

**An-Najah National University**  
**Faculty of Graduate Studies**

**Evaluating the Supply Chain Management System of  
Palestinian companies**

**By**

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**This Thesis is Submitted in Partial Fulfillment of the Requirements for  
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In the beginning I thank God and praise Him in a manner that befits the (infinite) number of His creation, and as it pleases Him, for supporting me in the completion of this work. I would like to express my gratitude to my supervisor Dr. Husam Arman for being an outstanding advisor and excellent professor. His constant

### Evaluating the Supply Chain Management System of Palestinian companies

Words fail me to express my appreciation to my wife Eng. Ghadeer whose dedication, love and persistent confidence in me, has taken the load off my shoulder. I thank her for being unselfishly let her intelligence, passions.

**Ahmed Bassam Abdullah**

Finally, I would like to thank everybody who was important to

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## الإقرار

أنا الموقع أدناه مقدم الرسالة التي تحمل العنوان:

### **Evaluating the Supply Chain Management System of Palestinian companies**

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### **Declaration**

The work provided in this thesis, unless otherwise referenced, is the researcher's own work, and has not been submitted elsewhere for any other degree or qualification.

Student Name :

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Date :

التاريخ :

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**APREVIATION**

<b>SCM</b>	Supply Chain Management
<b>CLM</b>	Council of Logistic Management
<b>PFI</b>	Palestine Federal Industries
<b>PCBS</b>	Palestinian Central Bureau of Statistics
<b>EDI</b>	Electronic Data Interchange
<b>ERP</b>	Enterprise Resource Planning
<b>RFID</b>	Radio Frequency Identification

## **Evaluating the Supply Chain Management System of Palestinian companies**

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Abstract**

Today, customers have the upper hand. The days where they had to take what has been offered to them has gone. Customers now choose the right products they want, when they want them, and at the right price. With the advent of new communication networks, the world has become a smaller place. Customers can now decide on products offered by suppliers around the globe. Therefore, the competition is no longer regional; it is global. In order for the enterprises to remain globally competitive they have to rethink their strategy and manage things differently. One of today's major issues is managing the supply chain effectively.

The purpose of this research is to develop a generic framework for Palestinian companies. The framework can be applicable in the research environment and the special conditions of Palestine in order to align the strategic fit area between supply chain strategy and the competitive advantage. The current practices of the Palestinian companies suffer from many problems and difficulties from supply chain perspective. Quantitative and qualitative research methodology was used in this study. The quantitative research data was gathered with the aid of online survey. Seventy five surveys have been sent to six sectors of manufacturing

industrials companies in Palestine, Plastic industry, Marble and stone industry, Foodstuff industry, Pharmaceutical industry, Chemical industry, Engineering and metal industry, forty responses were received. The response rate was (53.3%) percent. The results of the interviews and survey revealed a high level of weaknesses in the four key themes were studied and analyzed through the survey results, supply chain management concept and its impact on the success of the firm, competitive and supply chain strategies, supplier relations, and customer relation

A Generic framework for the supply chain management was proposed. It aims were to guide the company to structure a successful supply chain, and does not assume any particular solution. The framework is comprised of four major levels:

1. The business strategy level. This level involves formulating a strategy and deciding what the objectives of the business are, i.e. to sustain company advantage over its competitors.
2. The competitive advantage level. . In this level it is discussed what a company should do to attain a competitive advantage, in order to achieve successful supply chain management.
3. The supply chain strategy level. This level shows how supply chain strategy aims to achieve business goals by using or implementing the competitive advantage, and reveal hidden interactions.

4. The strategy translation. This final level explains the role of the physical infrastructure and the supply chain function process to implement the supply chain strategy, effectively determining responsiveness and efficiency.

The generic supply chain management framework presented a process that helps in understanding, describing, measuring, evaluating the supply chain activity, providing systematic process to establish new project and enhance, and develop ongoing project.

# Chapter 1

## 1 Introduction

### 1.1 Overview

For many decades, companies in Palestine have suffered hardship and failure. This is due to many factors which include political unrest, economic oppression and down fall, social incompatibility, and geopolitical instability. The companies are facing internal and external challenges, within the nature of the environment in which the companies live.....multivariate, complex, and interrelated. On the other hand the subjective obstacles are a result of the old paradigm and traditional structure. Effective supply chain management has become a key driver for enhancing the competitive advantage and improving organizational performance. However, there is an urgent need to assess the performance of the overall supply chain.

This study will evaluate the supply chain management (SCM) activities in private companies in Palestine and will diagnose and analyze the current situation of selected companies in different sectors. Companies will be selected according to the predetermined criteria to represent some sectors of the Palestinian companies. The evaluation of the (SCM) system will be through developing a generic supply chain management framework, which can be used to support the Palestinian organizations. The framework will be structured by conducting the literature review of

(SCM) concept, issuing a comparative study between Palestinian companies and the state of the art practices of (SCM). The expected outcomes will be establishing a framework, increasing the awareness of the importance of supply chain management, and finding better ways of managing the supply chain among the local companies.

## **1.2 Research Questions**

The research questions were raised based on the observed gap between the current application of supply chain management in research environment, and current global supply chain management illustrated in literature review chapter. Based on that the research questions were formulated as follows:

1. What are the gaps between applied supply chain management in Palestinian companies, and the theoretical and practical global concepts used in successful world companies?
2. What is the suitable supply chain management framework that can be used to leverage company's performance, taking into account the condition of the research environment?

## **1.3 Research aim and objectives**

The aim of this research study is to develop a generic supply chain management framework that can be used to support Palestinian organizations through integrating various supply chain activities. Further objectives are listed below;

- a. To investigate the role of supply chain management in providing competitive advantage for companies
- b. To explore and asses current practices and understandings of Palestinian companies' in relation to the supply chain management concept.
- c. To investigate the state of the art in the area of SCM.
- d. To develop a generic framework that complements Palestinian industry.

#### **1.4 Research design and methodology**

The Importance of the research stems from the fact that it looks at things not addressed before in Palestine, the study evaluates the performance of the companies and its extended relations on the customer service and strategic goals achievements. The research addresses the weaknesses of supply chain management taking in to account the research environment, and suggests a framework for designing best of supply chain management, which can tackle these weaknesses and propose the solutions. The methodology preferred for this research was a conceptual model, quantitative methodological approach. The collected data shall be validated using different data sources. Research hypotheses have been approved using quantitative statistical tools. Based on parameters of the research's scope, associated with time and resource constraints, it was supposed that the defined

Framework for supply chain would best satisfy the articulated objectives and respond the research questions.

### **1.5 Thesis Outline**

The thesis will be formed from six chapters as shown in Table 1.1. The introductory chapter, which outlines the character of the study, Chapter 2 will review the related literature of the supply chain management concept and related topics. Chapter 3 will present and defend the dissertation's selected methodology. Chapters 4 will discuss data gathering, analysis issues and research results. Chapter 5 will display the framework and its implementation process. Finally, Chapter 6 will conclude the study through an articulation of the research findings, and conclusions.

**Table 1.1: Outline of the thesis**

<b>Chapter 1</b>	Introduction	1.1 Overview	1.2 Research Questions	1.3 Research aim and objectives
		1.4 Research design and methodology	1.5 Thesis Outline	
<b>Chapter 2</b>	Literature Review	1.1 Introduction	2.2 Supply chain and Supply Chain Management	2.7 Demand Planning
		2.8 Supplier Relationship	2.9 Customer Relationship	2.10 Drivers and Metrics
<b>Chapter 3</b>	Research Methodology	3.1 Introduction	3.2 Research background	3.3 Research design and methodology
		3.4 Research approach	3.5 Research methodology description	
<b>Chapter 4</b>	Data Gathering	4.1 Introduction	4.2 Supply chain management concept	4.3 Competitive and supply chain strategy
		4.4 Supplier relation	4.5 Customer relation	4.6 Findings
<b>Chapter 5</b>	Conceptual Framework	5.1 Introduction	5.2 Palestine business environment constraints	5.3 Generic Supply chain Management Framework
<b>Chapter 6</b>	Conclusion	6.1 Conclusion summery	6.2 Contribution to knowledge	6.3 Recommendations
		6.4 Future work		

## **Chapter 2**

### **2 Literature review**

#### **2.1 Introduction**

This research aims to evaluate the current practices of supply chain management system in the manufacturing industry in Palestine. The literature review provides a starting point for research, and an essential part of the research process, since it helps to generate ideas for research and summarizes existing research by identifying patterns, themes and issues. The conducted literature review covers the four major four key themes which are studied and analyzed through the survey results, and then some conclusions are drawn and displayed.

The first part of the literature review transacts to the supply chain design strategy, assured that the success of a supply chain correlated by the best fit between the design and the management of the supply chain. The principles and methods of supply chain design were reviewed. From the conducted literature review it was found that the companies should practice supply chain management activities that are most aligned with their business strategies. The aforementioned concepts proceeded with supply chain definition and supply chain discipline.

The second part of the literature review entails the supply chain demand management, as the most important business decision in the course of managing the supply chain. It starts with forecasting the customer demand

in order to handle the difficulties of demand vary from time to time. The literature showed many techniques used in forecasting that the companies can use. Moreover, aggregate planning was found to be a fundamental concept in the supply chain demand management, where the aggregate plan focuses on the general course of action, compliance with the company's strategic goals and objectives, without going down into details. Level of demand aggregation is an important consideration in a company's decision with respect to what to forecast and where the aggregated demand will be. The literature showed the important role of the inventory in the supply chain, and how it may be a boom or a bane for the companies.

The third part of the literature clarified the role of the supplier and customer in the supply chain; the literature displayed the latest ideas of integrating the customer and the supplier in the supply chain. This way of looking at the business involves integrating the customer into all aspects of the supplier's business, and vice versa. This implies a relationship that is deeper and wider than the traditional 'arms-length' supplier-customer relationship.

How to attain the utmost positive results from supply chain management were addressed in the last part of the literature review, where the company shall determine the factors and elements that contribute to its success and drive the supply chain to better performance. Finally, common measures and metrics to evaluate a company's performance were presented.

## **2.2 Supply chain and Supply Chain Management**

(Mentzer, 2001) defines the supply chain as "a set of three or more entities (organization or individuals) directly involved in the upstream and downstream flows of product, services, finance, and /or information from a source to customer".

The supply chain according to (Handfield, 2002) may contain internal division of the company as well as external suppliers that provide input to the company. A supplier for the company has his own chain of suppliers that provide raw input, which is called second tier suppliers. Supply chains are essentially a series of linked suppliers and customers till product reach the final customer.

Supply chain of a company forms from an upstream supplier's network and its downstream distribution channel. Depending on how complex the supply chain is, (Mentzer, 2001) defines three types of supply chain:

1. Direct supply chain, which consist of a company, a supplier, and customer.
2. Extended supply chain, which includes suppliers of the immediate supplier, as well as customer of the immediate customer.
3. Ultimate supply chain, which includes all the organizations involved in all the upstream and downstream flow.

### **2.2.1 Supply chain management**

Through a historical narrative that was reviewed, it was found that with the development of the companies and its expansion, the concept of supply chain management has matured, where attention to the company's management as a separate entity has been shifted to the company and all concerned, furthermore became a harmony between the company's objectives and all parties in the chains.

( Chopra, et al, 2001) consider the supply chain as system that consist of all parties involved, directly or indirectly, in fulfilling a customer request. The supply chain does not only include the manufacturer and suppliers, but also transporters, warehouses, retailers, and customers themselves within each organization such as manufacturer. According to ( Chopra, et al, 2001) the supply chain includes all functions involved in receiving and filling a customer request. These functions include, but are not limited to, new product development, marketing, operations, distribution, finance, and customer service. (Terry, et al., 2004) define the supply chain as " ... a set of value-adding activities that connects a firm's suppliers to the firm's customers. The basic unit of a supply chain activity is:

Receive input from supplier - Add value - Deliver to customer

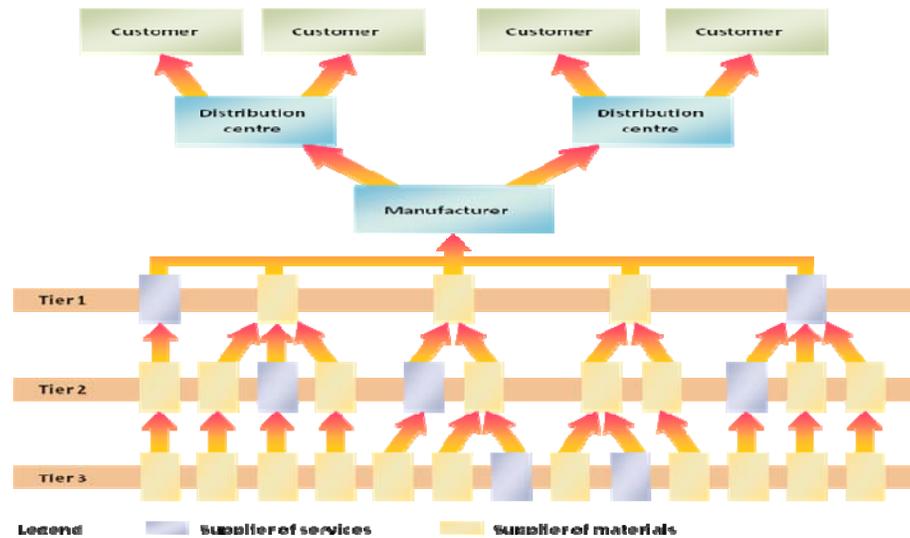
According to (Terry, et al., 2004) definition, the objective is to determine and identify the activities with the supply chain to be considerable in which by add value to the product.

(Krajewski, et al) define the supply chain from the relationship between the process involved in achieving the shared goals "Supply chain management seeks to synchronize a firm's processes and those of its suppliers to match the flow of materials, services and information with customer demand", while (Suhong Li, et al, 2005) mentioned that the Council of Logistic Management (CLM) (2000) considers clearly that the supply chain management as the system, strategic coordination of the traditional business function and tactics across these business functions within a particular organization and across business within the supply chain for the purpose of improving the long term performance of the individual organization and the supply chain as a whole. Other authors like Govil, et al, 2002, look at the supply chain from a networking perspective and consider the supply chain a global network of organizations that cooperate to improve the flow of materials and information between suppliers and customers at the lowest cost and the highest speed. Govil, et al, 2002, indicate that the supply chain is limited to logistic activities, while most other authors emphasize the objective of a supply chain as achieving customer satisfaction.

(Supply Chain Council, 1996) developed a framework called supply chain operation reference model (SCOR). This process model is designed for effective communication among supply chain partners. The scope of the SCOR model is defined as "from company's suppliers' suppliers to company's customers customer" (Supply Chain Council). It is based on five

distinct management processes (plan, source, make, deliver, and return). Each of these processes is implemented in four levels of details, level one defines the number of supply chain as well as what metrics will be used, level two defines the planning and execution process in material flow, level three defines the inputs, outputs and flow of each transitional element (Lambert Douglas M, 2005). Each process is analyzed and implemented around three components: business process reengineering, benchmarking, and best practice analysis.

From the definitions mentioned above, we can find that all definitions share and intersect about; the Supply chain management is the combination of art and science that the companies endeavor to enhance the way acquire the raw elements it needs to make a product or service and deliver it to customers. These component of the definition can be applied on any company, whether small or large scale. Where the concept of the supply chain management is philosophy, should be carried and adapted by company's top management to compete strongly, Figure 2.1 shows the extended supply chain from suppliers to customers.



**Figure 2.1** : Overview of supply chain management (Ritzman, et al, 2002)

### 2.2.2 Supply chain Management as management philosophy

Supply chain management as a management philosophy takes a system approach to viewing the supply chain as single entity; this means that the partnership concept is extended into all company effort to manage the flow of goods from suppliers to the final customer. Each company in the supply chain directly or indirectly affects the performance of the other supply chain component, as well as the overall performance of the supply chain (CooperMartha, et al, 1997)

Supply chain management as a philosophy can be seen from the following according (Lambert, et al , 1997)

- A systematic approach to viewing the supply chain as a whole and managing the total flow from the supplier to the final customer.
- A strategic orientation toward cooperative efforts to aggregate and converge internal and external capabilities.

- Customer focus, to create distinct, leading to the customer satisfaction.

Supply chain typically consists of supplier, manufacturer, distributor, retailer, and customer. A Palestinian company's manager shall be aware of supply chain components and its role along the supply chain. However it is not necessary for each supply chain to be designed according the typical form of global supply chain such as Dell. Palestinian companies are considered to be small companies relative to the international companies, therefore the Palestinian companies should work to configure the most effective chain to achieve its goals taking in to account Palestinian environment.

### **2.3 E-Supply chain**

The commercial companies more than any non profit companies are affected by innovation and new technologies, where it employ the new technology to keep its advancement in order to maximize the profits. (Terry, et al., 2004) Assured that the supply chain management is significantly affected by the huge growth of electronic commerce. Where the developments in the communications made the conveying of information very fast, manufacturing, warehousing, and distribution technologies could not accelerate the movement of material to such levels without using information revolution and the world web net. (Terry, et al., 2004) added that the coordination of information and material flows will

increase the importance for profitable electronic commerce. While the impact of the Internet on supply chain coordination has been rather positive, some reservations remain regarding its impact on supply chain design, such as incentive alignment, trust, and fair process required for effective communication and collaboration.

The extended supply chain suffered from disturbed information whether amplification the information or underestimation, therefore the growing in the technology and information transmission reduced the side effects, (Terry, et al., 2004) declared that the bullwhip phenomenon, the big challenge in supply chain coordination, which cause delayed and distorted information as well as by transaction. Web-based technologies have the greatest impact on supply chain coordination through the elimination of information delays and distortions, and through the reduction of business costs. Creating sufficient information infrastructure to interface members of a supply chain has always been challenging (Mason, et al, 2000). (Terry, et al., 2004) Declared also that the infrastructure must satisfy the following needs (Upton and McAfee 1996): first, it must be able to adapt members with different levels of IT sophistication. Second, it must provide a wide range of functionality ranging from simple data transmission to access to applications on a remote computer. Finally, it must be able to adapt with changing pool of suppliers and customers at varying stages of relationship.

According to (Terry, et al., 2004) the current technology on the design side does not yet allow the mitigation of the trade-off between richness and

reach in the crucial area of supplier identification, certification, and selection.

The Palestinian companies can use e-Business as an enabler to drive supply chain to gain clear visibility across their extended network of trading partners and help them respond quickly to changing customer demand captured over the Internet. But in context of applying e-Business the Palestinian companies shall face challenges, cultural and physical infrastructure issues, where Palestinian environment suffering from lack of information integration, synchronized planning, coordinated workflow, and new business models. As a result, many of the core supply chain principles and concepts cannot now be put into practice much more effectively using e-business, and significant value cannot be created by e-business enabled for Palestinian supply chain.

#### **2.4 Global supply chain**

With increased globalization phenomena and sourcing activities, global supply chain management becomes an important issue for many companies. Where one of the supply chain management endeavors to reducing the costs of procurement and decreasing the risks related to purchasing activities. The big difference is that global supply chain management involves a company's worldwide interests and suppliers more than simply a local or national. According to (Long, 2003) the global supply chain management usually involves more than one country; it also

usually comes with many new difficulties that need to be coped. One of these difficulties that companies should consider is the overall costs. While local labor costs may be significantly lower, companies must also focus on the costs, tariffs, and other expenses related to doing business out of country. Additionally, companies need to review the exchange rate of the money. Companies must do their research and give serious consideration to all of these different elements as part of their global supply management approach.

(Mary J, et al, 2005) added that the time is another big issue that should be addressed when dealing with global supply chain management. The productivity of the other country employees and the extended shipping times can be positively or negatively affect on the company's lead time, subsequently affect the customer satisfaction. Other factors can play significant effect like the weather conditions on one side of the world often vary greatly from those on the other and can impact production and shipping process. Also, customs clearance time and other governmental red tape can add further delays that need to be planned for and viewed into the overall picture.

(Long, 2003) mentioned that the issue that must be addressed into a global supply chain management strategy is supplier selection. Comparing supplier's bids in the company's home can be difficult, but comparing bids for global suppliers can be more complex. The first decision companies must make is to choose the qualified suppliers, which should be based on

research and previous experience. Many companies go to the lowest price instead of taking the time evaluate all of the other elements. In addition to money and time factors, companies must make decisions about the number of suppliers to use. Few supplies may be easier to manage but may lead to potential problems if one supplier is unable to deliver as requested or if one supplier tries to leverage its supply power to obtain better price.

Palestinian companies as well as rest companies who choose to create national relations and want to ship their manufacturing overseas may face some additional considerations. Where many questions need to be answered, regarding the number of plants that need to be established, as well as the locations for those plants. This can create difficult logistical problems for companies to examine these issues in terms of the global supply chain. For example, if a business uses a number of vendors around certain area, it should locate the manufacturing plant that would utilize those supplies in or around the intended area. Not only will this provide lower employee costs, but overall shipping and tariff expenses can be reduced.

## **2.5 The Objective of a Supply Chain**

The former sub titles in the beginning of the literature review, as well as the definition of supply chains may put the basis of the supply chains objectives, where the primary purpose from the existence of any supply chain as stated by ( Lambert, et al , 1997) is to fulfill customer request, in

the process generating profits for itself. Supply chain activities begin with a customer order and end when a satisfied customer has paid for his purchase. The term supply chain bring up images of product or supply moving from suppliers to manufacturers to distributors to retailers to customers along a chain.

### **2.5.1 Supply chain design/strategy**

Any project has life cycle, the utmost important stage of the project life cycle is the design stage, the importance of the design stage stems from the future implication and on the size of the efforts and resources spent. The sensitivity and importance of the design stage will increase according to the project scale, so when we talk about supply chain design ,the design decision shall be rational and taken according cross functional study to all parties concerned. (Terry, et al., 2004) describe the important considerations of designing a supply chain, where they mentioned that the Supply chain design has a large impact on various measures of performance such as profitability, customer service, flexibility and reliability, also It is a critical source of competitive advantage given that as much as 80% of total product cost may be fixed by these decisions.

( Chopra, et al, 2001), declared that there is a close connection between design and management of supply chain flows of the product, information, and fund. They assured that the success of a supply chain correlated by the best fit between the design and the management of the supply chain. The

authors has described in the narrative course the companies that succeed in the supply chain design, Wal-Mart, Dell computer, and seven –eleven Japan are examples of companies that have built their success on superior design of their supply chain, in contrast the failure of many e-business such as Webvan can be attributed to weaknesses in their supply chain design. The successful of the mentioned companies can be attributed to its beginning where the companies invested in transportation and information infrastructure to facilitate the effective flow of goods and information (Chopra, et al, 2001).

During the design phase the companies shall decide how to structure the supply chain over the next several years, it decides what the chains form will be, how resources will be attained, and what processes each stage will execute. All decision during the design stage will have long term effect; (Chopra, et al, 2001) stated that the firms must ensure that the supply chain configuration supports its strategic objectives and increase supply chain surplus during this phase (Terry, et al., 2004) stated that the Supply chain design is the process of determining the supply chain infrastructure the plants, distribution centers, transportation modes and lanes, production processes, etc. that will be used to satisfy customer demands. These studies are strategic in scope, use a time horizon of many months or years, and typically assume little or uncertainty with the data.

The decisions in the design stage are considered at the strategic level, its draw the future form of the supply chain and how will supply chain

configuration operate supply chain management functions, ( Govil, et al , 2002) clarifies that The decisions at the strategic level of the supply chain lay out the framework of how the supply chain operates, and there are five major activities take place within supply chain at the strategic level, buy, make, move, store, and sell.

### **2.5.2 Principles and methods of supply chain design**

The principles and methods of supply chain design have been introduced from a variety of viewpoints; some authors offered the supply chain design from analysis perspective where supply chain design addresses a wide range of strategic infrastructure issues for the firm, other authors offered the supply chain design from major activities take place within a supply chain, these decision will be taken at strategic level lay out the framework of how the supply chain operates.

(Terry, et al., 2004) rely on asking questions to key infrastructure issues in order to address the strategic firm concerns. The following are some key issues and its analysis:

#### **Manufacturing Strategy**

- How many plants are needed
- Where should each plant be located
- What products should each plant make
- What process technologies should each employ, and how much of each process is needed

- What markets should each plant serve

### Supply Base Design

- Who are the suppliers should be determined for all parts within commodity groups
- Who are the suppliers should be allocated to plants.

### Distribution Strategy

- Should we ship direct or stock regionally
- How many DCs are needed and where should they be located
- Which DCs will server which customers
- What transportation modes will be used

### Outsourcing

- What portions of the supply chain remain in-house versus outsourced
- Cost tradeoffs versus service considerations

### New Product and Process Design

- What infrastructure should be used when new products are added to existing lines
- At what demand points are additional sources of supply needed and where should they be located

(Terry, et al., 2004) concluded after extensive experience with a number of supply chain design projects, that the benefits are tangible and executed supply chain can be substantial. Some remarkable outcomes are:

- Decreased costs of 5-60%, with 10% typical
- Decreased service times of 25-75%, with 30% typical
- Foster cross functional teamwork and "out of the box" thinking
- Provide an objective assessment of alternatives in the politically charged environment of strategic supply chain decision making

(Govil, et al , 2002) offered the supply chain design from the strategic decisions taken with respect to the following activities:

- The buy activity includes the tasks of buying raw materials, components, resources, and services.
- The make activity concerns creating products, maintenance and repair of resources when needed and training workers, performing all the tasks that are needed for production.
- The move activity concerns transportation of materials and personnel inside and outside the supply chain.
- The store activity concerns the work-in-process (WIP) and raw material when it is waiting for transportation or transformation as well as the finished products waiting to be sent to customers.
- The sell activity concerns all the market activities, including marketing and sales.

Each of these activities is linked with all other activities. In contrast to the day-to-day decisions in each of these activities, which are covered at the tactical level, the strategic level focuses on the long term. For example, the buy activity at the strategic level focuses on developing long-term relationships with suppliers. It is not short-term goal of buying from the supplier submitted low price. It shall select suppliers whose strategic goals are compatible with those of the supply chain. (Govil, et al , 2002) determined These goals :

- Direction of technical innovation for the supplier
- Focus on quality
- Focus on reduction of cost
- Focus on reduction in response time

### **2.5.3 Supply chain strategy as part of Business Strategy**

Companies shall practice supply chain management activities that are most aligned with their business strategy. Effective business strategy begins with the core strategic vision that lays down the framework for the business. Business strategy defines what the company is, what it does, and what it does not do (Cohen, et al, 2005). Company's blind adaption of generic supply chain may allow a company to compete with its competitors, but it will not create basis for competitive advantage.

The question is how to develop supply chain capability and select the exact best practice, those that will drive a company's strategic objective ahead.

Supply chain strategy designs a unique supply chain configuration that drives strategic goals forward. A supply chain strategy consists of five building blocks (Cohen, et al, 2005)

- Operations strategy.
- Outsourcing strategy.
- Channel strategy.
- Customer service strategy.
- Asset network.

Our decisions with respect to the components mentioned above of the supply chain strategy will play together to define the supply chain strategy.

#### **2.5.3.1 Operation strategy:**

The decisions about how will we produce goods are forming our operations strategy. (Cohen, et al, 2005) asked question to enable us to determine the operation strategy

- Will you choose make to stock, make to order, engineer to order, or some combination?
- Will you outsource manufacturing?
- Will you pursue a low-cost offshore manufacturing strategy?
- Will you complete your final configuration outside the manufacturing plant and closer to the customer?

The answers of the above questions are critical decisions, because they influence and shape the whole supply chain and the investments. Furthermore the operations strategy determines how we staff and run our factories, warehouses, and how you design our processes and information systems.

*Make to stock* is the best strategy for standardized products that sell in high volume. Larger production batches keep manufacturing costs down, and having these products in inventory means that customer demand can be met quickly.

*Make to order* is the preferred strategy for customized products or products with infrequent demand. Companies follow this strategy only when a customer orders are in hand. This keeps inventory levels low while allowing for a variety of product options.

*Configure to order* is a hybrid strategy in which a product is partially completed to a generic level and then finished when an order is received. This is the preferred strategy when there are many variations of the end product and you want to achieve low finished-goods inventory and shorter customer lead times than make to order can deliver.

*Engineer to order*, which shares many of the characteristics of make to order, is used in industries where complex products and services are created to unique customer specifications.

Changing your operations strategy can be a key source of performance advantage see table 2.1. many companies after they be aware of the operation strategies, found that moving from make to stock to configure to order improved service levels while reducing inventory.

**Table 2.1: Types of operations strategies.****Source: (Cohen, et al, 2005)**

<b>Strategy</b>	<b>When to Choose This Strategy</b>	<b>Benefits</b>
Make to stock	For standardized products selling in high volume	Low manufacturing costs; meeting customer demands quickly
Configure to order	For products requiring many variations	Customization; reduced inventory; improved service levels
Make to order	For customized products or products with infrequent demand	Low inventory levels; wide range of product options; simplified planning
Engineer to order	For complex products that meet unique customer needs	Enables response to specific customer requirements

The operations strategy of the supply chain as all component strategy of the supply chain, it is changeable. A key driver is the product life cycle (Cohen, et al, 2005). As demand for products increases and then decreases, companies can move from make to stock to make to order to reduce inventory problems while still interesting with competitive price. Another driver is the number of product kinds. It is not unusual to find that 80 percent of volume shipments comes from just 20 percent of your sales item numbers (or possible configurations). In this circumstance, a hybrid make-to-stock and make-to-order strategy may be more appropriate (Cohen, et al, 2005)

#### **2.5.3.2 Out sourcing strategy:**

Outsourcing decisions started with an analysis of our company's existing supply chain capabilities. (Cohen, et al, 2005) ask questions to determine the suitable out sourcing strategy.

