Chapter 3: Logistic Management & Transportation Policy

3.1. Background:

Logistics is a word that seems to be little understood, if at all, by nearly anyone not directly associated with this professional and very important discipline. Many, when hearing someone say they work in the logistics field, associate it with some quantitative, technological, or mathematical practice. Some even confuse logistics with the study of language (i.e., linguistics). The fact is, logistics is a very old discipline that has been, currently is, and always will be, critical to our everyday lives. The origin of the term logistics comes from the French word “logistique,” which is derived from “loger” meaning quarters (as in quartering troops). It entered the English language in the nineteenth century.

Logistics plays an important role in support of bringing innovative products and services to light. By effectively coordinating material flows with suppliers and managing distribution with intermediaries and customers, the logistics organization can help the company to “make the boat” rather than miss it. Along with a thorough understanding of internal operations, this physical connection to suppliers upstream in the supply chain and customers downstream allows logistics to assume a leadership role in the realm of supply chain management.

Logistics is concerned with the organization, movement and storage of material and people. The term logistics was first used by the military to describe the activities associated with maintaining a fighting force in the field and, in its narrowest sense, describes the housing of troops. Over the years the meaning of the term has gradually generalized to cover business and service activities. The domain of logistics activities is providing the customers of the system with the right product, in the right place, at the right time. This ranges from providing the necessary subcomponents for manufacturing, having inventory on the shelf of a retailer, to having the right amount and type of blood
available for hospital surgeries. A fundamental characteristic of logistics is its holistic, integrated view of all the activities that it encompasses. So, while procurement, inventory management, transportation management, warehouse management and distribution are all important components, logistics is concerned with the integration of these and other activities to provide the time and space value to the system or corporation.

Logistics and supply-chain management have become increasingly important over the last two decades. Over that period most businesses have undergone a significant period of change. Growth has become all important for companies, together with achieving scale. This has prompted an unprecedented wave of acquisitions and mergers across all industry sectors. New technology combined with consumer demand has driven companies to expand their range of products, and indeed to significantly increase the level of new product introduction. The need to satisfy demanding shareholders has meant that businesses have focused on manufacturing and distribution efficiencies, seeking ways to reduce costs. This in turn has prompted companies to seek lower-cost locations for their manufacturing bases, moving factories to Asia, Central and South America, and Eastern Europe. Companies now operate in a global market that, while offering opportunities, is extremely competitive and demanding.

Excess global capacity in most types of industry has generated intense competition. At the same time, the availability of alternative products has created a very demanding type of customer, who insists on the instantaneous availability of a continuous stream of new models. So the providers of logistics activities are asked to do more transactions, in smaller quantities, with less lead time, in less time, for less cost, and with greater accuracy. New trends such as mass customization will only intensify these demands. The accelerated pace and greater scope of logistics operations has made planning-as-usual impossible.

All of these changes have affected companies’ supply chains and logistics requirements. Now supply chains are extended over several continents and include suppliers as well as customers. They are significantly more complex, involving sea, air, rail and road movements, and different types of storage requirements, as well as the multitude of ancillary activities such as relabeling, repacking, configuration, postponement, line sequencing and reverse logistics. Already challenging for most companies, supply chains have become even more difficult for many businesses. Of course, all of this has had a profound impact on outsourcing. Whilst some companies
have outsourced parts of their logistics activities for some time now, these changes in business practices and supply chains have driven businesses to seek more efficient and effective ways to provide products in marketplaces across the world. A variety of planning decisions has to be made, ranging from the simple warehouse-floor choice of which item to pick next to fulfill a customer order to the corporate-level decision to build a new manufacturing plant. Logistics planning supports the full range of those decisions related to the design and operation of logistics systems.

Efficient, effective and competitive logistic networks and systems can be achieved only if the rules and laws of modern logistics are known and correctly applied. The aim of this RESEARCH is to present the knowledge and to establish the basics for this purpose. Further goals are to support the general understanding of logistics, to stimulate thoughts and ideas, and to offer new impulses for research and development.

However, through this chapter will strive to throw the light as far as possible on the logistics and supply chains as system and network through discussion some important concepts which may point out some what about this area which characterized by the complexity caused by many interfaced factors between decision-makers, drivers, workers and clients; vehicles, transportation and warehousing processes; communication systems and modern computer technologies which are very complex.

### 3.2 Historical overview:

The history of logistics goes far back. Since people began to cooperate, operative logistics has been practiced under different names: conveying, lifting and transport; buffering and storing; handling, packing and stacking; carrying, shipping and traveling. Cars, trucks, trains and ships were invented, cranes and handling devices were developed, and stores, silos and depots were erected. Roads, channels, railways and ports have been built all over the world. The logistic service providers of the past were the merchants of Venice, Florence, London and the Hanseatic League, the couriers and postal services, the carriers, shippers and forwarders and the operators of stores and market places. More than 150 years ago, these logistic entrepreneurs already procured goods from all over the world, moved huge quantities around the globe and delivered letters over long distances on the next day.¹

¹ Timm Gudehus & Herbert Kotzab, Comprehensive logistics, springer, vertag Berlin Heidelberg, 2009, pp.xvi introduction
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The practice of logistics in the military sector has been in existence for as long as there have been organized armed forces and the term describes a very old practice: the supply, movement, and maintenance of an armed force both in peacetime and in battle conditions. Logistics considerations are generally built into battle plans at an early stage, for it is logistics that determine the forces that can be delivered to the theater of operations, what forces can be supported once there, and what will then be the tempo of operations. Logistics is not only about the supply of materiel to an army in times of war, it also includes the ability of the national infrastructure and manufacturing base to equip, support and supply the armed forces, the national transportation system to move the forces to be deployed, and its ability to re-supply that force once they are deployed.

The practice of logistics in the business sector, starting in the later half of the twentieth century, has been increasingly recognized as a critical discipline. The first professional association of logisticians was formed in 1963, when a group of practitioners and academicians formed the National Council of Physical Distribution Management.2

Fifty years ago manufacturing and service companies did not have a logistics function. Generally, customer service was handled by the sales department. Inventory was managed by manufacturing or sales according to location. Suppliers arranged inbound transport and outbound transport was booked by someone in the sales department. In the intervening period, many companies have created a logistics function to look after an increasing proportion of movement and storage functions3.

After the Second World War, businesses sought diversification in order to achieve scale and protect profits. In the 1970s and 1980s organizations found themselves struggling to compete in a more global environment because of their lack of agility, caused by over-complex and over-staffed management structures. To resolve this, many large companies developed a strategy of focusing on their core business. This meant selling off some non-core activities, but also identifying those non-critical processes that could be outsourced. Meanwhile, transportation deregulation occurred across the Western world, making it much easier and more attractive for companies to contract out their road freight transport function. In many countries external purchases of freight transport

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2 G.Don Taylor. Logistic engineering Hand book, Taylor and francis Group, LLC, 2008, pp. 1/1
3 Lan Sadler, Logistics and supply chain integration, SAGE PUBLICATIONS LTD, First published, 2007, pp. 32
services had been constrained by government controls on the capacity of the road haulage industry. These controls excluded road freight vehicles from operating on an ‘own-account’ basis and thus encouraged companies to operate their own road freight operations. Deregulation allowed new and more sophisticated haulage and freight companies to emerge.

The growth in contracting out cannot, however, simply be attributed to deregulation because the move away from in-house transport did not accelerate until the general change in managerial attitudes to contracting out that occurred in the late 1980s. At this time, companies also began to contract out other physical distribution activities such as warehousing and materials handling.

Interestingly, outsourcing was not officially identified as a business strategy until 1989 (Mullin, 1996). During the 1990s businesses, by now under cost pressures, reviewed their core competencies and as a result outsourced more and more activities, such as accounting, human resources, data processing, security and maintenance. In logistics this was mostly confined to outsourcing dedicated distribution and transportation activities, but gradually other logistics services were outsourced, including stock control, order processing and returns operations.4

**Late 1980s and early 1990s**

In the late 1980s and early 1990s, and linked very much to advances in information technology, organizations began to broaden their perspectives in terms of the functions that could be integrated. In short, this covered the combining of materials management (the inbound side) with physical distribution (the outbound side). The term 'logistics' was used to describe this concept. Once again this led to additional opportunities to improve customer service and reduce the associated costs. One major emphasis recognized during this period was the importance of the informational aspects as well as the physical aspects of logistics.

**1990s**

In the 1990s the process was developed even further to encompass not only the key functions within an organization's own boundaries but also those

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4 Alan Rushton & Steve Walker, International logistics and supply chain outsourcing, Kogan page limited, 2007, pp. 5
functions outside that also contribute to the provision of a product to a final customer. This is known as *supply chain management*. The supply chain concept thus recognizes that there may be several different organizations involved in getting a product to the marketplace. Thus, for example, manufacturers and retailers should act together in partnership to help create a logistics pipeline that enables an efficient and effective flow of the right products through to the final customer.

These partnerships or alliances should also include other intermediaries within the supply chain, such as third-party contractors.

