time factor. This difference in time can be as to three times higher sourcing from global suppliers rather than local ones. This strategy is dependent on the type of products and services and their specifications (Van Weele 2005, p. 161). The local (national) sourcing strategy favors the products that are in constant engineering or technological change, precise delivery and/or frequent on-time delivery is required (i.e. Just in time JIT), fast response and flexibility on orders (i.e. change in design, quantities) as well as immediate personal communication (Van Weele 2005, p. 161; Brewer 2001, p.223). The global sourcing strategy favors the products that can be standardized and bought in bulk, for these items prices are highly competitive and can have economies of scale in the logistics and transportation (Van Weele 2005, p. 161). In many cases, sourcing with international suppliers can drive to substantial savings, however they need to be assessed along with the inventory, communication and logistics costs (Monczka et al. 2011, p. 247).

Local sourcing can reduce the challenges that global sourcing has on reliability, operation costs and limitations related to the foreign location thus lowering the impact of the demand uncertainty (Lin et al. 2006, p. 422). According to Fredriksson, Jonsson and Medbo (2010, p. 316), the initial point to start this local sourcing strategies relies on the selection of materials, which have to be the ones that bring the highest benefits for the company. Therefore an analysis on the benefits comparing global versus local has to be made to decide which strategy to follow. The local sourcing allows the companies to reschedule production, increasing the effectiveness of their processes by programming the materials in accordance to the demand forecast and providing a higher flexibility in order to satisfy their customers.
The interest of this study is based on the location decision through the assessment of the sourcing strategies local vs. global, therefore the main focus will be on the description of the factors that are included in the evaluation of the supplier base site and how the organizations decide if the supplier will be local or not.

2.3.5 Low cost country sourcing strategy

Kusaba, Monser and Rodrigues (2011, p. 74) define the low cost country strategy (LCCS) as “a specific case of global sourcing with a focus on countries with relatively lower production costs and a culturally and/or geographically substantial distance from the buyer's location”. This type of sourcing is generally used by the companies of developed countries such as the United States of America and the European Union searching for a potential base of suppliers in growing economies and emerging markets like the BRIC (Brazil, Russia, India, China), Hungary, Vietnam, Mexico, and Costa Rica (Lee and Lee 2007, p. XIV).

Fredriksson et al. (2010, p. 313-315) states that there is an increasing outsourcing activities from the companies to low cost countries looking for competitive advantages. Such advantages can be found by cost reductions related to a lower labor cost in such countries. In fact, the author also remarks that there are many companies that have in their corporate strategy to source a specific amount of goods and/or spend in low cost countries, thus making them study the best combination of low cost sourcing and local sourcing. However it is important to keep in mind that the supply chain would suffer a re-configuration. This would mean that there would be new measurements in terms of performance, including quality, time of delivery, flexibility of service and response as well as cost. It is also important to understand that there could be hidden costs in this sourcing strategy, therefore it is necessary to carefully analyze the benefits and the risks in order to make this decision (Lee & Lee 2007, p. XV).

2.4 Location aspects for the evaluation of a sourcing strategy

If the organization has made the decision to outsource the products or services instead of making them, the next step would be to decide where to buy them. According to Lysons and Farrington (2006, p. 425-427) there are several aspects that need to be considered on the evaluation of the place to source. See figure 5. These aspects include the general considerations, comprised by the items’ categorization and classification using Kraljic’s matrix, the frequency and quantities of requirement, the present/previous supplier performance in price, quality and delivery and the time frame of new requirements. The strategic considerations for the analysis include the aspects that impact the competitive advantage with a new potential source in terms of price, reliability on delivery, quality, service, logistics and overall costs. It also includes the supplier development required, the number of suppliers to use, the contract terms and length and the type of relationship to build with the supplier. In addition to these two types of considerations, the authors mention to take into account the product factors, the supplier factors and the personal factors. The product factors which are the ones concerned to the technical specifications, guarantees, tooling, machinery and equipment required, test facilities, and lot sizes required. The supplier factors are related to the
supplier performance and rating. And lastly, the personal factors that include the cultural factors, the experience and professionalism of the suppliers.

Figure 5. Location Decision Model

Figure 6 shows the Location decision model more detailed.

Figure 6. Location Decision Model in detail
In relation to the overall costs, Monczka et al. (2011, p. 381-382) propose the elements that need to be considered for the total cost impact while making a decision on location, called “worldwide sourcing”. It is worldwide because these elements can be compared among the different potential suppliers in order to find the best option, not only for the price, but for the whole costs involved. The elements that these authors considered for this costs analysis are the base price, the tooling required, the packaging, the transportation, the customs duties, insurance, additional fees such as for storage, port terminal and handling fees, customs broker fees, taxes, communication costs, payment and currency fees, and inventory carrying costs (see figure 7). Furthermore, Weber, Hiete, Lauer and Rentz (2010, p. 5) stress the need to make the sourcing decisions based on the evaluation of the total cost of ownership, which can be referred as all the costs related to the acquisition and maintenance of the materials to be purchased.

![Cost analysis model](image)

Figure 7. Cost analysis model

### 2.5 Development of Local Sourcing Strategies

The results of using local suppliers are a faster response in terms of transportation time and communication. It also reduces the logistics time and cost, making it possible for the organizations to develop some delivery systems such as Just in Time (JIT). In addition, it is possible to foster closer cooperative relationships (Lysons & Farrington 2008, p. 419). There is no formal process used for local sourcing strategies, however Monczka et al. (1998, p. 384) proposes a general “international” sourcing process, which could be used as a base to develop a “local” sourcing process. It would be required to have an opposite perspective to the location aspect and change the “international” for the “local” (see figure 8).
The first step includes an evaluation on cost, quality, product features is realized in order to understand the need of the company to consider a local sourcing strategy. In the next step, it is identified which products or services are suitable for local sourcing. After the identification of items, it is required to identify and evaluate the potential local sources for them. The suppliers should be evaluated based on the quality of products or services and processes they provide, the delivery time and terms, the long-term potential, the response time they can offer, the available technology and capacity, and the total costs that would be incurred using that supplier. Then it is essential to provide the necessary information in regards the products or services to these suppliers so that they can quote them. After the suppliers submit their quotation, it is required to evaluate if the proposals are competitive or not. If the proposal is not competitive, the company should keep the current supplier, however if it is competitive, the company should move to the new local supplier and develop the contractual agreement on terms and conditions including price, service, delivery time and place, quality specifications, currency and payment terms.

In addition Monczka et al. (2011, p. 388) in a more recent work uses an example of a global sourcing nine steps process for a U.S. Chemical company that could serve as a guideline for developing a local sourcing process for a manufacturing company (see figure 9). It also requires an opposite perspective to the location aspect and change the “global” for the “local” on the first three steps and the rest of them could remain the same. It is a similar process like the one mentioned previously, however it include
additional steps that are more into detail of the strategy developmental process and also include a plan for the supplier transition after the contract has been done.

The first step in this process is the identification of the “local” sourcing opportunities. This stage requires an analysis of the commodities that are currently bought. This analysis can be done on the type of products or services, commodity, price, costs, and potential improvements. The second step is to establish a “local” sourcing project team, which requires the participation of cross-functional members of the organization. The third step is to propose a “local” strategy. This can be one of the more extensive steps since it involves many activities related to the analysis and feasibility of switching to a local supplier. In this step the responsibilities for each member are clearly defined, the specifications and assumptions of the project are validated, the volume, spend and potential savings are defined, and it is determined if a local supplier base exists for the desired commodities. The fourth step is the development of a request for proposal (RFP) or request for quotation (RFQ), which include all the specifications required by the organization, the volumes, and all the supply information that a supplier needs. With the request for proposal, the supplier is requested to offer a solution that meets the organization’s needs along with the quotation.

The request for quotation requests the supplier to quote the specific products or services requested by the organization (Monczka et al. 2011, p. 62-64). The next step is the actual release of the RFP or RFQ, which means to send the RFQ or RFP information to the suppliers identified, and follow up the process closely with the suppliers. The following step is the negotiation with the suppliers where the organization and supplier make the agreements and cover the contract aspects. The next step is awarding and signing the contract with the supplier. The last step involves the implementation of the contract and the plan for the management of the suppliers involved in the supply transition of the products and services agreed. These processes show the key steps that need to be followed during the development of a local sourcing strategy in order to move on with the implementation.
The last model to present is a template related to the supplier selection in order to be able to award the contract. It includes forty nine selection criteria subdivided in six main factors: cost, quality, service, reliability, management and organization, and technology. It does not necessarily apply to all types of companies, since each company has a different purchasing process and behavior, and they can differ in their own contextual circumstances. However, this template shown in table 1, provides a starting point for analysis and evaluation of factors on the supplier selection process (Şen S., Başligil, Şen G. & Baraçli 2008, p. 1828, 1834).
Table 1. Supplier Selection Process

<table>
<thead>
<tr>
<th>Supplier Selection Criteria</th>
<th>Cost</th>
<th>Reliability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net Price</td>
<td>Process capability</td>
<td></td>
</tr>
<tr>
<td>Price Breaks</td>
<td>Process flexibility</td>
<td></td>
</tr>
<tr>
<td>Bidding procedural compliance</td>
<td>Amount of past businesses</td>
<td></td>
</tr>
<tr>
<td>Operating cost</td>
<td>Product range</td>
<td></td>
</tr>
<tr>
<td>Geographical location</td>
<td>Suppliers’ expertise</td>
<td></td>
</tr>
<tr>
<td>Maintenance cost</td>
<td>Performance history</td>
<td></td>
</tr>
<tr>
<td>Order cycle time</td>
<td>Financial position</td>
<td></td>
</tr>
<tr>
<td>Foreign exchange rate</td>
<td>Impression</td>
<td></td>
</tr>
<tr>
<td>Export taxes</td>
<td>Labor relation record</td>
<td></td>
</tr>
<tr>
<td>Quality</td>
<td>Management and Organization</td>
<td></td>
</tr>
<tr>
<td>Defects</td>
<td>Cultural similarity</td>
<td></td>
</tr>
<tr>
<td>Quality of support services</td>
<td>Communication system</td>
<td></td>
</tr>
<tr>
<td>Packaging ability</td>
<td>Reputation and position in industry</td>
<td></td>
</tr>
<tr>
<td>Quality systems used by supplier</td>
<td>Speed in development</td>
<td></td>
</tr>
<tr>
<td>Quality team visits</td>
<td>Desire of business</td>
<td></td>
</tr>
<tr>
<td>Operational controls</td>
<td>Reciprocal arrangements</td>
<td></td>
</tr>
<tr>
<td>Service</td>
<td>Technology</td>
<td></td>
</tr>
<tr>
<td>Delivery</td>
<td>Suppliers’ technological system</td>
<td></td>
</tr>
<tr>
<td>Production facilities and capacities</td>
<td>Technical capacity</td>
<td></td>
</tr>
<tr>
<td>Response to changes</td>
<td>Future technology development</td>
<td></td>
</tr>
<tr>
<td>Repair service</td>
<td>Design / Process improvement</td>
<td></td>
</tr>
<tr>
<td>Training aids</td>
<td>Future manufacturing capabilities</td>
<td></td>
</tr>
<tr>
<td>Ability to fill emergency orders</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Warranties and claims</td>
<td></td>
<td></td>
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<tr>
<td>Attitude</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2.6 Local sourcing in Mexico as a low cost country

In accordance to the notes of Fredriksson et al. (2010, p. 313, 315) the North American companies that have been moving their operating facilities to Mexico are searching for competitive advantages that can be reflected in cost reductions and a better service. Therefore, since Mexico is a low cost country, it only makes sense for these companies to take a look at the possibility of obtaining the materials from a local supplier base. This action will be reflected in a reduction of costs and a reduction on logistics times. This potential change of suppliers will affect the current configuration of the supply chain for these facilities, making it shorter and perhaps leaner.

The foreign direct investment of North American companies in Mexico create a demand for local sourcing as stated by Glass and Saggi (2005 , p. 629) “this demand effect may be one reason why many countries impose domestic content requirements on multinationals”. In the case of Mexico, the benefits sought by these multinational’s
corporate strategies are obtained faster since the local sourcing is already being pursued in a low cost country.

Lee and Lee (2007, p. 31, 39) address an example of an American company comparing their landed cost, which is formed by the direct materials costs, labor costs, freight cost and duties, among different countries (Korea, Honduras, China, Indonesia and Mexico) where Mexico has the lowest landed cost and appears as the most convenient option. This sort of analysis is required in order to fully understand the cost structure and make it comparable among different countries. This specific company reveals that Mexico is the best sourcing option for their operations, once the local skill base has been developed. Moreover, their research on nearly 800 companies shows that more than 20% of them planned to enter or expand their operations to Mexico in a three year time period. In addition, KPMG (2010, p. 6) lists Mexico in the top 10 countries with cost advantage over the United States of America, with an 18.2%.

3 Research Methodology

This chapter covers several aspects of the research methodology developed for this study. It addresses the research philosophies, research paradigms, research approaches, types of research, research strategies, research design, sample selection and data collection, data analysis and quality considerations.