- What is your company really good at?
- What areas of expertise are or have the potential to become strategic differentiators?
- What are the activities you should keep in-house and make even better.
- When to consider outsourcing activities are low strategic importance or that a third party could do better, faster, or more cheaply.

Outsourcing allows companies to go up or down quickly, produce new products, or change the position in the marketplace, all by leveraging the capability and ability by other company's qualifications. The out sourcing provides the company more flexibility which allows companies to focus on their core competencies and enhance their competitive positioning.

Before going forward, the company shall be considering the risks and strategic consequences of the company outsourcing decisions. The company must be aware that, Introducing new products, managing inventory levels, and relationship with customer by configuration supply chain to support competitive customer lead times; these are strategic activities that cannot be shifted to a third party.

(Cohen, et al, 2005)ask question to put limitation to the out sourcing strategy

- Should outsourced skills also be maintained internally, or are they no longer needed?

- Which existing skills should be strengthened?
- Will new tools or skills be needed, such as the ability to manage inventory across the extended supply chain?
- Can it be done more cheaply outside?" is unlikely to provide a strategic solution.

(Cohen, et al, 2005) Cleared that the outside partners can deliver three potential advantages:

*Scale:* Third party provides often services more cheaply because he is specialist in his aspect and there are large customers in additional to us. The third party can provide needed product without having to invest in new manufacturing capacity.

*Scope:* for companies that want to expand into new markets or geographies, outsourcing partners can provide access to new locations.

*Technology expertise:* Outsourcing partners may have differentiated product or process technology that the company needs to invest in new project to produce such product internally, and may be not as well as the third party quality.

Despite the benefits mentioned above, outsourcing isn't always the right decision. Before decide to attain services from external providers, the company according (Cohen, et al, 2005) shall consider four things: differentiation source, operating scale, power position, and the uniqueness of operations.

First, the company shall know what let it differentiated. What gives the company competitive edge? If the product or process technology is a source of differentiation, the company must not outsource that aspect of your operations.

Second, the company shall compare between the sizes of the internal processes against the requirements. If the operations at or near full capacity utilization, with no plans to increase production, you will not gain any benefit from the cost of outsourcing

Third, locate the uniqueness of your internal operations. The company shall seek if it have unusual product characteristics that will not be accomplished by outsider .If so, the company have little to gain by going outside, (Cohen, et al, 2005)mentioned Wal-Mart as example, it has developed a highly customized internal logistics operation that manages inbound inventory flows from its central distribution centers to the shelves of its retail locations. As the owner of one of the largest warehousing operations in the world, Wal-Mart has nothing to gain and everything to lose by outsourcing this aspect of its operations.

Fourth, the company shall compare its power with the outsourcing partner power. Many providers of services, fulfillment services are already larger than their customers. They'll gain more power and be better than the company.

The company to be able to choose the best decision regarding the outsourcing, the company must go beyond technical criteria and consider the overall business context. The company shall think about its volume against the service provider's, and then take the correct decisions.

#### **2.5.3.3 Channel strategy.**

The channel strategy of the company tackle the issues related to how the company will get the products and services to buyers or end users. The decisions deal with these issues as the company sell indirectly through distributors or retailers or directly to customers through its show, should take in to account the market segments and geographies the company is target. Although since profit margins vary depending on which channels are used, the company has to decide on the optimal channel and how will the availability of products in shortage period or in the high demand.

#### **2.5.3.4 Customer service strategy:**

Customer service strategy is another key configuration component to draw the supply chain strategy. The customer service strategy shall be based on two things according to (Cohen, et al, 2005): the overall volume and profitability of your customer accounts and an understanding of what your customers really want.

The two criteria, overall volume and profitability will contribute to form the supply chain strategy because they help you to prioritize and focus your capabilities.

- Should all customers get same-day delivery?
- Should you aim for different service levels depending on customer importance?
- Should all products be equally available, or should some customers have quicker, easier access?

The company should review its service strategy, to don't provide more costly levels of service than the customers need, or missing important market opportunities. Where not all customers care about same level of service, but it's important to know who are the high-value customers.

The company shall rely on customer service strategy to deliver the best cost and the best service tradeoff to the customer segment that can pay to maximize company's revenue.

#### **2.5.3.5 Asset Network**

The final component of the supply chain configuration is the decisions that the company makes regarding the company's network, the factories, warehouses, production equipment, order desks, and service centers that backup up the supply chain. The location, size, have considerable impact on supply chain performance. According to (Cohen, et al, 2005) the companies choose one of three network models based on some criteria like business size, customer service requirements, tax advantages, supplier base, local content rules, and labor costs:

*Global model:* Manufacturing of a certain product is executed in one location for the global market; the need of such model is to control unit manufacturing costs, or the need for highly specialized manufacturing skills.

*Regional model:* Manufacturing is done in the region where the products are sold, although some product manufactured in more than one region The regional model is chosen based on a mix of factors, including customer service levels, service levels, and the need to adapt products to specific regional requirements.

*Country model:* Manufacturing is done primarily in the country where the market is. This is the model for goods that are expensive to transport. Other factors include duties and tariffs and market access that are conditional on in country manufacturing.

#### **2.5.4 Check list for effective supply chain strategy**

The components of the supply chain strategy, operations strategy, channel strategy, outsourcing strategy, customer service strategy, and asset network, are the base of supply chain strategy. So the company shall operate these components to drive the strategic business and achieve a competitive advantage, (Cohen, et al, 2005) mentioned that these components and the choices the company makes about shall be:

- Aligned with your business strategy
- Aligned with your customers' needs

- Aligned with your power position (your influence)
- Adaptive, because competitive advantage is temporary and market conditions change.

#### **2.5.4.1 Aligned with your business strategy**

The supply chain strategy shall drive business strategy, and the business strategy extracted from the core strategic vision where its answer very important question like, what you are, what you'll do, and what you are not and what you won't do. The core strategic vision clarifies the answers to key business strategy questions such as:

- What are your overall strategic objectives?
- What value do you deliver to your customers?
- How does your company differentiate itself in the marketplace?

Without answering these key questions the supply chain strategy and configuration, will be operating in a space.

#### **2.5.4.2 Align with Your Customers' Needs**

The company shall capture customer needs to create a competitive advantage and aligned their supply chains accordingly. The company shall ask itself; do we really know what the customers want? Are there opportunities that you're not exploiting simply because you can't predict them?

#### **2.5.4.3 Align with Your Power Position:**

The supply chain strategy must be based in an understanding of the company power and influence compared to customers and suppliers. Why is this so important? Because by company power can really achieve its goal and reconfigure the supply chain to meet strategic objective.

The company needs to understand how much its power is, and its influence on the ground. And before practice supply chain power must understand the effect on other. The supply chain control is a possibility but the collaboration is better. Therefore the company shall analyze its position in the supply chain to determine how can rethink your interactions to cut costs.

#### **2.5.4.4 Become Adaptive**

The company shall be aware about the surrounded, where the change is a given, market circumstances are shifted, business strategies evolve, and new technologies emerge. The company must pay attention; otherwise the supply chain will get out. The supply chain strategy, like the business strategy, has to adapt. The change is constant, and will happen depend on the industry aspect.

(Cohen, et al, 2005) declared that the components of the supply chain strategy, operations strategy, channel strategy, outsourcing strategy, customer service strategies, and asset network, are the base of supply chain strategy. So the company shall operate these components and interact all

together to rely supply chain strategic aligned with the competitive advantage, the a company's competitive strategy according to ( Chopra, et al, 2001) is defined relative to its competitors, and the customer needs that the company pursue to satisfy through its product and services, the customer needs can be viewed from how the customer prioritize the product cost, delivery time, variety, and quality. ( Chopra, et al, 2001) start the relationship between the competitive advantage and supply chain strategy from the value chain for any organization to analyze company capability in term of responsiveness and efficiency, companies that focus on cost leadership as a competitive advantage will tend to find the lowest cost of overall functions in the supply chain and rely efficiency strategy; on the other hand companies that focus on differentiation leadership will tend to rely responsiveness as a supply chain strategy that consistent with customer needs regardless of the cost.

### **2.5.5 Supply chain strategy Responsiveness versus Efficiency**

The company business strategy lays down company's competitive advantage, which allowing a company to compete with its competitors, and the company reviewed all supply chain components in order to structure supply chain strategy, the companies shall decide how to structure the supply chain over the next several years, it decides what the chains form will be, how resources will be attained, and what processes each stage will execute. The company should take into consideration that all decision

during the design stage will have long term effect and must support its strategic objectives and increase supply chain surplus.

company's decision with respect to supply chain infrastructure the plants, distribution centers, transportation modes and lanes, production processes, etc.. These studies are strategic in scope, use a time horizon of many months or years, and typically assume little or uncertainty with the data.

The supply chain strategy in designing the aforementioned components can be categorized to the responsiveness and the efficiency. Responsiveness comes at a cost, where to fulfill all quantities demand; the capacity should be increased, which cause to increase the costs. In the other hand supply chain efficiency is the inverse of the cost of producing and distributing a product to the customer. Increasing cost to implement company function activities will lower efficiency. For every strategic choice to increase responsiveness, there are additional costs that lower efficiency.

Deciding the strategy of the supply chain whether to be responsive or efficient will affect all design component of the supply chain design. The supply chain strategy defines the processes within the company in additional to the role played by each supply chain entity. To explain the effect of these strategic decisions, the company should define the value chain of the product produced by the company and introduced to the customer.

Whether the companies rely on supply chain design from analysis perspective to addresses a wide range of strategic infrastructure issues for the firm, or rely on supply chain design from strategic decision perspective to lay out the framework. The two perspectives have the same aim and can be applied, The concern is to work on the design before proceeding in the management, where there are those who think, they are working according to the prior design but the truth may be otherwise, where each part in the supply chain works around company boundary subsequently aligned goals and supply chain surplus will be beyond what is at hand.

With respect to the study of Palestinian companies, there is no real design of supply chains, according to study result (see chapter 4) for the following reasons:

- There is no practical or theoretical researches that have addressed management issues like supply chain concept or how the company can design supply chain.
- The Size of the companies in Palestine are small comparing to global companies
- The facts on the ground like economic situation or how companies interact with research and development.

## **2.6 Logistics Network strategy**

The company pursue to align all processes and decisions with the company's objective and one of the most important decision is logistic

network design, where it has considerable short and long term effects. Therefore the optimal configuration of a company's product distribution network can create a balance between the logistics and delivery costs required to achieve desired level of customer services. An agile and flexible distribution network can be a strategic competitive advantage, where the distribution is main function in the value chain.

(Frazelle, 2001) mentioned that there are many factors that play a role when the company want to configure the network logistic like, Security requirements, new trade agreements, shifting labor rates, space costs, supplier and customer locations, new carriers and products, lane congestion, and fuel costs and he assured that optimum network design tend to minimize the inventory, and transportation cost, but at the same time satisfying customer needs.

(Chopra, et al, 2001) Supply chain network design decision include the assignment of facility role, location of manufacturing storage or transpiration related facility, and the allocation of capacity and market to each facility.

### **2.6.1 Factors influencing network design decision**

According to (Chopra, et al, 2001) the company's competitive strategy has a significant impact on network design decision within the supply chain. Where companies that focus on cost leadership tends to find the lowest cost location of their manufacturing facilities, even if that means locating very

far from the market they serve. Firms that focus on responsiveness tend to locate facilities closer to the market and may select a high cost location if this choice allows the company to satisfy customer needs and be ready to changed circumstances.

(Chopra, et al, 2001) added that the technological factors which characteristics of available production technologies have a significant impact on network design decision, if production technology reflects significant economies of scale, a few high capacity locations are more suitable like computer chip, but if facilities initial cost is low cost, many local facilities may be established because this helps lower transportation.

in additional to the previous major factors that affect the network logistic there are other factor according (Chopra, et al, 2001), macroeconomic factors including tariffs and tax incentive exchange rate, demand risk political factors, infrastructure factors, competitive factor, customer response time, and logistic and facility cost

### **2.6.2 Network design**

In order the companies to create an optimal network design/redesign, (Frazelle, 2001) recommends a 10-step logistics network design process:

1. Assess/evaluate current network.
2. Design and populate network optimization database.

3. Create network design alternatives, such as more or fewer hierarchies, multi-commodity flows, pooling opportunities, merge-in-transit, direct shipping, cross docking, and supply-flow optimization concepts.
4. Develop network optimization model.
5. Choose network optimization tool.
6. Implement network model in chosen tool.
7. Evaluate alternative network designs.
8. “Practicalize” recommended network structure.
9. Compute reconfiguration cost.
10. Make go/no-go decision.

According ( Chopra, et al, 2001) the company should take the following point to design its logistic network:

the companies shall define a supply chain strategy, where the objective of the first stage of the logistic network design is to define firms supply chain design, this includes determining the stages in the supply chain, and the companies shall determine also the supply chain function if it will be in house or outsource, ( Chopra, et al, 2001) divided the network design into phases:

Phase 1 :starts with determining the firms competitive strategy as the set of customer needs that the supply chain want to satisfy .the supply chain strategy specifies the capabilities that the supply chain network must have to support the competitive strategy, forecasting of evolution of global competition and whether competitors in each market will be took place, based on the competitive strategy of the firm, its resulting supply chain strategy , an analysis of the competition, any economies of scale or scope, and any constraints, managers must determine the supply chain design for the firm.

Phase 2: define the regional configuration; the objective of the second phase of network design is to identify regions where facilities will be located, their potential roles, and capacity. the analysis starts with forecast of the demand if the country including a measure of size demand, the next step is to identify whether economies of scale or scope can play a significant role in reducing cost, next the company must identify demand risk, exchange rate, managers must identify competitors in each regions and make a case for whether a facility needs to be located close to or far from competitors facilities

Phase 3: select a set of desirable sites. The objectives of phase 3 is to select a set of desirable site within each regions where facilities to be located, site should be selected based on an analysis of infrastructure availability to support the desired production

Phase 4: location choices, the objectives of phase 4 is to select a exact location and capacity allocation for each facility, attention is paid to the desirable potential sites selected in phase 3, the network is designed to maximize total profits taking into account the expected margin and demand in each market, various logistic and facility cost, and the taxes and tariffs at each location

the Palestinian companies should be aware that the network design decision have a significant impact on performance, and shall define its competitive advantage to be able to determine the network design strategy, where the determining of the supply chain network design will set constraints within which the other supply drivers can be used either to decrease supply chain cost or to increase responsiveness.

The Palestinian companies can take use of Chopra approach when taking network design decision and its affect on each other, where decisions concerning the role of each facility are significant because they determine the amount of flexible the supply chain has in change the way it meets demand

## **2.7 Supply Chain Management: Demand Planning**

Demand planning is a vital aspect of managing flow of product along the supply chain. Generally, the first step of demand planning is to forecast product demand. The company can plan resource deployment in accordance with the resulting forecasts in order manage the inventory, it

should provide as accurate as possible information to the operation process. The company can enhance the forecasting and overcome the little and uncertainty information by forecasting on aggregate planning. The sections below shall introduce the demand planning function in details.

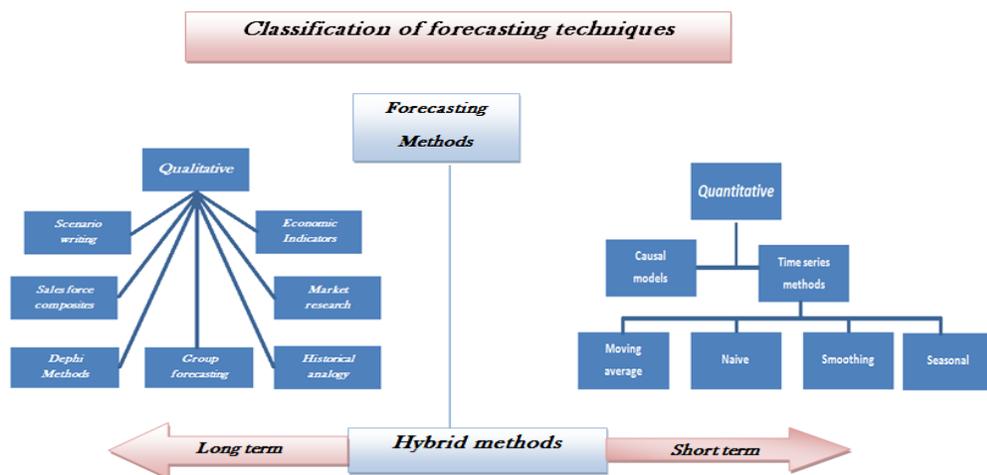
### **2.7.1 Forecasting:**

One of the most important elements of supply chain success is effective planning to determine customer demand, which begins with accurate forecast. A forecast according (Krajewski, et al) is "a prediction of future events used for planning purposes". The important role of the forecasting appears among situations like changing business condition as a result of competition, rapid technological change, and rising environmental concerns. Forecast is needed to assist in determine the resources, scheduling existing resources and acquiring additional resources.

The most important business decision in course of managing the supply chain which forming challenge to the company is to forecast the customer demand, where it is a difficult task because the demand for product and services vary from time to time, therefore forecasting demand in changeable situations requires uncovering the underplaying patterns from available information. (Krajewski, et al) defined the pattern" is the repeated observation of demand for product or service in their order of occurrence such as horizontal, trend, seasonal, cyclical, and random". The company must take in to account when it goes to forecast demand the pattern and all

factors demand affects by it. The company shall ask itself what factors cause change in the demand for product and service over time. Generally such factors can be divided in to two main categories: external and internal factors.

The company can use more than one method to issue the forecasting process, there are mathematical models using historical data, and qualitative methods based on managerial experience, or combination of both, but the company before starting forecasting according (Krajewski, et al) must determine what to forecast, what type of forecasting technique to use and what type of computer hardware or software to use. Level of data aggregation and unit's measure are important consideration in course of company decision with respect to what to forecast. (Krajewski, et al) Stated that the forecasting technique can be divided in to two main categories, qualitative methods and quantitative methods, the figure 2.2 shows the forecasting technique



**Figure 2.2:** Classification of forecasting techniques (Armstrong, 1986)

In the supply chain management the forecasting is very important for all relied operation strategy, but (Terry, et al., 2004) stated that the forecasting is more necessary for companies that manufacture items for inventory make to stock strategy and that are not made to order. Manufacturers will use material forecasting to ensure that they produce the level of material that satisfies their customers without producing an overcapacity situation where too much inventory is produced and remains on the shelf. At the same time, the forecast must not fall short and the manufacturer finds them without inventory to fulfill customer's orders. The cost of failing to maintain an accurate forecast can be financially catastrophic.

The Palestinian companies lack in terms of utilizing the appropriate forecasting techniques in the supply chain management. Companies should start adopting new ways of doing things with regard using forecasting and the relevant software. Planners should review their decisions with respect to the internal and external environment. They should adjust the calculation to provide a more accurate forecast based on the current information they have.

### **2.7.2 Inventory management**

The basic purpose of supply chain management is to plan customer demand and to fulfill his order as well as the least lead time, therefore the company must control inventory by managing the flow of materials to achieve the desired fulfillment, according (Krajewski, et al) the inventory is "a stock of material used to satisfy customer demand or support the

production of goods or services", the level of inventory is determined from the rate of input materials and product and the outward flow represents the demand for materials in inventory, like customer order or requirements for suppliers

Inventory management is an important issue for the companies in all types of business, for large scale business, the company can improve its profits and maximize its surplus, for companies that operate on low profit margins, the poor inventory management can destroy the business. (Krajewski, et al) stated that the challenge is not to pare inventory to the bone to reduce cost or to have plenty around to satisfy all demands, but to have the right amount to achieve the competitive priorities for the business.

(Krajewski, et al) stated that the inventory can be found in three categories with respect to the kind of material that are stocked, raw materials which are needed for production of goods or services, the raw materials are considered an input to the manufacturing process of the company, work in process which are consisted from items such as component or assemblies needed for final product in manufacturing, finished goods in manufacturing plants, warehousing, and retail outlet are items sold to the company's customer, the finished goods of one company may be the raw materials for other.

### 2.7.2.1 Types of inventory

The inventories can be classified according to how it is created, there are four types of inventories according (Krajewski, et al): cycle, safety, anticipation, and pipe line each one of the four types comes into being in different way.

**Table 2.2: Types of inventories (Krajewski, et al)**

#	Type of Inventory	Function
1.	Cycle inventory	the portion of total inventory that varies directly with lot size
2.	Safety stock inventory	placing an order for delivery earlier than when the item is needed therefore the replenishment order arrives ahead of time
3.	Anticipation inventory	used to absorb uneven rates of demand or supply which company may face
4.	Pipeline inventory	inventory moving from point to point in the materials flow system

The aforementioned types cope with different situation, where safety stock type of inventory can be created to avoid customer service problems and hidden costs of unavailable components, on the other hand anticipation inventory suit uneven demand which lead the company to stock anticipation inventory during period of low demand to be used in peaks demand period later on.

### **2.7.2.2 Inventory controls**

The company must manage the inventory to achieve the objective and reach maximum profit and maximum surplus, inventory control system is the managerial function that should be practiced to attain the desirable objectives, selecting an inventory control system for a particular application, the nature of demand imposed on the inventory items is crucial. (Krajewski, et al) stated that there are two inventory control system are, the continuous review system, called Q system, and the periodic review system, called P system.

Continuous review system (Q):

Continuous review system, sometimes called a reorder point system or fixed order quantity system, tracks the remaining inventory of an item each time a withdrawal is made to determine whether it is time to order or not. When the inventory position reaches a predetermined minimum level, called the reorder point, a fixed quantity Q of the item is ordered.

Periodic review system (P):

The second inventory control system is periodic review system, sometimes called fixed interval reorder system or periodic reorder system, where an item's inventory position is reviewed periodically rather than continuously, a new order is always placed at the end of each review, and the time between orders is fixed at P. In P system the lot size may change from one order to the next, but the time between orders is fixed.

The Palestinian companies shall be aware that the inventories are important to all types and scale of companies and their employees. Inventories affect everyday operation because must be counted, paid for, used in operation, used to satisfy customer. Where the inventories can be managed in simple technique rather to complicated technique, therefore the companies should adapt managerial concept to manage the inventory. Inventory require an investment of funds, they represent a drain on the cash flows of an organization.

the Palestinian companies shall transform the inventory from a bane to boon, by do not reduce profitability if there is too much inventory, and do not damage customer confidence if there is too little inventory. The goal should not to minimize inventory or to maximize service, but rather to have the right amount to support the competitive priorities of the company,

### **2.7.3 Aggregate planning**

the companies pursued to improve its performance by preparing the plans and reduce the uncertainty as well as possible, so the companies used forecasting technique to enhance its ability in this regard, but is the forecasting enough and accurate? the company can enhance the forecasting through shorten the time horizon or by forecasting families of products whether for inventory level or for production plans, and many companies practiced seasonal shift in demand for its product, the shifting of demand is called an aggregate plan, ( Krajewski, et al)stated that the aggregate plan is

a statement of its production rates, workforce level, and inventory holding based on estimates of customer requirements and capacity constraints. This statement time phased, meaning that the plan is projected for several time periods in to the future.

A manufacturing firms aggregate plan, called a production plan, focused on production rate and inventory holding, whereas a service firms aggregate plan called a staffing plan, centers on staffing and other labor related factors. For both types of company the plan must balance conflicting objectives involving services, workforce stability, cost, and profit.

The aggregate plan determines how the company will work for the next year within existing resources and facilities capacity constraints. ( Krajewski, et al) stated that from the aggregate plan which is considered medium term plans the companies prepare detailed operating plans. For manufacturing companies the aggregate plan connect strategic objectives with production plans for individual's products and the specific component of them.

The companies can apply the aggregate plan to be aware about the future without going into details, where the aggregate plan focus on general course of action, compliance with the company's strategic goals and objectives,. ( Krajewski, et al) stated that the aggregation allows company to determine whether they can satisfy budgetary goals without going to schedule each of the company's products and employees, even if a planner

could prepare such a detailed plan, it will not be feasible to update it again, for this reason production and staffing plans are prepared by grouping or aggregating, similar products service, units of labor or units of time.

## **2.8 Supplier relationship**

In spite the companies have unique character, but it have to deal with others in many ways and forms. (Terry, et al., 2004) declared that the forms of the relationship between the companies are five types of supplier relationships: buy-the-market, ongoing relationships, partnerships, strategic alliances, and backward integration. But he said that the backward integration might not be considered a form of supplier relationship because the components are produced internally, he added that the relationship style should fit with the characteristics of the purchased component and of the marketplace.

Buying from one firm today means no commitment to buy from same firm anther time, and the interaction between firms is very limited, where there is little need for face to face meetings. (Terry, et al., 2004) as firms move toward ongoing relationships and partnerships, they are responding to a need for interaction with the supplier. where some companies invest on such relationship to improve cost, quality, and delivery ,on the other hand Strategic alliances, involve even closer relationships, sharing the same location of facilities or personnel, wide sharing of information and plans, higher levels of trust,

### 2.8.1 How to Structure the Relationship

In the previous section the relationship styles have been presented, but how should managers build their own supplier relationships? (Terry, et al., 2004) declared that there are four fundamental factors that should drive a firm toward closer relationships. These factors should be considered in light of the operations objectives of the firm cost, quality, delivery, and flexibility. Firms should focus on their critical objectives as they analyze relationship styles for each component category. The first factor is the *strategic importance* of the purchased component. If the component is critical to competitive differentiation, it is best to manufacture it in-house. If the firm cannot develop the capability to manufacture the component, it should form a close alliance with available suppliers

The second factor is the *number of suppliers* that can provide the component or service. If only one supplier is available, the firm may need to maintain close relationships with it, the third factor is *complexity* of the interfaces between the components procured and the rest of the final product and the complexity of the supply chain itself, the fourth factor that affects relationships is *uncertainty*,. If a sourcing relationship creates high uncertainty, it should develop closer relationships.

The importance of the cases is that the Palestinian companies must explicitly consider the operations objectives of cost, quality, delivery, and flexibility, and that they must understand the concepts of strategic

importance, number of suppliers, complexity, and uncertainty in determining how to structure their supplier relationships.

As the Palestinian companies are working and practicing its activities, like outsource, selling, managing supplier relationships has become critical. therefore companies shall not go to strategic alliances as the only style of supplier relationships, and shall not take different way drastically, but careful analysis of the operations objectives of the firm and the number of available suppliers, in addition to examination of the uncertainty, complexity and strategic importance of the component being purchased, the companies can have clear image of how to structure supplier relationships. Thus, within the same firm some components should be purchased through strategic alliances while others purchased via a partnership, on-going relationship or buy-the-market approach. on the managing side of these relationships. Firms that decide to pursue strategic alliances should strongly consider introducing competition into the relationship, while firms that buy over the Internet should consider building longer term relationships.

## **2.9 Supply Chain Management: Customer Relationship**

Customer relationship management is a complementary process to the previous operations process to achieve the organization goals, so that efforts will be fruitful if all previous processes were coroneted of running a sound relationship with the customer. (Ellen, 2009) declared that the

customer relationship is an essential part of modern business management. And it concerns the relationship between the organization and its customers. Where the customers are considered the lifeblood of any organization.

The companies and the customers have special environment to consider when building the relationship, (Ellen, 2009) declared that wants and needs govern the relation of both parties; organizations need to make a profit to survive and grow, customers want good service, a quality product and an acceptable price, therefore good CRM can influence both sets of conditions. In the company side the customer relationship management affects the overall company, where, (Ellen Gifford ) declared that the organization shifting the focus from product to customer, streamlining the offer to what the customer requires, not what the organization can make, and highlighting competencies required for an effective CRM process

### **2.9.1 Organization need to the CRM**

The final goals of the customer relationship management is to maximize supply chain surplus and earn customer loyalty to the company and let him to be company's messenger, this is will not be achieved without submitting better service more than any competitors else. the best customer relationship capability will be reflected on the company itself, (Ellen Gifford ) stated that CRM not only improves the service to customers though; a good CRM capability will also reduce costs, wastage, and

complaints (although you may see some increase initially, simply because you hear about things that without CRM would have stayed hidden). CRM enables instant market research as well: opening the lines of communications with your customers gives you direct constant market reaction to your products, services and performance, far better than any market survey. Good CRM also helps you grow your business: customers stay with you longer

### **2.9.2 What do customers want?**

Customer wants to get an equivalent to what he paid; (Ellen Gifford) mentioned that the customers want cost-effective products that introduce required benefits to them. But at the same time the same product or service can submit different benefits to different customers. so It's important to look at things from the customer's perspective to determine the satisfaction of the customer, (Ellen Gifford) declared that the customers want to have their needs satisfied, and will often include the buying-selling process, the way that communications are handled, and the nature of the customer-supplier relationship.

(Ellen Gifford) mentioned that the CRM theory refers to the idea of 'integrating the customer'. This way of looking at the business involves integrating the customer into all aspects of the supplier's business, and vice versa. This implies a relationship that is deeper and wider than the traditional 'arms-length' supplier-customer relationship.

### 2.9.3 Managing customers

Why manage customers? the customers are the usual source benefit for the company, as well as the source of the information which is important for company success, therefore the customer relationship should be managed carefully. (Ellen Gifford) stated that managing customer's relationship will be by, knowing what customers want and need that let the company to focus on production and service according customer desire, the company also should know which products or customers have most growth which enables it to focus on developing highest potential, knowing which products or customers are most profitable which enables the company to focus on maximizing profit, and the company should know which customers will be supporters and loyal which enables it to provide references, case studies, and to safely test new products and services

The company shall attain effective relationship with the customer through right management of the relation, the company will achieve effective customer relationship according (Ellen Gifford) by adopting a new perspective.