**2000 and beyond**

Business organizations face many challenges as they Endeavour to maintain or improve their position against their competitors, bring new products to market and increase the profitability of their operations. This has led to the development of many new ideas for improvement, specifically recognized in the redefinition of business goals and the re-engineering of entire systems\(^5\).

Impetus and innovations of *modern logistics* – besides the new name – are the increasing multitude of technical solutions and the larger capacities, higher speeds, cheaper energy, improved performances and extended services. The most important development, however, is the growing *integration* of the single logistic activities. This was stimulated by new information and communication systems and by modern process control technique. Integrated systems and extended networks have been set up, which supply companies and consumers quick, cheap and reliable within broad variety of goods and services. Today logistics is the backbone of global trade.

**Emergence of Logistics as a Science:**

Since mid 20th century, scientists have observed and described this development. They noticed the importance of *planning*, *organization* and *scheduling* for the *supply management* and named the discovered field of activities ‘*logistics*’ (Baumgarten 1981, 1999; Kapoun 1981; Krampe 2000; Morgenstern 1955; Morphy and Woods 1996, 2004; Plowman 1962; Schulte

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Up to now, logistic scientists primarily study the historically grown systems and current practices, describe techniques and options, and develop solutions for selected problems. However, in order to cope with fast changing requirements and to use innovations more efficiently, it is necessary to convert logistics from a descriptive *empirical science* into a normative *ANALYTICAL SCIENCE*.\(^6\)

**Changing views of logistics (concept and definitions):**

All organizations move materials to support their operations. These materials are both tangible (such as raw materials, components, finished goods, and spare parts) and intangible (predominantly information). Logistics is the function responsible for these movements; it manages the transport and storage of materials on their journey from original suppliers through supply chains and on to final customers. In practice, the terms ‘logistics’ and ‘supply chain management’ are used interchangeably, so the Institute of Logistics and Transport can give the following definitions.

Logistics is the time related positioning of resources or, the strategic management of the total supply-chain. The supply-chain is a sequence of events intended to satisfy a customer. It can include procurement, manufacture, distribution and waste disposal, together with associated transport, storage and information technology.\(^7\)

Parallel to the growth in the importance of distribution and logistics has been the growth in the number of associated names and different definitions that are used. Some of the different names that have been applied to distribution and logistics include:

- physical distribution;
- logistics;
- business logistics;
- materials management;

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\(^6\) Timm Gudehus & Herbert Kotzab, *Comprehensive logistics*, 2009, ibid., pp.xvi introduction
procurement and supply;
- product flow;
- marketing logistics;
- supply chain management;
- demand chain management;
- and there are several more.

There is, realistically, no 'true' name or 'true' definition that should be pedantically applied, because products differ, companies differ and systems differ. Logistics is a diverse and dynamic function that has to be flexible and has to change according to the various constraints and demands imposed upon it and with respect to the environment in which it works. So these many terms are used, often interchangeably, in literature and in the business world. One quite widely accepted view shows the relationship as follows:

Logistics = Supply + Materials management + Distribution

As well as this, logistics is concerned with physical and information flows and storage from raw material through to the final distribution of the finished product. Thus, supply and materials management represents the storage and flows into and through the production process, while distribution represents the storage and flows from the final production point through to the customer or end user. Major emphasis is now placed on the importance of information as well as physical flows and storage, and an additional and very relevant factor is that of reverse logistics - the flow of used products and returnable packaging back through the system.

The question of the most appropriate definition of logistics and its associated namesakes is always an interesting one. There are a multitude of definitions to be found in textbooks and on the internet. A selected few are:

3.3.1 Concepts of Logistics and Distribution:

Logistics is the management of all activities which facilitate movement and the co-ordination of supply and demand in the creation of time and place utility. (Hesket, Glaskowsky and Ivie, 1973)

Logistics is the art and science of managing and controlling the flow of
goods, energy, information and other resources. (Wikipedia, 2006).

Logistics management is the planning, implementation and control of the efficient, effective forward and reverse flow and storage of goods, services and related information between the point of origin and the point of consumption in order to meet customer requirements. (CSCMP, 2006)

Logistics is the positioning of resource at the right time, in the right place, at the right cost, at the right quality. (Chartered Institute of Logistics and Transport (UK), 2005) An appropriate modern definition that applies to most industry might be that logistics concerns the efficient transfer of goods from the source of supply through the place of manufacture to the point of consumption in a cost-effective way whilst providing an acceptable service to the customer. This focus on cost-effectiveness and customer. For most organizations it is possible to draw up a familiar list of key areas representing the major components of distribution and logistics. These will include transport, warehousing, inventory, packaging and information8.

However, people use many different terms to describe aspects of logistics. Even something as basic as a ‘supply chain’ may be called a ‘process’ when emphasizing operations, a ‘marketing channel’, ‘logistics channel’ or ‘distribution channel’ when emphasizing marketing, a ‘value chain’ (Porter, 1985) when considering added value, a ‘demand chain’ to show how customer demand is satisfied or a ‘supply network’ or ‘supply web’ to emphasize its complexity (Waters, 2003). The variety of terms can be confusing, but each gives a subtle difference in meaning.

Whatever names we give to different logistics activities, the important point is that they combine to form an essential function in every organization. Christopher (1986) emphasizes this broad importance by saying that ‘Logistics has always been a central and essential feature of all economic activity.’ Shapiro and Heskett (1985) agree, saying that ‘There are few aspects of human activity that do not ultimately depend on the flow of goods from point of origin to point of consumption.’

8 Alan Rushton, Phil Croucher, Peter Baker, Handbook of logistics and distribution management, 2006, ibid, pp. 5.
Despite this importance, there is a long history of organizations paying little attention to their logistics. They traditionally put all their effort into making products, and then considered the movement and storage of materials as an uninteresting chore that formed part of the overheads of doing business. In 1962 Drucker described physical distribution as ‘the economy’s dark continent’ and said that this formed ‘the most sadly neglected, most promising area of… business’ (Drucker, 1962). After this, organizations began to realize that logistics can be expensive, and they gave it more attention.

3.3.2 Interfacing area of logistics and supply chain

Supply chain management:

Supply chain Manufacturers now compete less on product and quality — which are often comparable — and more on inventory turns and speed to market.

- John Kasarda

Forbes, October 18, 1999

The supply chain is more than the physical movement of goods “from earth to earth.” It is also information, money movement, and the creation and deployment of intellectual capital, or, as some call it, “knowledge work.” Joel Sutherland of J.B. Hunt Logistics, Inc. has captured the essence of the discussion when he describes the difference between the term “logistics” and “supply chain.” Sutherland was an active participant in the deliberations of the Council of Logistics Management and its efforts to build the lexicon of supply chain terminology. He points to three different common views of the supply chain.

1. “Supply chain” is just another term for “logistics.”
2. Supply chain includes other functions such as purchasing, engineering, production, finance, marketing, and related control activities in the single company.
3. The supply chain is all the functions in definition #2 plus those in a company’s suppliers’ suppliers and a company’s customers’ customers as well — extending far outside the traditional enterprise.
4. For his part, Sutherland subscribes to definition #3. We would add our two

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cents’ worth with the following definition:

Supply chain:

Life cycle processes comprising physical, information, financial, and knowledge flows whose purpose is to satisfy end-user requirements with products and services from multiple linked suppliers.

Processes:

These cover broad range including sourcing, manufacturing, transporting, and selling physical products. The definition includes the corresponding activities for a service.

Life cycle:

Refers to both the market life cycle and the usage life cycle\(^\text{10}\).

Supply chains vary significantly in complexity and size but the fundamental principles apply to all operations whether they be large or small, manufacturing or service, private or public sector. Supply chain management is not just for large big name businesses such as Dell Computers, Wal-Mart and Toyota Motors. It is for all businesses and for all operations\(^\text{11}\).

The term “supply chain management” arose in the late 1980s and came into widespread use in the 1990s. Prior to that time, businesses used terms such as “logistics” and “operations management” instead of supply chain\(^\text{12}\).

Supply chain management encompasses the planning and management of all activities involved in

Sourcing and procurement, conversion, and all logistics management activities. Importantly, it also includes coordination and collaboration with channel partners, which can be suppliers, intermediaries, third-party service providers, and customers. In essence, supply chain management integrates supply and demand management within and across companies\(^\text{13}\).


\(^{13}\) G. Don Taylor, Logistics engineering Hand book Taylor and francis group, LLC, 2008, PP.1,3
Supply of Chain Management:

Beyond the management of physical inventories and information in the domain of logistics is the way that products are developed, marketed, and sold. Add in the relationships formed with suppliers and customers and you have supply chain management.* When viewed in this light, supply chain management is clearly much more than logistics. This integration of a company’s planning and execution functions represents not just a way to achieve efficiencies, but a holistic strategy for doing business.

While much talk has surrounded the concept of supply chain management, very few companies are seizing the potential found in broad-scale adoption. Why? First, the concept of supply chain management is not well understood. Much debate has surrounded the very meaning of the term, with a lack of consensus existing even today. Even the functions that belong in supply chain management have been debated. Another reason supply chain management is not widely practiced is that it is not easy to accomplish. As noted, it involves coordination of planning and operational activities throughout the company as well as coordination of activities with suppliers and customers.14

Supply chain management is a set of approaches utilized to efficiently integrate suppliers, manufacturers, warehouses and stores, so that merchandise is produced and distributed at the right quantities, to the right locations, and at the right time, in order to minimize system-wide costs while satisfying service level requirements.