3.1 Research Philosophy

The research philosophy is concerned with the knowledge creation and its nature and it helps to understand the researcher’s perspective of the world. There are two main considerations for the research philosophy: the ontology and the epistemology (Saunders et al. 2009, p. 107-109). The first consideration to discuss is the ontology, which according to Bryman and Bell (2011, p. 20) is related to the nature of the social entities and its aim is to decide if such entities could be considered as objective, meaning they exist without a dependence on the social actors that exist in them, or if they are subjective, meaning that the social actors have an influence through their perceptions and actions in such entities (Saunders et al. 2009, p. 110; Bryman & Bell 2011, p. 20). Furthermore, Bryman and Bell (2011, p. 21-22) contrasts both objectivism and subjectivism (also called constructivism) by pointing out that the objectivism sees the social entity such as an organizations as independent of the actors, and has a reality separate from them and can be seen as a constraining force that has an influence on them. On the other hand, the authors point out that subjectivism or constructionism considers that the social entities are affected by the decisions and actions of the actors, and in this case the organization would have an emergent reality that is in constant change. For this research purposes, even though the companies have a specific steady and similar description for the strategic sourcing activities, their behavior is different in different contexts. The managers perceive in diverse ways the factors to consider while making decisions and developing their sourcing strategies. Therefore it is valid to say that the ontological consideration for this study uses the subjectivism or constructionism and that the organizations are dependent of their actors, in this case, the sourcing managers, their perceptions and their decisions.
The second consideration is the epistemology, which is related to determine how acceptable is the knowledge in a specific area of study, and if the social world could be studied the same way as the natural sciences are (Bryman & Bell 2011, p. 15). According to Saunders et al. (2009, p. 113-116) there are three philosophical positions within the epistemology: positivism, realism and interpretivism. The positivism tries to apply the natural science methods to the social studies and tries to explain the human behavior (Bryman & Bell 2011, p. 15-16). The data collected in this view is not easy to be altered and the researcher’s personal values and feelings do not influence the facts gathered (Saunders et al. 2009, p. 114). The second position is the realism, which is similar to the positivism, it has a scientific approach as well, and it not only collects data, but also understands it. Realism could be direct or critical, where the direct considers the facts themselves and the critical considers both, the facts and an understanding mental process after the facts (Saunders et al. 2009, p. 114-115). And the third position is the interpretivism, which has an emphasis on social actors and rather studies the people than the objects (Saunders et al. 2009, p. 116). This view, as opposed to the positivism, tries to understand the human behavior (Bryman & Bell 2011, p. 16). In this perspective also, according to Saunders et al. (2009, p. 116), the researcher uses empathy to understand the social world as their actors sees it. The philosophical position of the epistemological considerations that this research is based on is the interpretivism. The reason is because the social actors, in this case, the sourcing managers do not act in a predictive way as the natural sciences would expect them to. They are influenced by many factors and situations, and the intention of the research is not to explain their behavior, but to understand it along with their perceptions of their organization and the world.

3.2 Research Paradigms

A paradigm in this research context is the way to analyze the social studies (Saunders et al. 2009, p. 118) and the included assumptions for the research objective (Bryman & Bell 2011, p. 24). The paradigms are aligned to either the subjectivism or objectivism positions and to a regulatory or radical change perspective. The subjectivism and objectivism positions have been previously described. The regulatory perspective aims to describe the organization and explains how it works without judgments and suggests minor changes. While the radical change perspective is criticizes the organization studied and suggests major changes (Bryman & Bell 2011, p. 24; Saunders et al. 2009, p. 120). There are four paradigms for the analysis of social theory. On the subjectivist side and regulatory perspective is the interpretative paradigm, which tries to understand and explain what goes on in the organizations, far from attempting to change them. The second paradigm lies on the same subjectivist side and in the radical change perspective and it is called the radical humanist paradigm. In this paradigm a more critical view is held by the researcher and there is an attempt to change the organizational life. On the other hand, on the objectivist side and regulatory perspective there is the third paradigm called the functionalist paradigm, which intends to explain the events that happen inside the organizations such as internal problems and suggest minor changes to try to correct them. This paradigm is commonly used for managerial research purposes. The last paradigm lies on the same objectivist side and on the radical change perspective, the radical structuralist paradigm which has the objective to achieve major changes in the entities instead of in the social actors dealing with hierarchies to solve problems for the analyzed area of conflict (Saunders et al. 2009, p. 120-121). This research leans towards
the subjectivism and interpretivism, as mentioned on the ontological and epistemological considerations respectively, and it does not intend to make major suggestions or criticize the way the organizations work. The research attempts to only to understand and explain the sourcing processes adopted by their managers, and the factors included in the sourcing strategies. Thus it is fair to say that the paradigm where this research locates is in the interpretative paradigm.

3.3 Research Approach

Bryman and Bell (2011, p. 11) state that the purpose of research is to find out the answers to the questions to social theory, therefor in order to understand the relationship between these two factors, the theory and the research, it is necessary to define the two types of theory and relate to them while doing the research.

The first theory is the deductive one, in which a hypothesis is stated and the research purpose it to test it (Saunders et al. 2009, p. 124). It is based on logic (Ghauri & Grønhaug 2010, p. 15) and as Bryman and Bell (2011, p. 13) explain it, first is the theory, then comes the observations and findings. As opposed to this theory, the second one is the inductive theory, in which the data collected is analyzed and afterwards a theory is proposed (Saunders et al. 2009, p. 124). In this theory, the observations and findings are first and the theory is an outcome of them (Bryman & Bell 2011, p. 13) and it is based on empirical evidence (Ghauri & Grønhaug 2010, p. 15). The research approach tendency that this research leans toward is the inductive approach. First findings will be discovered through the research means based on particular cases in the manufacturing industry, and once they are analyzed, theory can be proposed as complementing knowledge to the current one. This new theory can be based on the comparison between the academic research and the findings and observations gathered through the development of this particular research with professionals in the sourcing area.

3.4 Research Type

There are three main classifications on research purposes: exploratory, descriptive and explanatory. The exploratory research is explained as the discovering and understanding of what goes on in the organizations and new visions about it. This type of study can be done through literature research, interviews with experts or through focus group interviews (Saunders et al. 2009, p.138-141). One characteristic of this study is its flexibility on direction, where it goes from the broad to the narrow focus (Ghauri & Grønhaug 2010, p. 56). The second type is the descriptive research, which has a concrete area of study prior to the data collection, and seeks to describe the organization and draw conclusions about it (Saunders et al. 2009, p.138-141). A key characteristic is the use of a structure or a procedure for the data collection (Ghauri & Grønhaug 2010, p. 57).The last type of study is the explanatory research, which is focused on the causal relationship among different variables (Saunders et al. 2009, p.138-141). This particular study uses a descriptive research, because it has a very well defined area of study, which is the sourcing strategies. Besides this, the study attempts to describe the way the companies and their mangers operate in the specific, and the findings compared to the theoretical frameworks.
3.5 Research Strategies

According to Bryman and Bell (2011, p. 26-27) the research strategies are the way to conduct the research and divide into quantitative strategy and qualitative strategy. The quantitative strategy is based on the quantification and measurement of information and data. This type of research strategy is appropriate for the deductive approach and helps on proving theories and initial hypotheses. It is more related to the positivism position and to an objectivism view. On the other hand, the qualitative research strategy is based on words rather the on measurements or quantified data. This type of research is used in the inductive approach where information and data are collected and analyzed in order to build new theory afterwards. It is related to the interpretivism position and constructionism view. As a contrasting terminology in this matter, Saunders et al. (2009, p. 151) consider the qualitative and quantitative terms as data collection techniques instead of research strategies. Although Ghauri and Grønhaug (2010, p. 104) make a difference between research techniques and methods. According to them, research methods are related to a systematic way of data collection with the objective to gather information and answer the research question such as historical reviews, field experiments, case studies, etc. While research techniques refer to a procedure to be followed in order to collect data, analyze it and answer to the research question, such as interviews, surveys or observations.

Regardless of the terminologies used by the different authors, the terms keep a similar meaning. For this research, a qualitative research strategy is employed because it does not attempt to quantify or measure any information from the organizations, but rather to obtain data and information through words, perceptions, perspectives and experiences from the managers that work for these organizations. This information that is searched is not to be applied in any statistical or numerical analysis because it does not make sense, however it will be used to understand the experiences and behaviors of the social actors, which are understood and analyzed in a qualitative way (Silverman & Marvasti 2008 p. 8-9)

What Bryman and Bell (2011, p. 45) describe as research design, Saunders et al. (2009, p. 141) describes as research strategies. This includes experiments, social surveys, case studies, action researches, grounded theories, ethnographies and archival researches. A brief description of each of the designs is given to understand the available choices and the appropriate design selection for this study. The experiment studies causal relationships and is used in exploratory and explanatory research. It includes a hypothesis, a sample selection and control and manipulation of variables to test for different results (Saunders et al. 2009, p. 142-143). The survey strategy is used in exploratory and descriptive research and permits to collect large data normally through questionnaires, structured observation or structured interviews. It is used in the deductive approach, and allows producing models out of the relationships concluded from the answers collected (Saunders et al. 2009, p. 144-145). The case study includes an empirical research in its real context using several sources. It is used in the explanatory and exploratory research and includes interviews, observation, questionnaires, and documentary analysis, among others (Saunders et al. 2009, p. 145-147). The action research strategy involves the analysis of the change implications in the organizations along with the people affected, it includes work from both academics and practitioners and has an impact on many contexts. It implies a processes conformed by diagnosis, plan, action and evaluation in an iterative way (Saunders et al. 2009, p.
The grounded theory strategy combines induction and deduction and its purpose is to predict and explain the behaviors after observation is performed. The theory can be stated after a series of these observations and involves an interpretive process (Saunders et al. 2009, p. 148-149). The ethnography theory strategy’s purpose is to describe and explain the social world as the studied subjects perceive it. It is a strategy used for the inductive approach, however it is time consuming and not very suitable for business research (Saunders et al. 2009, p. 150). And the last strategy is the archival research which uses documents and administrative records and it intends to answer a research question that focus on the past (Saunders et al. 2009, p. 150).

Besides of these types of design there are two types of time horizon while doing research: the cross sectional and the longitudinal. The cross-sectional studies focus on a research at a particular time, and are more related to the time constrained researches. On the other hand the longitudinal studies are developed on a longer period of time, or even in a constrained time but analyzing information from a long interval of time (Saunders et al. 2009, p. 155-156). The nature of this research is cross-sectional due to the fact that the research is made in a short period of time and on this contemporary set as for the year 2011. It does not include historical data, but only current one. It results impossible to use a longitudinal study because of the time constraint and does not attempt to draw a line in time with differences in the managerial processes. As mentioned by Bryman and Bell (2011, p. 57) the longitudinal design is not frequently used in the business research because of the constraints in time and cost.

The selected design for this research is the case study because it can be associated with the organizations’ workplace as a setting for the study. This research will use a representative case on the wish to exemplify the real day to day activities and situations in a specific area of the organization, in this case, the sourcing area (Bryman & Bell 2011, p. 61-62). This research design is described in the following section.

3.6 Research Design: Case Study

The research method used for this analysis is the case study. The case study is used to contribute to existing knowledge through an investigation on real life cases where managerial processes can be studied in the organizations. The case study does not pretend to manage the behavior of the events and subjects of study and focuses on contemporary events. In this research, the intention is not to manipulate the behavior of the sourcing managers or the processes they follow in their organizations nowadays (Yin 2009, p. 4, 8), but to study how these processes are done as for this year 2011. The survey method was analyzed as another alternative of designing this research instead of the case study, however due to the fact that this study does not aim to collect large amount of data, the case study made a better fit for the purpose of this work. Although the research questions are “what” questions, to find out the main factors considered in the evaluation and development of local sourcing strategies, the underpinning information to get this factors is based on analyzing “how” the sourcing managers actually perform their analysis, “why” they decide to move from a previous foreign supplier to a new local supplier and “how” to proceed then with the development of the sourcing strategy. So this “how” and “why” questions are that support the investigation to answer the research questions, and they are a characteristic of the case study research method (Yin 2009, p. 9-10).
This particular case study includes interviewing the people that are directly involved with the sourcing processes, the actual sourcing managers that can provide a full perspective of their activities for further analysis and comparison. The development of this case study will rely on several sources of evidence, the interviews to sourcing managers and the research done on academic material in order to be able to triangulate the data collected for better results (Yin 2009, p. 18). This case study focuses on five different North American companies within the manufacturing industry, with established manufacturing and assembly plants in Mexico. It attempts to describe how things and processes are done in each of the companies by each of the sourcing managers.

According to Yin (2009, p. 27-33) there are five essential components for the research design: the study’s questions, the proposition, the unit or units of analysis, the logic link between data and proposition and the interpreting criteria for the findings. The first component has been mentioned previously and includes the study questions for this research. The research questions aim to find the specific factors considered during the evaluation and the development of the local sourcing strategies, and in order to find out the factors, the supporting questions are “how” the sourcing managers make their analysis and evaluation of a local sourcing strategy, “why” they decide it is better to go for a local source and “how” to carry on with the strategy. The second component involves the propositions for this study, which are mainly three: the analysis of factors that are taken into account when considering to move to a local source, the decision making based on decisive factors, and the factors included for the strategy development. In other words, propositions include: analysis, decision making and development factors. The third component is the selection of units of analysis, which in this case is each of the sourcing strategies that the managers develop for the company they work for. This unit of analysis is explained more detailed in the analysis of qualitative data, in the section 3.7, because it has a strong relationship with the method applied. The fourth component, which includes the logic link between the data collected and the proposition, is done by a thematic analysis, which is detailed in the data analysis section as well, where this specific method is thoroughly explained. And the last component that involves the criteria for the interpretation of the findings, which relies on the contrast of patterns found, in order to interpret the findings.