- traditional customer service is something you 'do to' the customer
- modern Customer Relationship Management is 'done with' the customer

The second statement is certain a big differences between traditional customer service, and the modern customer service.

the Palestinian company should establish relationships with customers ongoing, cooperative, and built for the long term, and they will be aware that company who have many temporary relationships with customers have to spend a lot of money on finding new customers, where the cost of keeping existing customers is little bit of the cost of acquiring new customers.

## **2.10 Supply Chain drivers and Metrics**

The company shall support its competitive advantage by creating balance between the responsiveness and efficiency, but to understand how company can improve supply chain performance in terms of responsiveness and efficiency. ( Chopra, et al, 2001)stated that the company must review the logistical and cross functional drivers of supply chain performance to determine the supply chain performance, the logistical drivers are facilities, inventory, and transportation, the cross functional drivers are information, sourcing, and pricing.

The fit between the competitive advantage and company supply chain strategy is the right combination of the three logistical and three cross functional drivers, where when the company takes decision with respect to each driver, it must make tradeoff between efficiency and responsiveness based on interaction with the other drivers.

The drivers are very important elements to enhance the supply chain performance, but how we can measure these drivers, (Cohen, et al, 2005) stated that most people agree with the saying, “If you can’t measure it, you can’t fix it.”, therefore a set of measures or metrics should be prepared to evaluate company performance with respect specific driver, (Cohen, et al, 2005) stated also that yet few metrics programs actually provide a clear picture of overall performance, identify the root of performance problems, or identify improvement opportunities. The reason is simple: Establishing a robust and useful performance measurement program is difficult where still arguments to what to measure, how to define the chosen metrics, and how often they should be measured.

The Merriam-Webster Dictionary defines a metric as “a basis or standard of comparison.” where by this definition, a stand-alone number or value is not a metric. A number or value only becomes a useful management tool when compared with another number or value. This is the premise of an effective performance measurement program. After explaining what the drivers and metrics are, the following sections take it in detail.

### **2.10.1 Facilities:**

The facilities are the location in the supply chain where product is stored, assembled or manufactured; (Chopra, et al, 2001) stated that the facilities can be summarized into two major types, production and storage sites. Decision with respect the role, location, capacity, and flexibility of

facilities have a considerable effect on supply chain performance; therefore tendency to locate many warehouses closed to customer is expresses adaption of responsiveness, in the other side adaption efficiency strategy needs to locate fewer warehouses to increase efficiency despite the fact that this practice will reduce responsiveness.

Decisions with respect facilities are very important part of supply chain, ( Chopra, et al, 2001)declared that the role of production facilities must be determined whether it will be flexible, devoted, or a combination of the two. Flexible capacity can be used for many types of product. On the other hand decisions regarding the location of facilities are part of the design of a supply chain, the company shall decide whether to centralize the facilities in order to attain economies of scale or to decentralize to become more responsive, facility capacity also is considered part of supply chain design where the company shall decide a facility's capacity to perform its intended functions.

#### **2.10.1.1 Facility metrics:**

According ( Chopra, et al, 2001) there are below some of the metrics that the company can use to measure its performance.

**Table 2.3: Facility metrics ( Chopra, et al, 2001)**

<b>Metrics</b>	<b>clarification</b>
Capacity	Measures the maximum amount a facility can process
Utilization	Measures the fraction of capacity that is currently being used in the facility. Utilization affects both the unit cost of processing and the associated delays. Unit cost tends to decline and delays increase with increasing utilization.
Production cost per unit	Measures the average cost to produce a unit of output. These costs may be measured per unit, per case, or per pound depending on the product.
Theoretical flow/cycle time of production	Measures the time required to process a unit if there are absolutely no delays at any stage.

**2.10.2 Inventory:**

The inventories include all raw materials, work in process, and finished products within the supply chain. ( Chopra, et al, 2001) cleared that The inventories exist in the supply chain to compensate the mismatch between the supply and demand, therefore changing inventory polices alter the supply chain efficiency and responsiveness, therefore inventories play a considerable role in supply chain ability to reinforce a company strategy, company's competitive strategy which is relying on responsiveness can be achieved by locating large amounts of inventory close to the customer. On

the other hand a company can use inventory to become efficient by decreasing inventory through centralized stocking.

### 2.10.2.1 Inventory metrics:

According ( Chopra, et al, 2001)the company shall track the following inventory metrics that have significant influence on the supply chain performance:

**Table 2.4: Inventory metrics ( Chopra, et al, 2001)**

<b>Metrics</b>	<b>Clarification</b>
Cash to cash cycle time	Is a high level metrics that includes inventories, accounts payable, and receivables.
Average inventory	Measures the average amount of inventory carried. Average inventory should be measured in units, days of demand and financial value
Inventory turns	Measures the number of times inventory turns over in a year. it is the ratio of average inventory to either the cost of goods sold or sales.
products with more than a specified number of days inventory	Identify the product for which the firms is carrying a high level inventory, this metrics can be used to identify products that are in oversupply or identify reasons that justify the high inventory, such as price discount or being very slow mover.

### 2.10.3 Transportation:

Transportation conveys product between different points in the supply chain, ( Chopra, et al, 2001)stated that the company can take more than one

form or combinations of modes and routs.; the company can design its transportation network which includes collection of modes, location and routs to be close to the customer, and also can use faster modes of transportation or different forms like air, truck, sea and pipe line, thus transportation has a large impact on both responsiveness and efficiency making the supply chain more responsiveness but in the same time less efficient.

### 2.10.3.1 Transportation metrics:

According (Chopra, et al, 2001) the company should measure transportation performance with respect to the following metrics.

**Table 2.5: Transportation metrics ( Chopra, et al, 2001)**

<b>Metrics</b>	<b>Clarification</b>
Average inbound transportation cost	Typically measures the cost of bringing product into a facility as a percentage of sales or cost of goods sold (COGS). Ideally, this cost should be measured per unit brought in, but this can be difficult. The inbound transportation cost is generally included in COGS. It is useful to separate this cost by supplier.
Average incoming shipment size	Measures the average number of units or dollars in each incoming shipment at a facility
Average inbound transportation cost per shipment	Measures the average transportation cost of each incoming delivery. Along with the incoming shipment size, this metric identifies opportunities for greater economies of scale in inbound transportation.
Average outbound transportation cost	Measures the cost of sending product out of facility to the customer. Ideally this cost should be measured per unit shipped, but it is often measured as a percentage of sales. It is useful to separate this metric by customer.

#### **2.10.4 Information:**

The information is considered across functional driver, where it affects every part of the supply chain and impacts every other driver. (Chopra, et al, 2001) declared that the company can use information system to become both more efficient and more responsiveness. The wide growth of information technology is evidence to the impact of information on improving company performance; the company must decide which technologies to use and how to integrate these technologies into their company and their partners, there are many enabling technologies to be used to enhance information system among the company and its partners, such as electronic data interchange (EDI), internet, enterprise resource system(ERP), supply chain management software, and radio frequency identification(RFID). Information like other drivers, the company must make tradeoff between efficiency and responsiveness where at certain point the marginal cost of investing in additional information increase, whereas the marginal benefit from the additional information decrease.

The components of information decisions exceed coordination and information sharing that occurs in all stages of supply chain to achieve objectives, where the company must analyze the information to increase efficiency and improve responsiveness. the companies that rely push system in its designing process of the supply chain require information in the form of elaborate material requirements planning(MRP), but companies rely pull system require information on actual demand, on the other hand

the companies need the information to forecast the future demand and to prepare the aggregate supply planning.

#### **2.10.4.1 Information metric:**

The company can measure its performance according ( Chopra, et al, 2001)by examining the following metrics.

**Table 2.6: Information metrics ( Chopra, et al, 2001)**

<b>Metrics</b>	<b>Clarification</b>
Forecast horizon	Identifies how far in advance of the actual events a forecast is made. The forecast horizon must equal the lead time of the decision that is driven by the forecast.
Frequency of update	Identifies how frequently each forecast is updated. The forecast should be updated somewhat more frequently than a decision will be revisited, so that large changes can be flagged and corrective action taken.
Forecast error	Measures the difference between the forecast and actual demand. The forecast error is measured of uncertainty and drives all responses to uncertainty such as safety inventory or excess capacity
Seasonal factors	Measures the extent to which the average demand in a season is above or below the average in the year.

#### **2.10.5 Sourcing:**

Sourcing is the cluster of business processes required to acquire goods and services. The crucial decision that company should take regarding

acquiring goods and services as declared ( Chopra, et al, 2001), which tasks should be outsourced and those that will be performed within the company, for the outsourcing process as mentioned in the section 2.6.2.2 the company should decide whether to source from a single supplier or a portfolio of suppliers. Sourcing decisions are very important where affect the level of efficiency and responsiveness the supply chain can achieve.

### 2.10.5.1 Sourcing metric:

The sourcing metrics as stated by ( Chopra, et al, 2001)as following.

**Table 2.7: Sourcing metrics ( Chopra, et al, 2001)**

<b>Metrics</b>	<b>Clarification</b>
Day's payable outstanding	Measures the number of days between when a supplier performed a supply chain task and when it was paid.
Average purchase price	Measures the average price at which a good or service was purchased during the year. The average price should be weighted by the quantity purchased at each price.
Range of purchase price	Measures the fluctuation in purchase price during a specified period. The goal is to identify if the quantity purchased correlated with the price.
Average purchase quantity	Measures the average amount purchased per order. the goal is to identify whether a sufficient level of aggregation is occurring across locations when placing an order
Fraction of on time deliveries	Measures the fraction of deliveries from the suppliers that were on time

### 2.10.6 Pricing:

Pricing is the process which a company decide how much the customer will pay for its goods and services. Pricing affects customer groups that choose to buy the product, subsequently affects the supply chain responsiveness

#### 2.10.6.1 Pricing metrics:

The company can follow up its performance with respect the pricing driver by measuring the following metric as stated by ( Chopra, et al, 2001).

### **2.10.7 performance evaluation of the Supply chain management**

In the previous sections supply chain management drivers and metrics have been

displayed, subsequently the supply chain performance can be evaluated according specific drivers. ( Govil, et al , 2002)stated that performance measures to evaluate a supply chain should cover the financial and operational domains since the goal is to provide customer satisfaction at low cost and to guarantee competitiveness over the long term. ( Govil, et al , 2002)added that the performance measures should be valuable not only to continuously improve the efficiency of the supply chain but also to help applying a strategic policy. Performance measures should be easy to define, simple to apply, and easy to understand in order to take action accordingly.

( Govil, et al , 2002) stated that the financial performance reflects the profitability of the system and its ability to be competitive in the long term. The financial evaluation in the short term encompasses of measuring the incremental cost per unit in each activity center and for each project, and measuring the non-value-adding expenses. The company shall take in to account to maximize the productivity of capital, which supports for maximizing the capital turnover. They must also maintain flexibility of their strategic decisions by maintaining a significant cash flow.

( Govil, et al , 2002) declared that the customer satisfaction is a goal should that be reached, in order to magnetize and maintain customers. The evaluation of the supply chain in achieving this goal will be measuring the availability of the products and services and their adequacy to customer expectations.

**Table 2.8: Pricing metrics ( Chopra, et al, 2001)**

<b>Metrics</b>	<b>clarification</b>
Profit margin	Measures profit as a percentage of revenue. A firm needs to examine a wide variety of profit margin metric to optimize its pricing, including dimension such as type of margin (gross, net, etc.) scope(SKU, product line, division, firm), customer type, and others.
Days sales outstanding	Measures the average time between when a sale is made and when the cash is collected
Incremental fixed cost per order	Measures the incremental costs that are independent of the size of the order. These include changeover costs at a manufacturing plant or order processing or transportation costs that are incurred independent of shipment size at a mail-order firm.
Incremental variable cost per unit	Measure the incremental costs that vary with the size of the order. These include picking costs at a mail order firm or a variable production costs at a manufacturing plant.

## Chapter 3

### 3 Methodology

#### 3.1 Introduction

This chapter provides an overview of the methodological approaches, and the research design to evaluate the applied supply chain management of the Palestinian companies, through exploring and assessing current practices and understandings of Palestinian companies' in relation to the supply chain management concept, in addition conducting a comparative study between Palestinian and the state of the art practices of SCM is discussed.

The thesis investigates the gap between applied supply chain management in Palestine and a similar, yet successful pattern of the supply chain management, that appeared in the literature review. Based on the above parameters, the special condition for the research environment will be addressed through the development of the framework in chapter 5. Furthermore the thesis provides focusing on four key themes are practiced in course of supply chain implementation, the themes were studied and analyzed through the survey results and some conclusions are drawn and displayed.

Theme1: Supply chain management concept and its impact on the success of the firm

- What is supply chain management?

- What are the various issues that need to be considered when designing, planning, or operating the supply chain?
- What are the basic elements that must be managed within this comprehensive understanding?

#### Theme 2: Competitive and supply chain strategies

- Determining supply chain strategy, responsive or efficient strategy
- Possessing competitive advantage, low cost or differentiation.
- Strategic fit between the competitive advantage and the supply chain strategy

#### Theme 3: Supplier relations

- Supplier selected criteria
- Reduction of the number of suppliers
- An evolution towards strategic partnership

#### Theme 4: Customer relation

- Customer delivery performance
- Relationship management
- Customer personalized services

Finally, a proposal for conceptual framework module be structured and the proposal submitted through using suitable tools that required to identifying deferent designing stages requirements, considerations or constraints.

## **3.2 Research Background**

### **3.2.1 Research Hypotheses**

The following are the hypotheses which raise the research question:

H1. there is weakness in supply chain management understanding among the Palestinian companies.

H2. The applied supply chain management in Palestine suffers from weakness in strategic design.

H3. There is not strategic fit between the applied supply chain and companies competitive strategy?

H4. Company's relationship with its supplier takes butterfly pattern.

H5. Customer relationship management suffers from weaknesses, which reflected on the customer services.

### **3.2.2 Research Questions**

1. What are the gaps between applied supply chain management in Palestinian companies, and the theoretical and practical global concepts used in successful world companies?

2. What is the suitable supply chain management framework that can be used to leverage company's performance, taking into account the condition of the research environment.

### **3.2.3 Research Objectives**

The aim of this research study is to develop a generic supply chain management framework that can be used to support Palestinian companies through integrating various supply chain activities. Further objectives are listed below;

- e. To investigate the role of supply chain management in providing competitive advantage for companies
- f. To explore and asses current practices and understandings of Palestinian companies' in relation to the supply chain management concept.
- g. To investigate the state of the art in the area of SCM.
- h. To conduct a comparative study between Palestinian and the state of the art practices of SCM.
- i. To develop a generic framework that complements Palestinian industry.

### **3.3 Research Design and Methodology**

Research methodology is controls to conduct the search process within a sound basis to ensure access to the desired outcome, where research methodology provides the procedural rules for the evaluation of research and the validation of the collected data, while research design role as the

research road map (Creswell, 2003). As (Sekaran, 2003) further clarifies, research methodology is considered academic framework describes how to collect and verify the parameters to get the results, and validating new knowledge. (Cooper, et al, 2005) said that identification of the research methodology of the important issues facing the researcher, where the search process that were not subject to systematic and clear become a deviation from the desired goal will be the resources consumptive search process is not constructive, so it must be a clear methodology and applicable.

Research methodology is an utmost importance to conduct the research. A methodology does not simply structure a study but it identifies the research tools and strategies (i.e. resources) that will be employed, and determine the mechanisms of use to attain research objectives. As (Sekaran, 2003) suggests, The importance of the research methodology stems from being a set of activities related to conducting research, methods and strategies, in addition to providing criteria to ensure the success of research and achieve the goals.

Falls within the context of the research methodology, each research should raise a set of unique questions and determines a group of objectives need to be achieved. The research design functions will articulate the strategies and tools through which raw data will be collected and analyzed. It additionally serves to connect the research questions to the data and articulate the means by which the research hypothesis shall be tested and the research

objectives satisfied (Punch, 2000). For research design and preparation of the correct methodology must answer the following questions related. These are (1) the articulation and selection of the research questions; (2) the identification of the relevant data; (3) determination of data collection focus; and (4) the selection of the method by which the data will be analyzed and verified (Punch, 2000). Although research methodology and research design are distinct academic constructs, (Punch, 2000) maintains the former to be more holistic than the latter and, in fact, inclusive of it.

### **3.3.1 Research Purpose**

Research scholars have recognized three main purposes to the research activity. These are the exploratory, the descriptive and the explanatory purposes (Saundres, 2000). (Patton, 1990) identifies a fourth purpose which he added the prescriptive purpose. (Jackson, 1994) stated that the researcher should name the purpose(s) by correlating the research questions to the research objectives, this is exactly the strategy that the current research shall take up.

#### **3.3.1.1 Exploratory**

Exploratory research revealed through focus group interviews, by conducting structured or semi structured interviews with experts and a search of the relevant literature (Saundres, 2000). Its key purpose is the exploration of a complex research problem or phenomenon, to clarify the complexities that have been identified and a gallery of the nature of the

underlying phenomenon selected. In other words, and as (Robson, 2002) explains, exploratory research investigates a specified problem/phenomenon for taking it from different angles and putting it under light, consequently, revealing new knowledge. The research questions directly tie in with, and complement one another. They additionally correlate to research objectives and are fundamentally explorative in nature.

### **3.3.1.2 Descriptive**

(Punch, 2000) explains the purpose of the descriptive research as the gathering, organization and summarization of information about the research problem and issues identified in it. The descriptive research, it renders the complicated phenomenon and issues more understandable. Descriptive research entails the thorough examination of the research problem, for the specified purpose of describing the phenomenon, as in defining, measuring and clarifying it (Dane, 1990) . (Jackson, 1994) claimed that all research is partly descriptive in nature. The descriptive aspect of a research is, simply stated, the (1) who, (2) what, (3) when, (4) where, (5) why, and (6) how of the study. Proceeding from the above and bearing in mind that the first research question is partly descriptive in nature; the research adopts a descriptive purpose in parts. To answer the research question, and test the proposed hypotheses, it is necessary to ask (1) What are the gaps between applied supply chain management in Palestinian companies, and the theoretical and practical global concepts

used in successful world companies?.(2) What is the suitable supply chain management framework that can be used to leverage company's performance, taking into account the condition of the research environment? These questions, immediately correlate to the research objectives, are integral to the testing of the hypotheses and are essential for the answering of the research questions. More importantly, these questions are descriptive in nature, are answered through the literature review and, as such, impose a descriptive purpose upon the research.

### **3.3.1.3 Explanatory**

(Miles, et al, 1994)stated that the function of explanatory research is to clarify the relationship between variables and the elements component of the research problem. Explanatory research, in other words, functions to show up the complex interrelationships existent within, and around, a particular phenomenon and contained within the research problem (Miles, et al, 1994). Explained this, (Punch, 2000)asserts that explanatory, or causal research, determined upon the nature of the problem under investigation, and explains the basis for the proposed solution. It is an explanation of the complex net of interrelated variables identified and follows directly from stated central research hypothesis and research question. Where both research questions have descriptive component to them, they appears a fundamentally explorative intent. Responding to these questions necessitates the clarification of the variable relating to practiced supply chain management. The research questions can only be

satisfactorily answered, and the requirements of research objectives can only be adequately satisfied if the interrelated variables of the four themes are explained. Accordingly, the research shall further adopt an explanatory purpose.

#### **3.3.1.4 Prescriptive**

(Hair, 1992) defines prescriptive research as studies which aim to propose well defined solutions to the investigated research problem. A prescriptive research does not simply prescribe a set of solutions or recommendations but sets a well-defined, comprehensively explained and implementable blueprint for a specified solution. (Patton, 1990) contends that the prescriptive research purpose builds upon the other purposes but extends beyond them in one key aspect. Whereas the descriptive, exploratory and explanatory purposes focus upon facts on ground, the prescriptive approach focuses on what should be. Research scholars, concurring, have determined that research which embraces the prescriptive purpose tend to be more valuable than those which avoided it, as they add to a field and expand its parameters ( (Patton, 1990); (Jackson, 1994); (Punch, 2000); (Cooper, et al, 2005); (Hair, 1992); (Ghauri, et al, 2005)). The second research question and the main research objective impose a fundamentally prescriptive purpose upon the study. Quite simply, the ultimate objective of the research is the proposal of generic supply chain management framework which includes a successful implementation to the research environment.

Consequently, while the research has undeniably descriptive, exploratory and explanatory purposes, its ultimate purpose is prescriptive in nature.

### **3.4 Research Approach**

The research approach selection should be in accordance with the important decisions needed to be made. The research approach will not influence the research design, but it will give the researcher the opportunity to consider how each of the various approaches may contribute to the research design. It may also limit the study, allowing satisfaction of the articulated objectives and design to an approach which best satisfies the research's requirements (Creswell, 2003).

The research approach embraces the quantitative versus the qualitative and the deductive versus the inductive. Each set of approaches is commonly perceived of as referring to polar opposites (Hair, 1992). (Jackson, 1994)takes issue with this perception and contends that a researcher should not limit himself to a particular approach but, instead should use a variety of approaches, if and when required by his study.

#### **3.4.1 The Deductive versus the Inductive Approach**

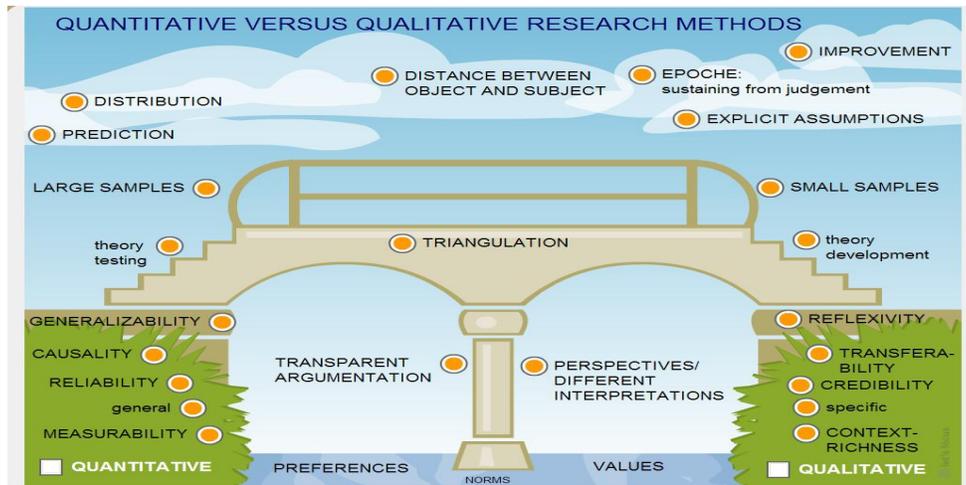
(Marcoulides, 1998)defines the deductive approach as a testing of theories. The researcher starts with a set of theories and conceptual precepts in mind and formulates the study's hypotheses on their basis, the research proceeds to test the proposed hypotheses. The inductive approach, on the other hand,

follows from the collected empirical data and proceeds to formulae concepts and theories in accordance with that data,

### **3.4.2 The Qualitative versus the Quantitative Approach**

The quantitative tools for data analysis generally used in the physical sciences, are structured in such a way to guarantee as much as possible, objectivity, ability to generalize and reliability (Creswell, 2003). Here the researcher is viewed as external to the research, and results are expected to be constant if the study is repeated, regardless of the identity of the researcher. Accordingly, the matrix of quantitative research techniques is inclusive of random and unbiased selection of respondents. It is primarily used for the production of data able to generalized for such purposes as evaluation of outcomes, tending towards the near total decentralization of human behavior. It is such decentralization that raises criticisms amongst those who tend to exhibit preference for qualitative tools, arguing that these offer insight into perceptions and interactions (Creswell, 2003). Accordingly, whereas questionnaires are leading tools for the first, qualitative methods include interviews, observations and focus groups, are designed to clarify the underlying meaning/cause behind selected phenomenon. In other words, while qualitative tools analyze the reasons behind a particular phenomenon, quantitative tools analyze the phenomenon itself, independent of human perceptions of reasons why (Creswell, 2003). In contrast, quantitative tools are used for the production

of statistical data which proceeds from the availability of quantifiable data, essentially out of the human factor effects. The first of these tools, means, standard deviations and frequency distribution is a cost efficient method of reducing close-ended questionnaire data into straightforward statistics, representing the average and variability of responses, with the frequency distribution functioning as the graphical representation of the number of times particular responses were given. This tool reduces data to comprehensible, manageable and (ideally) objective numerical or graphical representations (Creswell, 2003). The second tool, cross tabulation, scatter diagram, and correlation coefficients, goes a step beyond the first in the sense that it draws conclusions on the relationship between the variables. The last tool, difference tests, measures one sample group against a baseline for purpose of examining the differences between specific variables over a time frame (Creswell, 2003). we can conclude that the conditions necessitating the use of quantitative tools includes presence of quantifiable research data and the goal of reducing that data into straightforward statistical representations of basic facts regarding aspects in the inputs, outputs or design components in any of the organization, group and individual levels. The figure 3.1 summarizes the differences between the two approaches.



**Figure 3.1:** The Qualitative versus the Quantitative Approach (knowledge-communication. Site)

Quantitative research Objective is to test hypotheses that the researcher created. Objective is to find out and encapsulate meanings once the researcher becomes immersed in the data. Concepts are in the form of distinct variables Concepts tend to be in the form of themes, motifs, generalizations, and taxonomies. However, the objective is still to generate concepts. Measures are systematically created before data collection and are standardized as far as possible; e.g. measures of job satisfaction. Measures are more specific and may be specific to the individual setting or researcher; e.g. a specific scheme of values. Data are in the form of numbers from precise measurement. Data are in the form of words from documents, observations, and transcripts. However, quantification is still used in qualitative research. Theory is largely causal and is deductive. Theory can be causal or non-causal and is often inductive. Procedures are standard and replication is assumed. Research procedures

are particular and replication is difficult. Analysis proceeds by using statistics, tables, or charts and discussing how they relate to hypotheses. Analysis proceeds by extracting themes or generalizations from evidence and organizing data to present a coherent, consistent picture. These generalizations can then be used to generate hypotheses. According to (Punch, 2000) advice that a research's value is inevitably maximized should it exploit both approaches, this research shall contain both quantitative and qualitative approach. The questioner or the survey as long as interviews approaches have been adapted in order to collect the data required for this research.

### **3.4.3 Research Strategy**

(Robson, 2002) identifies three research strategies, or plans to answer the research question. These are the experimental, the survey and the case study strategies. The researcher can select one, or even all three of these strategies, depending on the requirements of the research itself and the nature of the study. (Yin, 1989) Agrees, scientific researches exploit the experimental strategy while the social sciences tend towards the survey and the case study strategies.

Our research adopted survey model approach. The survey approach have been chosen in this research in order to achieve research descriptive and explanatory purposes, the survey looks at companies current situation through answering questionnaire question, what, why, how. The

questionnaire constructed to address four key themes (section 3.1) are practiced in course of supply chain implementation, however the questionnaire was presented to the participants on four parts, each part intended to measure and explore one key theme. Themes components which have been reviewed in the literature formed the base of the questionnaire questions, then the survey statistical analysis tools have been used in order to measure the relation between survey questions. In addition the exploratory purposes have been achieved by executing some direct interviews, and meetings discussions. Finally, the exploratory, descriptive, and explanatory purposes achievement led to achieve the main objective generic framework.

#### **3.4.3.1 Sampling criteria**

The sample selection criteria to conduct a qualitative survey, is faced with a different set of priorities need be considered. The qualitative survey is almost similar to an individual scientific research. According to (Patton, 1990), The sample should be large enough to be credible, given the purpose of evaluation, but small enough to permit adequate depth and detail for each case or unit in the sample.

The research sample preparing passed through close coordination with the Palestinian general federation, the federation recommended to form the sample from the top vital sectors which having considerable weight in the Palestinian industrial sector, which are six sectors, Plastic industry, Marble

and stone industry, Foodstuff industry, Pharmaceutical industry, Chemical industry, Engineering and metal industry. The sample was formed from the six sectors according to weight of each sector to be 75 companies.

The method relied upon in preparing the research sample is the Judgmental sampling method. This sampling criteria has been chosen to attain the maximum benefit of the Federation's deep knowledge of Palestinian companies and all related concerns. In addition, we are dealing with unprecedented research in Palestine regarding the supply chain management.

The research sample has been prepared after reviewing relevant studies conducted globally, irrespective of the sectors under study or the number of the companies used to form the sample. Furthermore, the sample was finally formed in light of the PCBS (Census, 2008).

#### **3.4.3.2 Qualitative Data Collection**

(Cooper, et al, 2005) advise researcher against putting specified data collection method in mind. Instead, the researcher should first identify the type and nature of the required data and then select those collection methods which are best suitable to the collection of the identified data types.

While (Ghauri, et al, 2005) largely agree with this advice, they nevertheless assert that the researcher must limit his selection of data collection methods, not to the type of data required, but to the collection methods

available to him. For example, it will not be feasible for the researcher to collect the data across several countries, for example, even if the nature of the required data has determined this to be the optimal collection method. It is necessary for the researcher to make tradeoff between the available data collection methods and the methods optimally required by the needed type of data (Ghauri, et al, 2005). In our research three data collection methods have been utilized. On line survey, personal observations of the researcher through his work, meetings discussion, and interviews based data collection method.

The on line survey have been used in order to reach all of the research sample companies, and such type of survey may add more seriousness and official to respondent, it is easier to fill, in additional, the online surveys facilitate the work of analysis and they can give immediate results

#### **3.4.4 Credibility and Quality of Research Findings**

The data that is collected is used for reporting research results. If the data cannot be verified, this means that the likely suspect in the results. Accordingly, it is incumbent on the researcher to validate his findings (Sekaran, 2003).

The Research data have been collected using four different ways.