What do these definitions suggest? They suggest that supply chain management must consider every organization and facility involved in making the product and the costs involved in doing so. This also implies that the objective is to be cost-effective across the whole supply chain, which requires a system-wide approach to optimization.15

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Supply Chain Management—Boundaries and Relationships:

Supply chain management is an integrating function with primary responsibility for linking major business functions and business processes within and across companies into a cohesive and high-performing business model. It includes all of the logistics management activities stated earlier, as well as manufacturing operations, and it drives coordination of processes and activities with and across marketing, sales, product design, finance, and information technology\(^{16}\).

The biggest challenge facing companies today is not the Internet, by itself, or globalisation or stakeholder needs. Rather, the greatest challenge is the integration of supply chains from vendors through manufacturers and distributors to satisfy end customers and obtain value for those companies. Supply chain management is the planning and flow of materials and products between a number of companies to deliver goods and services to end consumers\(^{17}\).

Logistics Management:

logistics

There seem to be as many definitions of “logistics” as there are logisticians. And this is not a bad thing! Why? Because logistics is so far-reaching and yet so integrated into our businesses that it is hard for one definition ever to meet the challenge of summing up what we do in a few short sentences. Although logistics does involve internal operations and stretches to up- and downstream trading partners in the supply chain, it is fair to say that any definition of logistics will need to involve the management of inventory, whether it is in the form of hard goods (materials, people) or soft goods (information). If there is no inventory to move around, there is no need for logistics\(^{18}\).

Logistics deals with the planning and control of material flows and related information in organizations, both in the public and private sectors. Broadly speaking, its mission is to get the right materials to the right place at the right time, while optimizing a given performance measure (e.g. minimizing total operating costs) and satisfying a given set of constraints (e.g. a budget constraint).

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\(^{16}\) G. Don Taylor, Logistics Engineering Handbook, 2008, Ibid., pp.1
\(^{17}\) Lan Sadler, Logistics and Supply Chain Integration, SAGE Publications Ltd, 1st edition 2007, pp.4
\(^{18}\) Thomas Goldshy, Lean Six Sigma Logistics, Ibid., 2005, PP.4
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Logistics systems.

A logistics system is made up of a set of facilities linked by transportation services. Facilities are sites where materials are processed, e.g. manufactured, stored, sorted, sold or consumed. They include manufacturing and assembly centres, warehouses, distribution centres (DCs), transshipment points, transportation terminals, retail outlets, mail sorting centres, garbage incinerators, dump sites, etc. Transportation services move materials between facilities using vehicles and equipment such as trucks, tractors, trailers, crews, pallets, containers, cars and trains.¹⁹

Logistic management.

Logistics management is that part of supply chain management that plans, implements, and controls the efficient, effective forward and reverse flow and storage of goods, services, and related information between the point of origin and the point of consumption in order to meet customers’ requirements.²⁰ Logistics management takes into consideration every facility that has an impact on system effectiveness and plays a role in making the product conform to customer requirements; from supplier and manufacturing facilities through warehouses and distribution centers to retailers and stores. Second, the goal in logistics management is to be efficient and cost effective across the entire system; the objective is to minimize systemwide costs, from transportation and distribution to inventory of raw material, work in process and finished goods. Thus, the emphasis is not on simply minimizing transportation cost or reducing inventories, but rather on a systems approach to logistics management. Finally, because logistics management evolves around planning, implementing and controlling the logistics network, it encompasses many of the firm’s activities, from the strategic level through the tactical to the operational level.

Indeed, following Hax and Candea’s (1984) treatment of production-inventory systems, logistical decisions are typically classified in the following way.

- The strategic level deals with decisions that have a long-lasting effect on

¹⁹ Donald Waters, Global logistic and distribution planning, 2003, Ibid, pp. 2 & 4
²⁰ G. Don Taylor, Logistic engineering Handbook, 2008, Ibid., pp. 1
the firm. This includes decisions regarding the number, location and capacities of warehouses and manufacturing plants, or the flow of material through the logistics network.

- The **tactical level** typically includes decisions that are updated anywhere between once every quarter and once every year. This includes purchasing and production decisions, inventory policies and transportation strategies including the frequency with which customers are visited.

- The **operational level** refers to day-to-day decisions such as scheduling, routing and loading trucks.21

**CHART No. (3.1) : The logistic network**


**Logistics Management—Boundaries and Relationships**

Logistics management activities typically include inbound and outbound transportation management, fleet management, warehousing, materials handling, order fulfillment, logistics network design, inventory management, supply–demand planning, and management of third-party logistics services providers. To varying degrees, the logistics function also includes sourcing and procurement,

production planning and scheduling, packaging and assembly, and customer service. It is involved in all levels of planning and execution—strategic, operational, and tactical. Logistics management is an integrating function, which coordinates and optimizes all logistics activities, as well as integrates logistics activities with other functions including marketing, sales manufacturing, finance, and information technology.

Is there a difference between ‘logistics’ and ‘supply chain’ management?
The Council of Logistics Management has recently changed its name to Council of Supply Chain Management Professionals, which indicates that they see logistics management as part of the supply chain process. The council when still the council for Logistics Management defined logistics management as: The process of planning, implementing and controlling the efficient, cost effective flow and storage of raw materials, in-process inventory, finished goods, and related information from point of origin to point of consumption for the purpose of conforming to customer requirements. There new definition is ‘Supply chain management encompasses the planning and management of all activities involved in sourcing and procurement, conversion, and all logistics management activities. Importantly, it also includes coordination and collaboration with channel partners, which can be suppliers, intermediaries, third party service providers and customers. In essence, supply chain management integrates supply and demand management within and across companies.’ Council of Supply Chain Management Professionals (2007)

If we consider these definitions we see they are very similar to the earlier definitions we have provided (Melwynk and Swink, 2002; Simchi-Levi et al., 2003), and can conclude that for our purposes, at least in a manufacturing and supply organization, logistics and supply chain management are synonymous. If one is inclined to separate the physical movement of logistics in a service organization, we can see that there is but a fine border between logistics and supply chain management in the service sector.

Taylor (1997) goes on to divide supply chain management into:

- Logistics and supply chain strategy

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22 G.Don Taylor, Logistic engineering Handbook, op. cit, 2008, pp.1
23 Ron Basu, Total supply chain management, 2008, Ibid, pp.8
• Purchasing and supplies management
• Manufacturing logistics
• Distribution planning and strategy
• Warehouse planning and operations management
• Inventory management
• Transport management
• International logistics and international market entry strategies

Taylor’s definition infers that ‘Logistics’ is a subset of ‘SCM’. Each sub-topic contributes to the performance of the overall supply chain process and, as a consequence, to improved stakeholder satisfaction.

❖ **Definitions of terms related to supply chain and logistic**

Here are some definitions for terms that are related to logistics and supply chain.

**Contract logistics**

Contract logistics is used to define the logistics activities that relate to warehousing, distribution and other associated activities that are outsourced. The term refers to the asset-intensive nature of the activity and the need for a contract to be in place between the third-party logistics provider and the customer.

**Distribution**

Distribution can be defined as the process of delivery of manufactured products to the customer.

**Fourth-party logistics**

A fourth-party logistics service provider can be defined as an integrator that assembles the resources, capabilities and technology of its own organization and other organizations to design, build and run comprehensive supply chain solutions.

**Freight forwarding**

Freight forwarding may be defined as the secure and efficient movement of goods on behalf of an exporter or importer, commonly known as the shipper. Freight forwarders might use the services of shipping lines, airlines or road and...
rail freight providers, or in some cases the freight forwarding company itself provides the service.

**Logistics**

Logistics can be defined as the process of planning, implementing and managing the movement and storage of raw materials, work-in-progress inventory, finished goods and the associated information from the point of origin to the point of consumption.

**Supply chain**

Supply chain can be defined as the flow of materials and products through the process of procurement, production, storage, distribution and disposal.

**Logistics service provider (LSP)**

Logistics service providers are external providers who manage outsourced activities on behalf of the shippers or customers whose business processes they support. They are also commonly referred to as 3PLs (see below).

**Off shoring**

Off shoring is the relocation of the provision of services from one country to another to benefit from cost savings (for example through lower labour costs in India). Organizations can undertake offshoring without outsourcing and vice versa, be they manufacturers or service providers. Car manufacturers have been both offshoring and outsourcing for years. They select the most effective locations around the world for their manufacturing facilities, and outsource some, but by no means all, of their manufacturing supply.

**Outsourcing**

Outsourcing can be defined as the strategic use of external specialized service providers to execute and manage activities or functions that are normally seen as non-core to the business. Outsourcing should not be, but often is, confused with off shoring (see above).

The researcher concludes that the logistic involves the effective planning and management of flow of goods, people and information from origin point to the consumption point, where as the supply chain has extensive range, including all stages involved directly or indirectly, in fulfilling a customer request, supply
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Chain includes the finance, marketing, distributing and selling to the customers themselves, hence, the supply chain surrounded by complexity, therefore it is hard to put it into practice.