3.6.1 Case Selection: Participating companies

For the case study development, there were selected five different companies that operate in the manufacturing industry. The manufacturing industry was selected because it is the industry that receives the highest amount of foreign investment (ProMexico 2010) and also because of the easiness of contacting the sourcing management that exist in my previous working network.

Two of the companies selected are companies where I used to work, therefore the contact access to the sourcing managers was approached directly. Same direct approach was made with other two companies which were selected because their sourcing managers are ex-colleagues of mine. So far these four companies are headquartered in the United States of America and were selected based on the networking contacts on my previous professional experience. One more company was selected because of their headquarters locations in Canada, thus covering the North American region. This company was approached by an interview invitation through an academic contact that
used to work for it. The five companies selected for this study have operating plants with manufacturing or assembly processes in Mexico.

This selection makes possible to gather the necessary characteristics of the companies in order to analyze the relevant information in regards the local sourcing strategies that their managers execute. To briefly describe the participating companies, two of them belong to the aerospace industry and they will be referred as “Aircraft” and “Navigator”. One of the companies belong to the chemical industry and will be referred as “Chemicals”. The remaining two companies belong to the electrical industry and will be referred as “A/C” and “Motors”. A more extensive description of the companies and their industries is provided on chapter 4, Empirical Data.

3.6.2 Data Collection

According to Yin (2009, p. 102) there are six different sources of evidence for case studies: documentation, archival records, interviews, direct observations, participant observation and physical artifacts. The interview was the selected source of evidence because it is an effective way to find out information and relevant data through a guided conversation with members of the organizations (Yin 2009, p. 106). The rest of the sources of evidence did not apply for this particular case study because they did not facilitate a direct interaction with members of the organization involved with the specific area of sourcing in a short period of time. The interview method helps providing the insights required from the experts in the area to understand the reality in their organizations. An interview requires an active interaction between the researcher and the interviewee (Ghauri and Grønhaug 2010, p. 125), therefore it is an adequate tool for this research purpose.

There are three types of interviews: the structured interview, the unstructured interview and the semi-structured interview. The structured interview includes a predetermined set of questions that are required to be asked in the same way and order to the interviewees to avoid any bias. This type of interview is normally used to collect quantitative data. The unstructured interview or in-depth interview does not include a predetermined list of questions and is informally conducted in the general area of interest. And the semi-structured interview includes a list of themes and questions as a guide for the interview, but there is no sequential order and there can be additional questions to explore the research based on the response of the interviewee (Saunders et al. 2009, p. 320-21; Bryman & Bell 2011, p. 205). From the three types of interviews, it was decided to use a semi-structured interview, because it will allow to have higher leeway on the responses of the interviewees and avoid a restrictive structure that would result in a richer content of information. The semi-structured interview would include guiding questions separated by areas to cover during the time of the interview in order to get information for the same topics from each organization involved in this process.

The case study was developed collecting empirical qualitative data through semi-structured interviews in order to understand the different perspectives the managers have and the sourcing processes they follow for their companies. The semi-structured interviews focused on the sourcing strategies from two different stages: the evaluation and analysis stage, in order to find out what analysis the managers make in order to decide if a local sourcing strategy is applicable to the materials or components they
currently buy. And the second stage is the strategy development, where the managers
draw their strategies to move on with a local source. A total of five semi-structured
interviews were performed during a period of a week and all of them were recorded
with permission of the interviewee, and later transcribed to facilitate a more thorough
analysis of the content information.

The selected people to invite to participate in the semi-structured interviews were the
ones that were the head of the sourcing activities in each of the five companies involved
in the case study. They all performed similar activities in the sourcing area such as
supplier identification, selection and development. By contacting this people directly, a
higher accuracy of the results of this study was achieved. Each of the sourcing
department heads were contacted through e-mail with the explanation of the interview
purpose, approximate duration of 45 to 60 minutes and invitation to participate. The
date and time for the interview was open for the interviewee to select and permission to
record was asked in order to transcribe the content. The semi-structured interviews were
held via Skype and telephone, and needed to be highly time managed due to the
differences on time zones between Mexico and USA, where the interviewees are, and
Sweden, where the research is being developed.

Table 2 summarizes the companies that participated in this study, the industry they
belong to and the sourcing contact for the interview:

<table>
<thead>
<tr>
<th>Manufacturing Industry</th>
<th>Company</th>
<th>Interviewee</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aerospace</td>
<td>“Aircraft”</td>
<td>Supplier Development Manager</td>
</tr>
<tr>
<td></td>
<td>“Navigator”</td>
<td>Global Sourcing Manager</td>
</tr>
<tr>
<td>Electrical</td>
<td>“A/C”</td>
<td>Sourcing Leader</td>
</tr>
<tr>
<td></td>
<td>“Motors”</td>
<td>Commodity Manager</td>
</tr>
<tr>
<td>Chemical</td>
<td>“Chemicals”</td>
<td>Strategic Sourcing Manager</td>
</tr>
</tbody>
</table>

### 3.6.3 Semi-Structured Interview Design

The semi-structured interview was designed in such a way that would allow to obtain
the interviewees’ perspectives on the local sourcing strategies for their own companies.
The structure of the interview was divided in five sections (see appendix 1) and covers
the following subjects: evaluation process, decision making process, development
process, organization approach and future challenges. The first section is focused on the
evaluation and analysis the sourcing managers make for a local sourcing alternative on
their materials. They are asked to detail the activities they perform and the factors that
they consider during the evaluation and analysis of the materials and components that
are eligible for local sourcing. The second section focuses on the decision making stage.
The interviewees are asked to comment on the decisive factors that make them go for a
local sourcing, and they are requested to assign weighs to each factor in order to
compare the data among the different companies. The third section concentrates on the
process of creation and development of the local sourcing strategy. The sourcing
managers are asked about how they proceed to create and develop the local sourcing
strategy, emphasizing on the factors they include and they indicate if the Company has a
procedure, documented or not, on the whole local sourcing strategies. This section of the interview aims to find out if the companies have a standardized way to carry on the process of localizing suppliers or if they act according to their own experience. The fourth section addresses the Companies’ strategies, the alignment of the local sourcing activities to the organizational goals, as well as the anticipated benefits they take into account. And lastly, the fifth section aims to find out what are the future challenges that the managers see for the local sourcing strategies in their companies as well as in their industry. This section helps to discover new areas of research on how the sourcing strategies could be developed in the future and is suggested for further investigation.

The questions included in the structure of the interview are asked to all of the interviewees in order to obtain the information on all of the subjects included. Thus, it will allow to analyze and compare the same level of information among companies and among industries. The questions are not necessarily asked in the same order; it depended on the information described by the interviewees during the interview progress. This means that every manager had the liberty to expand their answers and even cover another subject before they were asked about it. But it was assured that all of the interviewees covered all of the subjects.

The semi-structured interview contained eleven guiding questions within the five sections and they were designed in a simple way so that all of the sourcing managers could understand the terms regardless of their industry or type of components managed. The questions were a guide to obtain the information that will answer the research questions stated for this thesis. Besides these eleven questions, some additional questions on the same subject arose during the interview that permitted a better understanding of the managers’ responses, perspectives and context applications. Using a semi-structured interview instead of a structured one was beneficial because the questions were not restrictive. It allowed for the interviewees to develop their ideas in an open way enhanced by additional details asked based on their responses. The managers expressed their perspectives freely and it seemed that the conversation flowed easily due to the conversational follow up questions included and not previously planned.

3.7 Analysis of Qualitative Data: Thematic Analysis

The inductively based procedure utilized for the analysis of the qualitative data obtained in this case study is the thematic analysis. As previously mentioned, the inductive approach is taken to make a relationship between the theory and the research. The thematic analysis attempts to analyze the qualitative data by categorizing the information collected on themes. This categorization can be originated from the theoretical framework and they need to be structured in a way that will ease the analysis of the collected data. This type of analysis can combine both inductive and deductive approaches since it makes it possible to include a predetermined coding and a revised version after the data collection. (Saunders et al. 2009, p. 492-493, 502, 505-508).

The thematic analysis is a process used to encode qualitative information where a pattern is recognized on the information gathered for further interpretation. The themes or patterns can be generated from the data collected and/ or from previous research and allow for an improved communication of findings (Boyatzis 1998, p. 1, 4-5). The
thematic approach includes a category development on themes, and it also allows to order them in a hierarchical way if required (Saunders et al. 2009, p. 506). The benefits of using this analysis for this thesis are first the selection and use of the relevant information for the study purpose and the clarity of patterns of information provided by the participants. By the development of the themes to organize such patterns, it makes an easier task to compare and analyze them in order to draw conclusions on similitudes and differences, as well as inclusions and exclusions of the information to be utilized for the findings.

According to Boyatzis (1998, p. 29), there are three stages that need to be included when developing a data-driven code in a thematic analysis (see figure 10). The first stage includes the sample and design issues, which includes deciding on the sampling and design issues such as unit of analysis and units of coding. The sampling was done by the selection of five different companies in three different manufacturing industries. The unit of analysis is the sourcing strategy that each of the managers develop for their own company. On the other hand, the unit of coding is the most basic piece of raw information of the research. In this case, the response that the sourcing managers gave to each of the questions is the unit of coding. The second stage comprises the development of the theme and a code. This stage includes various steps. The first step is reducing the raw information obtained through the data collection, in this case, the semi-structured interviews. This raw material should be structured in a way that permits an easy review. This means that from the transcript of the interviews, the most important parts for this research should be selected, this way time and effort can be managed more efficiently. The second step is to identify the themes within the samples; while the third step is to compare the themes among the samples. The steps two and three can be done simultaneously if the samples are small. In these steps there is a search for similarities or patterns through the comparison of the responses of the sourcing managers. The fourth step is to create a code, which is a preliminary coding that could serve as a differentiator among the samples, for example the presence or absence of a certain theme makes a difference from sample A to sample B. These codes ideally should include a label, a description of the theme, and indicator that describes how to recognize when the theme happens, an example and an exclusion example to avoid confusion. The final step in this stage is to determine the theme reliability on the coder, where if the same theme and codes are applied to another sample and it achieves similar responses, then reliability is accomplished. The third and last stage in the theme analysis is the code validation and includes two steps. The first step is to code the rest of the raw information for the rest of the samples. The second step is to validate the code qualitatively meaning making a visual comparison of the themes and codes for the different responses of all the samples. The themes that show differentiation constitute a validated theme. Moreover, a way to verify the reliability of the themes and codes is to summarize the consistency of agreement of each of the units of analysis. This consistency can be measured by the presence or absence of code in their responses (Boyatzis 1998, pp. 29, 31, 41-51, 62-66, 159).
For the first stage of the thematic analysis, the sample, unit of analysis and unit of coding were determined earlier in this chapter, and after the analysis of the empirical data, the same information is kept. The sample is the five companies selected from the manufacturing industry. The unit of analysis which is the element analyzed in this thesis, is each of the local sourcing strategies that the sourcing managers from those companies make. And the unit of coding is each of the responses that each of the managers made to the questions asked during the semi-structured interviews.

For the second stages of the analysis, the first step was to reduce the raw information obtained through the semi-structured interviews. To do this, it was necessary to review each of the transcripts in order to select the most important and relevant information and to structure it in such a way that could ease the analysis. The concrete way to reduce, select and structure the information was done with the help of a table, which was developed as an aid to summarize the most important information, a shortened version that could be further used for comparison in a simpler way. On the left hand side it included the guiding questions from the interview and on the top side the names of the five companies. This way each column included the essential information from the empirical data (see appendix 2).

After the table with the reduced raw information was designed, the themes were identified. The five initial themes included identification and selection of components, analysis of factors, cross-functional team, decisive factors for local sourcing, and development of local sourcing strategy.

While making the comparison of responses of the interviewees through the transcript analysis, a second set of themes was developed, because there were other patterns found during analysis of the responses of all the managers. The theme of identification and selection of components, and the theme of cross-functional team were taken out, but their information was included in the theme of analysis factors for materials’ selection. Also, two more themes were added to the initial ones: strategic alignment, due to the
recurrent topic of low cost countries; and future challenges, due to the repeated issue of limited supply related to process complexity. These modifications left the analysis with five final themes as shown in table 3. The thematic analysis is quite flexible and allows many changes until this final theme table was achieved after thorough analysis of the data collected (Saunders et al. 2009, p. 507-508).

<table>
<thead>
<tr>
<th>Themes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theme 1</td>
</tr>
<tr>
<td>Analysis factors for materials’ selection</td>
</tr>
<tr>
<td>Theme 2</td>
</tr>
<tr>
<td>Decisive factors for local sourcing</td>
</tr>
<tr>
<td>Theme 3</td>
</tr>
<tr>
<td>Development of local sourcing strategy</td>
</tr>
<tr>
<td>Theme 4</td>
</tr>
<tr>
<td>Strategic alignment</td>
</tr>
<tr>
<td>Theme 5</td>
</tr>
<tr>
<td>Future challenges</td>
</tr>
</tbody>
</table>

There were 27 codes created for this thematic analysis (see appendix 3).. They were created based on repeatability and abbreviated for easier recognition. The previous themes and codes were used on the analysis of the rest of the raw material of the samples and several patterns were found (see appendix 4). This allowed to identify easier the similar information, and also to identify factors that not all the companies shared such as the spend consideration in the analysis factors for Aircraft, as well as their strong emphasis on the production capacity analysis as a decisive factor to switch suppliers. This analysis based on the presence or absence of code use for the themes was performed in order to validate and demonstrate the reliability of the codes (see appendix 5).