1. On-line survey which was sent to the respondent by mails.
2. Direct interviews.

3. Previous related – local- researches.

4. Observations

The sample size was 75 enterprises. A period of two weeks was taken for the completion of the surveys and their return back to the researcher. At the end of the second week period, 40 surveys were returned; one was rejected and excluded from the study because it was not completed. Therefore, only 39 have been approved. The average time to complete the online survey was 17 minutes; the response rate was 53%. Pilot tests have been conducted and the feedback was taken into consideration before sending the final survey. Furthermore, some external experts have been asked to review the survey and their feedback was also considered and utilized.

### **3.5 Research methodology description**

The research question emerged from the company's practice. The research objective answers the question, through the development of a generic framework meant to enhance the company's abilities. The starting point was from a literature review which forms the main base for the research. Then six sectors have been chosen as a representative research sample in order to investigate the current situation of supply chain management practice in Palestine. Then electronic survey was developed in order to gather the data, which have been analyzed using some statistical tools and methodologies. The gap between the result of the analysis and related researches and observations surmised in the literature, form the base of

developing a generic framework, which can be used as a benchmark for measuring a company's performance in a research environment.

The research methodology in points can be summarized as follows:

1. Conduct a literature review

This is largely designed to review existing literatures and publications on the concept of supply chain management, and to review recent significant supply chain studies and reports.

2. Identifying research objectives.

3. Data gathering

- a. Selecting a group of companies according to the predetermined criteria to represent Palestinian companies.

- b. Developing an electronic survey.

- c. Conducting a pilot test.

- d. Conducting the actual surveys.

- e. Interviews and meetings to be conducted with the executive management of the selected companies. The expected outputs are:

- ✓ Information about the reality of the companies' adherence to the managerial concept of SCM

- ✓ Evaluation of companies understanding of the SCM

- ✓ Clarification, from companies' viewpoint, the obstacles faced when applying the SCM concept.

#### 4. Data analysis

- a. Conducting comparison between local companies performance in practice to literature review.
- b. Determine the gap between practice and theory.
- c. Developing conceptual framework module in order to :
  - ✓ Standardize descriptions of management processes.
  - ✓ A framework of relationships among the standard processes.
  - ✓ Standard metrics to measure process performance.
  - ✓ Management practices that produce best-in-class performance.
  - ✓ Standard alignment to features and functionality.
- d. Testing companies practice compared with frame work module.

## Chapter 4

### 4 Data gathering and analysis

#### 4.1 Introduction

The data of this research were collected by using an electronic (online) survey distributed to six sectors of manufacturing industries in Palestine, they are Plastic industry, Marble and stone industry, Foodstuff industry, Pharmaceutical industry, Chemical industry, Engineering and metal industry. Some of the data came from Palestine Federal Industries (PFI) and also from Palestinian Central Bureau of Statistics (PCBS).

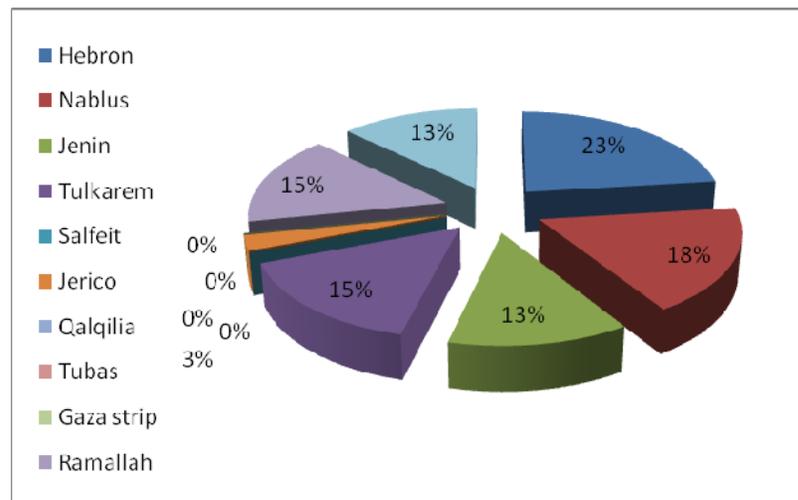
The six sectors industries are considered as some of the oldest industries in the West Bank and play a key role in the Palestinian economy. Developing framework for such industries depend upon identifying the current situation of the working firms in research environment. In order to do that the researcher conducted an electronic survey; the respondents were asked to answer the survey questions, **see Appendix 1**, 39 completed responses constitutes the basis of the results of this chapter.

This chapter presents a discussion of the study's results as related to the statement of the problem, purpose of the research, and the research questions, followed by results analysis, findings and conclusions.

As noted earlier, the electronic survey was distributed to the research sample in Palestine. The researcher chose this sample of population in

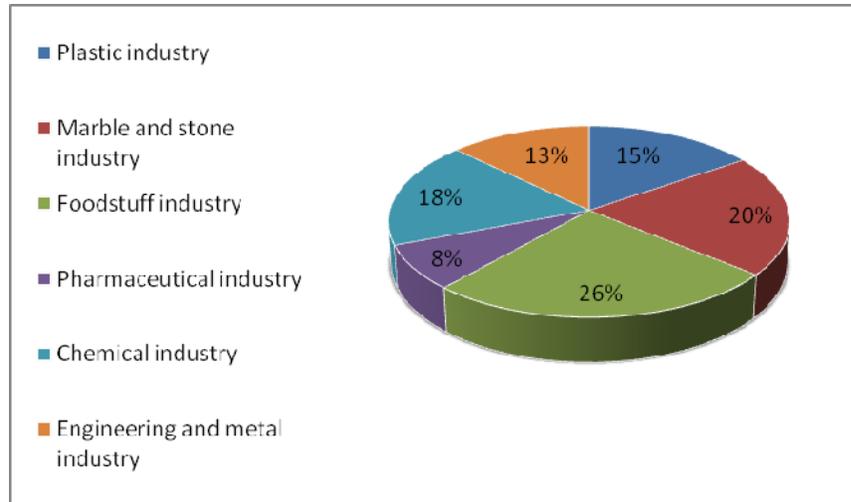
order to achieve the research objectives which were generally the important companies according PFI classification. The researcher exerted considerable efforts to leverage the number of responses to be completed. A period of two weeks was taken for the completion of the surveys and their return back to the researcher. At the end of second week period, 40 surveys were returned; one was rejected and excluded from the study because it was not complete. Therefore, only 39 had been approved. The average time to complete the online survey was 17 minutes; the response rate was 53% per cent.

The surveyed firms were selected according following a geographical perspective to cover the different industrial zones within research environment in Palestine, as shown in Figure 4.1



**Figure 4.1: Geographical distribution of the surveyed firms**

Meanwhile the responses included six manufacturing sectors categories: Plastic industry, Marble and stone industry, Foodstuff industry, Pharmaceutical industry, Chemical industry, Engineering and metal industry, Figure 4.2 shows the percent of each sector forming the sample.



**Figure 4.2: The percent of each sectors forming the sample**

The average investment for the sample companies was \$3,000,000. The largest investment was \$18,000,000 while the smallest one was \$200,000. Also the average number of senior employees and the plants' workers was 40 and 22 respectively.

This research aims at assessing the application of supply chain management system in the manufacturing industry in Palestine. The evaluation presented is based on data and information collected through the execution of questionnaire in 40 companies from six sectors of manufacturing industries in Palestine. In this research four key themes are

studied and analyzed through the survey results and some conclusion are drawn.

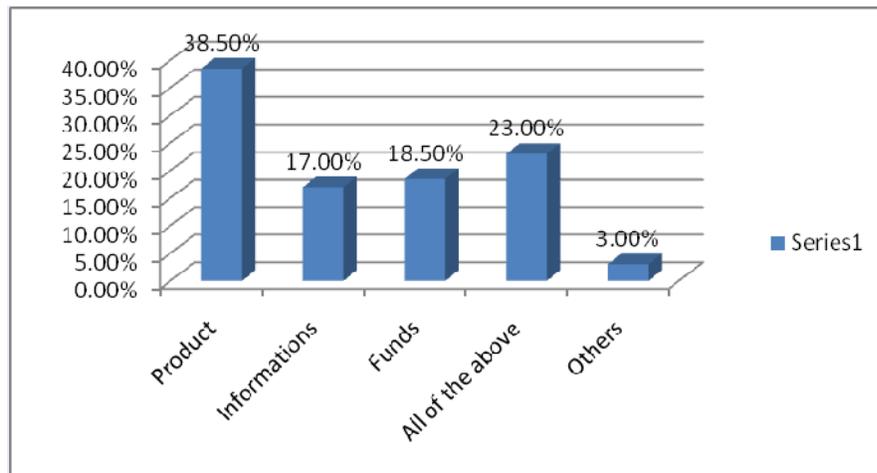
#### **4.2 Theme (1) Supply chain management concept and its impact on the success of the firm**

The first objective of the survey was to investigate the surveyed sample understanding of the supply chain management concept, the following issues fall under this key theme

- What is supply chain management?
- What are the various issues that need to be considered when designing, planning, or operating the supply chain?
- What are the basic elements that must be managed within this comprehensive understanding?

The surveyed companies showed that the elements that are basic to each stage and that must be managed through the supply chain management are products, information and funds. Where the result was only 23%, the surveyed companies indicated that the basic elements of products, information and funds must be managed in the supply chain simultaneously. However, the majority (77%) mentioned some elements in need of management along with the above mentioned basic elements. While 23% thought that the basic elements must be managed simultaneously, 77% mentioned managing with them along with other elements.

The survey findings with respect to the elements that should be managed showed weakness in the understanding of the concept. As each stage in the supply chain is connected through the flow of products, information, and funds. These flows often occur in both directions and may be managed by one of the stages or an intermediary. **Figure 4.3** shows the results.



**Figure 4.3: Elements should be managed in the supply chain**

57% of the surveyed companies, showed that the objective of the supply chain is to maximize the overall value generated, 43 % said that there are other objectives else.

The objective of every supply chain should be to maximize the overall benefit. The benefit also known as supply chain surplus, a supply chain generates is the difference between what the final product is worth to the customer and the cost the supply chain incurs in filling the customers desire. Where 75% did not know the exact objective of the supply chain,

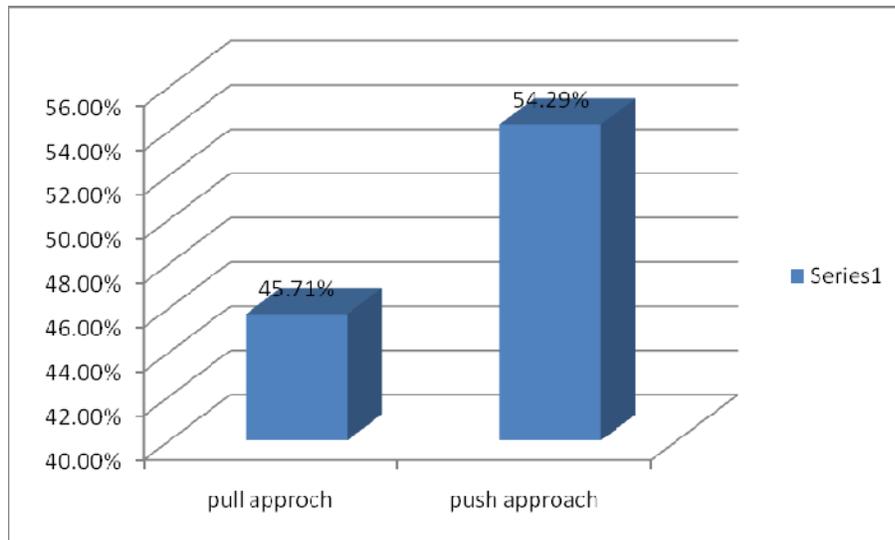
this indicates that there is a significant proportion not aware about the supply chain objective

The surveyed companies showed clearly that the customer is a part of the supply chain and must be taken in to account, 93% illustrated that the customer is an integral part of the supply chain, 7% said that the customer is not part of the supply chain.

In fact, the primary purposes of any supply chain are to satisfy customer needs and in the process generate profit. Supply chain moves the product in the following order: expanded chain, supplier, manufacturers, distributors, retailers and finally customers.

The results of the survey also showed that 53% of the companies executing the order in response to anticipation of customer order, which is a push approach to produce the production initiated and performed in anticipation of customer orders.

At the same time, 47% of the surveyed companies showed that they are executing the orders in response to customer orders, which is pull approach to produce the production initiated and performed by customer order, the chart 4.4 displayed the results:



**Figure 4.4: Production process approach**

Companies adaptation of the pull or push approach must be based on studies, interoperations, and kind of product produced by the company. Push approach shall be based on forecasting studies to achieve the desired objective, subsequently satisfying the customer to attain the maximum surplus. The survey results showed that 77% of the surveyed companies rely on forecasting and previous studies.

When the surveyed companies were asked directly about the time frame of making the decisions and its impact on company success, all of the surveyed companies said that taking the decision into phases plays significant role in the success or failure of a firm.

All the above concluded results have been attained from answers submitted by the respondents. They were answered through direct questions, that were presented on the questionnaire. In order to check the reliability of the

surveyors answers, the attained data will be analyzed statistically, with hypothetically based data analysis. Furthermore, statistical analysis tools will be used to analyze data used to formulate results.

The first tested hypothesis states that the production plans were not based on forecasting studies to achieve the desired objective, subsequently will not satisfy the customer to attain the maximum surplus. According to the data from the questionnaire findings, the companies assured that they prepare productions plan according to previous studies and forecasting, but actual observations of the researcher; local companies do not prepare production plans according previous studies and forecasting.

Chi Square analysis was used as a tool to check relations between two different question or factors and distinguish whether it is dependent or independent. the Chi Square analysis and results have been attained directly from the used software (questionpro), the online survey software facilitated the work of analysis and can give immediate results

After statistical analysis for two questions are supposed to be related, by using a Chi Square test, Table 4.1 shows there is relationship between the two question, which is mean that the two tested question dependent on each other.

**Table 4.1: Chi Square to investigate the relation between the background of production plan and production approach**

<b>PEARSON'S CHI-SQUARE TEST</b>	
<b>First Variable</b>	Are productions plans prepared according previous studies and forecasting?
<b>Second Variables</b>	What are the bases that companies depend upon to prepare the production plan? Is it pull or push approach?
<b>Null hypothesis</b>	Two variables are independent
<b>Adverse hypothesis</b>	Two variables are dependent
<b>Criteria</b>	If the pairs of variables are dependent, there is a relation to prove that the companies prepare its production plans according previous studies and forecasting. Where preparing plans according previous studies and forecasting is a prerequisite to rely push approach. If the pairs of variables are independent, there is a relation to demonstrate that the companies do not prepare production plans according previous studies and forecasting.
<b>Alpha level of significance</b>	5%
<b>Degree of freedom</b>	1
<b>Critical Value for Alpha</b>	3.841
<b>Chi square</b>	6.695
<b>Conclusion</b>	As chi square value (6.695) exceeds alpha critical value (3.841), then the null hypothesis can be rejected, so we can say that there is a dependency between the answers of two questions and that leads to say that the companies prepare its production plans according the previous studies and forecasting.

According to the results mentioned above, it was found that there is a significant percent of the surveyed companies that are aware of the supply chain management concept, but on the other hand there are results indicated to weakness in understanding of the supply chain essence. The

conflict in the results can be attributed to the concept and details we are asked about. When questioned about general issues the results reflected the companies awareness, where management function was practiced for long term. However when questioned about in depth issues, new concept, and details like supply chain management objectives and elements that should be managed through the supply chain and descriptive questions, the results proved a weakness in supply chain management understanding.

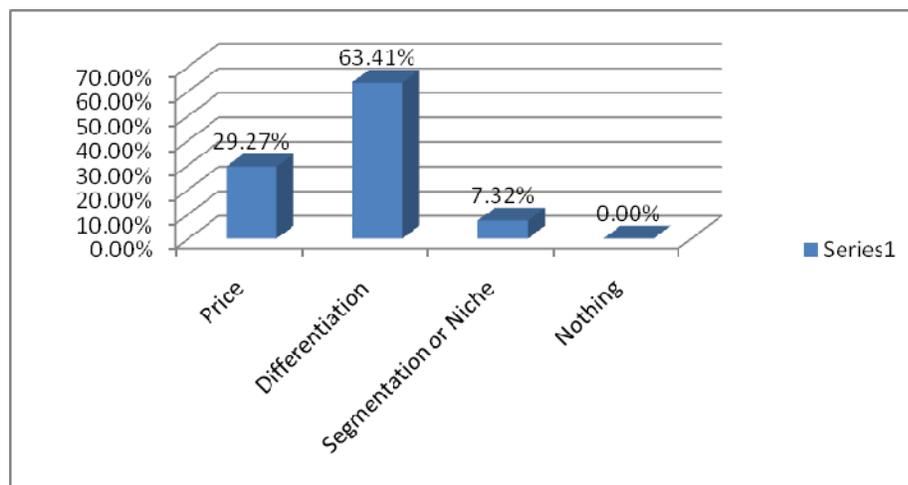
### **4.3 Theme (2): Competitive Advantage and Supply Chain Strategies**

The second key theme of the research is to explore the supply chain management strategy of the surveyed companies and its competitive strategy. Furthermore, to explore if there is strategic fit between the supply chain and its competitive strategy,

Company's competitive strategy considered relative to its competitors, the set of customer needs that it seeks to satisfy through its product, according (Porter, 1985) companies will compete in low price, product differentiation and focus group (segmentation strategy or niche). On the other hand, the supply chain strategy includes design decisions regarding inventory, transportation, operating facilities and information flow. Supply chain capability will support a desired fit, when relying on responsiveness or efficiency strategy.

The surveyed companies showed as presented in figure 4.5 that its competitive strategy are mainly based on the product differentiation where

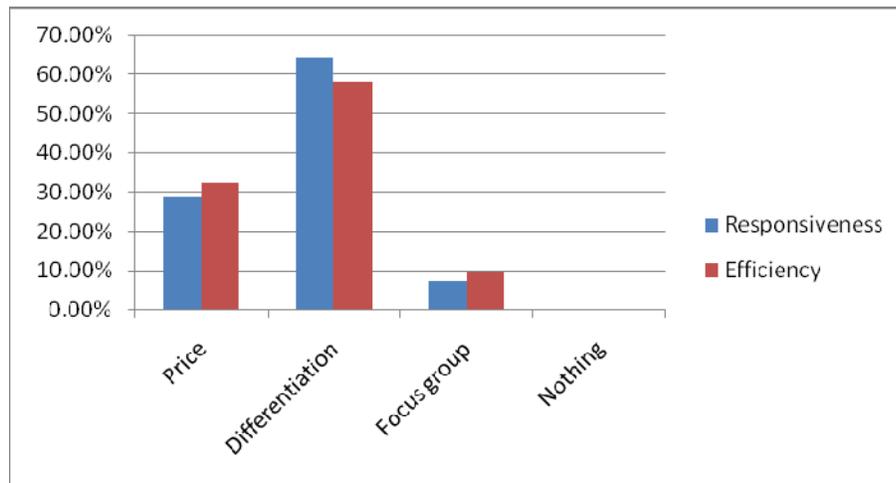
63% ascertain this, 30% of the companies said that the low price was their competitive strategy and 7% said segmentation strategy or niche strategy. But companies express an inclination to mixed strategy between product differentiation and low price, wherein 30 % illustrated this conclusion which can be interpreted from two perspectives, as companies seek to target different sectors, or they produce different types of products.



**Figure 4.5: Companies' competitive advantage strategy**

The survey results showed weak signs that there is a proper fit between a companies supply chain strategy and their competitive strategy. This means that both the competitive and supply chain strategies are not strategically aligned. Figure 4.6 display the results, whilst 64% of the respondents had said that the supply chain strategy at their companies is responsiveness said that the product differentiation is the competitive strategy of their companies in the market, 32% of those who had said that the efficiency is their supply chain strategy said the low cost is their competitive strategy. Moreover 58% of those who had said that the efficiency is their supply

chain strategy said the product differentiation is their competitive strategy, at first glance this conflicting data can be attributed to the existence of policies in the companies to produce some differentiated product, despite their reliance on a strategy to reduce the resources in the management of supply chain.



**Figure 4.6:** Strategic fit between supply chain strategy and competitive advantage

To exclude this possibility, the data above were searched in detail, the respondents surveyed were classified to whom answer only one strategy either responsiveness or efficiency, and to whom answer mixed strategy. Then the researcher looked at the first category at those who chose a unique strategy. It was apparent that the majority of the surveyed companies showed inconsistency between the supply chain strategy and the competitive advantage, and that they did not understand the required fit.

Other indication showed inclination to the strategic fit between the supply chain strategy and competitive advantage, respondents' answer on

question, “are customer needs taken in to account when making decision regarding the inventory location?” 86% of the respondents answered yes and only 24 % answered no.

The result attained that 86% take customer needs into consideration when deciding about warehouse location is a high degree of importance, where decision with respect to warehouse location considered strategic decision; these decisions falls in to the design category depending on the frequency of each decision and the time frame of decision impact. Warehouse location play significant role in design of the supply chain, companies must ensure that the chain configuration supports its strategic objectives and increase the supply chain surplus. This refers to company’s attitude to create consistency between customer priorities that the competitive strategy hopes to satisfy and the supply capabilities that the supply chain strategy aims to build, not a methodology along the extend supply chain.

The result above contributed to prove companies lack of understanding as to the importance of alignment and consistency between the supply chain management and it's competitive strategy. This result is exceeding the company’s level, to reach the rest of the supply chain; suppliers, distributors, retailers, and customer. This was determined by the responses given to the question concerning supply chain circles being aware of customers needs and how to work to satisfy those needs. It was found that a significant percent, (63%) of the respondents said no and only 37% said yes.

The former results indicate that the understanding of customer needs is not a considerable issue along the extended supply chain.

This result indicates that there is an effort to satisfy the customer, but inconsistency, adopting unclear vision among all circles of the supply chain, and working asynchronously to achieve the aligned goals do not reflect an overall understanding of the supply chain among all concern parties.

#### **4.4 Theme (3) Supplier relations**

##### **4.4.1 Supplier selected criteria**

The ranking of the supplier selection criteria employed by the companies in the surveyed companies are displayed in the Table 4.2 Conformance to technical specifications appears to be a winning factor for the supplier companies, where 61.0 % of the surveyed companies said that conformance to the technical specification is the top priority and the important criteria to select and deal with the supplier. A company relying on the conformance to technical specification as a top priority is indicating that respondents seek to produce good quality product in order to satisfy customer needs.

**Table 4.2: Ranking of the supplier selection criteria**

Ranking	Selection Criteria				
	specification	Price	Lead time	Quick com.	ISO
<b>A</b>	60.71%	28.57%	3.57%	3.57%	3.85%
<b>B</b>	17.86%	46.43%	28.57%	3.57%	3.85%
<b>C</b>	10.71%	21.43%	35.71%	25.00%	7.69%
<b>D</b>	7.14%	3.57%	25.00%	64.29%	0.00%
<b>E</b>	3.57%	0.00%	7.14%	3.57%	84.62%

On the other hand when surveyed companies asked to state the second most important criterion to select the supplier, 46% stated that price is the second most important, 36% stated that the delivery lead time is the third priority to select the suppliers, 64% stated that ease of communication the supplier is the fourth priority to select the supplier, 84% stated that supplier attaining to ISO certification is the fifth priority to select the supplier.

The aforementioned results regarding the supplier selection criteria validated by other way, each rank (classification) was given marks(weight), (A) classification was given 10 marks, (B) classification was given 7 marks.....etc. as in the Table 4.3 , for each criteria, the classification is multiplied by its weight, the summation of the results will be compared to rank the top priority. The biggest mark represents the top priority that the supplier will be selected upon.

**Table 4.3: Ranking of the supplier selection criteria**

<b>ranking</b>	<b>ranking weight</b>	<b>Price Voting</b>	<b>Price Marks</b>	<b>Spec Voting</b>	<b>Spec marks</b>	<b>Lead.T Voting</b>	<b>Lead.T marks</b>	<b>ease of com. Voting</b>	<b>ease of com. marks</b>	<b>ISO Voting</b>	<b>ISO marks</b>
<b>A</b>	10	8	80	17	170	1	10	1	10	1	10
<b>B</b>	7	13	91	5	35	8	56	1	7	1	7
<b>C</b>	4	6	24	3	12	10	40	7	28	2	8
<b>D</b>	2	1	2	2	4	7	14	18	36	0	0
<b>E</b>	1	0	0	1	1	2	2	1	1	22	22
			197		222		122		82		47

The findings indicate evolution in the mentality of the surveyed companies, where there is focus on considerable criteria to select the supplier consistent with shared goals, customer satisfaction by offering good quality product, where you can not submit good product without attaining raw materials from suppliers with good quality, all of this will be reflected on the supply chain as a whole and subsequently maximize the surplus.

There above findings are worth to reflect upon where it was found that 84% of the surveyed companies said that supplier attaining of ISO certification is the fifth criterion to select the supplier. This indicates that the surveyed companies do not require of suppliers comply with the certifications issued by international institutions, which in turn may reduce the networking opportunities with international companies and keep abreast of development on this front.

#### Reduction of the number of suppliers

The previous results displayed the criteria that should be relied upon to select the supplier, but what about the nature of the relation that must be built and the number of supplier who must deal with them to achieve the shared goals of all the supply chain circles.

The survey results show that 71.43% of the surveyed companies prefer to deal with more than one supplier specially for critical items in order to secure continues supply and to introduce price competition among these suppliers.

The high percentage in the result above, indicates that surveyed companies, for various reasons, have a strong tendency to deal with more than one supplier. The reasons for this are related to the nature of the relationship that is built between the companies and supplier, e.g. whether or not the relationship is based on trust and mutual benefit. The researcher believes that the relationship between companies and suppliers did not live up to the level required. There are subjective and objective reasons related to capabilities and abilities of the supplier in general, and the lack of resources in the Palestinian areas in addition to the restrictions imposed by occupation as will be explained in section 5.2.

The trend of the surveyed companies against a trend observed worldwide which has been the reduction of the number of suppliers. (Rommel, et al, 1995) provide an example of this trend their study among the machinery and component manufacturers has shown that successful companies have half the number of suppliers as compared to the less successful companies. This trend of reducing the number of suppliers was observed in Turkish companies. These companies sought system suppliers more than individual part and component suppliers. The trend towards system suppliers represents another policy of the manufacturers for reducing their number of suppliers. For suppliers to become a system supplier, they need to generate the resources required and to develop their own product design capabilities. Not every supplier of course is capable of becoming a system supplier. For such companies a survival strategy is to partner with other companies to

form a network of companies acting as a system supplier each contributing with its own capabilities.

#### **4.4.2 An evolution towards strategic partnership**

The results about the strategic relationship between the surveyed companies and the suppliers show that, The majority of the surveyed companies, around 86%, work to create strategic relationship with the suppliers, and 87% from these who said they work to create strategic partnership with supplier ensured they are planning and coordinating with suppliers to avoid some problems in the future, especially with regard to new product development.

The result which has been taken from another question, searching and dealing with the same issue, the relationship strategy between the companies and the suppliers was found to be drastically different. The 26% that said they work to create strategic partnerships with suppliers, ensured they are not providing the suppliers with information about the inventories or about the volume of sales.

Previous results may be misleading if viewed superficially, but upon in-depth inspection, it showed no conflict. The following reasons can rationalize this. First, high percentage of these who said "they are planning and coordinating with suppliers to avoid some problems in the future, especially with regard to new product." can be attributed for the planning and cooperation itself? Where any company desires to cooperate and seek

planning with partners? But when you go into details or what has been accomplished like information about the inventories you will find that a small percentage (26%) practice this activity which is fundamental to establish strategic relationship, so this high ratio shows that there is a desire to cooperation and joint planning.

The relationship between the companies and supplier has been taken from a different angle, when the surveyed companies were asked "is the company seeking to create a shared area and common understanding with the supplier then consensus on shared vision?, only 43% said they are aware of customer needs and work to fulfill it, and only 29% said they are sharing supplier with information about the inventories and volume of sales.

The results concluded above have been attained from the answers submitted by the respondents; they answered them from direct question on the questionnaire. In order to check surveyors answers reliability, the attained data will be analyzed statistically, data analysis based on some hypotheses; statistical analysis tools will be used to analyze data and getting the results.

The company's answers reliability with respect to supplier relationship will be checked through two hypotheses. The first tested hypothesis states that the companies did not seek to create strategic relationship with the suppliers, and companies did not work to create a common understanding

with the supplier then consensus on shared vision. According to the questionnaire findings, the companies ensure they work to create strategic relationship with suppliers, also the companies claim that they work to find common understanding and shared area with suppliers. However, actual observations of the researcher show that local companies do not work seriously to build strategic relationships with the suppliers, nor do they work towards common understanding and shared vision.

Chi Square analysis was used as a tool to check the two hypotheses; each hypothesis was tested by checking the relations between two different questions or factors and distinguishes whether it is dependent or independent.

After testing the first hypothesis by using a Chi Square test, statistical analysis for two questions that are supposed to be related, Table 4.5 shows there is no relationship between the two questions, which means that the two tested question are independent.