**Third-party logistics (3PL)**

Third-party logistics can be defined as the management of outsourced logistics, transportation and distribution activities. 3PL is commonly used as the term to describe an external provider who manages outsourced activities on behalf of the shippers or customers whose business processes they support. 3PL services typically include:

* outbound transportation;
* warehousing;
* inbound transportation;
* freight bill auditing/payment;
* customs brokerage;
* freight forwarding;
* customs clearance.

**Transportation or freight transport:**

Transportation or freight transport may be defined as the physical movement of goods, both inbound and outbound, including the collection of product and its delivery to the end user. Transportation can be executed across a variety of modes including air, sea, rail and road.

3.4. **Transportation and logistics:**

The most important logistics activity for many business firms, not only in terms of cost but also in terms of service requirements, is transportation. No firm that produces a product can remain in operation without the availability of transportation – for the movement of products or raw materials to its plants and/or the movement of finished products from its plants to its customers. An efficiently managed business logistics system for a firm requires that the transportation activities of the firm be efficiently

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managed. However, the minimization of the firm’s transportation costs in the movement of raw materials and products does not necessarily result in the minimization of the firm’s total business logistics costs that are related to these movements.\textsuperscript{25}

**Freight transportation:**

Freight transportation plays a key role in today’s economies as it allows production and consumption to take place at locations that are several hundreds or thousands of kilometres away from each other. As a result, markets are wider, thus stimulating direct competition among manufacturers from different countries and encouraging companies to exploit economies of scale. Moreover, companies in developed countries can take advantage of lower manufacturing wages in developing countries. Finally, perishable goods can be made available in the worldwide market. Freight transportation often accounts for even two-thirds of the total logistics cost and has a major impact on the level of customer service. It is therefore not surprising that transportation planning plays a key role in logistics system management.

Main features of the most common containers used for transporting solid goods. So as to transport large shipments over long distances and small shipments over short distances (facility consolidation). Second, less-than-truckload pick-up and deliveries associated with different locations may be served by the same vehicle on a multi-stop route (multi-stop consolidation). Third, shipment schedules may be adjusted forward or backward so as to make a single large shipment rather than several small ones (temporal consolidation).

When selecting a carrier, a shipper must take two fundamental parameters into account: price (or cost) and transit time. The cost of a shipper’s operated transportation service is the sum of all costs associated with operating terminals and vehicles. The price of a transportation service is simply the rate charged by the carrier to the shipper. Air is the most expensive mode of transportation, followed by truck, rail, pipeline and ship. According to recent surveys, transportation by truck is approximately seven times more expensive than by train, which is four times more costly than by ship. Transit time is the time a shipment takes to move between its origin to its destination. It is a random

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\textsuperscript{25} Wayne .K. Talley, Port economics, 2009, Taylor and Francis library, pp. 70
variable influenced by weather and traffic conditions. One must bear in mind that some modes (e.g. air) have to be used jointly with other modes (e.g. truck) to provide door-to-door transportation. The standard deviation and the coefficient of variation (standard deviation over average transit time) of the transit time are two measures of the reliability of a transportation service.

In transportation the trade-off between responsiveness and efficiency is manifested in the choice of transport mode. Fast modes of transport such as airplanes are very responsive but also more costly. Slower modes such as ship and rail are very cost efficient but not as responsive. Since transportation costs can be as much as a third of the operating cost of a supply chain, decisions made here are very important. There are six basic modes of transport that a company can choose from:

1. **Ship** which is very cost efficient but also the slowest mode of transport. It is limited to use between locations that are situated next to navigable waterways and facilities such as harbors and canals.

2. **Rail** which is also very cost efficient but can be slow. This mode is also restricted to use between locations that are served by rail lines.

3. **Pipelines** can be very efficient but are restricted to commodities that are liquids or gases such as water, oil, and natural gas.

4. **Trucks** are a relatively quick and very flexible mode of transport. Trucks can go almost anywhere. The cost of this mode is prone to fluctuations though, as the cost of fuel fluctuates and the condition of roads varies.

5. **Airplanes** are a very fast mode of transport and are very responsive. This is also the most expensive mode and it is somewhat limited by the availability of appropriate airport facilities.

6. **Electronic Transport** is the fastest mode of transport and it is very flexible and cost efficient. However, it can only be used for movement of certain types of products such as electric energy, data, and products composed of data such as music, pictures, and text. Someday technology that allows us

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to convert matter to energy and back to matter again may completely rewrite the theory and practice of supply chain management (“beam me up, Scotty).

Given these different modes of transportation and the location of the facilities in a supply chain, managers need to design routes and networks for moving products. A route is the path through which products move and networks are composed of the collection of the paths and facilities connected by those paths. As a general rule, the higher the value of a product (such as electronic components or pharmaceuticals), the more its transport network should emphasize responsiveness and the lower the value of a product (such as bulk commodities like grain or lumber), the more its network should emphasize efficiency.

3.5. Integration of the supply chain:

Initially, organizations responded to these pressures for change by looking for improvements to the separate activities of logistics – procurement, inventory control, warehousing, materials handling, packaging, transport and so on. It soon becomes clear, however, that these are not isolated activities, and changes in, say, transport have direct consequences for warehousing and other logistics operations. The best results clearly come from considering all aspects of material movement in a single, integrated function. This gives a broader and more inclusive view of logistics, with relevant activities coordinated under the umbrella of a unified function. The result is a more effective and efficient flow of materials, with lower overall costs. One development from this view is ‘quick response’ or ‘efficient customer response’ (ECR), which links all the tiers of a supply chain so that a final customer buying a product from a retailer automatically sends a message back through the chain to trigger a response from upstream suppliers. When, for example, a customer buys a pair of jeans in a clothes shop, the EPOS (electronic point of sales) system sends a message back to the wholesaler to say that the stock needs replenishing, then back to the manufacturer to say that it is time to make another pair of jeans, then back to suppliers to say that they should deliver materials to the manufacturer, and so on. The result is ‘a focus on the consumer, the development of partnership relationships between retailers and their suppliers, and an increased integration of the components of the supply-chain’ (Szymankiewicz, 1997). Hutchinson (in O’Sullivan,

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1997) says that, ‘ECR means meeting consumer wishes better, faster and at less cost’, and he adds, ‘Is there anybody, wishing to remain in business, who believes that his or her company should not be striving to meet the wishes of the customer of their products and services better, faster and at less cost?’ The clear benefits from this integrated view include:

- common objectives for all parts of the supply chain;
- genuine cooperation to achieve these objectives;
- less uncertainty, errors and delays along the supply chain;
- less duplication of effort, information, planning, stocks, etc;
- elimination of operations that add no value for customers;
- improved efficiency and productivity, giving lower costs;
- lower stocks and shorter response times;
- actual demands triggering replenishments;
- faster and more flexible responses to customer demands;
- sharing information and highlighting important features such as costs;
- making planning easier;
- using available technology, such as EPOS, EDI and e-commerce;
- focusing on the importance of logistics28.

3.5.1. Availability of Logistics Services (importance integrated logistics):

In general, A major role of an integrated logistics system is to assist in the production, consumption, distribution, or management of the “supply chain” of goods and services. Integrated and seamless logistics services can play an important part in facilitating the global supply-chain process (Banomyong 2005). Logistics involves a wide range of related activities, including storage, inventory management, materials handling, and order processing.

Stank and Roath (1998) suggested that value-added services for international trade, such as import and export documentation services, insurance, and banking and finance, are important for shippers. Traders use these services to enhance their overall

transport and logistics capabilities. Warehousing, distribution, and logistics information services are also key components of an intermodal system. Like other businesses in the transport sector, global terminal operators are increasingly active in providing logistics services, particularly in operating logistics centres and container freight stations.

And from the general view, Every logistic task has certain aims, concerns a limited area and deals with defined aspects. The most general aspects of logistics – corresponding to macroeconomics and microeconomics (Mankiw 2003; Samuelson and Nordhaus 1998) – are macrologistics and micrologistics (Ihde 1991).

The aim of macrologistics is to ensure the efficient supply of consumers, companies and state with goods and to organize the traffic flows between sources and destinations within a region, a country and around the globe. This is aimed independent of the ownership of the goods, sources and sinks. In order to achieve the optimal economical development of a country, besides capable institutions and suitable laws an efficient logistic infrastructure is necessary.

The aim of micrologistics is to supply – based on private orders, agreements and contracts – companies and consumers with the required goods most efficiently and to cover the mobility demand of individuals. For this purpose, companies and logistic service providers plan, set up and operate logistic systems and networks. The task of micrologistics is to realize and operate logistic systems and to manage transport chains and supply networks in order to fulfill the expectations of customers and to ensure the optimal development of a company. The main area of micrologistics is company logistics. There are internal logistics and external logistics. Internal logistics, also called indoor logistics, material handling or Intralogistics, connects the receiving docks, internal sinks and sources, and the shipping docks of the same site, which can be a logistic center, transshipment point, plant or market. External logistics or Extralogistics connects the shipping docks of one or several locations with the receiving docks of other locations.