### 3.8 Quality considerations

This section includes the reliability and validity factors adjusted for the qualitative research developed, as well as the ethical considerations concerned for this study.

The reliability and validity are important criteria in business research. However they are mainly used on quantitative research along with replicability. For the qualitative research, the proposed criteria used to measure the quality of the study are the trustworthiness, which includes equivalent criteria for the quantitative research, as well as the authenticity. The trustworthiness consists of credibility, transferability, dependability and confirmability (Bryman & Bell 2011, p. 394-395). The credibility of the research creates the acceptability and an internal validity of the findings through a feasible work. This credibility could be reached by the triangulation technique or by respondent validation. The respondent validation refers to the confirmation of information obtained with the subjects of study. On the other hand, the triangulation suggests combining several sources in order to achieve more confidence in the results of the research. This study used a theory triangulation by using several theoretical frameworks such as diverse models and processes for data interpretation. (Bryman & Bell 2011, p. 396-397; Silverman & Marvasti 2008, p. 260).
The transferability refers to the possibility of applying the same research findings achieved to a different context utilizing a thick description of the details and aspects of the case. With the transferability an external validation can be achieved. This particular research provides a vast amount of details and characteristics of the subjects of study used, meaning the managers, their companies and their industries, included in the empirical data. With this detailed information other researchers can evaluate the possibility of transferring the findings realized by this research to another context (Bryman & Bell 2011, p. 398).

The dependability corresponds to the reliability of the study and is achieved by keeping a record of all the procedures followed in the research development. This record keeping consists on problem formulation, method of selection of the companies and managers to participate on this research, interview transcripts, decisions made and choices selected in the data analysis, among others (Bryman & Bell 2011, p. 398). Silverman and Marvasti (2008, p. 273) also state that in order to have reliability, the researcher has to document the followed procedure. This thesis has a statement on every choice made for each selected method and backs up the decision making with a valid argument. This makes it possible to provide a guide through the study. The semi-structured interviews’ transcripts are not included due to content extent limitations, however are available for reference.

The confirmability attempts to have an objective stand for the interview without overly agreeing or disagreeing subjective arguments. This thesis attempts to provide an objective study of the theory and practice for knowledge development. And lastly the authenticity of the research is created by the fairness and genuineness of the study. On the fairness side, the research includes different perspectives by the participation of different managers of diverse companies. These participants belong to a same setting within the manufacturing industry. This allows to have a fair standpoint for the study development. On the genuineness side, this study permits to expand the knowledge of the area of research by understanding the strategic sourcing field within the organizations by combining and including their opinions and perspectives on the matter, allowing for ontological authenticity (Bryman & Bell 2011, p. 398, 399).

The ethical considerations concerned with this study are related to the appropriateness on every approach to the subjects of study, as well as to the information management. This is a matter strongly enforced in the development of the thesis, from the research methodologies and theoretical frameworks used, to the data collection, analysis and conclusions. Some of the issues in research ethics are related to privacy, voluntary participation, participants consent, confidentiality, behavior and objectivity (Saunders et al. 2009, p. 183-186). On this thesis the participation of the different managers was voluntary and they agreed to be a part of this study with recorded interviews for later transcription. The participants granted consent to study their behaviors, analysis and decision making, comparison among them, and results publication. Their names and companies are kept confidential per their request and therefore, their companies are given alias names for proper referral and distinction. Objectivity was maintained in order to avoid bias or misunderstanding on data collection and interpretation.
4 Empirical Data

This chapter first describes the industry characteristics in which the case is developed, as well as the companies that participate in this study. Afterwards, it provides the most relevant information retrieved from the interviews. This information is presented following the designed interview sections in order to maintain a smooth flow of information that can be easily followed for further analysis.

4.1 Empirical Context

According to the analysis that KPMG (2010, p. 3) made in regards the competitive alternatives to the international business location, they establish three major business type industries, which are the manufacturing industry, the corporate and IT services industry and the research and development industry. Within the manufacturing industry, there are several sub-types of industry categorized in aerospace, agri-food, automotive, chemicals, electronics, electrical, medical devices, metal components, pharmaceuticals, plastics, precision manufacturing and telecommunications.

The five selected companies fall within the manufacturing industry, however, they locate themselves in different branches of it. Two companies belong to the aerospace industry, which is the industry related to the production of aircraft components. The aerospace industry in Mexico comprises the companies that manufacture, design, maintain and repair components for the commercial and military aircrafts. This industry is quite new in Mexico and is growing rapidly tripling the exports from 2004 to 2010, sustaining a 16.5% growth rate. In 2010 the exports were of 3.2 billion US dollars ($3.2B USD). This industry is based in two main states of the country: Baja California and Queretaro. Mexico is the most attractive country for aerospace manufacturing investment, above China, USA, Russia and India (ProMexico 2011). One of the aerospace companies manufactures in Mexico the wings, tail, electrical harnesses and fuselage structures, and it will be referred in this study as “Aircraft”. This company is headquartered in Canada, and has a manufacturing plant in the state of Queretaro. The second aerospace company designs and manufactures navigation and communication components for the aircrafts, and will be referred to as “Navigator”. This company is headquartered in the USA and has a manufacturing plant in the state of Baja California.

Two other companies belong to the electrical industry. This industry includes processes on industrial equipment components, home appliances, equipment for transmission and distribution of electric power. Within this industry in Mexico has exported in 2010 twenty one billion US dollars ($21B USD), mainly to the USA and Canada, with an annual growth of 9.5% from 2003 to 2010. The foreign investment in this industry is quite large in Mexico. From 2000 to 2010, it has received seven billion US dollars ($7B USD), from which the foreign investment only in 2010 was of five hundred and four million US dollars ($504M USD) coming mainly from the United States of America (USA), Netherlands, France, Costa Rica and Germany (ProMexico 2011). The electrical industry is mainly based in the following states of the Country: Baja California, Chihuahua, Nuevo Leon, Jalisco, Mexico and Tamaulipas. In regards to the companies from this industry used for this study, the first one manufactures and assembles air conditioning equipment for home and commercial use and its manufacturing facilities are in the state of Nuevo Leon. This company will be referred in this study as “A/C” and
The last company belongs to the chemical industry. This industry is comprised by companies that manufacture specialty chemicals, adhesives, solvents, fragrances and essences (KPMG 2010, p. 9). The chemical industry has increased the exports from twelve billion US dollars ($12.2B USD) in 2005 to over sixteen billion US dollars (16.8B USD) in 2010. This industry is present mainly in the following states: Chiapas, Mexico City, Durango, Guanajuato, Hidalgo, Jalisco, Mexico, Nuevo Leon, Puebla, Querétaro, Tamaulipas, Tlaxcala and Veracruz (INEGI 2010, p. 109). The company selected within this industry manufactures acetyl products as well as engineered polymers for many end users such as companies dedicated to textiles, automotive, medical applications, industrial applications, among others. The manufacturing plants in Mexico are located in Jalisco and Veracruz. The company is headquartered in the USA and their sales for 2010 were of 5.9 million US dollars ($5.9M USD). This company will be referred in this study as “Chemicals”.

4.2 Interviews overview

The empirical data is built with the responses, opinions and perspectives of the interviewees. It helps to outline the common practices among the respondents, as well as the differences on factors considered on their strategies. A series of quotations are included to emphasize the importance of certain matters on the local sourcing subject which seemed to be determinant for that particular organization and helps to understand the relevance of their rationalization for the local sourcing processes.

The five semi-structured interviews resulted in some similarities and differences on the processes performed by the sourcing managers at the time of analyzing their components or materials, the importance of the decisive factors considered on the decision making process and the strategy development. This section contains the resulting empirical data obtained through the answers, opinions and perspectives of the different managers while attempting to perform the local sourcing processes. The similitudes and differences could be originated on the type of activities that each of the managers perform on their own roles within their organizations and the type of materials, components or products they manage for their company.

Table 4 clarifies the roles, main responsibilities and commodities managed by each of the participants as well as the duration of the interview. All of the interviewees perform very similar activities within their organization which are the identification and development of local suppliers for their manufacturing plants. For the purpose of this work, the term “materials” will be used to refer to products, or components that need to be purchased for the manufacturing facility.
<table>
<thead>
<tr>
<th>Company</th>
<th>Role</th>
<th>Activities</th>
<th>Commodities</th>
<th>Interview Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Aircraft”</td>
<td>Supplier Development Manager</td>
<td>Identification and development of Mexican suppliers</td>
<td>Sheet metal, machined parts, composite materials</td>
<td>39 minutes</td>
</tr>
<tr>
<td>“Navigator”</td>
<td>Global Sourcing Manager</td>
<td>Local sourcing in each of the best cost countries for the company (Mexico, China, India)</td>
<td>Stamped parts, sheet metal, wire and harnesses</td>
<td>40 minutes</td>
</tr>
<tr>
<td>“A/C”</td>
<td>Sourcing Leader</td>
<td>Identification, selection and development of Mexican suppliers</td>
<td>Sheet Metal, steel, compressors, motors, screens, copper tubing, aluminum, plastic parts, valves, steel tubing, electronic parts.</td>
<td>39 minutes</td>
</tr>
<tr>
<td>“Motors”</td>
<td>Commodity Manager</td>
<td>Local Sourcing and Supplier Development for Latin America</td>
<td>Stamped parts and enclosures</td>
<td>30 minutes</td>
</tr>
<tr>
<td>“Chemicals”</td>
<td>Strategic Sourcing Manager</td>
<td>Sourcing and development of procurement strategies</td>
<td>Maintenance, Repair and Operations materials: pipes, valves and fittings (PVF), safety equipment, rotation equipment.</td>
<td>54 minutes</td>
</tr>
</tbody>
</table>

### 4.3 Evaluation Process

According to the responses of the interviewees, the initial process for the local sourcing starts by identifying which are the materials that are eligible for a change in the source, from a foreign supplier, to a local Mexican supplier. This process includes the identification of common specifications, common raw materials, common processes so that they can be classified into one group or commodity. Most of the managers have very specific commodities on their charge, however the sourcing leader for A/C handles all the materials for his company, therefore the classifications becomes more exhaustive for this company since one person handles every commodity in the organization. The rest of the sourcing managers handle around three different commodities each. So here is the first difference on sourcing management practices among the companies.

Once the materials are identified and classified, the managers start to analyze them in order to know if they could be sourced locally in Mexico. All of the managers take into consideration the product and process specifications in order to define the materials’ complexity and this is the first common factor in the analysis. They include in the group of materials to source locally those which are made of raw materials available in the country, as well as processes that are not critical for the operations, and could be performed by a previously known supplier market. When referring to critical operations, the manager of Navigator does not consider any materials that are dedicated for the military industry due to the highly certified processes required, or those materials that form part of a program that has not reached maturity due to potential engineering changes. Similarly, the manager for Chemicals does not consider materials that are used on a critical process due to safety specifications and high complexity. But if the raw material is available, for example the steel, and the process is available within a known
and current supplier market such as the stamping process, then the materials are included in the potential local sourcing group.

The second factor that most of the managers analyze is the spend for those materials, meaning the volume demanded times the price. The only company that does not consider this factor is *Aircraft* because according to his manager, "We like to buy locally as much as we can" no matter the spend. The rest of the managers do calculate the spend in an annual way except for *Navigator* who does it on a three years basis and only includes in the potential local sourcing group those materials who have a higher spend than 30,000 US dollars per year, meaning 90,000 US dollars every three years. In fact, the manager of *A/C* said “I focus first on the items of higher spend to start reducing costs on an 80-20 basis”, which is similar to what the manager of *Motors* does too.

The third factor included in the analysis by the managers is the available supplier market. They all acknowledge that there is already a known supplier market established in Mexico, characterized by capabilities on processes, who have to be further analyzed in terms of available capacity, certifications, quality procedures and that could be developed to meet the needs of the companies. Several mangers also took into account the alternative of suggesting to foreign specialized suppliers to expand their operations inside of Mexico in order to make available processes that were not offered by the current market.

An important point to mention is that the sourcing managers do not act on their own while doing this analysis. In accordance to the sourcing definition addressed in the literature review, where it is mentioned that in the sourcing process is a cross-functional activity, the managers work together with other areas to study the local sourcing possibility. Depending on the organizational structure of each of the companies, different departments put their efforts together on the local sourcing activities. All of the departments mentioned by the managers are procurement, sourcing, quality, engineering, supplier development, logistics, and manufacturing & operations. Each of the departments could be from different levels, meaning that they could belong to a specific business unit of the organization and/or the corporate itself. The departments could be also conform internal teams called different in the organizations, for example, the quality and engineering team for *Aircraft* is called the implementation team, while for *Chemicals* these same two department teams together are called reliability team, or in *Navigator* the team conformed by procurement, sourcing, engineering and quality is called category team. It is only evident that all the companies included in the case study perform cross-functional tasks for the sourcing purposes.