**Table 4.4: Chi Square to investigate the relation between  
company/supplier strategic relationships and their coordination to  
avoid future problems:**

<b>PEARSON'S CHI-SQUARE TEST</b>	
<b>First Variable</b>	Did the companies seek to create strategic relationship with the suppliers and go farther and farther in this relationship?
<b>Second Variables</b>	Are the companies planning and coordinating with suppliers to avoid some problems in the future, especially with regard to new product?
<b>Null hypothesis</b>	Two variables are independent
<b>Adverse hypothesis</b>	Two variables are dependent
<b>Criteria</b>	If the pairs of variables are dependent, there is a relation to prove that the companies work to create strategic relationship with the suppliers. Where planning and coordinating between the companies and suppliers are very important to build strategic relationship. If the pairs of variables are independent, there is a relation to demonstrate that the companies do not seek to build strategic relationship.
<b>Alpha level of significance</b>	5%
<b>Degree of freedom</b>	1
<b>Critical Value for Alpha</b>	3.841
<b>Chi square</b>	0.386
<b>Conclusion</b>	As chi square value (0.386) did not exceed alpha critical value (3.841), then the null hypothesis cannot be rejected, so we can say that there is a independency between the answers of two questions and that leads to say that the companies did not work to create strategic relationship with suppliers.

The result of testing the second hypothesis by using a Chi Square test also, statistical analysis for two questions are supposed to be related, , Table 4.5 shows there is no relationship between the two questions, which means that the two tested questions are independent.

**Table 4.5: Chi Square to investigate the relation between  
company/supplier common understanding and provided information  
to the supplier to keep him updated**

<b>PEARSON'S CHI-SQUARE TEST</b>	
<b>First Variable</b>	Is the company seeking to create a shared area and common understanding with the supplier then consensus on shared vision?
<b>Second Variables</b>	Are the companies providing the suppliers with information about the inventories or about the volume of sales?
<b>Null hypothesis</b>	Two variables are independent
<b>Adverse hypothesis</b>	Two variables are dependent
<b>Criteria</b>	If the pairs of variables are dependent, there is a relation to prove that the companies work to find common understanding and shared area. Where the companies cannot claim they work to find common understanding or shared area without share the suppliers with information's. If the pairs of variables are independent, there is a relation to demonstrate that the companies do not seek to find shared area and establish common understanding.
<b>Alpha level of significance</b>	5%
<b>Degree of freedom</b>	1
<b>Critical Value for Alpha</b>	3.841
<b>Chi square</b>	0.798
<b>Conclusion</b>	As chi square value (0.798) did not exceed alpha critical value (3.841), then the null hypothesis cannot be rejected, so we can say that there is a independency between the answers of two questions and that leads to say that the companies did not work to find common understanding and establish shared area.

According to the results mentioned above, the researcher believes that there is coordination at low level and limited on daily basis, but there is no joint value generation aims at providing benefits to both the companies and suppliers in short and long terms. It is based on the premise that collaborating with the suppliers to improve their operation can reduce purchasing cost. Purchasing cost includes not only the purchasing price but all the other cost incurred due to uncertain deliveries and further due to handling defective parts and component being supplied and even worse, used in manufacturing process. As a result of joint value generation, the purchasing cost is reduced for the manufacturer and manufacturing cost is reduced for the supplier putting it into a more advantageous position than before even if it's selling price is reduced.

A form of strategic partnership to be emphasized here is one where the partnership is based on complementary knowledge and capabilities leading to supply of system. It can answer the need of reducing the number of suppliers and thus the complexity of the purchasing process for the purchasing company. Such partnership aimed at the end product can lead to increase in the added value and in the sales for such products,

Strategic partnership involves long term relation based on mutual trust. Information sharing is essential for proper coordination of the supply chain, particularly in reducing the uncertainties involved around order level and schedules. Reduction in uncertainties leads to improvements in the inventory positions of both parties and thus to cost savings for both parties.

## 4.5 Theme (4) Customer relation

Meeting customer requirements and expectation is a broad indicator of customer satisfaction. Customer relationship encompasses the all practices that are employed for the purpose of managing customer complaint, building long term relationships with customer and improving customer satisfaction.

### 4.5.1 Customer relationship management

The surveyed companies answered clearly that they are working to satisfy the customer as shown in table 4.6.

**Table 4.6: Company customer relationship management**

#	Question	Yes %	No %
5.	Does the company work to satisfy the customer even it requires modifying the products or change it?	85.71	14.29
6.	Does the company measure customer satisfaction continuously?	89.29	10.71
7.	Does the company service after the sale?	71.43	28.57
8.	Is the company seeks to take the feedback regarding products and a variety of sources?	96.30	3.7
9.	Is there a specific mechanism to receive complaints?	78.57	21.43
10.	Does the company work to create long-term relationship with customers and achieve customer loyalty for the products?	88.89	11.11
11.	Is the product design and arrange production processes so as to achieve a quick response to customer and lower costs to the company?	96.3	3.7

The high ratios that have appeared in the results above indicate that high attentions are paid to the customer needs and the customer is a top priority,

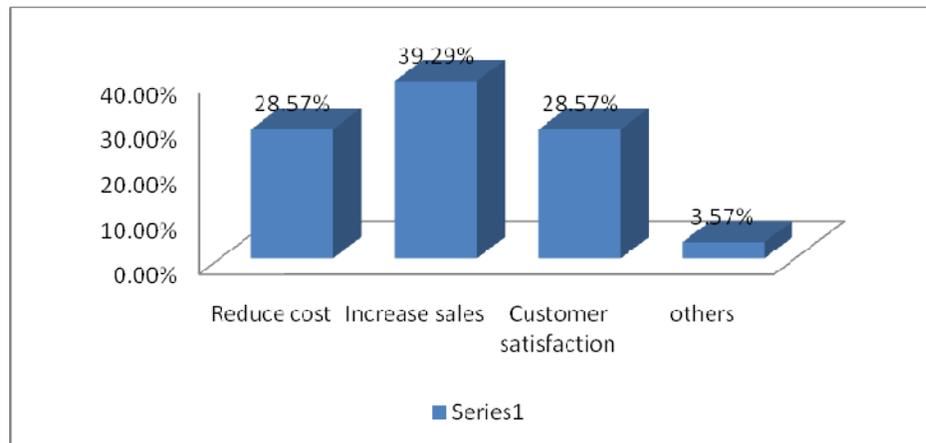
where the production according customer desire, customer opinion taken into consideration during production process, and he is asked after the service about his satisfaction. So this strong performance toward customer needs must form tendency to aggregate efforts to create a straight line towards the main goals, which is called the strategy

But is this the real situation, Chi Square test presented in Table 4.7 shows there is no relationship between the two questions, which means that the two tested questions independent.

**Table 4.7: Chi Square to investigate the relation between company's actions to establish long term relationship with the customer and efforts to satisfy the customer**

<b>PEARSON'S CHI-SQUARE TEST</b>	
<b>First Variable</b>	Do the companies work to establish long term relationship with the customer and seek for customer loyalty?
<b>Second Variables</b>	Do the companies work to satisfy the customer desire even if they need to modify their products or change it?
<b>Null hypothesis</b>	Two variables are independent
<b>Adverse hypothesis</b>	Two variables are dependent
<b>Criteria</b>	If the pairs of variables are dependent, there is a relation to prove that the companies work to establish long term relationship with the customer and seek for customer loyalty. Where establishing long term relationship and achieving customer loyalty need serious effort in customer satisfaction and working according mass customization. If the pairs of variables are independent, there is a relation to demonstrate that the companies do not seek to build long term relationship.
<b>Alpha level of significance</b>	5%
<b>Degree of freedom</b>	1
<b>Critical Value for Alpha</b>	3.841
<b>Chi square</b>	0.422
<b>Conclusion</b>	As chi square value (0.422) did not exceed alpha critical value (3.841), then the null hypothesis cannot be rejected, so we can say that there is an independency between the answers of two questions and that leads to say that the companies did not work to establish long term relationship with the customer and seek for customer loyalty.

In addition to the result in Table 4.7, as indicated abstract ratios when the question directly? .The surveyed companies have been asked the question in different way by linking the mechanism to achieve the strategic goals with managing the relationship with customer, the observations were as displayed in the figure 4.7:



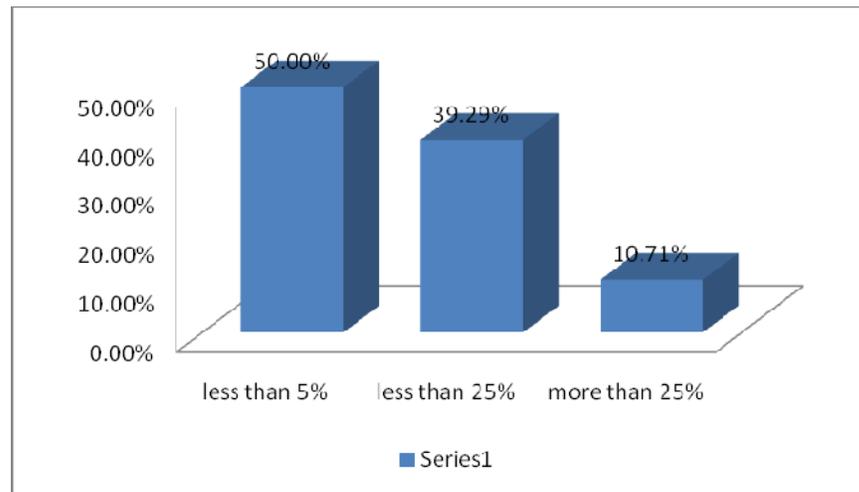
**Figure 4.7:** Mechanism to achieve the strategic goals with managing the relationship with customer

Although, 29% of the surveyed companies declared that customer satisfaction is the main priority for the company to achieve its strategic goals. Customer satisfaction was ranked as the second priority to achieve the strategic goals proceeded with expanding the company sales volume. This result indicates that the surveyed companies pay medium attention to the customer needs to achieve the strategic goals, which demonstrate that there is awareness and knowledge of the payoff of customer satisfaction, such as increasing the market share and maximizing the surplus, but not relying customer satisfaction as a tool to drive companies strategic goals.

#### **4.5.2 Delivery performance on time & in full**

Delivery is the most widely used performance indicator in measuring delivery performance. It is defined as the percentage of time a company delivers the orders at the right quantities and the right time to its customer,

the observations in the chart below demonstrate that, nearly 40 % of the surveyed companies declared that they failed to fulfill between 25% to 5% of the customer orders, and 50% failed to fulfill less than 5% of the customer orders, 11 % failed to fulfill more than 25% of the customer orders.



**Figure 4.8: Delivery fulfillment performance**

If we take abstract look to the result mentioned above, especially to the extreme ratio, 50% failed to fulfill less than 5% of the customer orders, which means that at least 95 % of the customer orders have been fulfilled; it sounds an acceptable level of services being submitted by the Palestinian companies compared with available abilities and condition of the Palestinian companies.

In the same context the researcher investigated if the companies seek to enhance its performance with respect the delivery fulfillment, Chi Square

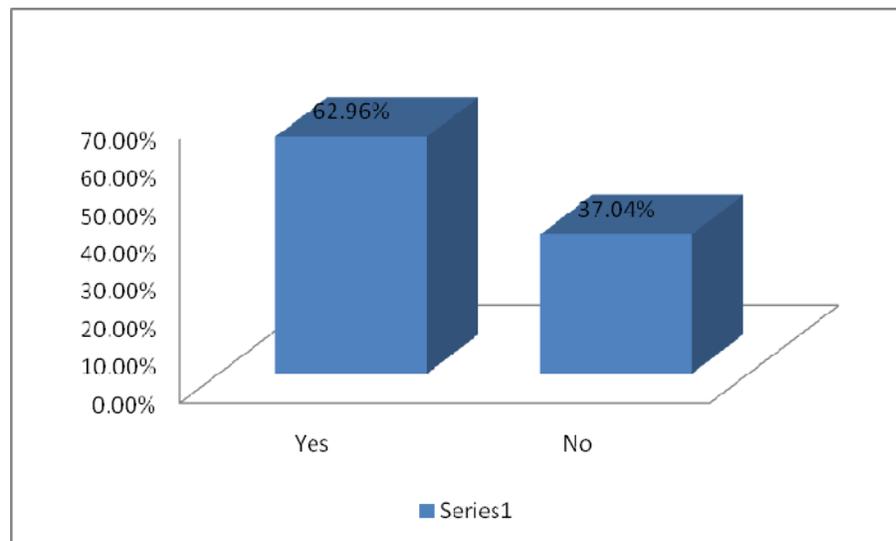
test in Table 4.8 shows there is not relationship between the two question, which is mean that the two tested question independent on each other.

**Table 4.8: Chi Square to investigate the relation between the percent of orders that companies failed to meet and companies working to get feedback**

<b>PEARSON'S CHI-SQUARE TEST</b>	
<b>First Variable</b>	What is the percent of orders that companies failed to meet regardless of cause?
<b>Second Variables</b>	Do the companies work to get feedback about the products from different sources?
<b>Null hypothesis</b>	Two variables are independent
<b>Adverse hypothesis</b>	Two variables are dependent
<b>Criteria</b>	<p>If the pairs of variables are dependent, there is a relation to prove that companies working to communicate others, and live among the audience to attain real quick feedback, useful feedback will be reflected on orders failed percent. Where companies active feedback will be better in meet customer orders, subsequently the percent of failed orders in lowest level.</p> <p>If the pairs of variables are independent, there is a relation to demonstrate that the companies do not work to get feedback in order to reduce failing in fulfilling customer orders.</p>
<b>Alpha level of significance</b>	5%
<b>Degree of freedom</b>	2
<b>Critical Value for Alpha</b>	5.991
<b>Chi square</b>	1.510
<b>Conclusion</b>	As chi square value (1.510) did not exceed alpha critical value (5.991), then the null hypothesis cannot be rejected, so we can say that there is an independency between the answers of two questions and that leads to say that the companies did not work to establish mechanism to get the useful feedback.

### 4.5.3 Customer personalized services

Customer personalized services or mass customization considered core component of the customer relationship management, customer relationship management is an important component of the supply chain management practices. The results of the questions directed to the surveyed companies showed growth of mass customization and personal services which is leading to stage in which relationship management with customer is becoming crucial for companies survival, the results displayed in figure4.9.

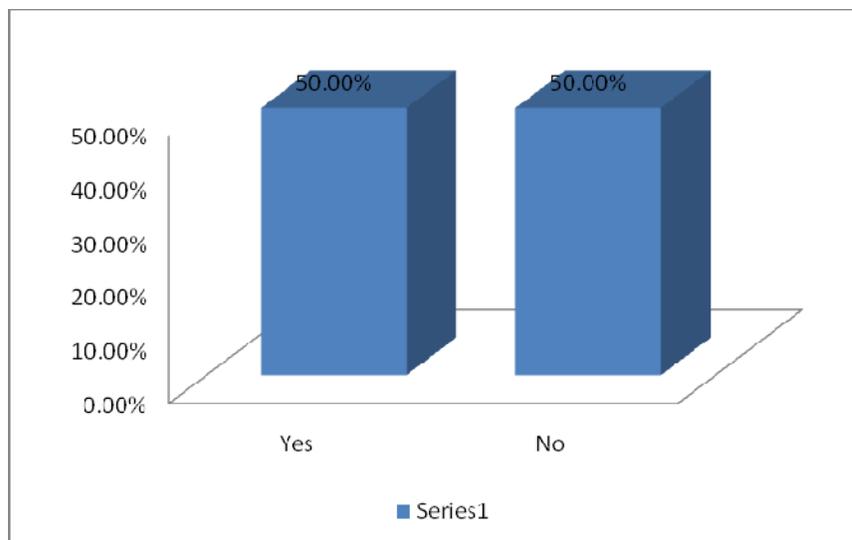


**Figure 4.9: Company's using of customer desire information to provide individual customer needs**

The ratios of the results above are considered high and indicate that there is tendency to satisfy the customer and manufacturing according customers desire, but when descriptive question directed to the surveyed companies,

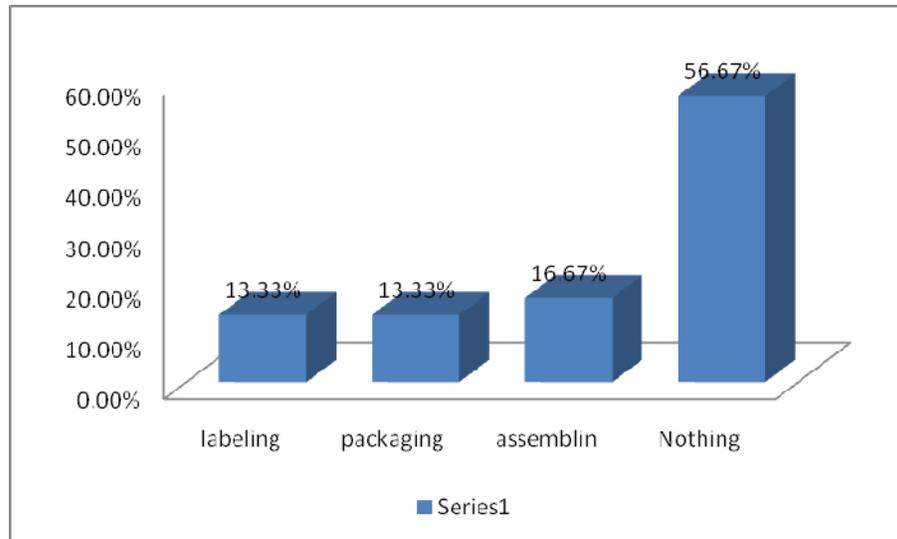
the answers were divided into two main categories, part of the companies which are formed 55% left the blanks without filling, and the second part did not mention considerable action to manufacture according customers desire. The weakness in understanding of mass customization which has appeared in the previous ratio was supported by directing question about postponement.

Where postponement is defined as the practice of moving forward one or more operation or activities to much later point in the supply chain, the postponement entails delaying activities that determine the form and function of the product in the chain until customer orders have been received like labeling, packaging, and assembling. The result displayed in Figure 4.10, shows the percent of the survey companies that can apply the postponement on their product.



**Figure 4.10: Application of (postponement)**

On the other hand when question about the form of postponement has been directed to the surveyed companies, the result in Figure 4.11 reinforced the pervious result, where 57% of the surveyed companies declared they did not apply any form of the postponement on produced products.



**Figure 4.11: Used postponement form**

The postponement allows companies to execute customization effectively, where the company can be flexible in developing different versions of the product in order to meet changeable customer needs, and differentiate product. Companies do not apply the postponement effectively, and even not adopting this managerial tool will not keep materials undifferentiated for long as possible to increase company's flexibility in responding to uncertainties, so the companies will not submit personalized services that incurred significant surplus, the two table Chi Square test, statistical analysis for two questions are supposed to be related, Table 4.9 and 4.10,

show there is no relationship between, which means that the two tested questions independent Therefore the company should work to use postponement tool to enhance its services.

**Table 4.9: Chi Square to investigate the relation between production process arrangement and the effect of the postponement**

<b>PEARSON'S CHI-SQUARE TEST</b>	
<b>First Variable</b>	Are the product design and production process arrangement conducted so as to achieve a quick response to customer and lower costs to the company?
<b>Second Variables</b>	Can the application of postponement on any of the company product increase company's effectiveness?
<b>Null hypothesis</b>	Two variables are independent
<b>Adverse hypothesis</b>	Two variables are dependent
<b>Criteria</b>	If the pairs of variables are dependent, there is a relation to prove that companies work to design products and arrange the production process in order to achieve a quick response to customer and lower costs to the companies, where activation management tool as postponement certainly will enable the companies to arrange production process in to phases in order to achieve quick responses as well as lower costs to the companies. If the pairs of variables are independent, there is a relation to demonstrate that the companies do not work to design the products and arrange the production process to achieve quick response.
<b>Alpha level of significance</b>	5%
<b>Degree of freedom</b>	1
<b>Critical Value for Alpha</b>	3.841
<b>Chi square</b>	1.128
<b>Conclusion</b>	As chi square value (1.128) did not exceed alpha critical value (3.841), then the null hypothesis cannot be rejected, so we can say that there is an independency between the answers of two questions and that leads to say that the companies did not work to establish mechanism to get the useful feedback.

**Table 4.10: Chi Square to investigate the relation between manufacturing according customer desire and the application of postponement**

<b>PEARSON'S CHI-SQUARE TEST</b>	
<b>First Variable</b>	Do the companies tend to manufacture according customer desire in any products, achieving personalized services and mass customization?
<b>Second Variables</b>	Can the application of postponement on any of the company product increase company's effectiveness?
<b>Null hypothesis</b>	Two variables are independent
<b>Adverse hypothesis</b>	Two variables are dependent
<b>Criteria</b>	<p>If the pairs of variables are dependent, there is a relation to prove that companies work to fulfill customers needs according the customer personal perspective and his desire design in order to achieve mass customization, where activation management tool as postponement certainly will able the companies to produce products and submit services according customer personalized point view.</p> <p>If the pairs of variables are independent, there is a relation to demonstrate that the companies do not work to produce products according customer desire to achieve mass customization.</p>
<b>Alpha level of significance</b>	5%
<b>Degree of freedom</b>	1
<b>Critical Value for Alpha</b>	3.841
<b>Chi square</b>	0.520
<b>Conclusion</b>	As chi square value (0.520) did not exceed alpha critical value (3.841), then the null hypothesis cannot be rejected, so we can say that there is an independency between the answers of two questions and that leads to say that the companies do not work to produce products according customer desire to achieve mass customization.

#### **4.6 Findings and conclusions**

After analyzing the gathered data, the results of the analysis answered the research question in section 3.2.2, “What are the gaps between applied supply chain management in Palestinian companies, and the theoretical and practical global concepts used in successful world companies?” The research results were also congruent with the hypotheses in section 3.2.1, which raised that research question. According to survey data, the key findings and the gaps in practice were:

- There is weakness in supply chain management understanding among the Palestinian companies.
- The supply chain management in the Palestine suffers from weakness in strategic design.
- There is not strategic fit between the supply chain strategy and company’s competitive strategy?
- Company’s relationship with its supplier needs to be developed.
- Customer relationship management suffers from weaknesses.

The findings above answered the first question of the research and emphasized that the research hypotheses are valid, consequently, there is a need to develop a conceptual framework for the Palestinian companies to enhance its practice of the supply chain management system in order to answer the second question of the research. The developed framework will be discussed in chapter 5.

## **Chapter 5**

### **5 Framework**

#### **5.1 Introduction**

A supply chain is a network of facilities that procure raw materials, transform them into intermediate goods and then final products, and deliver the products to customers through a distribution system. All companies, large and small scale, manufacturers and service providers, depend on successful supply chain to help satisfy their customers. The performance of the supply chain should be measured according metrics to assure continuous improvement, reduce costs, and increase customer satisfaction.

Understanding the relationship between supply-chain management practices and supply chain performance becomes increasingly important. The Supply-Chain Operations Reference (SCOR) model developed by the Supply Chain Council provides a framework for characterizing supply-chain management practices and best processes performance. The SCOR model investigates the relationship between supply-chain management functions and supply chain performance based on the four decision areas (PLAN, SOURCE, MAKE, DELIVER).

In 1996, the Supply Chain Council became an independent, not-for profit professional association, and the SCOR model was attributed to it. (Cohen, et al, 2005) stated that Since launch of the SCC, the council has grown, establishing international chapters in Europe, Japan, Australia/New Zealand, Southeast Asia, and southern Africa, in addition to North America. Members have continued to advance the SCOR model, adding the return process in 2001 and periodically updating recommended practices and metrics. We expect that the model will continue to evolve as the “science” of supply chain management advances (Cohen, et al, 2005) added that the SCOR model is not the only framework of its kind for developing a supply chain, other models have emerged that focus on industry-specific practices and implementation level detail, such as data standards. Two such initiatives that have been adopted widely in recent years are Collaborative Planning, Forecasting, and Replenishment (CPFR) and RosettaNet. improve the partnership between retailers and vendor merchants through shared information.

the RosettaNet consortium Formed in 1998, is composed mainly of companies in the electronics and telecommunications industries and is managed by the Uniform Code Council, a leading commerce standards organization. RosettaNet develops Internet-based business standards to align processes through standard data definitions called partner-interface processes (PIPs). Widely adopted by the technology sector, PIPs support automated real-time information exchange between companies and cover a

broad range of transactions, including inventory management, order management, and ship from stock.

The supply-chain operations reference model (SCOR) is the first cross-industry framework for evaluating and improving enterprise-wide supply-chain performance and management. The result of huge efforts by 70 world-class manufacturers, SCOR provides standard process definitions, terminology and metrics. It will enable companies to benchmark themselves against others, and influence future applications development efforts to ensure fit with manufacturers' needs. The process reference model concept is the extension of business process re-engineering and other process improvement efforts. SCOR, which is structured in four levels, is based on a plan, source, make, deliver framework

The researcher will rely on concepts submitted by (Cooper, et al, 2005) and on the SCOR model to develop the framework, focusing on the weaknesses which appeared in the data analysis results. The research will investigate the major issues that SCOR based on, business strategy, competitive strategy and supply chain strategy. These major concepts will be research study and take more consideration through applying the SCOR model. Before displaying the generic framework the following titles show what is SCOR according supply chain council source.

The research generic framework designed to fit with the research business environment which has some special constraints. Based upon Palestinian

business environment constraints, the research develop the framework phases which developed based on supply chain operation reference model(SCOR) established by supply chain council (SCC) 1996, and (Chopra, et al, 2001) concept.

## **5.2 Palestine business environment constraints**

According to a research reported by United Nations Conference on Trade And Development (UNCTAD) in July 2004 (UNCTAD secretariat, 2004), and according to observations and some formal meeting discussions in PADICO, many factors may influencing Palestine enterprises growth, in the same time those factors can be considered as a limitations which affecting that enterprises' work, all of that limitations have to take into account among managing the supply chain to be more effective and to achieve the supply chain management systems. In this section the researcher will entail the major factors as it was introduced by the UNCTAD report.

### **5.2.1 Location**

The political division of the Palestinian territory into Region A, Region B, and Region C, is one of the most important factors that constitute an obstacle when taking decisions to choose the right places for any industrial enterprise that because of special regulations that controls each region, these regulation mostly affecting the availability and accessibility of

infrastructure, water and sewage networks, electricity, roads, and advertisements and signs.

In addition to that, proximity to the local markets considered as a major factor that influencing location choosing decision. Also proximity to Israel which is the Palestinian enterprises' main trading partner and source of supply inputs, and the imposition of prohibitive transaction costs facing Palestinian traders in view of the restrictive Israeli security measures and the cumbersome customs and overland transport procedures at the main borders seems to be one of the important factors that affecting location choosing decision.

### **5.2.2 Subcontracting arrangements**

Subcontracting arrangements, which are often relied upon to facilitate the transfer of technology to enterprises in developing countries, have generally been detrimental to the growth of Palestinian production companies. As shown earlier, the majority of Palestinian production enterprises are engaged in subcontracting arrangements with Israeli enterprises, resulting in the diversion of their backward and forward linkages towards Israel, which are the main source of input supplies, machines and equipment, trade credit and outlets for products. Furthermore, Israeli firms have been setting the limits for the development of these enterprises' production capacity and experience in industrial management, restricting their production processes to labor- intensive

activities. This has contributed to the impoverishment of those industrial bases, especially these enterprises, which are supposed to spur technological progress, are underdeveloped.

This contrasts with the experience of other developing countries, where subcontracting arrangements have played an important role in improving such enterprises performance. In particular, these arrangements have provided enterprises with access to modern production technologies and exposed them to international best practices, in addition to extending their outreach by incorporating them into international networks of producers and traders who form a complete marketing and production cycle for particular products.

### **5.2.3 Source of finance**

Most of Palestine production companies rely on personal savings to cover their start-up and operating costs. Bank loans are the second source of finance and it can't be considered as an important source of finance for Palestine production companies; that due to the uncertain condition which not encourage bank lending. Moreover, in the absence of formal land registration, most enterprises fail to meet banks' collateral requirements, since these are based on real estate mortgages. The PA is yet to complete the registration of the lands under its jurisdiction, making it difficult for many enterprises to legally prove their ownership. Moreover, enterprises find the application procedures complex and the interest rates are high.

Based on that, Palestine production enterprises may rely on other financing sources, particularly moneylenders, leasing and suppliers' credit loans. Some enterprises also make use of market finance (equity issues and bonds), but this is organized through informal channels, since they are not listed on the Palestinian stock market.

#### **5.2.4 The legal framework**

The absence of a comprehensive legal framework regulating economic transactions can be considered as one of the special constrain in Palestine business environment. Despite the considerable progress made in developing it, the Palestinian legal framework remains weak, lacking the key laws for ensuring a conducive business environment. The Palestinian Legislative Council (PLC) is yet to issue such key laws as: Capital Markets Authority Law, Income Tax Law amendments, Chambers of Commerce Law, Insurance and Securities Law, Competition Law, Foreign Trade Act, Intellectual Property Law, and Customs Law. At present, the legal framework for economic activity consists of a combination of different legal codes, including Israeli military orders, in addition to outdated Ottoman, British, Jordanian and Egyptian laws. Moreover, the PA has yet to institutionalize the separation of executive and judicial powers and develop its court system, which lacks experienced judges.

### **5.2.5 Natural resources and power resources**

The scarcity of natural resources available to the Palestinians under the Oslo agreements stands as a major impediment to industrial development. At present, the PA's jurisdiction is restricted to 80 per cent of the Gaza Strip, the town of Jericho and 3 per cent of the rest of West Bank areas, excluding Jerusalem. These areas are characterized by geographic discontinuity, with the Gaza Strip totally isolated from the West Bank areas by Israeli control of routes.

Water resources available to the Palestinians during the interim period have been limited, notwithstanding a transitional agreement to increase water quotas allocated to Palestinian areas. This is due in particular to the fact that Israel has not fulfilled its commitment to allocate 28.6 million cubic meters of water per year to the Palestinians during the interim period, though the occupied Palestinian territory's water needs are estimated at 70-80 million cubic meters per year. In the Gaza Strip, excessive tapping of the aquifers has led to seawater leakage, rendering the water brackish. Meanwhile, the process of desalination, which stands as the only option for solving water shortages, is prohibitively expensive for most, if not all, enterprises.