- **Objectives of logistics:**

  Logistics has three main objectives may shown as follows:

- **Capital reduction.** The first objective is to reduce as much as possible the level of investment in the logistics system (which depends on owned equipment and inventories). This can be accomplished in a number of ways, for example, by choosing public warehouses instead of privately owned warehouses, and by using common carriers instead of privately owned vehicles. Of course, capital reduction usually comes at the expense of higher operating costs.

- **Cost reduction.** The second objective is to minimize the total cost associated with transportation and storage. For example, one can operate privately owned warehouses and vehicles (provided that sales volume is large enough).

- **Service level improvement.** The level of logistics service greatly influences customer satisfaction which in turn has a major impact on revenues. Thus, improving the logistics service level may increase revenues, especially in markets with homogeneous low-price products where competition is not based on product features. The level of logistics service is often expressed through the *order-cycle time*, defined as the elapsed time between the instant a purchase order (or a service request) is issued and the time goods are received by the customer (or service is provided to the user). The order-cycle time is a random variable with a multinomial probability distribution.\(^{31}\)

### Strategic Logisticians and Theorists

The objective of strategic and theoretical logisticians is to contribute to practical use through analysis of the basic principles of logistics and by developing innovative concepts and strategies. This group consists of academics at institutes and universities and of consultants, strategists, organizers and systems analysts. Prerequisites for a successful strategic logistician are analytical thinking, openness about new ideas, creativity and judgment. *Analytical-normative logistics* requires knowledge of the methods and strategies of logistics and business administration, sufficient command of arithmetic, algebra, probability theory and

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statistics and some know how in operations research. A further necessity is to know the realities and requirements of the daily business.

Many theorists are generalists. They tend to set up tautological terms and definitions, to develop models out of touch with reality and to make considerations with little relation to practice. Logistics as applied science is justified by its applicability in practice. Hence, the measure for strategic logisticians is their contribution to practical use.

Task of Logisticians

• Operative Logisticians and Practitioners:

Operative logisticians and practitioners have the objective to generate permanent benefits by putting the best solution into action. Schedulers, plant managers, operators and users of logistic centers and logistic systems belong to this group. Most of them work for logistic service providers. Also logistic managers are in many respects practical logisticians. They manage logistic operations or a logistic network and take care for the sustainable competitive advantage of the company.

Operative logisticians need the ability to think practically. They have to have a solid knowledge of the techniques and capacities of their equipment, sites and systems. Operative logisticians in management position must be capable to organize processes and to decide under uncertainty. Practitioners schedule incoming orders, operate computers and lead business plans to success. Not all plans survive the contact with reality, not all software is suitable in practice. The schedulers make decisions, on which the daily profit or loss of orders and in the long run of the whole business depends. Therefore, they should be well educated and trained (Gardiner 2005 and 2002; Murphy 2004). To keep them motivated, their work and contribution has to be appreciated by the management.

Good logisticians are specialists in one or two fields and generalists in all other areas of importance for logistics. They follow the hawk principle:

• The logistician stays above theory and practice and observes with sharp eyes structures, processes and connections. If a certain field shows progress, the view is focused, good solutions are assessed, details
analyzed and useful ideas are captured from the lowland of theory and practice.

- The permanent change between top-down to bottom-up and vice versa widens the competencies. By this process, the logistician gains further abilities to solve actual problems.

- Who has no distance, does not see the whole. Who only focuses on details, can not understand the relations. A system is more than the sum of its elements, but the function of the total system can depend on one element only (Lenk and Ropohl 1978). This holds especially for bottlenecks that arise in practice everywhere, but are not noticed immediately (Goldratt 2002; Gudehus 1975/I). Bottlenecks are decisive for the capability and efficiency of performance, production and logistic systems.

### 3.6. Theory and Practice:

Apart from the contributions of Operations Research, logistics is in many areas a skill based on experiences and experiments. Most practical innovations in logistics are still found by trial and error. Some practitioners emphasize this proudly. Faced with a theoretically based proposal, they object: “That might be right in theory but is of no use in practice”. More than 200 years ago, the German philosopher Immanuel Kant wrote an article about this objection (Kant 1793). He criticized theoreticians, who never will become practical, and told the practitioners: “Nobody can disregard theory without being an ignorant in his field”.

Tensions have always existed between theory and practice and will remain in future. Without these tensions, neither progress in practice and nor discoveries in theory are possible.. Without unnecessary complexity and abstractness, it should help to a better understanding. Analytical-normative logistics offers rules for solving problems, develops methods for attaining logistic objectives and designs strategies for the planning and operation of logistic systems.\(^{32}\).

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\(^{32}\) Timm Gudehus, Comprehensive logistics, 2009, O.p, cit., pp. 34-37
3.6.1. Emerging Trends in Logistics:

In recent years, several strategic and technological changes have had a marked impact on logistics. Among these, three are worthy of mention: globalization, new information technologies and e-commerce.

Globalization.

An increasing number of companies operate at the world level in order to take advantage of lower manufacturing costs or cheap raw materials available in some countries. This is sometimes achieved through acquisitions or strategic alliances with other firms. As a result of globalization, transportation needs have increased. More parts and semi-finished products have to be moved between production sites, and transportation to markets tends to be more complex and costly. Also, as a result of globalization, more emphasis must be put on the efficient design and management of supply chains, sometimes at the world level.

Information technologies.

Suppliers and manufacturers make use of EDI. This enables them to share data on stock levels, timing of deliveries, positioning of in transit goods in the supply chain, etc. At the operational level, geographic information systems (GISs), global positioning systems (GPSs) and on-board computers allow dispatchers to keep track of the current position of vehicles and to communicate with drivers. Such technologies are essential to firms engaged in express pick-up and delivery operations, and to long-haul trucking companies\(^{33}\).

It is difficult to find any area of logistics that is not affected by improving technology in some way, but there are two particularly important areas for e-business. The first is new tracking systems that use item coding to give each package an identifying tag (usually a bar code or magnetic stripe) which can be read to monitor all locations and movements. The second is EFT (electronic fund transfer) systems that acknowledge the receipt of materials and automatically transfer money from customers’ bank accounts to the supplier’s\(^{34}\).

\(^{33}\) Gian paolo Ghiani, Ohers, Introduction to logistics systems planning and control, 2004, O.p, cit., pp.17

\(^{34}\) Donald Waters, Global logistics and distribution planning, 2003, Ibid, pp.10
E-commerce.

An increasing number of companies make commercial transactions through the internet. It is common to distinguish between business-to-business (B2B) and business-to-consumers (B2C) transactions. The growth of e-commerce parallels that of globalization and information technologies. As a result of e-commerce the volume of goods between producers and retailers should go down while more direct deliveries should be expected between manufacturers and end-users. E-commerce leads to a more complex organization of the entire logistics system (e-logistics), which should be able to manage small- and medium-size shipments to a large number of customers, sometimes scattered around the world. Furthermore, the return flow of defective (or rejected) goods becomes a major issue (reverse logistics). In an e-logistics system different approaches for operating warehouses and distribution are generally adopted. The virtual warehouse and the Points Of Presence In The Territory (POPITT) are just a few examples. A virtual warehouse is a facility where suppliers and distributors keep their goods in stock in such a way that the e-commerce company can fulfil its orders. A POPITT is a company-owned facility where customers may go either for purchasing and fetching the ordered goods, or for returning defective products. Unlike traditional shops, a POPITT only stores already sold goods waiting to be picked up by customers and defective products waiting to be returned to the manufacturers. This solution simplifies distribution management but reduces customer service level since it does not allow for home deliveries.35

In addition other current trends has been given by Donald Water as below:

Fewer suppliers

Traditionally, organizations have used a large number of suppliers. This encouraged competition, ensured that they got the best deal, and allowed deliveries to continue if one supplier ran into difficulties. However, the trend towards cooperation within a supply chain encourages organizations to look for the best suppliers and work exclusively – or largely – with them. This inevitably reduces the number of suppliers used.

35  Introduction to logistics system and control,2004,O.p, cit.,pp.17
Concentration of ownership

Because large companies can get economies of scale and efficient operations, they dominate many supply chains. There are, for example, many supermarkets and transport companies, but the biggest ones continue to grow at the expense of small ones. The result is a continuing concentration of ownership, with large organizations setting standards that all operations must match.

Postponement

Traditionally, manufacturers moved finished goods out of production and stored them in the distribution system until they were needed. When there are many variations on a basic product, this gives high stocks of similar products. Postponement moves almost-finished products into the distribution system, and delays final modifications or customization until the last possible moment. Similarly, postponement allows manufacturers of electrical equipment to keep stocks of standard products, and only add the transformers and cables needed for different markets at the last minute.

Cross-docking

Traditional warehouses move materials into storage, keep them until needed, and then move them out to meet demand. Cross-docking coordinates the supply and delivery, so that goods arrive at the receiving area, and are immediately transferred to the loading area and put onto delivery vehicles. There may be some sorting, breaking of bulk and consolidation of materials at the warehouse, but no long-term storage. The basic activities can be done at a simple transfer point, so the ultimate aim is to remove the warehouse completely and have ‘stock on wheels’. A related arrangement uses ‘drop shipping’, where warehouses do not keep stock themselves, but coordinate the movement of materials directly from upstream suppliers to downstream customers.