Having all the previous mentioned factors included in the analysis of materials to be potentially sourced in Mexico, the managers proceed to evaluate alternatives. This process is done first by putting all the product and process information together and develop a complete request for quotation (RFQ) that includes the specifications required, the volumes, and any relevant information that a supplier could use to quote the materials. This RFQ is sent out to the identified potential suppliers from the supplier market and normally as well to non-local suppliers. Then the quotations along with additional aspects are evaluated. Such aspects are considered for the total cost of ownership, as described by the managers of *Chemicals* and *Motors* as all the costs including price, logistic costs (transportation, customs fees, duties and taxes), carrying inventory costs, quality and reliability costs, tooling costs, and financial costs. Other
additional aspects evaluated are the lead time for delivery and the customer service offered.

4.4 Decision Making Process

The evaluation of the factors led the managers to define what the decisive factors were the ones that made them decide to proceed with the local sourcing strategy. According to the managers, these decisive factors are: quality & capacity, savings, lead time of delivery and customer service. The quality and capacity refers to the supplier being able to meet the required specifications and have the available capacity to produce the materials required on time and complete quantities. This was the one of the decisive factors for the manager of Aircraft and this manager was the only one to mention it. As opposed to this, all of the managers mentioned all of the other decisive factors. The savings are the ones related to the total cost of ownership. In the case of Navigator, if the savings are not from twenty to twenty five percent, the manager does not move the material from the original source, on the other hand, the manager also mentioned being able to get up to a fifty percent of savings by moving from American suppliers to Mexican suppliers. In the case of Chemicals if the savings are not at least fifteen percent, “it is not worth to move from the supplier”. The lead time of delivery refers to how much time is required for the supplier to ship or deliver the materials. As stated by the manager of A/C, “The main objective is the lead time reduction with local suppliers, they can deliver twenty four hours or less in contrast to the delivery lead time from a supplier in the United States which is at least of one week considering transportation and customs. Customers demand to have product in four days, so we require more local suppliers to minimize risks of shortage of material or excess inventory”. As per the manager of Chemicals, “of course the lead time is a big component, save time on the transportation and avoid customs. We all know that time is money”. And finally, the customer service factor, which the manager of Aircraft mentions to include the “flexibility provided by a closer supplier, a faster response on changes in requirements or on quality issues, on time delivery, more frequent deliveries with less volume, improving the inventory rotation and a possibility to work with the Just in Time (JIT) philosophy and a face to face relationship with the supplier”.

These decisive factors are a resemblance of the potential benefits that the companies could realize by sourcing locally what is possible to be sourced locally. The manager of Motors emphasized the efforts made to “regionalize 100% of the materials our plants need” and that “having the supply chain closer to the customer, in this case the manufacturing plant, we can be more flexible and we can deliver faster, we can respond faster to the customer’s requirements”. When the managers were asked to give weighs to each of the decisive factors they all hesitated to give an answer. They took their time to think about it and three of them concluded that they could not rank or give a specific weigh to each factor because they are related to each other. On the word of the manager of A/C, “It is complicated to rank, there are no benefits if they don't exist all together. For example, low quality and cheap equals no benefit; cheap but delivered in a year equals no benefit”. However, as convincing as the previous argument was, the other two companies did give a weigh and a rank to their decisive factors, for example, Chemicals weighed the factors as follows: reliability (quality) fifty percent, cost thirty five percent, and delivery lead time fifteen percent.
4.5 Development process

Once the decision of moving to a local source is made, the development of the strategy is detailed and includes several tasks in this process. Combining all the factors that the managers took into consideration at this stage, it was possible to create a richer list that covers all of them. According to the managers, in order to be able to make the supplier selection, it is necessary to perform a technical and quality assessment that would include a capacity analysis, certification if required and approval. After the supplier is selected, the award is made and the terms and conditions of the contract are negotiated and signed. Motors and Chemicals are explicit on putting together an implementation team that would include people from the company and from the supplier to work together on the execution of the action plan. This action plan is created to manage the necessary tasks on time and on budget. The managers included different tasks within the action plan, some of the included activities are a Gantt chart with a defined time line and defined reviews, a supplier workshop where the technical review of the materials would be performed; a transition program which would analyze the inventories, tooling transfer if required, changes in the system such as ERP. It also includes the placement of purchase orders, samples approval up to first production; and finally the complete change of supplier.

The whole sourcing process is not a documented or standardized procedure for these companies except for Chemicals who is the only one to have a defined sourcing process regardless of the location or scope (local or global). The rest of them argue that it not a standardized process across the organization and that is based on the companies’ needs on a particular situation. However the factors included in the whole sourcing strategy are highly alike as it could almost be a standard at some point.

4.6 Organization Approach and Future Challenges

It resulted interesting to discover the managers’ perspectives when they were asked about the alignment that their sourcing strategies had with the organizational strategies. Four out of the five companies responded that the alignment was based on the low cost country or best cost country strategies that the organizations pursue as global players, along with their growth in emerging economies such as Mexico. They mentioned that the companies are seeking for cost reductions and increasing sales in these economies and this is being achieved through improvements in the supply chain and operations. The only company that did not mention to have the low cost country as the common alignment area was Aircraft, however their manager did mention that although their strategy is “to be a global player and a global citizen” they align their supply chain to the organizational strategy by having a local presence with local suppliers in the main markets.

Finally, the future challenges for the local sourcing strategies perceived by the managers are pointing the same direction. They are concerned with the potential saturation of suppliers by the industry, as well as the lack of availability for special processes due to technology and know-how. This challenge is in line with the argument presented by the manager of A/C which was the lack of Research and Development (R&D) due to the poor investment on innovation and technology in the country, thus resulting in not being able to develop complex components or processes. A last challenge described by the
manager of Chemicals is the current problems that Mexico is facing in terms of insecurity, violence and corruption. This manager explained that the company had to stopped their expansion plans in Mexico due to corruption problems and that the investment went to Europe instead.

5 Analysis

This chapter is approached by interpreting the empirical data obtained through the interviews utilizing the literature and theoretical frameworks, along with the thematic analysis. In this chapter, the themes are analyzed in order to find out and understand the relevant factors they involve. These themes are analysis factors for materials’ selection, decisive factors for local sourcing, development of local sourcing strategy, strategic alignment and future challenges. The factors and activities that these themes comprise are related to the five models described in the literature review that aid to shape the procedures for the local sourcing strategies. These five models are: the Kraljic matrix, the location decision model, the cost decision model, the adapted local sourcing process and the supplier selection template.

5.1 Analysis factors for materials’ selection

Studying the responses from the interviewees, the first pattern identified while they were describing their sourcing processes is the analysis factors they used for the selection of materials eligible for local sourcing. This theme is called analysis factors for material’s selection. As stated by the managers, there are three main factors for the analysis of materials to be considered as a part of the strategy for local sourcing plus the initial identification and classification process. The first factor refers to the study of the materials’ complexity, composed by the specifications of the product itself or the manufacturing process required. The second factor refers to the materials’ monetary spend and the third factor relates to the study made on the available supplier market. These three factors can be associated to the Kraljic matrix (Kraljic 1983, p.111). It is possible to compare this model to the procedures that the sourcing managers make in order to classify and select the materials that will be analyzed for the potential local sourcing.

Recalling the two main variables of the Kraljic matrix, the business impact, plotted in the Y axis, can be referred as the current spend of the materials, or the potential savings if moved to a local source, or the process criticality of the materials in order to be used for the operations. The second variable, the supply risk, plotted in the X axis, as the number of potential suppliers that are capable of doing the required processes, have enough production capacity and/or have the necessary certifications that the company requires. The business impact is connected with the first two factors described in the empirical data, the materials’ complexity based on their product and process specifications, and the materials’ spend. On the other hand, the third factor described in the empirical data, the available supplier market, is connected to the supply risk variable of the model. All of the companies have the knowledge on the available local supplier base and use this information in order to decide how to proceed with their materials’ selection.
None of the companies included in this study mentioned the Kraljic matrix per se, however the managers referred to the matrix factors in their own way. For instance, Aircraft does not use the money value as the business impact for the selection criteria suggested by Kraljic. According to their manager they do not pay so much attention into the overall spend or potential savings, because they assume already that savings would be achieved by moving to a local source. However, in terms of criticality versus risk, they do identify what are the materials that require a special process, such as chemical treatments like coatings, and match them with the available suppliers in Mexico. This type of items can be referred to as the critical and bottleneck materials, and if there is no available source with the proper capabilities, then that material remains with the current foreign supplier. This company makes no difference on going first for the low risk or the high risk, they work with both types of materials at the same time. This is possible because according to their manager, the aerospace industry does not use a vast number of materials in their operations, as opposed to other manufacturing industries. This is the same case with Navigator, as it belongs to the aerospace industry as well. A strong importance is paid to the criticality of the materials and the special processes. However, this company does include, in the selection, the spend and savings as the business impact. Since the manager mentions that the total annual spend for the material has to be of at least of 30,000 USD to consider it with potential savings of 20 to 25% this indicates that they select first the high impact materials. This analysis made by the manager indicates that he classifies the materials in low and high impact, depending on the spend. The manager also mentions that they have an objective of reducing the number of suppliers, so this allows the assumption that he makes an analysis on the number of available suppliers, selecting first the low supply risk. Therefore, their selection would be primarily on the leverage materials.

On a different view, Chemicals, Motors and A/C agree on analyzing the spend involved by the materials and focusing on the higher spend, which would be the high business impact, and the three companies also run a supplier market analysis which lets them know if there are potential local suppliers thus confirming they analyze the supply risk. The two companies belonging to the electrical industry, Motors and A/C have a higher number of materials used in their operations, and their selection strategy differs according to their context. If the need is to drive the highest savings in a short period of time, then the focus is on the leverage parts and the non-critical parts, even if this last one has a low value, it will contribute to the savings. On the other hand, if the need is to reduce the dependability of the limited suppliers, then the focus is on the critical and bottleneck items. It becomes evident that the five companies use the business impact and supply risk in their analysis of materials in order to classify them and decide which ones are suitable for a local sourcing strategy, as well as to prioritize the materials. Therefore it is proved that the factors of the Kraljic matrix are used for the classification and selection of materials.

On a different perspective, the analysis of factors for the materials’ selection can also use the Location decision model (Lysons & Farrington 2006, p. 425-427). This model is composed by general and strategic considerations, product factors, supplier factors and personal factors. Using the general considerations of this model, it is possible to first classify the materials into commodities for proper analysis, second to identify their spend through the study of the current state of quantities required and their current price, and third to categorize them in leverage, strategic, non-critical or bottleneck, because this model comprises the use of the Kraljic matrix as well. Additionally, the
strategic considerations of this model, along with its product factors section, can be used in order to analyze the potential supplier base existent in the region, with this, the companies can be aware of the availability of suppliers that can provide the desired materials according to the product specifications, production processes and certifications required. Therefore, this model helps to select the proper materials for the pursued local sourcing.

Lastly, this theme can also be approached with the adapted local sourcing process (Monczka et al. 2011, p. 384, 388), which requires identifying the commodities that qualify for local sourcing consideration in Mexico. Although this model does not state how to identify these items, it can be assumed that any other model that has a methodological process such as Kraljic’s can be used for this purpose. Therefore it can be concluded that this model overlaps with both of the previous models, so it would be valid to say that for the analysis factors theme, the primary model to be used is the Kraljic’s matrix because of its relevance of factors used for the items’ selection purposes. The secondary models would be the Location decision model as well as the adapted Local sourcing model because they both include Kraljic’s matrix, although they contribute with complementary information. By finding the analysis activity as the primary step in these three models it can be assured that the relevance of this activity is great in order to start with an effective strategy.

5.2 Decisive factors for local sourcing

The second theme analyzed in the empirical data corresponds to the identification and evaluation of factors relevant for decision making process. The importance of this theme is not only to recognize all the factors included for the evaluation, but to identify which of those factors are the decisive ones. During the interview, the mangers were asked to list the factors they considered relevant for evaluation in order to determine the ones that made them decide to start building a local sourcing strategy. Then, they were asked to determine which of those factors were the most important, the decisive ones, and if possible, to rank them in order of importance for the decision making. Their response was analyzed in order to be able to provide an answer to the first research question that asks for the decisive factors that the managers evaluate to proceed with a local sourcing strategy.

After the managers have made the selection of the materials that can be potentially sourced locally in Mexico, they proceed to collect all the specifications and relevant information on these selected items in their current state, meaning with the current supplier. The five companies explained to have access through their MRP (Material requirements planning) or ERP (Enterprise Resource Planning) systems, which include the present supplier performance, previous purchases, prices, real delivery time, quality approval, etc., information that helps them to have an accurate basis for comparison and benefits evaluation. The retrieval of this information is similar to what is required in the general considerations of the Location decision model. These general considerations are related to the materials’ performance in terms of price, quality and delivery time and represent the current supply situation and requirements of the company (Lysons & Farrington 2006, p. 425-427).
In addition, this information is used for the development of the documents that contain the specifications for further supplier referral. This process can be approached by the adapted Local sourcing process, which requires to develop a request for proposals (RFP) or request for quotation (RFQ) (Monczka et al. 2011, p. 388) which can use the information related to the product and processes, intersecting with the section of the product factors comprised in the Location decision model. Navigator includes in this section all the information related to the specifications of product and/or processes, annual quantities, frequency of delivery, and services required such as warranties, maintenance, etc. This is a very sensitive section because it includes the specific needs of the company and this is the information that is sent to the suppliers for a proposal or quotation.