Moreover, the occupied Palestinian territory is not endowed with natural gas, despite the recent discovery of commercially viable gas fields in the Gaza Strip, and it has yet to develop an electrical grid of its own. It is

therefore heavily dependent on neighboring countries, particularly Israel, to satisfy local demand. This has increased production costs for industries that also lack three-phase electric power, which is important for the use of heavy electrical equipment.

### **5.2.6 Market limitations**

In general, Palestine markets suffer from many weaknesses that have to be taken into account, such as the local market size is small and limited, there is a barrier between West Bank and Gaza strip markets, exports to neighboring countries and foreign countries have many limitations, and others.

The supply chain management concepts developed to satisfy customer desire and to enable the company to carry out its duties perfectly, supplying the raw materials from qualified suppliers, less manufacturing defects, delivering the production at the right time and in the right place. Palestinian companies in course of applying the supply chain endeavor to achieve its goals. However, Palestinian environment, as mentioned in the previous sections, imposes difficulties to select the supplier that companies want, due to restriction inside Palestine (importing and exporting restrictions due to the Israeli occupation).

The Palestinian business environment is not encouraging in terms of investing in technology to enhance company's capability in manufacturing due to market limitation and changeable political situation. The research

aims to emphasize that to implement success supply chain in the Palestinian environment, an in-depth look should transform the limitations and alleviate the restriction in order to drive and apply supply chain management system

### **5.3 Generic Supply chain Management Framework**

#### **5.3.1 Overview**

The Palestine companies like all companies cannot be competitive if it continues to operate randomly disorganized, as independent elements without appropriate integration between its functions, and without clear vision; the research will develop generic framework to overcome the gaps appeared in the analysis results which are:

- There is weakness in supply chain management understanding among the Palestinian companies.
- The supply chain management in the Palestine suffers from weakness in strategic design.
- There is not strategic fit between the supply chain strategy and company's competitive strategy?
- Company's relationship with its supplier needs to be developed.
- Customer relationship management suffers from weaknesses.

To guide the companies for successful supply chain management, and based on supply chain operation reference model(SCOR), as mentioned in

section 5.1, the research will develop framework to overcome the addressed gaps.

The SCOR model has four levels, processes, sub processes, and activities and operable processes, or level 4. level 4 is detailed workflow-level tasks and is always customized to an organization's specific strategy and requirements, level 1 and ending with level 3, the content of the SCOR model can be used to translate business strategy into a supply chain architecture designed to achieve specific business objectives.

### **SCOR Level 1**

At level 1, the company confirms how business processes will align with the high level business structure (business units, regions, etc.) and supply chain partners and refine the supply chain's strategic objectives, the business priorities that the supply chain must support. Level 1 focuses on the five major supply chain processes (plan, source, make, deliver, and return). Using these processes, the alignment between process and organizational domains can be established to describe where processes must be standardized across entities. Level 1 decisions also will determine whether an organization will be able to implement certain business practices.

## **SCOR Level 2**

At level 2, the company refines the choice of supply chain processes and confirms how supply chain processes align with company's infrastructure (physical locations and information technology). For this, level 2 called configuration level; level 2 involves developing and evaluating high-level options for the supply chain process architecture by choosing the “flavors” of plan, source, make, deliver, and return. This is done by selecting the relevant sub processes, based on company supply chain strategy; the selection of process categories will drive level 3 design where each category requires very different detailed activities.

## **SCOR Level 3**

SCOR level 3 is also called the process-element level; this is where the company can complete its supply chain architecture by adding operational detail to SCOR level 2 design. Within SCOR level 3 the company will find specific business practices, associated metrics, the company will develop maps illustrating the alignment between processes, locations, and organizations. These maps will show where inventory is located, the lead times between process elements, and the alignment between process elements and supply chain information systems.

Based on the appeared gap, and the SCOR framework, the research proposed framework to tackle the Palestinian state, taking in to account the following points to customize the SCOR model:

- Simplifying the SCOR levels to be applied in the Palestinian environment.
- Omitting the fourth level from the SCOR levels, because it is a detailed workflow-level task and always customized to an organization's specific strategy and requirements.
- Adding competitive advantage level, which is extracted from the level 1 to clear the link between the business strategies level (SCOR level 1) and supply chain strategy (SCOR level 2).
- Adding level four to translate supply chain strategy, showing how this will affect suppliers and customers, in order to overcome the gaps appeared in the company relationships with suppliers and customers.

From the analysis results, which indicate that the gap in Palestinian companies understanding, deep, and reach to strategic matters as well as details, the research intends to develop framework focusing on the key concepts, and dealing with daily details. The proposed framework starting from a point essential for the success of any business, start from strategic issues to the tactics issues. The proposed framework deal with the Palestinian state from macro level to micro level, consists of four major levels, the business strategy level, competitive advantage level, supply chain strategy level, and strategy translation level.

Level one is formulating a strategy and deciding what the objectives of the business are, understanding where the business is now, externally and

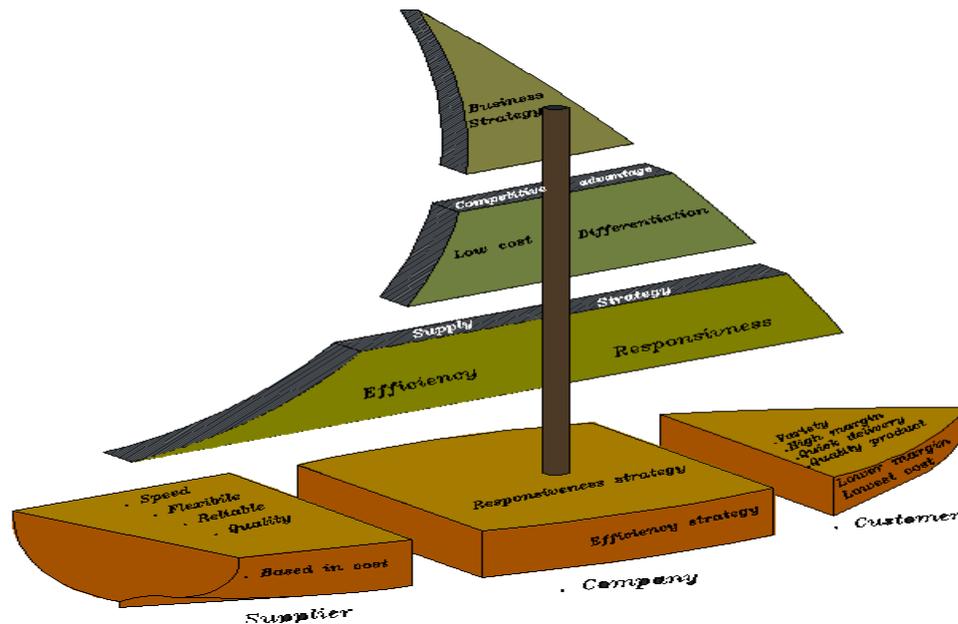
internally, in terms of its resources and competencies, in this level the company should set objectives for the business in terms of where it wants to be, in order to continue towards the future. This level is top priority to get start, and the company can not be successful in any aspect, with out draw its future by set the strategy.

Level one stated what the company wants, but how to get there, the research proposed Level two, to clear what should the company does to attain competitive advantage, to achieve successful supply chain management. The business strategy will help the company maintain an advantage over its competitors. The company should work to attain competitive advantage to achieve successful supply chain management.

Level three will set the strategies to maintain the competitive advantage, and to make sure that the supply chain strategies aligned with the competitive advantage, showing the interaction between the competitive advantage and the supply chain strategy to achieve business goal. Level three intends to structure the supply chain over the next several years, it decides what the chains form will be, how resources will be attained, and what processes each stage should execute.

Finally, level four explain the role of the physical infrastructure and supply chain function process to implement the supply chain strategy whether responsiveness or efficiency. In this stage, the company shall refine the choice of supply chain processes and confirms how supply chain processes

align with infrastructure, reflecting this on the relationship on the suppliers and customers.



**Figure 5.1: Conceptual framework**

This framework can be used by company's executives and practitioners to improve their capability to reduce costs, quick fulfillment, and customer satisfaction. The framework can assist them in analyzing, designing, and controlling their supply chain management. For educators and those engaged in research, the framework identifies opportunities for greater exploration and the discovery of additional foundations to develop the comprehensive management system.

### 5.3.2 Business strategy:

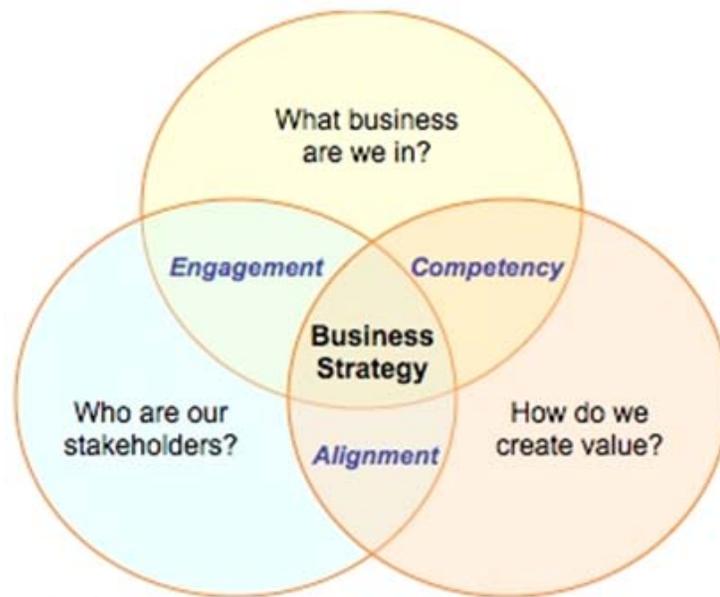
The starting point of the framework is formulating a strategy, deciding what the objectives of the business are, and developing an overall strategy for how they should be achieved within the business environment. This

should be done by taking advantage of the company's resources and core competencies, Strategy formulation then needs to follow a process that includes, according Figure 5.2:

- Understanding where the business is now: externally - in terms of its markets, customers, competitors and general business environment - and internally, in terms of its resources and competencies (SWOT Analysis).
- Setting objectives for the business in terms of where it wants to be - in order to continue towards the future, the company should thrive and grow according to its supply chain compass (Vision Statement and Mission Statement).
- Developing strategies and tactics for the business as a whole - and the different functions within it in order to achieve these objectives (Planning Strategy).

A company's business strategy is determined depending on answers to a series of 'how' questions: How does management intend to grow the business? How will a loyal clientele be built and compete rivals? How will each function piece of the business operate, including research and development, supply chain activities, production, sales and marketing, distribution, finance and human resources? How will performance will be boosted.

The idea of the business strategy is to make sure that the company maintains organization in every aspect of the business and is prepared for any and all situations whether they are positive or negative to the company. It is also important to maintain the strategy so that the business is always ready to compete with its competitors.



**Figure 5.2: Business strategy formulation (business strategy fundamental 2008)**

The starting with Preparing the business strategy will help the company maintain an advantage over its competitors and become organized for any unexpected situations and will maintain the supply chain directed.

### **5.3.3 Competitive advantage:**

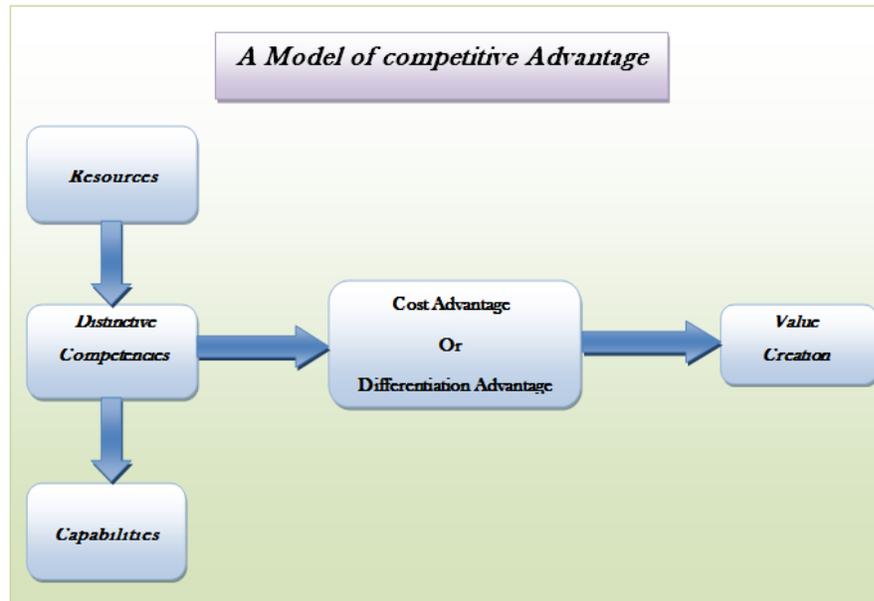
The business strategy will help the company maintain an advantage over its competitors. The company should work to attain competitive advantage to achieve successful supply chain management.

Competitive advantage occurs when an organization acquires or develops an attribute or combination of attributes that allows it to outperform its competitors. These attributes like natural resources, or skilled personnel human resources, and information technology either to be product produced by the company, or to assist making it.

The competitive advantage is formed from the attributes and resources, which provide capabilities and abilities, make it superior to competitors in the same area and industry (Porter, 1985). “A firm is said to have a competitive advantage when it is implementing a value creating strategy not simultaneously being implemented by any current or potential player” (Barney, 1991). The successful implementation of the strategy will raise the company's performance and excellence through the competitive advantage to excel at cases, current competitors or even potential competitors. (Passemar, 2000). To attain competitive advantage business strategies of a firm use the various resources that it has control on it, and these resources have the ability to create competitive advantage.

The aforementioned opinion, assured that the competitive advantage as the ability to reserve outperforming on current or anticipated competition, thus advanced performance reached through competitive advantage will ensure market leadership. Also it provides the understanding that resources held by a firm and the business strategy will have an impact on generating

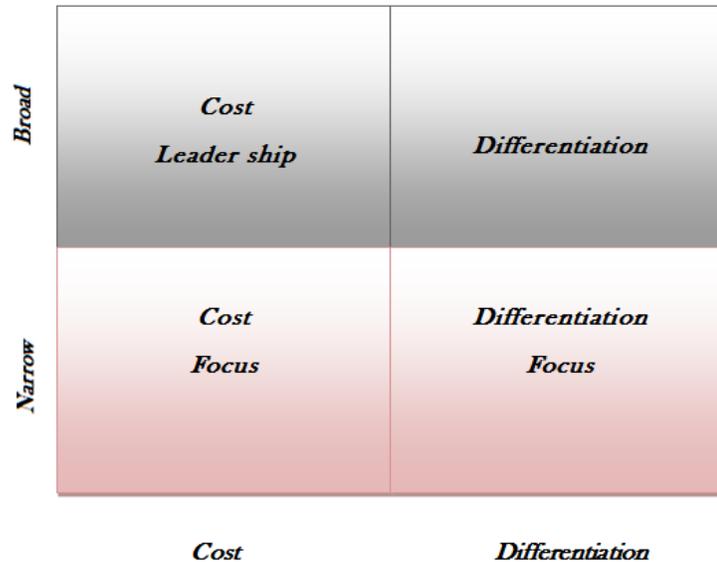
competitive advantage., Figure 5.3 shows the competitive advantage source.



**Figure 5.3:** A model of competitive advantage (Quickmba.com web site)

### 5.3.4 Ways of competing

The company should locate itself relative to its industry; determine whether a company level is above or below the industry average. There are two basic types of competitive advantage a company can possess according (porter): low cost or differentiation. The two main types of competitive advantage combined with segment intend the company to serve them, lead to three strategies for achieving above average performance in an industry: cost leadership, differentiation, and focus. The focus strategy has two kinds, cost focus and differentiation focus.



**Figure 5.4: Source of competitive advantage (Porter, 1985)**

#### 5.3.4.1 Cost Leadership

In cost leadership, the company decides to become the low cost producer in its industry. The sources of cost advantage are varied and depend on the structure of the industry. They may include the achieving of economies of scale, advanced technology, access to raw materials and other factors. A low cost producer must find and exploit all sources of cost advantage. The company can achieve and sustain overall cost leadership, then it will be an above average performer in its industry.

### **5.3.4.2 Differentiation**

In a differentiation strategy the company tries to be distinguishing in its industry along some dimensions that are valued by customers. It selects one or more attributes that many customers in an industry find it important, and positions it to meet those needs. It is rewarded for its differentiation with a premium price.

### **5.3.4.3 Focus**

The strategy of focus based on the choice of a narrow competitive scope within an industry. The focuser selects a segment or group of segments in the industry and generate its strategy to serving them to the exclusion of others.

The focus strategy has two variants.

- (a) In cost focus a firm seeks a cost advantage in its target segment.
- (b) Differentiation focus a firm seeks differentiation in its target segment.

The competitive advantage is a key determinant of supply chain superior, enhancing performance, and it will ensure survival and prominent placing in the market. Superior performance being the ultimate desired goal of a firm, competitive advantage becomes the foundation highlighting the significant importance of development.

### **5.3.5 Supply chain design and strategy**

At this stage the company had laid down company's competitive advantage to allow a company to compete with its competitors. During the design phase the companies should decide how to structure the supply chain over the next several years, it decides what the chains form will be, how resources will be attained, and what processes each stage should execute. The company should take into consideration that all decisions during the design stage will have long term effect and must support its strategic objectives and increase supply chain surplus at the same time it should strive to be agile.

The company should determine the supply chain infrastructure the plants, distribution centers, transportation modes and lanes, production processes, etc. that will be used to satisfy customer demands. These studies are strategic in scope, use a time horizon of many months or years, and typically assume little or uncertainty with the data.

The supply chain strategy in designing the aforementioned components can be categorized to the responsiveness and the efficiency.

Responsiveness comes at a cost, where to fulfill all quantities demand; the capacity should be increased, which cause to increase the costs. In the other hand supply chain efficiency is the inverse of the cost of producing and distributing a product to the customer. Increasing cost to implement company function activities will lower efficiency. For every strategic

choice to increase responsiveness, there are additional costs that lower efficiency.

#### **5.3.5.1 Supply chain strategy Responsiveness versus efficiency decision**

Deciding the strategy of the supply chain whether to be responsiveness or efficiency will affect all design component of the supply chain design, the supply chain strategy defines the processes within the company should do well in addition to the role played by each supply chain entity is. To explain the effect of these strategic decisions the company should define the value chain of the product produced by the company and being introduced o the customer.

The value chains for any product starting from product development, which determines specifications for the product .Marketing and sales generate demand by capturing the customer voice priorities that the products and services will satisfy .Marketing also brings customer feedback to new product development .Using new product specifications, transformations process to convert the raw material inputs to output to create the product .Distribution convey the product to the customer. These are key processes or functions that must be performed for a successful delivering. Finance, accounting, information technology, and human resources backup and facilitate the functions of the value chain.

Value chain functions play a significant role in defining how the product will be, therefore the company should develop strategy for each function refers to what each process or function will try to do particularly well. This strategy will be reflected on design decisions regarding inventory, transportation, operating facilities, and information flows as will be shown in the strategy translation section

The value chain highlight the close relationship between the functional strategies within a company .Each function is crucial if a company is to satisfy customer needs .Thus the various functional strategies cannot be built in separate to other strategies .They are closely intertwined and must fit support each other if a company is to succeed .

#### **5.3.5.2 Aligning the competitive advantage and supply chain strategy**

The Supply chain functions should be designed on light of the competitive advantage that the company adapted, company adapting of differentiation competitive advantage will lead it to have ability to provide a large variety of products very quickly, assembly facilities are designed to be flexible and easily handle the wide variety of configuration requested by customers. in the other hand if the company adapted low cost as a competitive advantage, therefore the distribution is targeting the lowest means of transportation economies by grouping orders together or using inexpensive but slow modes of transportation, carrying low levels of inventory, and selecting suppliers based on their low price.

Where the company should define its competitive strategy based on how the customer priorities product cost, delivery time, variety, and quality. A company that focused on low cost and efficiency by producing large volumes should adapt an efficient supply chain strategy in its entire supply function component to achieve the strategic goals and provide low cost product, while company that work to provide quality product in short lead time should have responsive supply chain.

company's success can be measured according the degree of achieved fit between the supply chain strategy and competitive advantage, the concept strategic fit invite the company to establish aligned goals between the competitive and supply chain strategies. This fitting will match between the customer priorities that the competitive strategy intends to satisfy and the supply chain capabilities that the supply chain strategy aims to build, company successful also will not be achieved with out integration between processes and function that are part of a company's value chain, where all function do not work in isolation manner. Company successful to perform it duties linked to the following key issues:

- All functional strategies and the competitive strategy must fit together to be a coordinated strategy in the overall company disciplinary, which mean that each functional strategy must support other functional strategies and help the company reach its competitive strategy goal.

- All functions in the company must build their processes and resources to be able to execute these strategies successfully.
- Supply chain architecture and the role of each stage must be aligned to support the supply chain strategy.

### **5.3.5.3 Achieving Strategic fit between the competitive advantage and the supply chain strategy**

The company need to achieve an important strategic fit between the supply chain and competitive strategic. A competitive strategy will specify, implementing three basic steps to achieving this strategic fit:

#### 1- identifying demand and supply uncertainty along the chain

A company must understand the customer needs for each targeted segment and the uncertainty these needs impose on the supply chain, these needs help the company define desired cost and service requirements. The supply chain uncertainty helps the company identify the level of the unpredictability of demand, disruption, and delay that the supply chain must be prepared for.

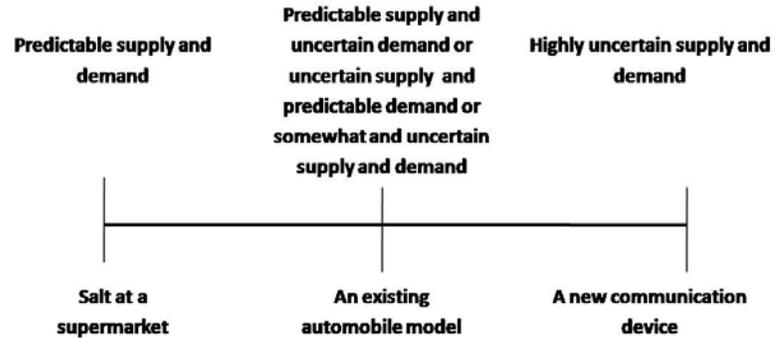
In order the company to understand the customer, it must identify the needs of the customer segment being served by capturing his voice, customer demand from different segments ranges along several attributes as follows:

- The quantity of the product needed in each lot: order in urgent situation for material needed to repair a production line is likely to be small. An order for material to construct a new production line is likely to be large.
- The response time those customers are willing to tolerate: the tolerate response time for the sensitive order will be short, whereas the allowable response time for the construction order is apt to be long.
- **The variety of products needed:** A customer may pay more for all parts of an emergency repair order from a single supplier .this may not be the case for the construction order.
- **The service level Required:** A customer placing an emergency order expects a high level of product availability. This will not happen in the case of the construction order for which a long lead time is likely .
- **The price of the products:** The customer placing the immediate and special order will be less sensitive to price than the customer placing the ordinary order.
- The Desired Rate of Innovation in the Product: Customers at a high margin expect a lot of innovation and new designs. Low margin Customers may be less sensitive to new product innovation.

By correlation the mentioned attributes above with customer segment to be served, each customer segment will have similar needs .and customers in a different segment can have very different needs. But the supply chain to be able to do well toward the many attributes, our action is to identify one key measure for combining all of these attributes. These attributes can be combined by what calls demand uncertainty. It was appeared that raising the customer service level and complexity of various customers needs, these will increase the demand uncertainty.

Lee (2002) pointed out that, in additional to demand uncertainty, it is important to consider uncertainty from the company to supply product to the customer. When a new product is introduced, the production process tends to be low and breakdowns are frequent. As a result, companies have difficulty delivering according to a well defined schedule, resulting in high supply uncertainty. Other factors may increase the supply uncertainty like poor quality, limited supply capacity, inflexible supply capacity, and evolving production process.

We can create a spectrum of uncertainty by combining the demand and supply uncertainty. This uncertainty spectrum is shown in Figure 5.4



**Figure 5.5: Uncertainty spectrum ( Chopra, et al, 2001)**

The first step in course of achieving strategic fit between competitive and supply chain strategies is to understand customers and supply chain uncertainty. Uncertainty from the customer and the supply chain can be combined and mapped on the uncertainty spectrum.

2-Understanding the supply chain capabilities:

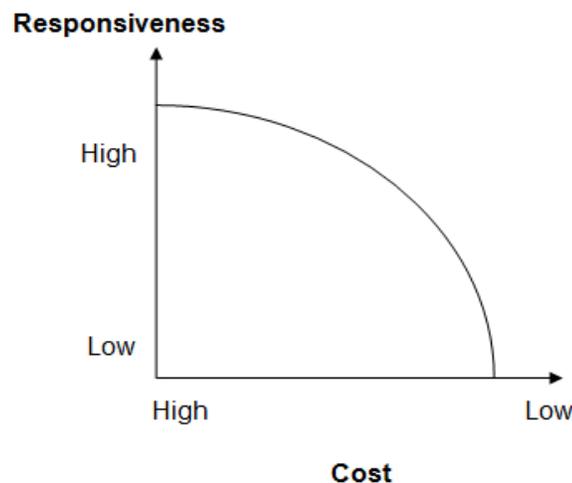
The company should determine the type of supply chains and its capabilities of the tasks that the supply chain designed to perform well. A company must understand what its supply chain is designed to do well. The company can understand its capabilities by identifying Supply chain characteristics based on responsiveness and efficiency, responsiveness includes a supply chains ability to do the following:

- Respond to wide ranges of quantities demanded.
- Meet short lead times.
- Handle a large variety of products.
- Build highly innovative products.

- Meet a high service levels.
- Handle supply uncertainty.

These abilities that the company interested with are similar to many of the attributes of demand and supply that lead to high uncertainty, when the company has more and more ability of the points mentioned above, more responsive it is.

The company adaptation of responsive strategy will come back a higher cost on the company, where readiness and providing wide range of quantities are expensive, the relation between the supply chain strategy and cost can be displayed in the figure 5.5.



**Figure 5.6: The cost-responsiveness efficient frontier ( Chopra, et al, 2001)**

The cost-responsiveness efficient relationship is showing the lowest possible cost for a given level of responsiveness. Which mean how to

achieve responsiveness at low cost, where lowest cost for responsive is defined based on existing technology and facilities that company cannot working without it, not every company can operate on the efficient frontier. The figure 5.5 is very useful for the company to decide how much it is willing to invest for improving its performance, where by moving toward the efficient frontier costs will be reduced, In contrast, a company on the efficient frontier can improve its responsiveness only by increasing cost and becoming less efficient. Such a firm must then make a trade-off between efficiency and responsiveness.

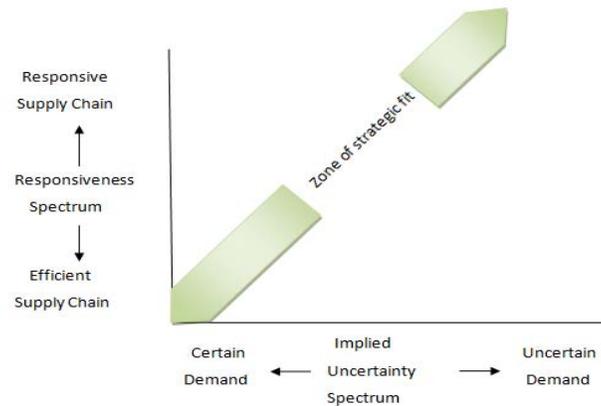
Supply chain range from companies that focus on being responsive to those that focus on producing and supplying at the lowest possible cost. If The Company faces both supply and demand uncertainty; therefore, the supply chain must be designed to deal effectively with both to provide customers with a wide Variety products. In contrast an efficient supply chain lower cost by eliminating some of its responsive capabilities and provide limited variety of products in large package sizes. The supply chain is capable of low costs and the focus of this supply chain is clearly on efficiency.

Achieving strategic fit between competitive and supply chain strategies is to understand the supply chain and map it on the responsiveness spectrum. Where the more capabilities constituting responsiveness a supply chains has, the more responsive it is

3-Achieving strategic fit

After the company determined the level of uncertainty is facing and understanding the supply chain capabilities in term of responsiveness. The final step is to ensure that the degree of supply chain responsiveness is consistent with the uncertainty. The company should target high responsiveness for supply chain facing high uncertainty, and efficiency for a supply chain facing low uncertainty.