Environmental concern

There is growing concern about air and water pollution, energy consumption, urban development, waste disposal and other aspects of environmental damage. It is fair to say that logistics does not have a good reputation for environmental protection – demonstrated by the emissions from heavy lorries, use of green field sites for warehouses, calls for new road building,
use of extensive packaging, oil spillage from tankers, and so on. On the positive side, however, logistics managers are clearly moving towards greener practices. Operators use more energy-efficient vehicles, control exhaust emissions, reuse packaging, switch to environmentally friendly modes of transport, increase recycling through reverse logistics, add safety features to ships, develop brownfield sites, and so on. There is a growing recognition that careful management can bring both environmental protection and lower costs\textsuperscript{36}.

However, all governments of the world are interested in both international trade and international transportation. This is for many reasons. It is generally believed that each country produces what it can best, and then is able to trade some of its surpluses for goods or services that other nations have to offer. All nations would like to export more than they import, in order to generate a positive balance of trade, which helps bolster both the country’s currency and its employment. There are several costs associated with international logistics, and they are in addition to the price of the product. If a good is either exported or imported, there are costs of transport and insurance. If these services are provided by the exporting nation’s firms, then the importing nation must import the goods, then provide the transportation for carrying the goods to the port of entry and the insurance for the movement. If the importing nation can provide the transportation and insurance, then they are “importing” only the goods.

3.6.2. Managing Successful Global Supply Chain Collaboration:

Creating such integrated supply chains is not the easiest of managerial tasks. In a 2001 survey of 145 U.S. high-tech firms using supply chain management strategies, the top ten barriers to supply chain management collaboration were:

1. The cost and complexity of technology integration
2. Lack of trading partner technology sophistication
3. Lack of clear benefits and/or ROI
4. Cultural resistance to new trading partner paradigms
5. Until recently, few native Web-centric applications designed for this collaboration
6. Lack of technical standards

\textsuperscript{36} Donald Waters, Global logistics and distribution planning, 2003, O.p, cit., pp.10-13
7. Fear of divulging proprietary information to business partners
8. Lack of awareness of solutions
9. Lack of commitment by top management
10. Lack of vendor support for collaborative processes.\(^\text{37}\)

In addition, one of the most significant changes in recent years, profound organizational challenge is the way in which we think of organization structures. Conventionally, organizations have been ‘vertical’ in their design. In other words, businesses have organized around functions such as production, marketing, sales and distribution. Each function has had clearly identified tasks, and within these functional ‘silos’ or ‘stovepipes’ (as they have been called) there is a recognized hierarchy, up which employees might hope to progress. The problem with this approach is that it is inwardly focused and concentrates primarily on the use of resources rather than upon the creation of outputs. The outputs of any business can only be measured in terms of customer satisfaction achieved at a profit. Paradoxically, these outputs can only be realized through coordination and cooperation horizontally across the organization. These horizontal linkages mirror the materials and information flows that link the customer with the business and its suppliers. They are in fact the core processes of the business. In the horizontal organization, the emphasis is upon the management of processes. These processes, by definition, are cross-functional and include new product development, order fulfilment, information management, profitability analysis and marketing planning. The justification for this radically different view of the business is that these processes are in effect ‘capabilities’ and, as we have observed, it is through capabilities that the organization competes. In other words, the effectiveness of the new product development process, the order fulfilment process and so on determine the extent to which the business will succeed in the marketplace. One of the major driving forces for change is the revolution that has taken place in information technology and systems, enabling the supply chain linkage to become a reality. More and more, the business will find itself organizing around the information system. In other words, the processes for capturing information from the marketplace (forecasts, anticipated requirements, customer schedules and orders) will be linked to the processes for meeting that demand.

It is no coincidence that companies that have installed the new generation of ‘enterprise resource planning’ (ERP) systems have also been at the forefront of the change from vertical to horizontal organizational structures. These systems enable entire supply chains to become truly demand-driven through the use of shared information. They open up new and exciting opportunities to create true end-to-end pipeline management and the achievement of the ultimate business goal of high service to customers at less cost.38

Obviously, the key to successful global supply chain management is collaboration among all parties to the supply chain. Professor Karl Manrodt and logistics executive Mike Fitzgerald offer seven suggestions for successful supply chain collaboration as follows:

- **Proposition 1:**

  As companies move toward collaborative strategies, logistics and supply chain executives must increasingly apply a process view of their organizations. By *process view*, Manrodt and Fitzgerald mean that managers should view their company’s activities as linked and continuous, contributing to a single outcome. When managers take such a view, they come to realize the interdependent nature of the firms in the supply chain, This process view represents a conceptual leap in the experience of many managers, but is essential for understanding how collaboration in the supply chain can be achieved with both efficiency and strategic intent.

- **Proposition 2:**

  Not all processes are created equal. The importance of each process should be based on a company’s corporate strategy. A firm having customer responsiveness as its overall corporate strategy is likely to create a far different supply chain than a firm whose goal is efficiency. Customer service, manufacturing, transportation, inventory management, and a whole host of business processes would rise and drop in prominence depending on the firm’s overall strategy. It is important to insure that supply chain management strategy is consistent with corporate strategy.

- **Proposition 3:**

  Before collaborative logistics can be effective, coordination must be

38 Donald Waters, Global logistic and distribution planning, 2003, O.p,cit., pp.31&32
improved. Manrodt and Fitzgerald coin the term *intragration* to describe the movement of information within a single organization, and such intragration is an important first consideration that each participant in a supply chain must make for a successful collaboration. They discuss four steps toward intragration: awareness, measurement, coordination, and integration. Firms must first be aware of the potential benefits of coordination, and then must develop appropriate process-based measurements to meter improvements and problems in coordination. Coordination speaks to the implementation of process-based improvements, with integration achieved as a firm transcends functional boundaries within the organization and successfully adopts the process view in business practice. Manrodt and Fitzgerald give several examples in transportation consolidation, where firms from different industries gain truckload (TL) rates by consolidating less-than-truckload (LTL) shipments.

Similar collaborations are possible in warehousing, container consolidation, and in conducting joint negotiations or “bulk buys” across the supply chain. Such collaborative intelligent communities of firms can be facilitated by Web-based information exchanges.

- **Proposition 4:**

  New tools will enable and facilitate increased levels of “intragration,” coordination, and collaboration.

  In the late 1990s, the Internet demonstrated its value as an efficient communications medium that allowed real-time sharing of information in supply chains. One study of information systems in supply chain management defines four distinct types of collaborative management tools:

  1) enterprise resource planning (ERP), linking functions within an organization through an integrated database;

  2) advanced planning and decision support systems, allowing dynamic and continuous planning;

  3) logistics execution systems, including order management, manufacturing execution, warehouse management, and transportation management; and

  4) electronic data interchange (EDI), permitting the transmission of standardized information among partners in the supply chain.16 Further
development and integration of Web-based technologies will enhance global supply chain collaboration.

- **Proposition 5:**
  
The key to “intragation,” coordination, and collaboration is visibility of key supply chain activities.

  Visibility speaks to the transparency and availability of information throughout the supply chain. Barriers to information sharing must be broken down. The key to success is “the right information, at the right time, in the right quantity, to the right people.”

- **Proposition 6:**
  
The future lies beyond collaboration—in synchronization. While few supply chains have achieved the level of collaboration envisioned by Manrodt and Fitzgerald, they see a higher level still: synchronization. Synchronization is collaboration among intelligent communities, linking disparate supply chains for additional efficiencies. They call for collaboration efforts to be inclusive and open to develop such cross-community synergies.

  **Performance measurement and improvement:**

  Supply chains should be managed so that products and services flow from source to destination, where the customer receives her or his products. This management needs to be very effective to make a profit for all organisations concerned while meeting customers’ needs on time. This requires reduced waste (rejects, time, extra efforts, etc.) and greater customer effectiveness. To improve the efficiency of our supply chain we need to measure how well we are doing and make chain-wide improvements. It does not matter how well we go at any point: it is the ‘system’ efficiency and effectiveness that count in meeting customers’ needs.

  **Link goals**

  Each link in the supply chain has its own goals which should be consistent with the customer supply goal of the whole chain. There is a current emphasis on reducing the number of suppliers with whom a manufacturer had to deal from

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hundreds to tens. This assists the manufacturer to deal more closely with the limited number of surviving direct suppliers.

- **Performance measurement and profit control:**

  An important part of management is performance measurement which must comprise physical and financial measures of business achievements. The tendency of businesses to rely on purely financial measures is being addressed by the use of the Balanced Scorecard. This is very important in logistics areas where customer service and delivery performance are more crucial than dollar turnover figures. Logistics must be seen as a function which can increase turnover and profit, rather than as a cost centre to be controlled.

  It is also essential to view logistics in the firm as contributing to business profits. Logistics has a main objective of satisfying customers by excellent delivery of correct products but immediately behind this objective comes the need to operate profitably. Businesses have mainly viewed logistics as a cost centre. This approach is not conducive to allowing logistics to invest in new facilities and information systems. Consequently, logistics should be seen as a profit centre which can, in conjunction with other functions, increase turnover and hence justify an optimal level of expenditure\(^{40}\).