Once the specifications and needs are defined by the companies, a clear understanding is achieved and with it, it becomes possible to identify the potential suppliers that are able to provide these materials. In the experience of the manager of Chemicals, this search and identification of suppliers is done by reviewing the existing supplier base that has already been developed and determine if they are capable of providing the new materials. Another way is to assist to fairs, search on the internet, or contact the governmental office in charge of the relations with manufacturers, among others. After the suppliers have been identified, then the RFP’s or RFQ’s are sent to them, and as Motors states, the suppliers’ doubts are clarified in order to make a positive progress with the process.

This supplier identification process can also be approached with the supplier factors of the Location decision model. These supplier factors are related to the suppliers’ performance, and in the case of Navigator’s analysis, the manager needs to know in advance the current quality performance measured by parts per million (PPM’s) and the percentage of on time delivery (OTD). As an additional supplier factor, Aircraft and Navigator highlight the importance of the supplier having more than enough available production capacity. Then the suppliers’ proposals and quotations are received and they are to be evaluated based on the offer in price, services, terms, times and costs. These activities are also included in this model under the strategic considerations, which include all the parameters that are evaluated on the present and potential form in order to make a comparison and calculate the benefits (Lysons & Farrington 2006, p. 425-427).

The evaluation of the proposals offered by the suppliers related uniquely to the price can be performed with the help of the Cost analysis model proposed by Monczka et al. (2011, p. 381-382). The sourcing managers included the analysis of the cost structure to define the feasibility of the local sourcing strategies. The manager of Motors explained that they work under a philosophy of “total cost”, and for this, he listed the costs that are analyzed in this company: base price, transportation costs, taxes, inventory in transit, tooling costs and payment terms for the financial costs. In addition to these same costs, the manager of A/C includes the customs duties and the customs broker fees, in order to determine the savings obtained by stop importing the materials. From the model proposed in the literature review, the only costs that were not mentioned by the managers were the packaging costs, the insurance costs and the communication costs. Nevertheless, the manager of Chemicals makes the analysis based on the total cost of ownership, in which besides the costs related to the price, freight and logistics, also includes the reliability costs, calculated with a factor called mean time between failure
(MTBF) and helps the company to understand all the costs incurred while operating, attempting to avoid the hidden costs.

On the other hand, the strategic considerations of the Location decision model related to the competitive advantage can function as guidance to the companies that decide to start to source locally as a strategic action to improve their performance, and are not focused rigorously on the price and cost structure. For example, Motors not only focuses on the price to make a decision, they also evaluate the service that a local source can provide in terms of flexibility and fast response to the requirements, a reduction on the delivery lead time which results in a reduction of other costs such as the carrying inventory and logistics since the supplier is located in the same country and avoids the import costs previously incurred. A/C makes the evaluation on price and service as well, and in addition indicates that the specifications have to be met in order to comply with the expected quality, same factor added by Chemicals but referred as to reliability in this company.

Finally, the managers compare all the factors important to them in order to make a decision. According to the empirical data, the shared decisive factors that were used for making a decision on the supplier selection were the suppliers’ capacity and quality, the savings, the delivery lead time and the customer service offered. This selection process can be approached with the Supplier selection model suggested by Şen S. et al. (2008, p. 1828, 1834). This is the model that includes a template with different variables that the managers evaluate in order to decide for the best supplier for the selected materials. This best fit includes a combination of factors and some of the managers are even able to weigh them to facilitate the decision making process. This model overlaps with other models in some of the evaluation factors such as the cost with the cost analysis model, also related to the price referred in the Location decision model along with the quality, delivery time and service. As for Aircraft, this service is reflected in the flexibility obtained due to the closeness to the supplier’s location, a faster response in the changes of requirements and for solving quality issues, a possible development of a just in time (JIT) program, etc. A part of the reliability and technology variables have been mentioned already referring to the suppliers’ capabilities and available processes. This overlapping also validates the importance of these factors for the decision making.

The decision making process in this study applies primarily to the decision of starting a local sourcing strategy. This decision is justified by calculating the potential benefits of selecting a different supplier from current one. This stage divides the sourcing strategy from the evaluation phase into the development phase. Therefore the supplier selection could be seen as a shared area, as the last step of the evaluation and decision making process, as well as the first step of the strategy development.

5.3 Development of local sourcing strategy

Once the supplier alternatives have been evaluated and a decision has been made with the selection of the new local source, the development of the strategy needs to be plotted. The strategy development is the third theme to analyze. The managers were asked how they started to develop the local sourcing strategy and if their company had a procedure for it. The objective of these questions was to find out if the managers had a standardized way with steps to follow for the strategy development. Even though most
of the managers argued not to have a standardized way to proceed, they did propose the same activities starting with the negotiation of the contract terms and conditions.

On the attempt of comparing the empirical data obtained for the development of the strategy with the theoretical frameworks included in the literature review, it was found that the models mainly stopped in the selection of supplier. After this point only the adapted Local sourcing process included the contract award, contract implementation and supplier management (Monczka et al. 2011, p. 388), and the Location decision model included under the supplier development, the definition of contract terms, type of relationship to develop, and number of suppliers to use (Lysons & Farrington 2006, p. 425-427).

The team establishment in the adapted Local sourcing process is developed at an early stage suggesting to have a presence in both, the strategy evaluation phase and the strategy development phase. The setup of the local sourcing team, has a cross-functional participation as mentioned in the empirical data description. According to the managers, this team is designed to perform the activities included in the strategy and is responsible for the proper planning and execution. This team is formed with people from different areas of the organization that are impacted with a change of supplier; therefore they all participate in the proposal and development of the local sourcing strategy.

The companies need to decide if they will be sourcing from the old and new supplier at the same time (dual sourcing) or if they will move completely to the new source (single sourcing). In regards to the factors related to the supplier development from the Location decision model, all of the companies are in the agreement of using only one supplier for the selected materials. They use a dual sourcing only at the beginning of the transition phase and for a limited number of orders, and once the production of the new supplier has been approved, there is a complete single sourcing. Prove of this is the need for supplier reduction in Navigator.

The contract periods varies for all the companies studied. For instance, Motors awards contracts of three years, Aircraft’s contracts’ length is of at least five years, same as Navigator. For this study, the type of relationship to develop with the suppliers depends on the criticality of the products, where for example, the suppliers of the materials that have low value and low supply risk do not require a great investment on the relationship, while the suppliers of the critical materials require a high commitment and close relationship with the company. Another type of relationship that was mentioned by Motors is related to the performance and commitment of the supplier. They categorize the suppliers in regular, preferred, marquee and partners, which require an increasing level of strength in the relationship.

However, after this point, there is no theoretical model or process that shows how to continue with the development of the sourcing strategies. Even if the sourcing process finishes with the implementation of the contract, it does not provide a guidance to compare with the actual activities that the managers perform after signing the contract with the suppliers. This contract implementation refers the transition management to the new supplier. The managers create an action plan to determine the necessary activities to guide them into achieve a full local sourcing development. This action plan varies among the companies; however combining the activities included by each manager it is possible to design an unofficial model that will further help to answer the second
research question related to the activities involved in the development of the local sourcing strategy.

Such action plan includes the timeline in which the sourcing activities are intended to be executed, and is periodically reviewed to measure the progress as stated by Chemicals, who makes these reviews at least in a weekly basis. This plan has to include the tasks and the responsible people to perform them. The plan is reviewed and measured and normally the managers use a Gantt chart to help them organize and execute the program on time and reporting the savings obtained along the timeline. This action plan contains the transition program mentioned in the adapted Local sourcing process, which includes the activities to move the materials supply from one supplier to another.

This limitation problem leads this research to propose a model for the strategy development shown in figure 11.

![Figure 11. Proposed model for strategy development](image)

**5.4 Strategic Alignment and Future Challenges**

The strategic alignment theme includes information regarding the organizations’ goals on cost reduction, sales growth, service improvement and time reductions. Even though the specific monetary or percentage goals are different among the companies, they all are focused on drawing the benefits that the local sourcing strategies bring in order to
contribute to the companies’ goals. This is in line with the theory of Fredriksson et al. (2010, p. 313-315), that the companies moving their operations to low cost countries are seeking for competitive advantages, cost reductions and improved customer service.

The managers agree that their sourcing strategies are aligned with their organization’s strategies with the development of capable local sources that can provide the materials as required by the company. The fact that the manufacturing facilities have been opened in a low cost country leads to an evident effort to develop a local supplier base in order to show congruence with the organization’s strategy. The strategic alignment theme can be approached with the strategic factors of the Location decision model, in order to determine the potential competitive advantage through price, differentiation, delivery and quality (Lysons and Farrington 2006, p. 425).

According to the five managers, the benefits sought through the local sourcing are to reduce the delivery lead time, to obtain a faster response and increased flexibility, reduce costs and have a closer communication. These same benefits are confirmed to be sought in theory by Van Weele (2005, p. 161) and Brewer (2001, p. 223), which shows that the benefits and goals in theory and practice coincide.

The last theme corresponds to the future challenges. All of the managers mentioned as a future challenge the saturation or lack of suppliers for special and complex processes required, such as special coatings. These processes are done by a very limited number of suppliers in the country due to the complexity and/or certification required. The study of the complexity of the materials can be done with the help of the Location decision model under the Product factors (Lysons & Farrington 2006, p. 426). This analysis would help on determining if the process is critical, if it can be done in the country or if it the supplier can be developed in order to make the process. In addition, the critical materials plotted in the Kraljic matrix (Kraljic 1983, p. 111), characterized by high criticality, in this case criticality of process and high supply risk due to limited number of suppliers, can be spotted in anticipation in order to make a sourcing decision. According to the managers, these critical materials are in risk of not being able to source locally in an undetermined period of time, until a supplier is willing to invest in the process and certification, and until it is fully developed.

On the other hand, the challenge related to the insecurity, violence and corruption can affect the supplier selection process, hence the decision making process of sourcing the materials with a local supplier. This challenge could be analyzed with the help of the location decision model, studying the personal factors, however the managers did not mention explicitly how they intend to address this problem, or how much it has impacted their decisions.

The future challenges are anticipated based on the current capabilities of the local supplier base, and need to be addressed with a supplier development strategy first in order to be able to source locally.

5.5 Local sourcing strategies: themes’ overall analysis

In general, the five models presented in the theoretical framework have been used in their majority to interpret the empirical data obtained through the interviews of the
managers of the participating companies. These models overlap each other in some sections, but also complement each other in other sections. Figure 12 shows the theme, the main focus on factors or activities, and the models or theory that can be used to approach the empirical data. For instance, the Kraljic matrix, the Location decision model and the adapted Local sourcing process are used in the analysis factors of materials’ selection in order to classify the materials and select the ones that are eligible for local suppliers. Then, for the theme of decisive factors for local sourcing, for the evaluation of alternatives and decision making process, all the models here described, except for the Kraljic matrix, are used: Location decision model, Cost analysis model, adapted Local sourcing process and Supplier selection model.

The supplier selection is in a dotted-line box because it represents the last step for the decisive factors for local sourcing, and the first step for the development of local sourcing strategy. This activity can be part of both themes, therefore in the diagram it is shown as a shared activity. It is important to bear in mind that the application of models is limited for the strategy development, however it can be approached with the local decision model and the local sourcing process. The theme of strategic alignment is basically focused on the concern of the low cost country and low cost country sourcing. Since the facilities located in Mexico are already in a low cost country, the direction that the managers have of initiating local sourcing strategies is justified with the low cost country theories, and the benefits related to the local sourcing can be approached with the strategic considerations of the Local decision model. Finally, the future challenges are mainly focused on the complexity of the processes and the lack of capable suppliers that can perform them, and the corruption and insecurity problems that the Country presents. These two aspects can be approached with the Kraljic matrix, the Product factors from the Location decision model and the Personal factors from this last model as well.

It is important to mention that it was possible to adapt the global sourcing model found in the literature to a local sourcing context (Monczka et al. 1998, p. 384; 2011, p. 388). This can be confirmed with the remark of Chemicals’ manager of their documented procedure for sourcing, who states that there is no difference made on it, even if the company attempts to develop a global or local sourcing strategy. This is the only company that has a documented procedure and served as a main guideline on the activities performed on the strategy development.

Moreover, the analysis of these main themes on the local sourcing strategies help to study the relations between the theories and the empirical data based on the practice in order to provide more accurate responses to the research questions. These responses are justified with arguments from both academics and practitioners’ perspectives.

The first research question is answered with a balanced explanation of practitioners and academics, while the second research question is answered mainly by the practitioners’ inputs due to the limited theoretical models.
6 Discussion and Conclusions

This chapter includes the answers to the two proposed research questions and discusses the findings from the analysis chapter. It also makes a remark on the managerial and theoretical implications, describing the contributions made with this research, as well as the recommendation proposals for practitioners and academics. Finally, it gives suggestions for further research in this area of study.

6.1 Answers to Research Questions

With the previous analysis of the themes developed for the empirical data, along with the theoretical models and processes proposed in the literature review, it is possible to provide pertinent answer combining the concepts obtained through academic research and business practices from the managers interviewed.