The company that is relying on differentiation as competitive strategy targeting customers who value having a large variety of products ,its customers can be characterized as having high demand uncertainty. Then the company is in front of many choices, it has the option of designing an efficient or responsive supply chain. An efficient supply chain may carry less inventory and maintain a level load on the warehouse to lower costs. But this will cause difficulty supporting the customer's desire for a wide variety of products; the other option is carrying a high level of inventory and picking capacity. Clearly, a responsive supply chain is better suited to meet the needs of customers targeted by the company even if it results in higher costs. The result is, when increasing uncertainty in term of demand and supply; it is best served by increasing responsiveness from the supply chain. This relationship is represented by the zone of strategic fit illustrated in Figure 5.6



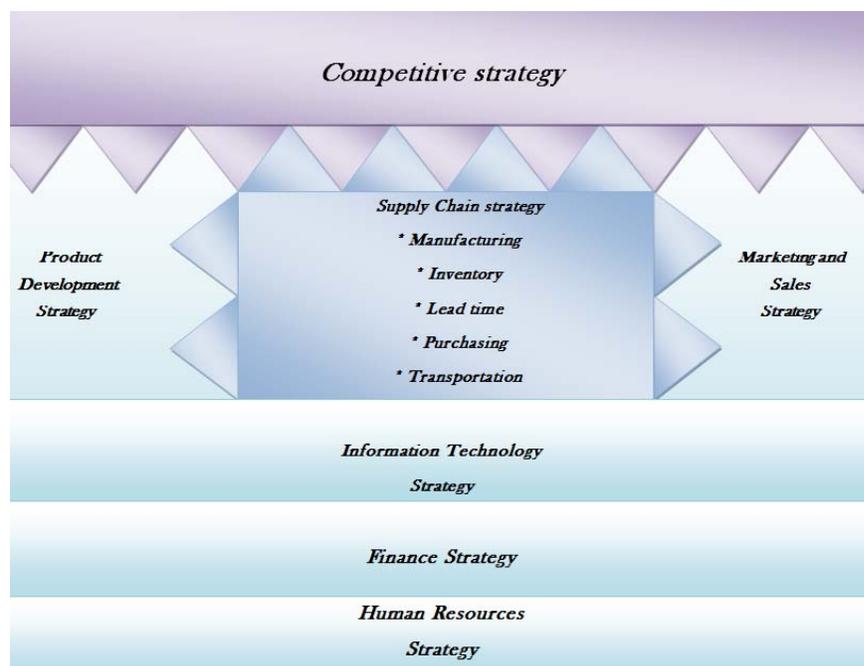
**Figure 5.7: Zone of strategic fit ( Chopra, et al, 2001)**

The first step to achieve the strategic fit is displayed in Figure 5.6, where it shows that the company to assure high level of performance, companies should move their competitive strategy and supply chain strategy toward the zone of strategic fit. The projection of this moving can be translated by: Whenever there was a tendency for distinguish in competitive advantage; there will be an increase in the uncertainty, in the other hand moving toward the strategy resulting responsiveness.

The second step in achieving strategic fit is to give roles to different stages of the supply chain that ensure the appropriate level of responsiveness. It is important to understand that the desired level of responsiveness required across the supply chain can be attained by determining different levels of responsiveness and efficiency for each stage of the supply chain. Which mean that the company can achieve certain level of responsiveness by

modifying the roles of each stage of the supply chain. Making one stage more responsive will allow the other stage to be efficient.

The third step to achieve complete strategic fit, the company must ensure cross functional consistent strategies, as shown in figure 5.8 all functional Strategies must support the goals of the competitive strategy, As well as all sub strategies within the supply chain , like manufacturing, inventory, and purchasing must also be consistent with the supply chain's level of responsiveness.



**Figure 5.8: Cross functional consistent strategies (Chopra, et al, 2001)**

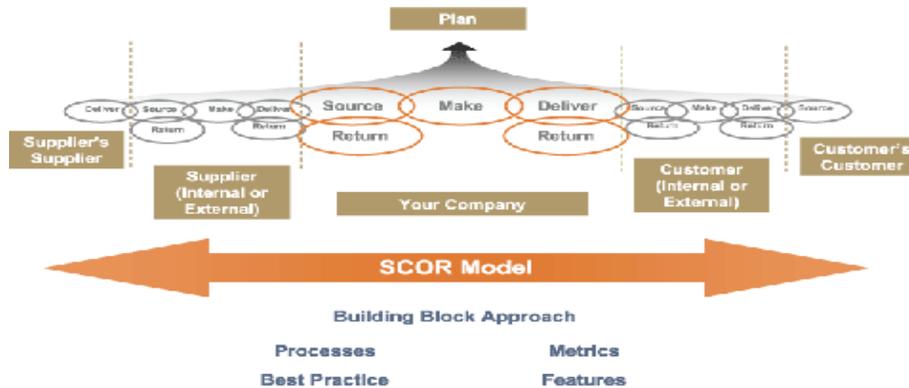
From submitted ideas above in order the company to fit the existence mismatch between supply chain capabilities and the desired customer needs, the company will need to restructure the supply chain to support the

competitive strategy or alter its competitive strategy, this lead us to conclude:

- Right supply chain today, may not tomorrow.
- There is a supply chain strategy for a given competitive strategy.

### **5.3.6 Strategy translation:**

In this stage, the company refines the choice of supply chain processes and confirms how supply chain processes align with infrastructure (physical locations and information technology). In this stage all functions along the supply chain should be configured .This can be achieved by selecting the relevant sub processes or process categories—based on company’s supply chain strategy, The decisions at the strategic level of the supply chain whether the company will rely responsiveness or efficient strategy, lay out the frame of how the supply chain operates, and there are five major activities take place within supply chain, these five major activities stated by SCOR ,plan , source, make, deliver, and return as displayed in Figure 5.9.



**Figure 5.9: SCOR model ( Supply Chain Council, 1996)**

Before projecting the supply chain strategy on all functions of the supply chain, the company should identify the scope of the module by defining the dimension of the major five activities.

#### 1. Demand/Supply Planning and Management

- Balance resources with requirements and establish/communicate plans for the whole supply chain, including Return, and the execution processes of Source, Make, and Deliver.
- Management of business rules, supply chain performance, data collection, inventory, capital assets, transportation, planning configuration, and regulatory requirements and compliance.
- Align the supply chain unit plan with the financial plan.

#### 2. Sourcing Stocked, Make-to-Order, and Engineer-to-Order Product

- Schedule deliveries; receive, verify, and transfer product; and authorize supplier payments.

- Identify and select supply sources when not predetermined, as for engineer-to-order product.
- Manage business rules, assess supplier performance, and maintain data.
- Manage inventory, capital assets, incoming product, supplier network, import/export requirements, and supplier agreements.

### Make-to-Stock, Make-to-Order, and Engineer-to-Order Production

#### Execution

- Schedule production activities, issue product, produce and test, package, stage product, and release product to deliver.
  - Finalize engineering for engineer-to-order product.
  - Manage rules, performance, data, in-process products (WIP), equipment and facilities, transportation, production network, and regulatory compliance for production.
3. Order, Warehouse, Transportation, and Installation Management for Stocked, Make-to-Order, and Engineer-to-Order Product
- All order management steps from processing customer inquiries and quotes to routing shipments and selecting carriers.
  - Warehouse management from receiving and picking product to load and ship product.
  - Receive and verify product at customer site and install, if necessary.
  - Invoicing customer.

- Manage Deliver business rules, performance, information, finished product inventories, capital assets, transportation, product life cycle, and import/export requirements.

#### 4. Return of Raw Materials and Receipt of Returns of Finished Goods

- All Return Defective Product steps from source – identify product condition, disposition product, request product return authorization, schedule product shipment, and return defective product – and deliver – authorized product return, schedule return receipt, receive product, and transfer defective product.
- All Return Maintenance, Repair, and Overhaul product steps from source – identify product condition, disposition product, request product return authorization, schedule product shipment, and return MRO product – and deliver – authorize product return, schedule return receipt, receive product, and transfer MRO product.
- All Return Excess Product steps from source – identify product condition, disposition product, request product return authorization, schedule product shipment, and return excess product – and deliver – authorize product return, schedule return receipt, receive product, and transfer excess product.
- Manage Return business rules, performance, data collection, return inventory, capital assets, transportation, network configuration, and regulatory requirements and compliance.

The five major activities will be translated in to functions processes and physical layout to implement the supply chain activities, the translation will comply the supply chain strategy whether responsiveness or efficiency. Suppliers and customers are the start and the end edges of the chain; therefore they will be affected by company's decision to adapt responsiveness or efficient strategy. Where company adaptation of responsive strategy lead to manufacturing strategy establishing many plants, many locations of the plants, and postponement manner in production process, quality product, and lowest defect product. The supplier will be selected according tight criteria based on quality, reliability, flexibility, and trust. The distribution centers are spread to fulfill needs rapidly by fast transportation modes to reduce the lead time as can as possible. Customer satisfaction is the company's goal, the responsive strategy provides the customer with innovative product, variety, quality, quantity, and customize product. Table 5.2 shows comparison between efficient and responsiveness supply chain, these considerations should be taken in to account during translation the supply chain strategy to sub strategies.

**Table 5.1: Comparison of efficient and responsiveness supply chains  
(Chopra, et al, 2001)**

	<b>Efficient supply chains</b>	<b>Responsiveness supply chains</b>
<b>Primary goal</b>	supply demand at lowest cost	Response quickly to demand
<b>Product design strategy</b>	Maximize performance minimum product cost	Create modularity to allow postponement of product differentiation
<b>Pricing strategy</b>	Lower margins because price is a prime customer driver	High margins because price is not a prime customer driver
<b>Manufacturing strategy</b>	Lower costs through high utilization	Maintain capacity flexibility to buffer against demand/supply uncertainty
<b>Inventory strategy</b>	Minimize inventory to lower cost	Maintain buffer inventory to deal with demand/supply uncertainty
<b>Lead time strategy</b>	Reduce, but not at the expense of costs	Reduce aggressively even if the costs are significant
<b>Supplier strategy</b>	Select based on cost and quality	Select based on speed, flexibility, reliability, and quality

### 5.3.7 Framework Summary

The generic supply chain management framework is a visual framework. It aims to guide the company to structure a successful supply chain, and does not assume any particular solution. The framework consists of four major levels:

1. The business strategy level. This level involves formulating a strategy and deciding what the objectives of the business are.

2. The competitive advantage level. This level provides clarity as to how the company should work to attain a competitive advantage in order to achieve successful supply chain management.
3. The supply chain strategy level. This reveals the importance of the supply chain strategy and how competitive advantage should be aligned with it.
4. The strategy translation level. This level explains the role of the physical infrastructure and supply chain function process, to implement the supply chain strategy's responsiveness or efficiency

Each phase within the framework represents the necessary decision making activities that should be occurring at that point in the design process. There are also some key concept to be gained from studying supply chain management framework. The integration of the framework across the different functions and the inclusion of the high-level strategy formulation body, show that supply chain management extends beyond logistic concept and includes all functions of the corporation. The presence of the strategy formulation body emphasizes that the key company functions are part of this design process and the supply chain management should have a strategy that supports the competitive advantage of the company. The formulation of this strategy will have a considerable impact on the product, service and customer satisfaction.

### **5.3.8 Propose Supply Chain Methodology**

The generic supply chain methodology is presented below in points. The display process not only offers a checklist to ensure all pertinent steps have been followed, but it also helps in understanding the how to describe, measure, and evaluate the supply chain activity. The following steps also provide a quick way of understanding the framework itself. Since the purpose of the process is to provide a way to think about each of the steps involved, The process below is most useful in starting new project with systematic process and for on going project to be enhanced and developed .

#### **1. Business strategy formulation**

- Identifying corporate stakeholders.
- Defining corporate stakeholder's needs.
- Developing corporate vision statement.
- Developing corporate mission statement.
- Identifying the corporate goals (long term objectives).
- Define the business objective and summarize business background
- Identification of Products, Markets and Competitive Priorities.
- Identifying business unit internal strengths and weaknesses.
- Identifying business unit external forces (environmental or industrial factors).
- Defining the future growth areas in the industry.

- Identifying business units core competencies.

## **2. Competitive advantage:**

- Implementing a value creating strategy.
- Identifying Appropriate Value Chain Performance Metrics
- Manipulating the various resources over which the company has direct control
- Defining capability.
- Locating relative to the related industry
- Assembling Appropriate Benchmark Comparisons
- Assessing and Prioritize Competitive Requirements
- Defining customer desire and needs.
- Possessing competitive advantage, low cost or differentiation or combined with segment seek the company to serve.
- Defining product and competitive strategy.

## **3. Developing supply chain strategy**

- Determining responsive or efficient strategy
- Establishing the sup strategies according the relied supply chain strategy
  - Supplying strategy
  - Out sourcing strategy
  - Manufacturing strategy
  - Inventory strategy

- Distribution strategy
- Delivery strategy

#### **4. Strategic fit between the competitive advantage and the supply chain strategy**

- Understanding the customer and supply chain uncertainty
- understanding the supply chain capabilities
- achieving strategic fit

#### **5. Supply chain strategy translation**

##### Supply Base Design strategy

- Determining supplier selection for all parts within commodity groups
- Allocating suppliers to plants

##### Outsourcing strategy

- Determining the portions of the supply chain remain in-house versus outsourced
- Determining the cost tradeoffs versus service considerations

##### Manufacturing Strategy

- Determining number of plants are needed
- Locating where should each plant be located
- Determining products should each plant make

- What process technologies should each employ, and how much of each process is needed
- What markets should each plant serve

### **Inventory strategy**

- Determining the amount of product that should be hold in the inventory
- Determining How many products of inventory should be located close to the customer
- Did the company decrease the inventory through centralized stocking.
- Deciding how many number of times inventory turns over in a year
- Determining the amount of safety inventory that should be hold

### **Distribution Strategy**

- Shipping types, direct or stock regionally
- Determining the number of DCs are needed and where should they be located
- Determining the role of each DCs in customer serving
- Determining the modes of transportation will be used

### **Customer service strategy:**

- Determining the day delivery for all customer segments.
- Determining the high-value customers.

- Determining different service levels depending on customer importance.
- Issuing tradeoff between the best cost and the best service to the customer segment.
- Should all products be equally available, or should some customers have quicker, easier access.

## **Chapter 6**

### **6 Conclusions and Recommendations**

#### **6.1 Thesis conclusions summary**

The generic framework of the supply chain management for Palestinian companies was introduced as a result of this thesis research. The thesis was started by introducing research objectives which can be summarized by studying the Palestinian company's practices of the supply chain. Based on the gaps which were identified in the literature review and the survey results, a conceptual SC framework was developed to address these gaps.

Quantitative researching approach has been used, data was collected using an electronic survey, 75 companies have been surveyed and the responses were 40. Additional data have been collected by other ways such as interviews, local related researches, and personal observations. As a result Palestinian company's application of the supply chain concept suffers from some weaknesses such as: the lack of structuring supply chain strategy, poor integration between strategic domain and strategy translation, relying clear competitive advantage and miss fitting between supply chain strategy and competitive strategy. Furthermore Palestine special conditions as an occupied country extremely affecting its business environment by adding more constrains and difficulties which have been taken into account among framework formulation activities.

The proposed framework consists of four major levels, the business strategy level, competitive advantage level, supply chain strategy level, and strategy translation level. Level one is formulating a strategy and deciding what the objectives of the business are, to maintain company an advantage over its competitors, level two clears what should the company work to attain competitive advantage to achieve successful supply chain management. Supply chain strategy aims to achieve business goal by use/implement the competitive advantage, level three show these interactions. Finally level four explain the role of the physical infrastructure and supply chain function process to implement the supply chain strategy whether responsiveness or efficiency.

Each phase within the framework represents the time horizon of the necessary decision making activities, the decisions that should be taken at the strategic design process, planning, and operation stage, which ranged between long and short time horizon. There are also some key concepts to be gained from studying supply chain management framework, the integration of the framework across the different functions and the inclusion of the high-level strategy formulation body, show that supply chain management extends beyond logistic concept and includes all functions of the corporation. The presence of the strategy formulation emphasizes that the key company functions are part of this design process and the supply chain management should have a strategy that supports the competitive advantage of the company. The formulation of this strategy

will have a considerable impact on the product, service and customer satisfaction.

## **6.2 Contribution to knowledge and practice**

This research makes several contributions to the topic. In summary, the contribution can be summarized

- investigating the role of supply chain management in providing competitive advantage for companies
- Clarifying the current situation of research environment in Palestine.
- Assessing current practices and understandings of Palestinian companies' in relation to the supply chain management concept.
- Conducting a comparative study between Palestinian and the state of the art practices of SCM.
- Developing a generic framework for the Palestinian industry companies taking in to account the state condition.

## **6.3 Recommendations**

The research introduces the following recommendations that can be implemented in course of company's development. The recommendations can be summarized as the following:

1. More emphasis on strategic design phase prior engaging in planning and operation.

2. Companies should rely upon their competitive advantage with reference to their on-hand capabilities, resources, and customer desire.
3. More attention should be paid when the company chooses the supply chain management strategy whether responsiveness or efficiency.
4. More focus on the strategic fit between the supply chain strategy and the competitive advantage which seem to be unavailable in the current practice in Palestine.
5. More attention should be given to align the objectives between extended supply chain functions.
6. companies still tend to consider supply chain management as being the same as logistic or as supplier management, companies should review the structure of its relationship on light of its strategy
7. More focus should be given to supply chain choosing and planning because of the research environment special conditions.

#### **6.4 Future works**

- The framework should be approved and validated by implementing it in a real and actual case in research environment – Palestine.
- The developed framework in this thesis can be of use to researchers for further studies of supply chain management practices and their relationships with other organizational processes and outcomes like competitive advantage, supply chain performance, and organization performance

- There are some sub topics under the research title which need in-depth study due to their importance and to overcome its weaknesses that have appeared during this research. That sub topics are agile supply chain, technology affect on the supply chain and supply chain performance metrics.
- The topic supply chain management is a new topic in the Palestinian environment, more studies and research shall be exerted in this regard.

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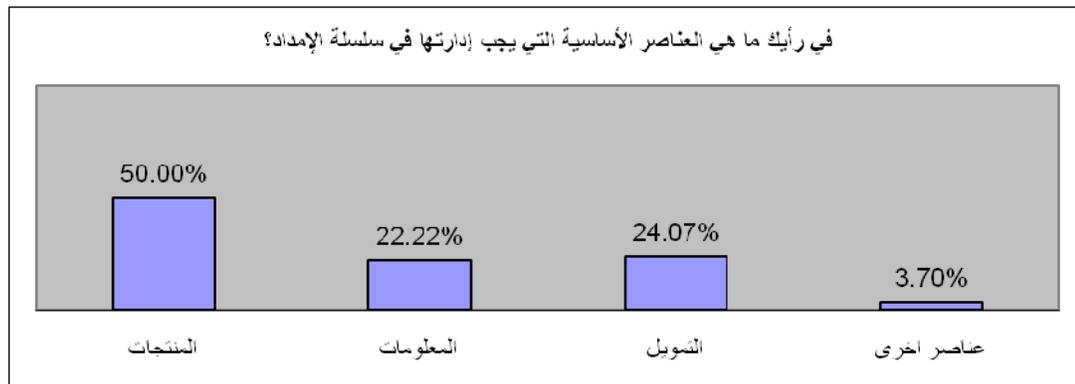
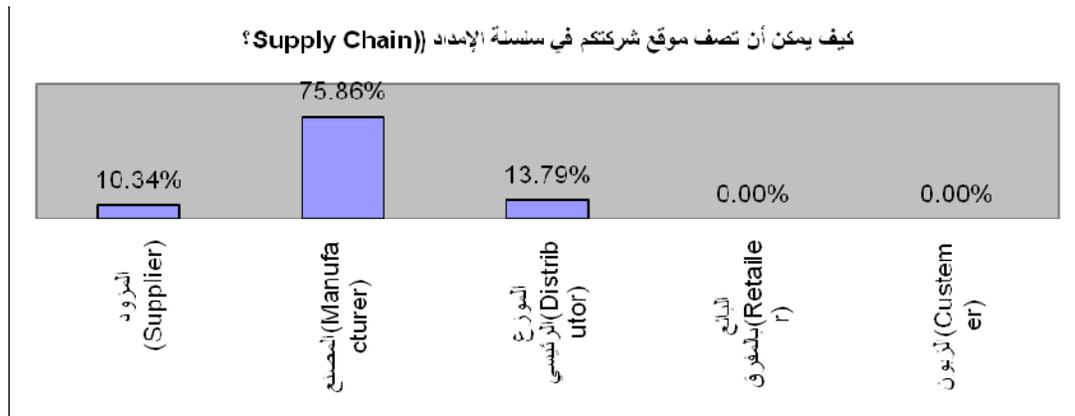
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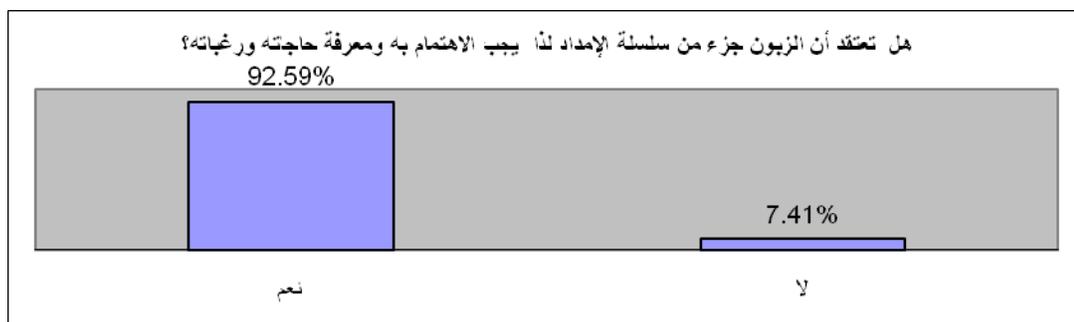
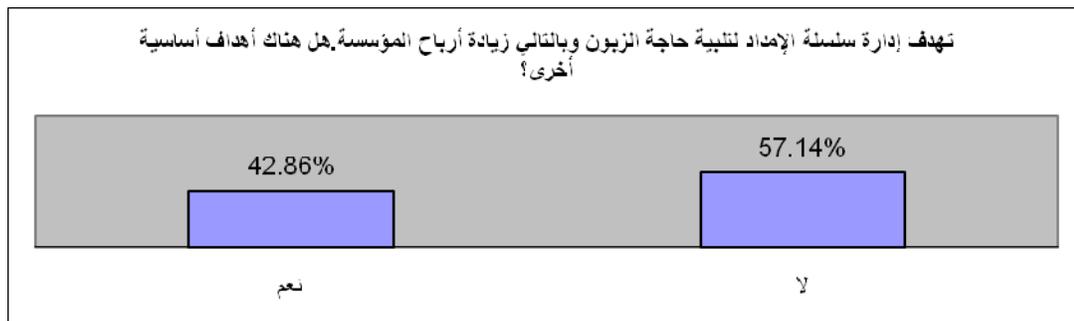
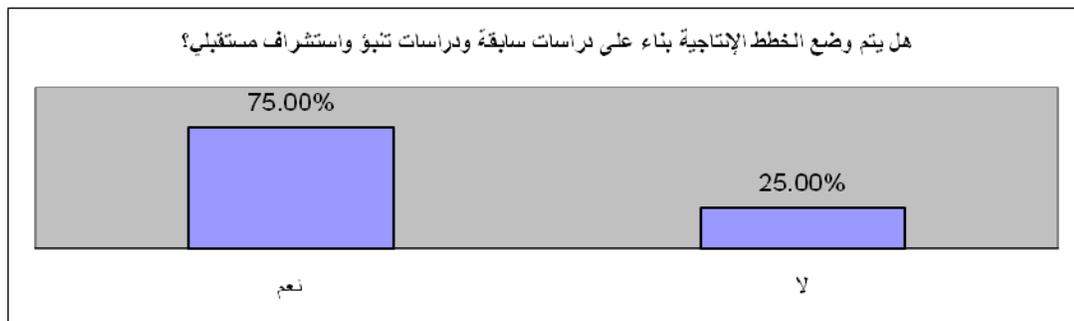
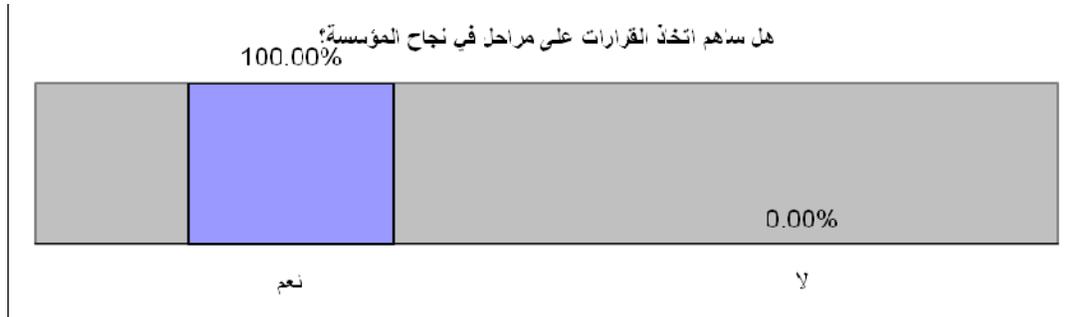
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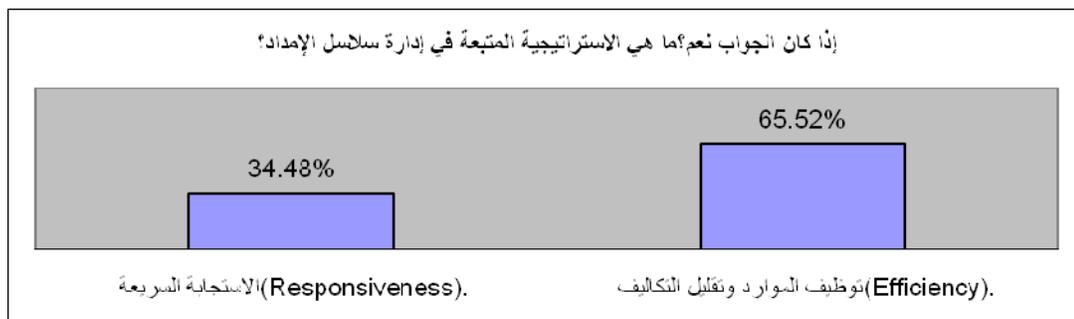
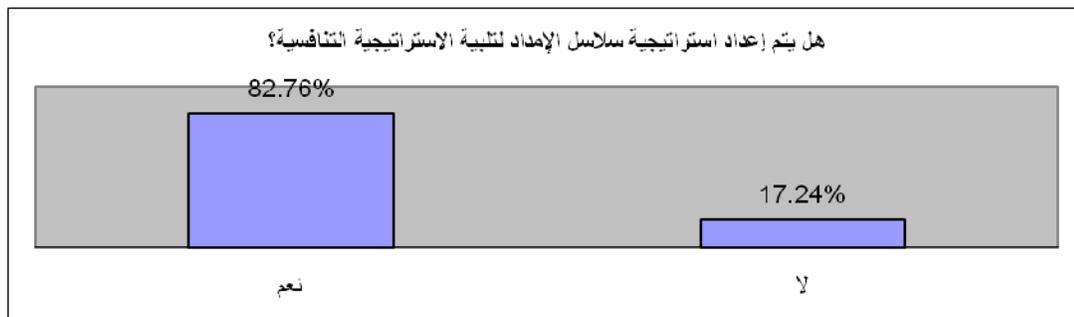
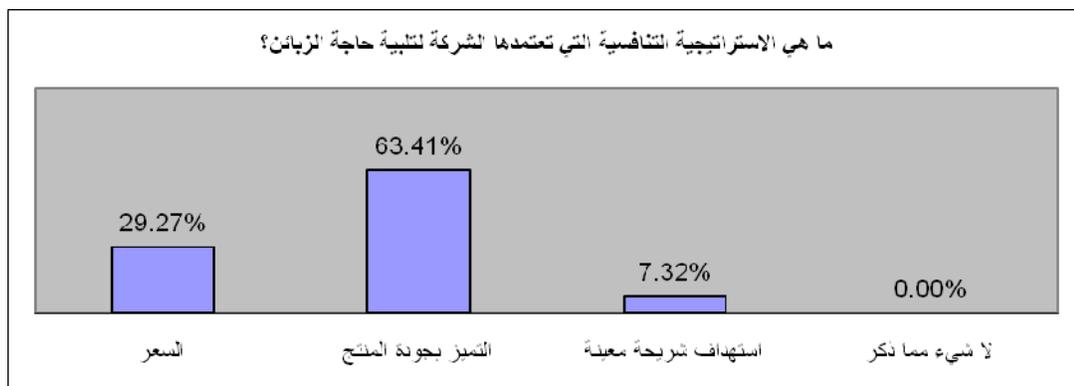
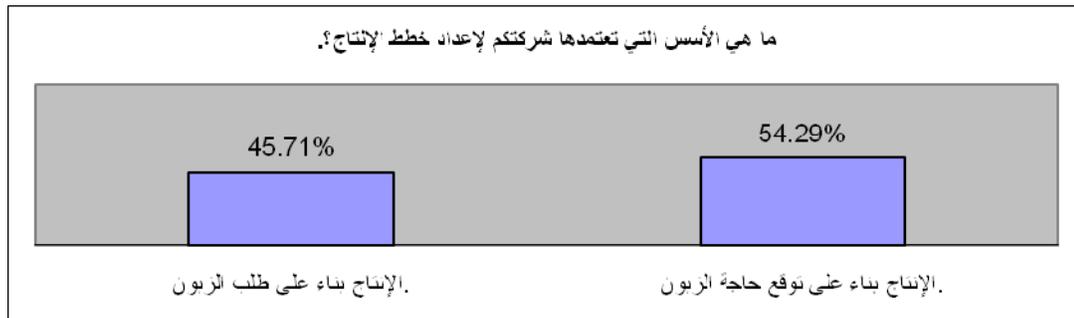
## Appendices