  In addition Van Hock (2001) has stated that measurement systems contribute significantly to expansion of alliances in supply chains attempts to improve efficiency and productivity in supply chains require movement away from internal organizational measures, which, in turn requires innovation in measurement and control systems and development of stronger relationships across the whole supply chain logistics networks are commonly strategically guided, extensive, and innovative. Such networks will almost certainty dominate the logistics industry over the coming decades\(^{41}\).

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\(^{40}\) Lan Sadler, Logistics and supply chain integration, SAGE Publications Ltd, 1th 2007, pp. 60 & 61
3.7 Transportation policy in Republic of Yemen:

3.7.1. Overview:

Transportation policy is an attractive topic for study because of the strong interrelations between policy and the nature of transportation systems. The policy story tells us what transportation is, does, and can or might do.

Policy may be defined as sets of formal and informal rules that control the innovation, construction, operation, financing, service provision, and other attributes of the transportation system. That is a vast subject area. There are policies for the testing of concrete pavements, for land taking, the funding of airports, the domain or the scope of agency concerns and powers, controlling the range of the products offered by equipment manufacturers, safety inspections, the subsidy of liner operators, and so on. Further, the limits on the subject area are not well defined.

However, Policy and planning overlap, for in many ways, planning is the application of policy. 42

The process of transportation planning and how to develop it, gain an ongoing importance for many reasons. The most important of which are two: the first of which is how to coordinate the growth of the productive capacities of the different branches of the transportation sector. The second is that the development in the transportation sector should accompany the development in other national economical sectors. The absence of such accompaniment will absolutely lead to drawbacks in the products of these sectors. This will result in disordering the economical development in the country and will lower down the average of its economical development.

So the overall development plans, in any country, should basically undertake various transportation services with minimum cost and the quality that fit the economical situation.

Brief background:

The development of the transportation sector in Yemen in 70s and 80s convoyed the growth requirements in a situation with minimal basic structures and infrastructure which are the corner stone for the development process.

42 William L. Garrison, David M. Levinson-transportation Experience: policy, planning and development, Oxford University, press 2006- pp 12
So the focus of the development plans programs was on the priority of ensuring the conditions necessary for economy and development especially the basic transportation means as roads, ports and airports.

In Yemen, as in other developing countries, the chances of investment employment in transportation sector within the framework of the developmental plans and programs which were executed in the beginning- the early 70s till now, were slightly high. The increasing chances of the investment employment in the early developmental plans and their relative declination in their later stages support the fact the need for transportation is increasing in the early stages of the development process and surpass those of the national income.\textsuperscript{43} After the existence of the Republic of Yemen and establishment of the Transportation Ministry, the overall political priorities of transportation had been identified within the overall political priorities of the government. These priorities were not in the framework of the overall strategies of the development or the transportation sector development strategy. Rather they were identified in the light of the priorities necessary for the newly reunified Yemen. Furthermore, a part of these priorities formed an entry for reforming the strategy of the first five-year plan for social and economical development (1996-2000).\textsuperscript{44} It was supposed that the first five-year plan of the Republic of Yemen to be prepared immediately the reunification and be executed after the transition period in 1992. Unfortunately, its extension from six months to two years and half along with the disagreement among the political parties and the army clashes in 1994 delayed its preparation and execution till the political resettlement. Then it was prepared in 1995 for five years (1996-2000).\textsuperscript{45}

3.7.2 Priorities in Transportation (1990-1995):

Road networks and the necessary equipments of air and sea transportation (ports and airports) in the time of the Republic foundation were in need for big investments to ensure the services expected by the investors for their works and employers. There was also an urgent need to adjust the public facilities to the new conditions after the reunifications. So the policy priorities in transportation were generally identified as follows:

\textsuperscript{43} Transportation, Reality, Expectation, Future/ the Consultant Council, 2000, p41
\textsuperscript{44} The Transportation Ministry, Transportation is the Nerve of Life – the History of the Transportation Sector in the Republic of Yemen, a book issued by the Ministry of Transportation, 2009. P.20
\textsuperscript{45} Al-odyni, Maresh,The Yemeni Ports’ Geography, Obadi Centre for Studies, First Edition, 2003, p348
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Roads:

The priorities of the government were identified as follows:

- Extending the main roads network to join the northern and western governorates to the eastern and southern ones especially those which have economical incomes like oil, fish and agriculture.
- Another priority is developing the road network which serves most of the areas of the transmuting industry.
- Supporting the Public Authority for Maintaining the Roads and Bridges.
- Supporting the local contractors to execute roads projects.

Ports and Airports:

It was expected that the growth in tourism, commerce and the Free Zone of Aden would be accompanied by increasing demand for their services. So the priorities were in developing ports and airports to meet the expected needs and services.46

However, the plan preparation was set out in the middle of 1995 formed a great chance to reconsider the priorities (1990-1995) and the suggested policies. It enabled the government to thoroughly evaluate the results of those policies in the light of the achievements inside the transportation sector after five years of the reunification and the simultaneous development witnessed and reflected in the sector activities. It took much into consideration the improvements in the process of structural merging of the sectors’ establishments and their different sections including the notions, by-laws, regularities, the administrative systems and frames, legislatives, the operating policies – wages and the statistical and planning styles, etc. in addition to the developments which were reflected negatively on the activities and conditions of the sector like the Gulf War 1990 and the Civil War in 1994. The results of the evaluation process of the transportation sector have been basics for preparation of the first five-year plan (1996-2000) were as follows:

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46 Transportation, Reality, Expectation and the Future Horizons the Consultant Council 1999, the documents of the transportation symposium by with the Ministry of Transportation, p43.
3.7.3. First Five-year plan (1996-2000):

- **Roads and land transportation:**
  - The provision of the necessary resources and maintaining the main and secondary roads by controlling car’s smuggling and their spare parts and imposing taxes on roads use in the light of effects caused by the vehicles according to their sizes and types to guarantee their continuity and working safety. Moreover, the government imposed fees on the cars’ driving licenses in all the areas and aspects to reduce taxes deterioration besides the transiting fees to regain its value.
  - The concerned authorities prepared a comprehensive study discussing goods and people’s transporting in the roads joining the different parts of the country including field surveys and site statistics.
  - Improving and training the national human resources to design, construct and maintain the roads to protect their good qualities.
  - Extending decentralization in maintaining rural roads by inviting locals and cooperative local councils in roads maintenance.
  - Encouraging the private companies working in roads field and providing them with the suitable facilities.
  - Preparing a long term plan for thorough transportation in Yemen to manipulate all the transportation sides especially the expected demand for various transportation means and investments necessary for the sector.
  - Making ready the necessary statistics for roads designing and construction, and using computer and modern technologies in roads and roads designing.
  - Applying the laws and the regularities concerning public roads use and adopting strict procedures against laws’ violators.
  - Marketing roads’ laws and regularities through media.
  - Ensuring free competition conditions in land transportation activities instead of using the turn taking stations which is run by union entities.\(^{47}\)

\(^{47}\) This turn taking stations were there in the fifties before the Yemeni Revolution for camels. The camel of the turn gets the load and the fair by a broker who control this process. When the number of the
which in charge of high transport costs and hampering the optimum utilization of potential transportation means and freight.

- Organizing the standing situation of the land transportation public institutes in the light of a policy which encourages the private sector and uses the market economy in developing the different economical activities.

➢ **Improving the transportation services as follows:**

- The concerned authorities should conduct studies to tackle the standing problems.
- Encouraging the private companies to take part in the development process.
- Setting out procedure concerning congestion, accidents and environment contamination.
- Issuing public transportation means law.
- Investigating the possibility to for constructing lorries’ parks and installing axial weighing stations outside the cities.
- Imposing obligatory insurance on all land transportation means and putting traffic safety criteria.

**Ports and marine transportation:**

- Rapid improvement in charging and discharging services’ opinions in all ports and increasing the production capacity by updating their institutions and equipment to meet the increasing expected demand for their services, and increasing the percentage of goods exchange on the ports’ platforms.
- Constructing Soqatra Port completing Al-Salif Port, constructing new ports and ports’ platforms, and giving the priority to building deep berths.
- Encouraging the construction of a commercial fleet with the cooperation of the private sector to enhance the current marine transportation energies.
- Encouraging the private sector to take part in navigation and ports’ vehicles increased after the revolution it went on like that till the appearance of the unions under the supervision of the Ministry of Work and Social Affairs.
services.

- Training workers and to become more qualified in managing and doing ports and platforms maintenance.
- Improving the ships’ docks services.
- Providing the necessary requirements to combat the environment contamination in the regional waters and Yemeni beaches.