Research Question 1:

What are the decisive factors that the North American companies evaluate in order to initiate a local sourcing strategy for their manufacturing facilities in Mexico?
To answer this question, first it is necessary to list all the factors that are studied and evaluated before making a decision. The combined list from theory and practice results in the following factors: annual spend, criticality of product/process, supplier market availability, price, quality, delivery time, reliability on delivery, service, logistics, overall costs (total cost of ownership), contract terms and length, management & organization and technology. All these factors are assessed during the analysis and evaluation phase in order to know if it is feasible to move the source to a local supplier. All the factors have a specific importance according to the needs of the company. However it was possible to identify the decisive factors that make the sourcing managers initiate a local sourcing strategy. The non-questionable factors in the decision making process are the production capacity and quality offered by the supplier. These two factors must meet the expectation of the companies in order to proceed with the local sourcing. The production capacity allows to have the materials’ quantities required, when required, with the process required, and the quality allows to have the materials as required, meeting the specifications and without defects. The following factor is the savings that are obtained through a meticulous calculation on the cost structure and the total cost of ownership. These savings are calculated as a percentage of the spend, and going from global to local, savings on logistics are anticipated. The next factor to appear in the list of the decision makers is the lead time of delivery, which would be measured by the reduction of the delivery time of the previous supplier against the potential one. Again, going from global to local at least a week is counted as a reduction due to transportation and import process. And the last decisive factor is the customer service offered by the suppliers. This customer service could be represented as flexibility, response time to changes, fast resolution of issues, delivery systems such as JIT, etc. These five factors, quality & capacity, savings, delivery lead time and customer service, are demonstrated to be decisive factors while evaluating them through a comparison of the current state with the potential state. And if the expectation is met on these factors and benefits are drawn, the sourcing managers proceed with the supplier selection and development of the strategy.

**Research Question 2:**

What are the activities involved in the development of a local sourcing strategy for the North American companies with manufacturing facilities in Mexico?

To answer this question, it is necessary to clarify that the information available for the development of the sourcing strategies is limited, assuming that the strategy development starts after the supplier has been selected. This research question is being answered with the help of models and with the combined managerial practices based on the experience of the sourcing managers. The activities involved in the development of a local sourcing strategy are contract negotiation and award, and the development of the action plan. This action plan is comprised by sub-activities required for the development of the strategy. These activities are: identification of the development team, creation of a tasks list, definition of the due dates, delineation of the timeline, budget determination (if required), Gantt chart development, supplier workshop planning and definition of the transition program. At the same time, this transition program comprises specific activities related to the transition of the previous supplier to the new supplier. These activities include inventory analysis, tooling analysis, purchase order placement, changes on information systems, sample approval, and production
approval. A total of sixteen activities are required for the development of the local sourcing strategies in order to execute them successfully.

6.2 Discussion of findings

Although the direction comes from the corporate strategy, alignment is sought by the sourcing managers to achieve sourcing coherence. With the opening of manufacturing facilities in Mexico, country considered as low cost, the North American companies seek for operational and supply benefits. The latter benefits can be achieved with the evaluation of sourcing strategies and determination for supply location.

The research findings show the existence of theoretical models that serve as a base for the analysis and evaluation of factors for the decision making process of selecting a local sourcing strategy for the company. It has been confirmed that the sourcing practices performed by the managers on the evaluation stage are included in such models, validating the practice with the theory. The case is different for the development of the strategy. After the supplier selection has been made, activity that is included in the theoretical models, limited information is available as to the approach of the local sourcing strategy development. This situation appeared unexpectedly contrary to the belief that the models covered this topic as well. Even the adapted local sourcing process, as a comprehensive as it is and overlapping with other models, did not cover the activities involved in the strategy development. This was a very interesting finding that led to rely on the practice and not so much on the theory.

Another interesting finding is the fact that the local sourcing process does not differ so much from the global one. Of course they differ in the location of the supplier base, however taking into account only the process, analysis and evaluation of factors and the activities for the strategy development are fairly similar. They both use a comparison of the current supplier versus the potential supplier and the current state versus the potential one with the calculated benefits. Therefore it results fair, to some extent, that the sourcing process itself can be applied for both global and local strategies and that the difference relies in the location of the potential supplier base, as well as in the comparative results. This argument can be justified with the fact that the adapted local sourcing process referred in the literature review, is a modification from the original sourcing process, which was the global one. In addition, one of the managers confirmed to be the only company with a documented sourcing procedure, where no difference is made as to local or global.

One last finding that resulted quite interesting is that even though the sourcing process appears not to be a standardized and documented procedure, the sourcing managers shared most of the practices for this matter, and all of them referred to the alignment they seek to achieve with the organization’s strategy. They mention that the process can vary depending on the context, however they showed mainly similitudes in their activities and decisive factor rather than differences. Even in different branches of the manufacturing industry, which suggests different processes and needs. This suggests as well that the sourcing strategies are not so sensitive to these manufacturing industry branches, as long as they are manufacturing still. With this research it could not be possible to compare with other industries because no company outside of the manufacturing industry was included in the study.
6.3 Managerial and Theoretical implications

This study was developed because a research gap was found in the topic of the local sourcing strategies. There is limited available information regarding how to proceed with local sourcing in general, but even more limited on how to proceed with such strategies for the facilities established in a low cost country like Mexico. The study of this topic is significant because of the unusual research area, as well as the specificity of locations and nations. With the foreign investment on the manufacturing industry and the operating expansions moving to Mexico, the need for local sourcing is becoming more relevant in this industry.

This research attempts to make a contribution in the managerial implications on the sourcing strategies, and more specifically of the local sourcing ones by determining the factors that are involved in the evaluation of the alternative to move the supplier base locally. But more importantly, to define which of these factors become decisive in order to proceed with the development of the local sourcing strategy. This contribution is completed with the answer to both of the research questions, stating the specific decisive factors to evaluate in order to initiate the local sourcing strategy, as well as how to proceed once the decision has been made, with a set of activities required in order to develop the strategy. A recommendation for the practitioners is to document the procedure even with context generalities, so that it can guide the other managers and serve as a base for developing and improving the process.

On the other hand, this research also attempts to make a contribution on the theoretical implications in the strategic sourcing field by the documentation here presented on the local sourcing strategies. There is extensive academic research on global sourcing and in contrast, very limited in local sourcing. This thesis, within specific context delimitations, is a part of the base for local sourcing strategies studies developed in low cost countries. In addition, it would be useful to have a model that includes the strategy development activities in order to define a guideline or procedure. It is not enough to name only the contract implementation as a final activity on the sourcing process. The answer to the second research question, related to the activities involved in the strategy development can be part of such model. It would be interesting to possibly compare in the future the complete local sourcing strategies in different contexts, among different industries and different countries. A recommendation for the academics is to include the strategy development activities inside of the sourcing models in order to have an understanding of the set of actions required to build a successful local sourcing strategy.

6.4 Suggestions for future research

The “soft” criteria, meaning the variables related to behavior, experience, impression, culture, communication, reputation, etc. (Lysons & Farrington 2006, pp. 426–427) are not explicitly contemplated in the local sourcing strategies studied. Perhaps a study of these variables can help to determine their impact in the supplier selection process, as well as their weigh for evaluation purposes. It would be interesting to see to what extent these behavioral implications influence the local sourcing decisions. It would also be interesting to develop an analysis that contemplates the relation between these soft criteria compared to the supplier performance. This could allow the North American companies to determine the type of conducts sought in local suppliers.
Another suggestion for further research is to study the local suppliers’ perspectives on these local sourcing strategies developments. Their inputs can be helpful to understand better the areas of difficulty and ease that the suppliers might experiment while the companies attempt to execute the local sourcing strategies. This would be of great interest for the practitioners as they would be receiving a significant contribution that will help on the development of their strategies.

This thesis has illustrated the current state of local sourcing strategies developed in Mexico by North American companies. The study shows what factors are analyzed in order to proceed with a transition to a local supplier base and what activities are required to be performed in order to develop a successful localization of suppliers. The combination of the managerial insights along with the theoretical frameworks had made possible to provide an answer to the proposed research questions, and have served as a base to a proposed model that can help the practitioners in their strategy development activities. It has been a very interesting research and it is motivating for further investigation in order to achieve improvements in the local sourcing strategies’ development.
References


Şen, S., Başligil, H., Şen, C. G. & BaraÇli, H. (2008). A framework for defining both qualitative and quantitative supplier selection criteria considering the buyer-


Appendix 1. Semi-structured Interview Questions:

Introduction & Background
Thank you. Permission to record.
Introduction of myself and the purpose of the interview, thesis title and focus.
1. What are the activities that you perform in this position?
2. What kind of products or services are you in charge of sourcing?

Evaluation Process
1. How do you identify and select the components that could be analyzed for a local sourcing strategy? (classification, spend, criticality & importance, initial location)
2. What are the factors that you need to analyze on these components in order to know if they are applicable for local sourcing? (cost analysis, product information, supply market, contract type)
3. What other departments and managerial roles in the organization are involved for the analysis & evaluation and decision making?

Decision Making Process
4. After the analysis, what are the decisive factors that make you decide to go for a local sourcing strategy in Mexico?
5. What are the weighs you assign to each factor? (rank, order of importance, percentage of weigh)

Development Process
6. After the decision has made, what would be the next steps? How do you start developing a strategy for sourcing in Mexico?
7. Do you or does the Company have an existing procedure (documented or not) for sourcing locally? If so, what are the activities involved and is there a sequence followed?

Organization approach
8. What are your goals and benefits of local sourcing?
9. Does your company have defined local sourcing goals and strategies? If so, what are they? (Determined percentage of spend, determined commodity, etc.)
10. In your opinion, how do these local sourcing strategies are aligned to the Company’s strategy?

Future Challenges
11. From your experience, what would be the future challenges that you perceive for the local sourcing strategies in your company / industry?

Closure: Could I come back to you in case of follow up questions?
## Appendix 2. Reduction of raw data information

<table>
<thead>
<tr>
<th>Company alias</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;Aircraft&quot;</td>
<td>&quot;Navigator&quot;</td>
<td>&quot;Motors&quot;</td>
<td>&quot;A/C&quot;</td>
<td>&quot;Chemicals&quot;</td>
<td></td>
</tr>
<tr>
<td>Industry</td>
<td>Aerospace</td>
<td>Aerospace</td>
<td>Electrical</td>
<td>Electrical</td>
<td>Chemical</td>
</tr>
<tr>
<td>Role</td>
<td>Supplier Development Manager</td>
<td>Global Sourcing Manager</td>
<td>Commodity Manager</td>
<td>Sourcing Leader</td>
<td>Strategic Sourcing Manager</td>
</tr>
<tr>
<td>Activities</td>
<td>Develop suppliers in Mexico that manufacture parts for airplanes for the Mexican plant</td>
<td>Local sourcing in Mexico, Best cost country sourcing</td>
<td>Local Sourcing and Supplier Development for Latin America</td>
<td>Identification, selection and development of Mexican suppliers</td>
<td>Sourcing and development of procurement strategies by commodities</td>
</tr>
<tr>
<td>Commodities</td>
<td>Sheet metal, machined parts, composite materials</td>
<td>Stamped parts, sheet metal, wire and harnesses</td>
<td>Stamped parts and enclosures</td>
<td>Sheet Metal, steel, compressors, motors, screens, copper tubing, aluminum, plastic parts, valves, steel tubing, electronic parts</td>
<td>Maintenance, Repair and Operations pipes, valves and fittings (PVF), safety equipment, rotation equipment</td>
</tr>
</tbody>
</table>
### ID and Selection of Components

Identify suppliers’ technical capacity and match it with the complexity of the components.

1. Division of export materials and military materials. (Only work with the export materials).
2. Spend of components over 30K USD with potential savings of 20-25%.
3. Only materials that do not include special processes and are on a mature program (20 years of production).

Products with at least 2000 pcs per year. Selection on the parts based on spend and geometry. The identification is every 3 years: sourcing value of all the spend.

Product specification, raw material availability in the region and processes with suppliers. Priority to the bigger spend and high and low volume mix of components. Try to localize 100%.

**BOM analysis, commodity classification, Quantity per unit, annual volume, cost per component.**

Focus first on the items of higher spend to start reducing costs on an 80-20 basis.

### Factors analyzed for a potential local sourcing

First the product and process complexity of process and product, certified supplier availability.

Second Cost analysis looking for 20-25% savings.

Third, the supplier capability and certifications to manufacture our products.

Product specification, suppliers with proper processes and equipment, supplier market availability already developed, cost analysis (price, transportation, taxes, inventory in transit, tooling costs, payment terms for the financial costs).