### Appendix 1

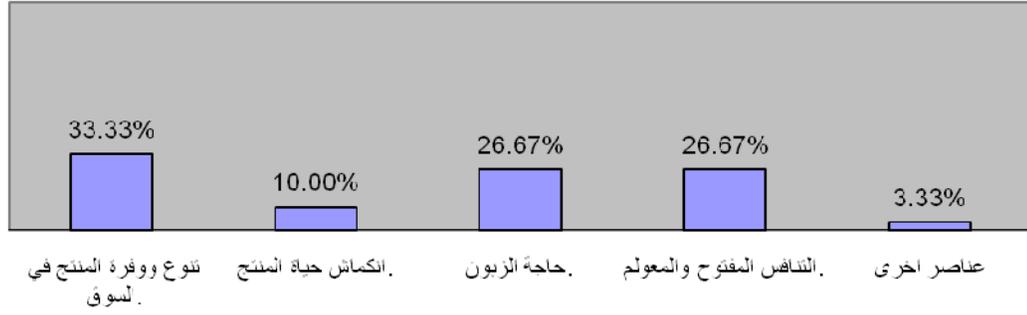
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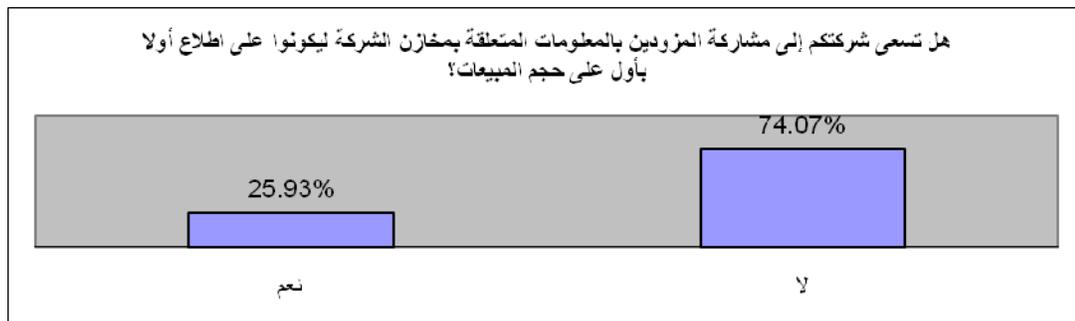
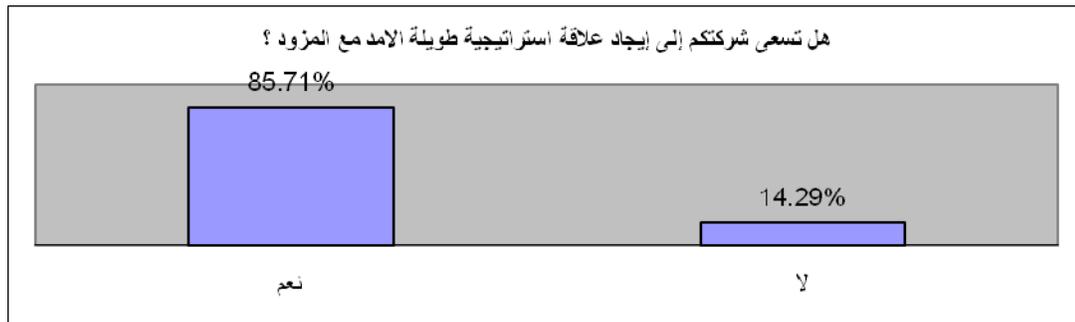
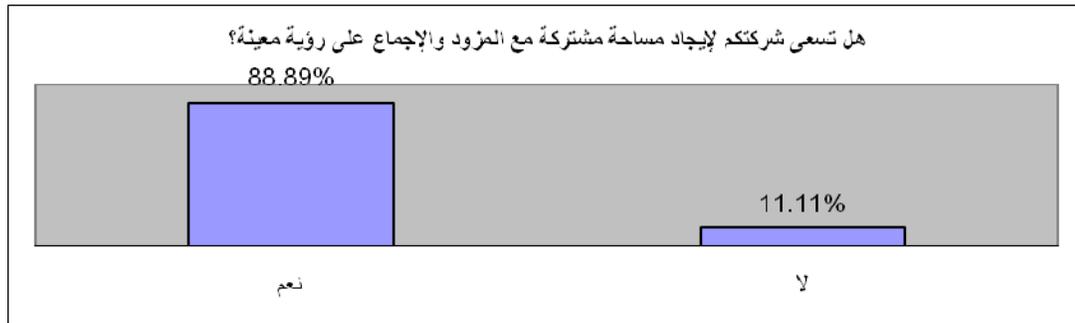


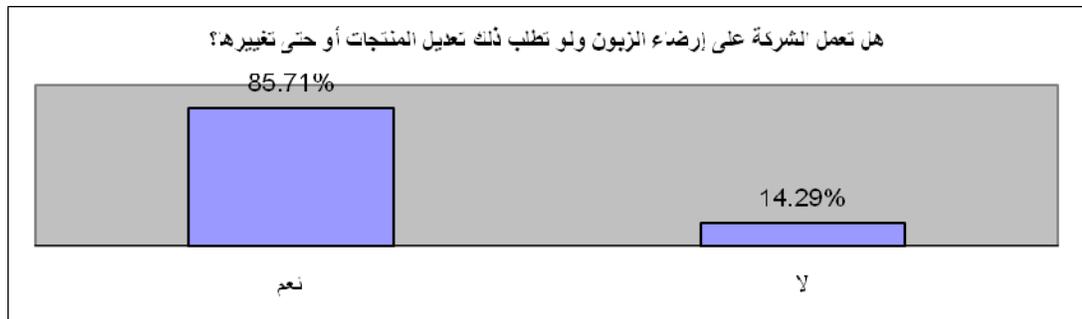
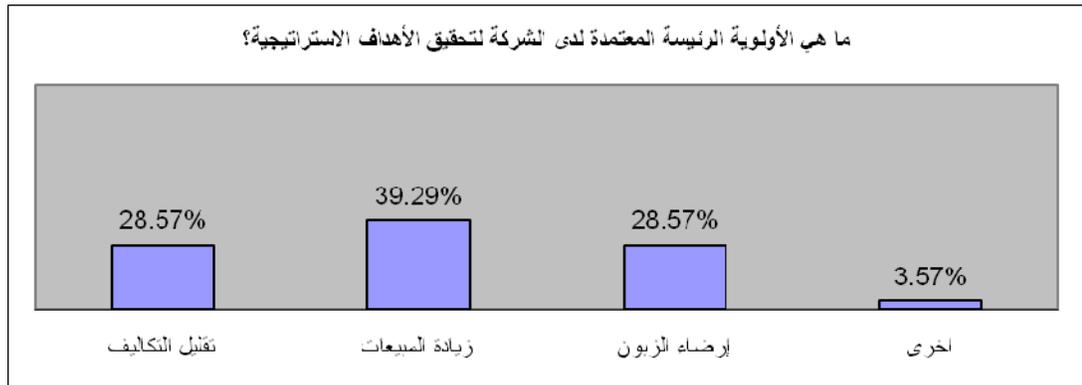
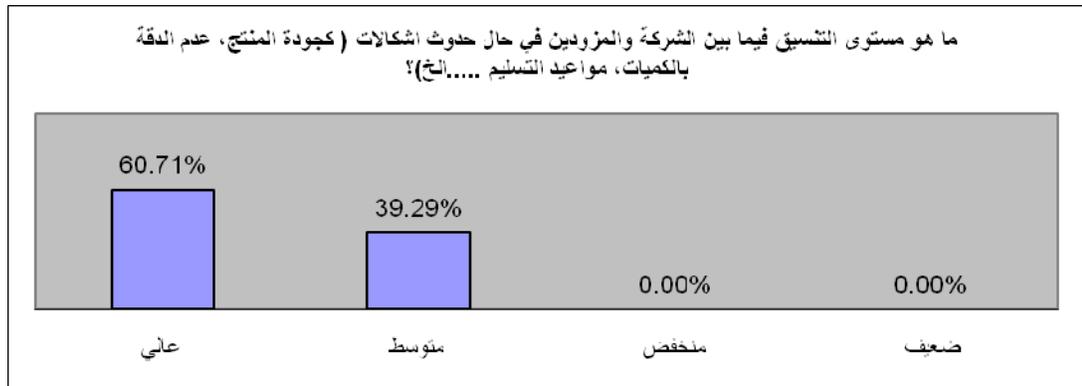
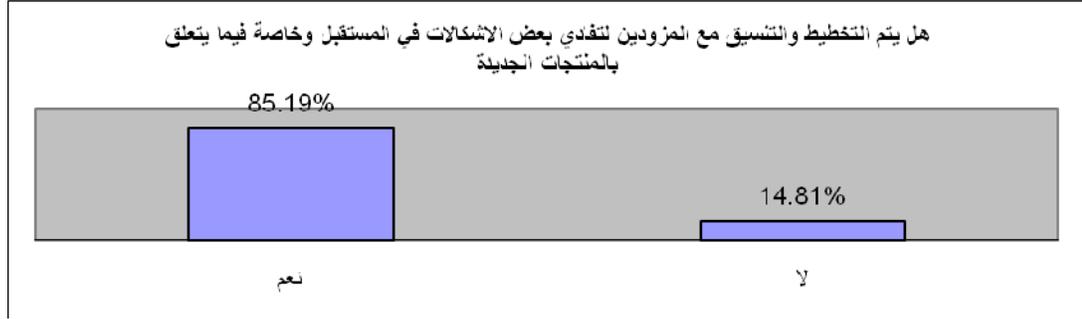
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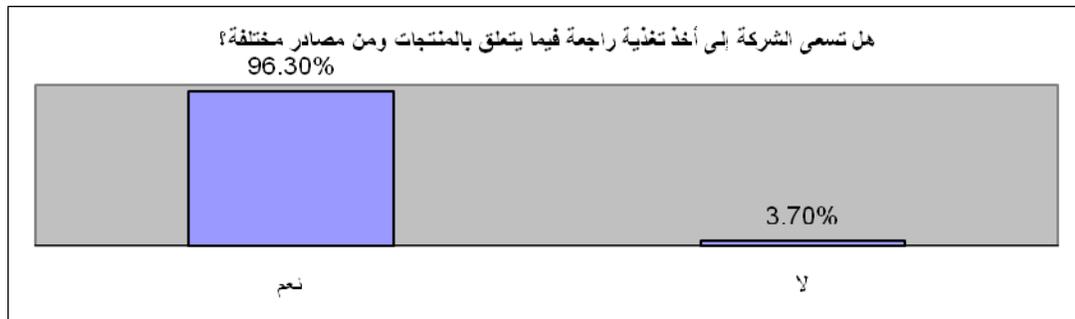
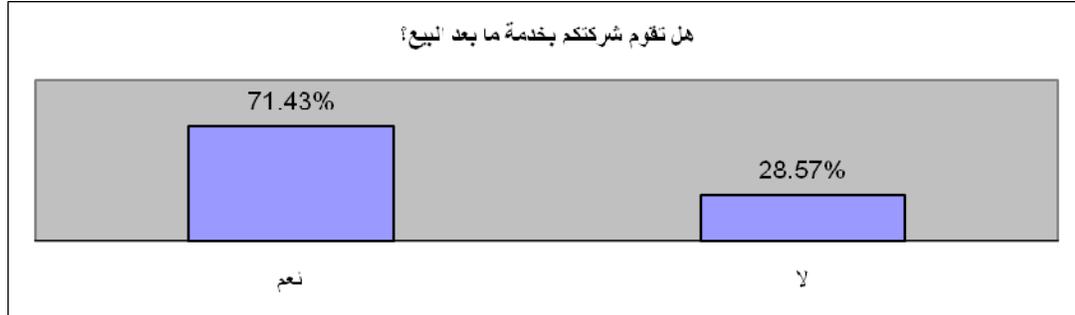
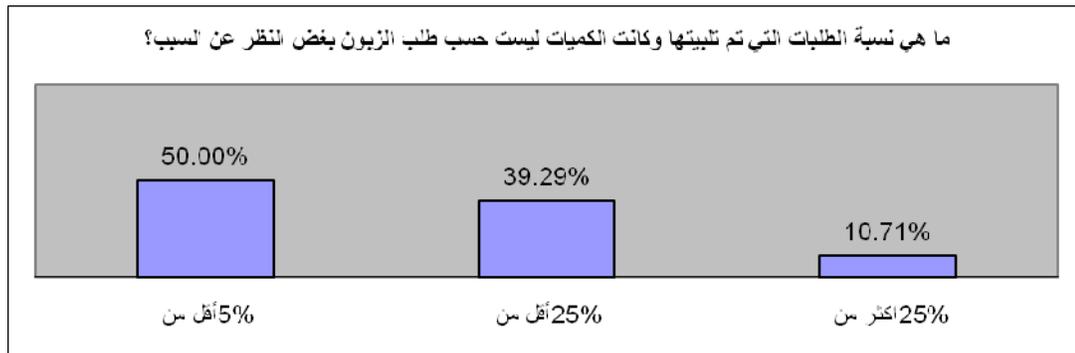
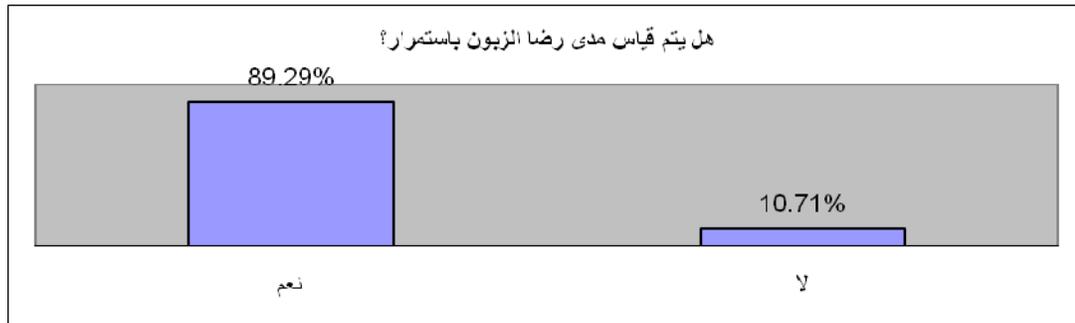


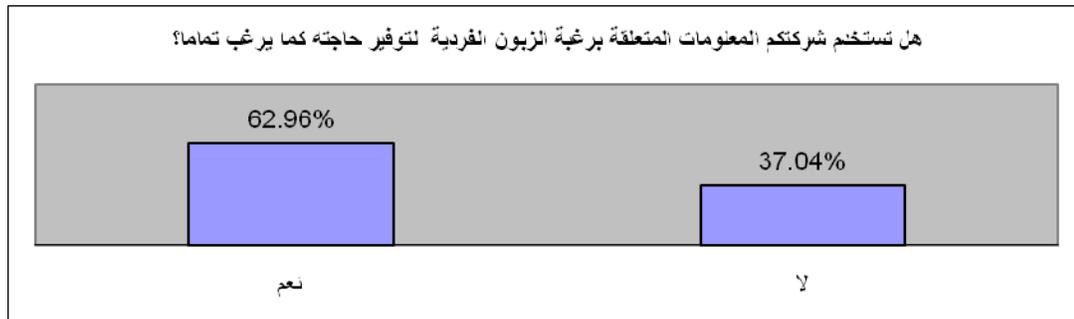
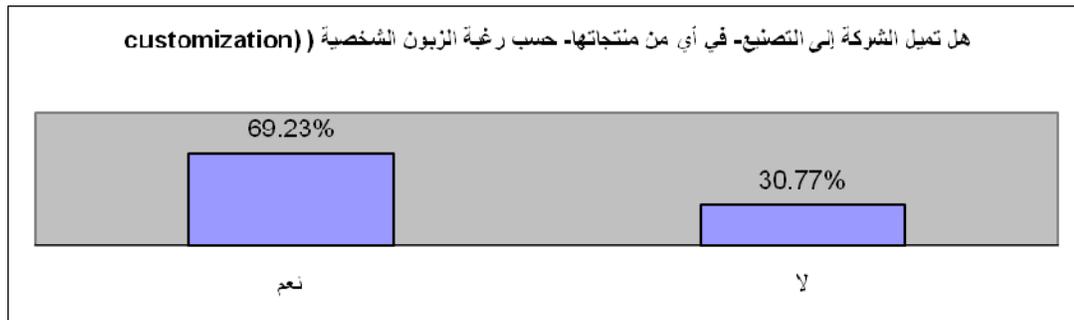
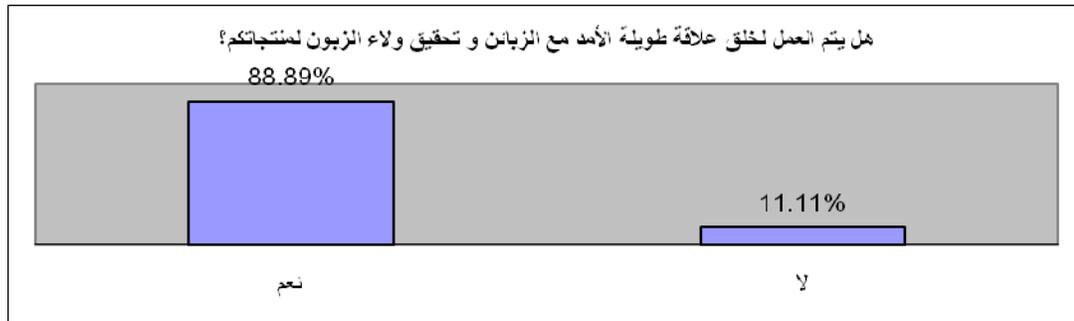
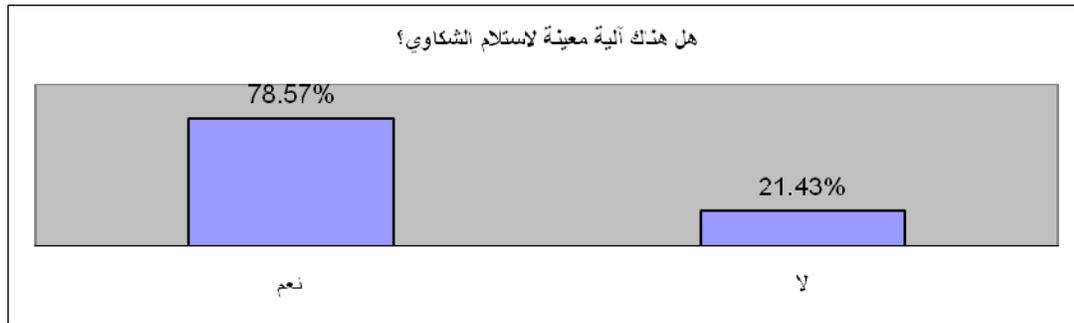
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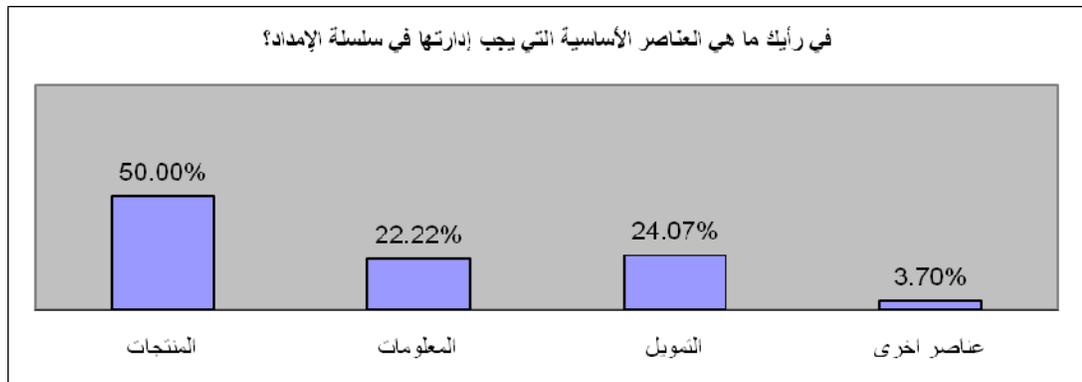
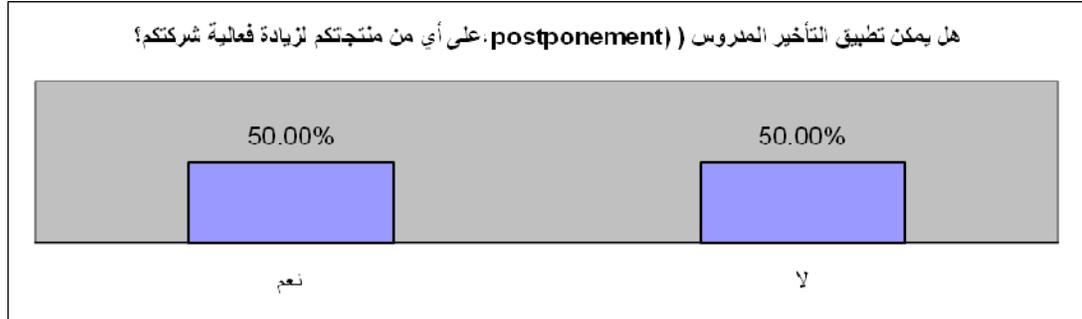
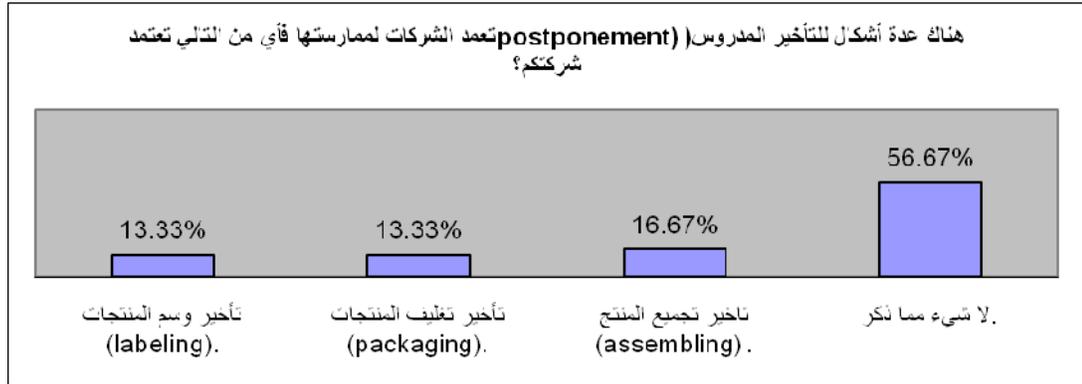
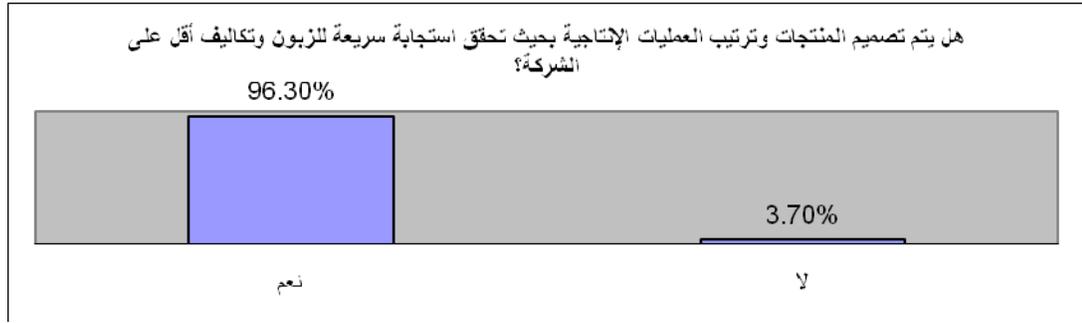




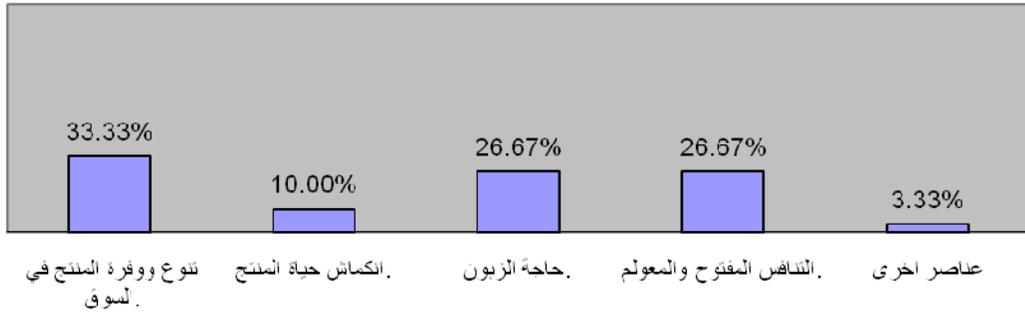




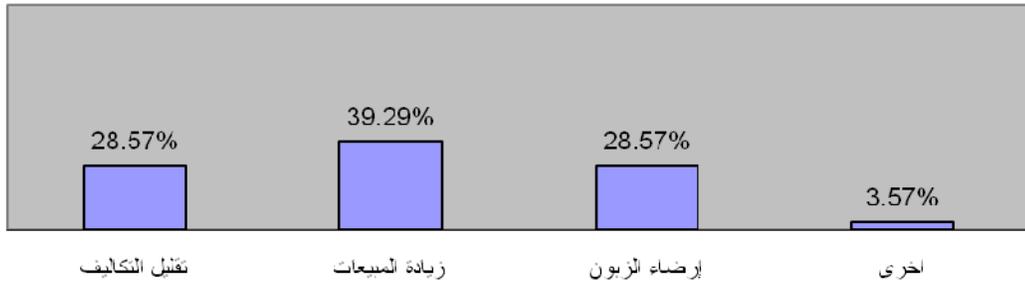




ما هي العوامل التي تؤثر على إدارة سلسلة الإمداد:



ما هي الأولوية الرئيسية المعتمدة لدى الشركة لتحقيق الأهداف الاستراتيجية؟



## تقييم ادارة سلاسل الامداد لدى الشركات في فلسطين

إعداد

احمد بسام عبدالله

اشراف

د. حسام عرمان

قدمت هذه الأطروحة استكمالاً لمتطلبات درجة الماجستير في الادارة الهندسية بكلية الدراسات العليا في جامعة النجاح الوطنية في نابلس، فلسطين.

2011

ب

## تقييم ادارة سلاسل الامداد لدى الشركات في فلسطين

إعداد

احمد بسام عبدالله

إشراف

د. حسام عرمان

الملخص

إن العهود التي كان فيها الزبون يتلقى ما يعرض عليه قد ولت ، فهو الآن يختار ما يريد وما يناسبه وفي الوقت الذي يريد حتى أن الأمر تعدى ذلك ليصبح الزبون يحدد السعر الذي يناسبه. فمع تقدم الاتصالات والشبكات العالمية أصبح العالم أشبه بالقرية الصغيرة مما أثر على التجارة العالمية وعلى المنافسة التي تتأثر بشكل مباشر بالزبون ورغباته. فالمنافسة تعدت الحدود الإقليمية لتكن عالمية، والمنافسة العالمية تتطلب إعادة التفكير بالإستراتيجيات المتبعة وإدارة الأمور والمشاريع بطريقة مختلفة غير تقليدية، وأحد أهم هذه الأدوات في وقتنا الحاضر هي إدارة سلاسل الإمداد بشكل فعال.

والغرض من هذا البحث هو وضع إطار عام للشركات الفلسطينية، يمكن أن تكون قابلة للتطبيق في إطار البيئة البحثية والظروف الخاصة لفلسطين، وذلك من أجل خلق تناغم فيما بين الميزة التنافسية التي تتمتع بها الشركة وإستراتيجية سلاسل المداد التي تسعى الشركة لتبنيها. وقد تبين أن إدارة سلاسل الإمداد لدى الشركات الفلسطينية تعاني من العديد من المشاكل والصعوبات من منظور سلسلة التوريد، حيث تم جمع المعلومات التي تتعلق بالشركات عبر استبانة أرسلت بالبريد الألكتروني لتمثل منهجية البحث الكمي والنوعي، فقد أرسل خمسة وسبعون استبانة لستة قطاعات من شركات الصناعات التحويلية في فلسطين ، وهي صناعة البلاستيك ، صناعة الحجر والرخام، الصناعات الغذائية، وصناعة الأدوية، وصناعة الكيماويات، والصناعات الهندسية والمعدنية، وقد تم تلقي أربعون استبانة مكتملة أي ما نسبته (53.3 %) لتمثل مادة البحث والدراسة. وكشفت نتائج الدراسة أن هناك مستوى عال من الضعف في المواضيع الأربعة الأساسية التي شكلت محاور الدراسة الرئيسية، وهي

مفهوم وإدارة سلاسل التوريد وأثرها على نجاح الشركة، و الميزة التنافسية واستراتيجيات سلسلة التوريد ، والعلاقات مع الموردين ، والعلاقات مع الزبون.

وبناء على المعطيات التي خلص إليها البحث تم اقتراح إطار عام لإدارة سلاسل الإمداد لدى الشركات الفلسطينية، يهدف إلى توجيه الشركات لهيكله سلاسل إمداد ناجحة. إن الإطار المقترح يتكون من أربع مستويات رئيسية، المستوى العام للشركة وما يتضمنه من علاقات وقرارات مصيرية تتعلق بمبررات وجود الشركة وأهدافها ورؤيتها للمستقبل وكيف يمكن المحافظة على ميزة تنافسية في الوسط الذي تعيش فيه، والمستوى الثاني يتطرق للميزة التنافسية التي ينبغي للشركة اعتمادها والعمل على تطويرها وضمان ديمومتها، والمستوى الثالث يتعلق بإستراتيجية سلاسل الإمداد التي يجب تبنيتها لتدعم وتحقق الميزة التنافسية وتكشف التفاعل الهام فيما بين الميزة التنافسية والإستراتيجية المتبعة لإدارة سلاسل الإمداد، وأخيرا المستوى الرابع والذي يسعى لترجمة الاستراتيجيات إلى عمليات تتسق وتتناغم مع الهدف العام للشركة ورؤيتها.

إن الإطار العام لإدارة سلاسل الإمداد يقدم عملية تساعد على فهم ووصف وقياس وتقييم نشاطات سلسلة التوريد، ويساهم في توفير بيئة نظامية للتأسيس لمشروعات جديدة وتحسين وتطوير المشاريع الجارية والقائمة.