Product specialization, higher value on savings on the short term, availability of suppliers (supplier market research through governmental fairs), total cost analysis of the component (material, labor, logistics), respect contract

Cost analysis: labor, materials, transportation. Product complexity. Availability of suppliers in the region close to the plant. Lead time is a big component! Avoid customs. Time is money. The variables that will be measured are: service (operations), quality (reliability) and cost (procurement).
<table>
<thead>
<tr>
<th>Departments involved in Evaluation</th>
<th>Supplier Development, Sourcing, Procurement, Implementation team: Quality and Engineering</th>
<th>Category team: procurement &amp; sourcing, quality and engineering (applications)</th>
<th>Evaluation: Regional Office for Latin America Supply Chain team (Procurement, logistics and sourcing), Business Unit supply chain team, with their Engineering, Quality and Finance (for tooling investments)</th>
<th>Decision Making: Regional Office of Latin America (Supply Chain team) and Supply Chain of each Business Unit.</th>
<th>Evaluation and Decision making: Sourcing, Engineering, Quality and Manufacturing.</th>
<th>Both for evaluation and decision making: procurement (cost), center of excellence of reliability (quality), operations (service) and safety teams. The reliability team is: engineering and quality, and they evaluate the supplier and product, their laboratories test for functionality and safety.</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td><strong>Decision Factors</strong></td>
<td>Suppliers' capacity, delivery lead time, flexibility, price (reduction due to production, logistics, risks)</td>
<td>5 factors: bid evaluation - price, contract terms agreement, PPM, on time delivery, customer service.</td>
<td>Savings, flexibility, delivery time reduction, fast response to customer's requirements, Lean supply chain without much inventories</td>
<td>Price, Quality (specifications), Service (Lead time) all together.</td>
<td>If the local sourcing represents 15% savings, it is worth to move the supplier. The total cost of ownership: cost, reliability (MTBF= mean time between failure), freight and lead time. The variables that will be measured are: service (operations), quality (reliability) and cost (procurement).</td>
</tr>
<tr>
<td>4</td>
<td><strong>Ranking</strong></td>
<td>No ranking</td>
<td>1 -price, 2- contract terms agreement, 3- ppm, 4- on time delivery, 5- customer service</td>
<td>Hard to rank, each factor is very related to the next one. 1- Lead Time 2. Customer Service, 3-Price</td>
<td>It is complicated to rank, there are no benefits if they don't exist all together. Low quality and cheap = no benefit.</td>
<td>cost 30%, reliability = quality 50%, freight 5%, lead time 15%</td>
</tr>
<tr>
<td></td>
<td>Strategy development</td>
<td>6</td>
<td>(supplier approval and development) Identification of potential suppliers, analysis of capacity, technical and quality evaluation, certification and approval. From approved suppliers, RFQ, RFP preparation and send out, cost structure analysis, if competitive, contract negotiation, audits, approval, PO's, samples, inspection &amp; approval, change of supplier.</td>
<td>After supplier approval, Workshop with supplier, award, implementation program based on lead time, transition program, samples approval, dual sourcing only at the beginning, 3PO's with previous supplier along with 2 PO's with new supplier, then all the product production is moved to the new suppliers.</td>
<td>Supplier identification, RFQ process, cost structure analysis, quality and performance evaluation with the implementation team (Business unit personnel, Supply Chain regional office, supplier), Award and contract, Implementation program (Gantt from sample approvals to first production) - Transition plan (inventory analysis, tooling analysis)</td>
<td>Identify the materials to source, identify suppliers (local engineers, brands, Mexican chamber), RFQ, bid, supplier's assessment, project team (sourcing team, reliability team, supplier project leader), transition plan (inventory analysis, change in ERP, PO's placement), project plan (timeline, weekly follow up)</td>
</tr>
<tr>
<td>---</td>
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<td>---</td>
<td>---</td>
</tr>
<tr>
<td>7</td>
<td>Company's sourcing procedures</td>
<td>No - different from OEM's, limited number of suppliers.</td>
<td>No documented procedure.</td>
<td>No documented procedure.</td>
<td>There is a process in the quality system according to ISO, however it is not standardized for each plant.</td>
<td>Yes. It's not different for local or global or LCC. A consulting firm developed the 7 steps for sourcing: identify needs, review spend, find sources, market and demand analysis, RFQ, run bid, award &amp; communication with customer (plant)</td>
</tr>
<tr>
<td>8</td>
<td>Benefits of local sourcing</td>
<td>Savings in price and labor, flexibility due to the closeness of the supplier, faster response to changes in requirements, delivery lead time reduction, inventory reduction (less volume-more frequent), JIT, faster response to solve quality problems, face to face relationship with supplier</td>
<td>For the Mexican plant there is a cost reduction of 50%, the customer service is improved and faster response. Savings in transportation, production.</td>
<td>The main objective is the lead time reduction with local suppliers, they can deliver in 24 hours or less vs. Foreign suppliers 3-4 days +1 customs, so no less than a week. Customers demand to have product in 4 days, so require more local suppliers to minimize risks of shortage or excess inventory. Cost reductions - LCC, less shipping costs.</td>
<td>Benefits: cost reduction. It all goes down to money. We are here to make money. Challenges: experience in people, import knowledge, learning curve, risk in any country, safety is first. Rotation in LCC.</td>
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<td></td>
</tr>
<tr>
<td>9</td>
<td>Company's goals for local sourcing</td>
<td>Goals established on the commodities' buckets for 2013 and based on spend (not so much for savings)</td>
<td>Goals for every 3 years. For 2013 intention of having local sourcing in Mexico of 10M, so far 7M. For 2020 for Mexico: 30M.</td>
<td>Annual goals with monthly reviews on percentage of local sourcing. Goal for FY2012 50% of materials used in Mexico have to be sourced in Mexico. (4 years ago was 16%).</td>
<td>Not as the Corporation. Each plant has its own metrics. This plant's roadmap is 30% Mexico, 70% USA at the beginning, when it is in full production it should be 50,50%</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Alignment to Company's strategy</td>
<td>Global player, global citizen. Local presence in Mexico, SCR, 100% aligned to Company's strategy.</td>
<td>The company has the strategy of growing in emerging markets, Mexico, China and India. Mexico as a BCC savings. In China and India is a governmental obligation. Closed 2 plants in USA and moved them to Mexico. BCC is price, quality, service and logistics.</td>
<td>100% aligned to company's strategy of growth in emerging economies, LCC. For Latin America the strategy is to increase sales, manufacturing and Supply Chain operations.</td>
<td>Once the company has established operations in a country it is expected to find suppliers inside of the country, where cheaper raw materials are found (natural gas, methanol, electricity, water). LCC.</td>
<td></td>
</tr>
</tbody>
</table>
Future challenges

Mexican suppliers are limited for certain processes. Since the volumes are low, and the industry is new, not many companies are attracted to the aeronautics industry and it takes time to develop them. Challenge in finding suppliers with the required capacities and capabilities. Bottlenecks on capacity.

Tier 1 suppliers are established. The challenge is for Tier 2 suppliers, the ones that provide secondary processes and special processes such as coatings. Mexico has limited suppliers. The States Government along with ProMexico provide support for Mexican Suppliers. Cluster of airspace companies to finding and developing suppliers that can work for all of them). JV or inviting American suppliers to Mexico.

Suppliers for special processes are very limited and do not have the solvency for investments. USA suppliers invest in Mexico more than the Mexican suppliers. Governmental investment aid programs are not enough.

Lack of potential suppliers, USA is afraid of moving more business to Mexico due to the safety problems the country has. The demand of suppliers is lower than the availability. The quantities and volumes are not aligned with the suppliers. The government should continue with incentives on programs to support Mexican suppliers. Another risk is the lack of R&D, there is no much investment on innovation and technology, so the complex components can't be developed in Mexico.

Insecurity of the Country, violence and corruption. It has stopped the company from expanding operations in Mexico. And instead went to Europe.
### Appendix 3. Codes for thematic analysis

<table>
<thead>
<tr>
<th>Code</th>
<th>Code Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLASS</td>
<td>Classification of materials into commodities</td>
</tr>
<tr>
<td>COMPLX</td>
<td>Complexity of product and/or process related to the specifications</td>
</tr>
<tr>
<td>SPEND</td>
<td>Volume of demand of the materials multiplied by its price</td>
</tr>
<tr>
<td>SUPP MKT</td>
<td>Supplier market is the available suppliers in the region</td>
</tr>
<tr>
<td>X-FUNC TM</td>
<td>Cross functional team</td>
</tr>
<tr>
<td>RFQ</td>
<td>Preparation of the Request for Proposal with all the specifications required</td>
</tr>
<tr>
<td>QTN</td>
<td>Quotation of the materials included in the RFQ</td>
</tr>
<tr>
<td>SUPP</td>
<td>Supplier</td>
</tr>
<tr>
<td>COST STR</td>
<td>Cost structure analysis</td>
</tr>
<tr>
<td>LT</td>
<td>Delivery lead time, time the supplier needs to deliver the materials</td>
</tr>
<tr>
<td>CS</td>
<td>Customer service</td>
</tr>
<tr>
<td>FLEX</td>
<td>Flexibility of the supplier for changes in requirements</td>
</tr>
<tr>
<td>RESP</td>
<td>Supplier's response to changes or quality issues</td>
</tr>
<tr>
<td>OTD</td>
<td>On time delivery of the materials</td>
</tr>
<tr>
<td>INV</td>
<td>Inventory</td>
</tr>
<tr>
<td>JIT</td>
<td>Just in Time</td>
</tr>
<tr>
<td>QLTY</td>
<td>Quality</td>
</tr>
<tr>
<td>CAP</td>
<td>Capacity of the supplier</td>
</tr>
<tr>
<td>SAVNGS</td>
<td>Savings on costs</td>
</tr>
<tr>
<td>TECH</td>
<td>Technical reference</td>
</tr>
<tr>
<td>AWD</td>
<td>Award of business to a supplier</td>
</tr>
<tr>
<td>SUPP SEL</td>
<td>Supplier selection among suppliers pool</td>
</tr>
<tr>
<td>IMP</td>
<td>Implementation</td>
</tr>
<tr>
<td>TRANS</td>
<td>Transition</td>
</tr>
<tr>
<td>PO</td>
<td>Purchase Order</td>
</tr>
<tr>
<td>FAI</td>
<td>Samples, first article inspection</td>
</tr>
<tr>
<td>LCC</td>
<td>Low cost country</td>
</tr>
<tr>
<td>R&amp;D</td>
<td>Research and Development</td>
</tr>
</tbody>
</table>
### Appendix 4. Themes / Codes Table

<table>
<thead>
<tr>
<th>Themes</th>
<th>Codes</th>
</tr>
</thead>
</table>
| **Analysis Factors for Materials’ selection** |-class based on commodities  
COMPLX of product and process and their SPECS  
SPEND analysis, higher to lower  
SUPP MKT available for the raw material, processes and capacity  
X-FUNC TM (Procurement, sourcing, quality, engineering, supplier development, logistics, and manufacturing & operations). |
| **Decisive Factors for local sourcing**   | Development of RFQ and QTN  
SUPP invitation  
COST STR analysis for the total cost of ownership  
Delivery LT proposal  
CS offer: FLEX on production line, fast RESP to changes, OTD, INV reduction, JIT  
Main Factors: Desired QLTY and CAP from the supplier  
Best SAVNGS in total cost of ownership  
Best delivery LT proposal  
Best CS offer |
| **Development of local sourcing strategy** | TECH and QLTY assessment  
CAP analysis  
Certification and approval  
AWD and contract agreement  
SUPP SEL  
IMP team  
IMP plan: Gantt, timeline, Workshop, TRANS plan, INV planning, PO’s, FAI, first production, SUPP change. |
| **Strategic Alignment**                | LCC focus  
Local SUPP |
| **Future challenges**                 | SUPP lack of COMPLX processes  
lack of R&D, poor investment in innovation and technology  
Insecurity, violence, corruption |
## Appendix 5. Code Validation and Reliability

<table>
<thead>
<tr>
<th>Themes</th>
<th>Codes</th>
<th>Consistency of Agreement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analysis Factors for</td>
<td>CLASS based on commodities, COMPLX of product and process and their</td>
<td>Managers of Navigator, Motors, A/C and Chemicals include all these factors for analysis.</td>
</tr>
<tr>
<td>Materials’ selection</td>
<td>SPECS, SPEND analysis, higher to lower SUPP MKT available for the</td>
<td></td>
</tr>
<tr>
<td></td>
<td>raw material, processes and capacity X-FUNC TM (Procurement, sourcing, quality, engineering, supplier development, logistics, and manufacturing &amp; operations).</td>
<td></td>
</tr>
<tr>
<td>Decisive Factors for</td>
<td>Development of RFQ and QTN SUPP invitation COST STR analysis for the</td>
<td>All the managers evaluate all these factors.</td>
</tr>
<tr>
<td>local sourcing</td>
<td>total cost of ownership Delivery LT proposal CS offer: FLEX on</td>
<td></td>
</tr>
<tr>
<td></td>
<td>production line, fast RESP to changes, OTD, INV reduction, JIT Main</td>
<td>Aircraft was the only one to mention CAP as decisive.</td>
</tr>
<tr>
<td></td>
<td>Factors: Desired QLTY and CAP from the supplier Best SAVINGS in total</td>
<td></td>
</tr>
<tr>
<td></td>
<td>cost of ownership Best delivery LT proposal Best CS offer</td>
<td></td>
</tr>
<tr>
<td>Development of local</td>
<td>TECH and QLTY assessment CAP analysis Certification and approval AWD</td>
<td>All the managers included a version of these tasks.</td>
</tr>
<tr>
<td>sourcing strategy</td>
<td>and contract agreement SUPP SEL IMP team IMP plan: Gantt, timeline,</td>
<td>The IMP plan is a combination of all the managers’ inputs.</td>
</tr>
<tr>
<td></td>
<td>Workshop, TRANS plan, INV planning, PO’s, FAI, first production,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SUPP change.</td>
<td></td>
</tr>
<tr>
<td>Strategic Alignment</td>
<td>LCC focus Local SUPP</td>
<td>All the managers agreed on using local SUPP as part of their sourcing strategies.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>All the managers agreed with LCC initiatives for their sourcing alignment except for Aircraft, who did not mention his company as part of LCC initiatives.</td>
</tr>
<tr>
<td>Future challenges</td>
<td>SUPP lack of COMPLX processes lack of R&amp;D, poor investment in</td>
<td>All the managers agree on the lack of SUPP for COMPLX processes. Only two managers (Chemicals and A/C) mentioned the insecurity issue.</td>
</tr>
<tr>
<td></td>
<td>innovation and technology Insecurity, violence, corruption</td>
<td></td>
</tr>
</tbody>
</table>