**Airports and Air Transportation:**

- Improving maintenance sections, air navigation, tarmacs and passengers’ services according to the international criteria.
- Merging the two Yemeni Airlines Companies into one sharing company and inviting the private sector to construct their own airlines companies.
- Training human resources in managing and operating the airports and airplanes.
- Encouraging the private sector in managing and operating the sections’ services in the airports.
- Decreasing the expenses of managing and operating the Yemeni ports.\(^\text{48}\)

**3.7.4. The Government Second Five-year Plan (2001-2005) of Transportation**

**Roads and land transportation:**

The second five-year plan (2001-2005) aimed at:

1. Adding 3911km of the asphalt roads and 2194km of the gravel roads.
2. Maintaining about 15,000km of the asphalt roads and about 2500km of the gravel roads.
3. Involving the private local and foreign sectors of investments in constructing and operating the roads of the main cities according to according to the systems of (building – operation_ transfere . (bot)
4. The public transportation safety inside the capital cities and the main cities of the governorates to solve the congestions and avoid accidents happening by adopting the following policies and procedures:
   - Finishing the unfinished parts of the internal roads network.

- Executing the roads network which join the agricultural and industrial production areas and fishing areas, and the areas that introduce the local markets and exporting ports.
- Giving the priority to the roads joining the populated areas.
- Finishing the current unfinished projects and not beginning new projects unless there is enough finance.
- Adjusting the technical and engineering criteria and standards of the roads network to the technical standards of the International Roads Agreement of the Arab Project.
- Executing the axial weight law and operating the axial weight centers.
- Finding the financial resources to construct and maintain the main and secondary roads by regaining constructing expenses from the roads users, imposing weight price and roads’ taxes according to the standards followed in many countries and giving more dependence to Roads Maintaining Fund.
- Finishing the Public Land Transportation Establishment privatization and solving the problem of redundant employment.
- Reducing passengers and goods’ transportation freight.
- Reducing vehicles contamination with the help of the concerned authorities.
- Identifying the traffic safety standards of the vehicles.
- Applying the obligatory insurance for all land transportation means.

**Ports and Marine Transportation:**

In spite of the activeness brought about by the first five-year plan (1996-2000) in the ports and marine transportation field, it was did not achieve the desired going ahead due to some factors. Such factors are the low level of the foreign Yemeni commerce, especially the non-oil exports and the high cost of marine charging and containers delivery in the Yemeni ports compared to the neighboring ports because limited and irregular marine lines from and to Yemen. The old age of the equipment and machines in the ports and the ships’ docks, the lack of more advanced technologies in the Yemeni ports, and the lack of the storing and cooling services, also still hinder the ports’ activities in general and the fish and agricultural exports in particular.
Furthermore, the operating of the containers’ port in the Aden Free Zone resulted in stopping the containers’ terminal in Aden Port. Some problems appeared while privatizing the National Navigation Company, public sector. Another problem was the monopoly exercised by the seven agencies working in Aden Port. In addition, the activity of Yemen Marine Lines Company was just dedicated to the internal transportation among the Yemeni ports because the only two ships it owned were old and their total load was only (3000) tons. The equipment of the National Company for Ships’ Docks was old and suffered from administrative complications and organizing and legal and legislative shortcomings in its facilities. So the second five-year comprised the following procedures:

- Constructing new ports, deepening the old ports’ berths and providing them new machines and equipment, and maintaining the old ones.
- Finding a safety system to secure the marine navigation and guarding the Yemeni beaches.
- Preparing a plan to combat the marine contamination.
- Finishing the legislative organizing the work of the establishments of the ports and marine transportation.
- Exploiting the existence of Aden Port on the international navigation lines and preparing the necessary plans for the purpose.
- Encouraging the private sector to construct and operate commercial transportation lines from and to Yemen.
- Finishing the marine establishments and facilities privatization program on sound standards.

The Air Ports and the Air Transportation:

The result of the air transportation movement stagnancy was that some planes companies which use the Yemeni international airports stopped their activities. They became 12 out of 38 international airlines companies with whom dual agreements were signed. The Yemeni Airlines had about 66% of the total number of passengers’ movement from and to the Yemeni airports in 2000 and about 56% of the freight activity. Such stagnancy of the air transportation
movement was due to the following factors:

- Deflation in foreign tourism in the last years.
- The continuous economical stagnancy.
- The low rate of the individual income in the last period.

And because of the bad ground services at airports and their high costs due to the absence of competition, the long time taken in charging and discharging processes, and the flying procedures in the airports, in addition to the low competitive capacity of the national transportation with its old fleet, the government put the policies of the second five-year plan (2001-2005) for the airports and air transportation. These policies were:

- Improving the basic organizing infrastructure of the local and international Yemeni airports by going on in constructing the establishments and the facilities and providing them with modern equipment and machines.
- Updating, improving and enhancing the competitive capacity of airports’ services and the transportation and air freight fleet.
- Providing the airports and the planes with the necessary equipment to ensure planes and passengers’ safety.
- Exploiting and organizing the Yemeni airports and discussing the suitable policies for that, for example, opening the skies, lowering down the fees and giving more competitive facilities.
- Involving the private sector in providing the land services and in the freight process in the Yemeni airports.
- Updating the air transportation fleet, and the potentiality to involve the foreign and the local sector posses some of the company’s shares.
- Discussing the idea of establishing private airlines companies.49

49 The ministry of Development and Planning, the second five-year plan for social and economic development (2001-2005), Ibid, pp192-196

* There are inconsistencies in the government statistics, so the researcher depended on the data of the Central Authority for Statistics as the authorized body.
3.7.5. The Performance Evaluation of the Second Five-year Plan (2001-2005)

Roads and land transportation field:

Through the available data, the researcher noticed that there were differences in gravel and asphalt roads’ lengths in 2005, (though all the data were taken from government resources*). The researchers only depended on the data of the Ministry of Development and Planning (the Annual Statistical Book). He noticed that the lengths of the asphalt roads increased from 6732km in 2000 to 11394km in 2005, the last year of the second five-year plan (2001-2005), and that the lengths of the gravel roads increased from 5243km in 2000 to 14967km in 2005 was about threefold regarding the gravel roads and double regarding the asphalt roads50.

During the period 2000-2005, maintaining works were done for about 17989km of the asphalt roads, 97% of it was routine maintenance; 829km was for the dust roads and tunnels. About 483 million YR was the cost for maintaining the gravel roads51.

The increase in roads’ lengths during that period did not mean that there was a positive improvement. Because what required was priorities planning in roads construction to join production and marketing areas and the populous areas, besides using the modern roads networks to join Yemen to the neighboring countries by connecting modern roads, it is observed that there is increasing the number of the roads without priorities planning of what was discussed early as the pre-constructed roads in the previous years varied in standards and that large parts of them were broken because the Road Maintenance Fund which was mainly responsible for financing the periodic maintenance did not have enough financing resources as was mentioned early, in addition to the non-application of the axial weights law and that the resources specified for the maintenance process were limited and not enough to meet the maintenance demands. What worsened the situation more were the low potentialities of the local contractors to execute the

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50 The statistics of increasing in 2000 regarding the asphalt and gravel roads were taken from the Ministry of Development and Planning, the Annual Statistical Book, 2006, p164. The statistics of 2000 were mentioned previously in Al-odyni, Maresh, An Introduction to Transportation Geography, p.13

51 The Ministry of International Cooperation and Planning, the Social and Economical Plan to combat poverty, 2006-2010, Ibid, p114
long roads projects. The land transportation sector suffered for a long time from old and unqualified public transportation means (Public Land Transportation Establishment), the absence of the private sector companies in the local transportation inside the cities and the absence of the necessary facilities and infrastructure such as reception and departure stations, the organizing stands, relaxation stops in the middle of the roads and maintenance centers, in addition to the accidents’ increasing percentage and the contamination resulted from such means. The government, in its successive plans stated, in vein, solutions for the problems of the accidents resulting from roads’ bad conditions and the absence of the traffic signs and traffic safety. What made it more complex to control such a sector the numerous entities running the land transportation.

With regard to land transportation, the taxi cars has been increased as it was 721158 in 95 and the number increased around 532547 from 96 up to 2005, out of this number, 227431 goods carriers with different sizes, 79629 taxi vehicle for transporting people.\[52\]

However, moving of people and goods in Yemen entirely depends on land transportation, the private sector takes over the large proportion in this respect, while public corporation of land transportation contributes weak proportion\[.

In this context, the government decided to privatize this corporation, but all its efforts were of a little avail, on the other hand, decree no. 30 in 2003 has been issued (transport law), issuing of this decree contributed slightly regarding organizing land transportation and opening scope for private sector which led to increasing land transport agency and reducing transport costs among cities around 50\%, international 40\% and increased the local and international companies from 2 companies in 2002 to reach upto 23 companies in 2005.\[53\]

According to the Ministry of Transportation, total amount of money spent on the transportation sector from 1990 to 2006 was 120,259 milliard YR, only 4,159,000 was dedicated to the land transportation.\[54\] This showed that this sector

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53 Weak performance of public corporation of land transport has been discussed in chapter 1.
54 Economic development plan for reducing poverty (2006-2010), Ministry of planning and Int. Cooperation, O.p.cit., p.117
54 The Ministry of Transportation, Transportation is the Nerve of Life, Ibid., p30
lacked the financial support at that period which resulted in its deterioration.

**Ports and Sea Transportation:**

Generally, the movement of the ships entering the Yemeni ports declined in 2000 in the wake of the terrorist activities like that of the USA Destroyer (coal), In 2001, and that of the French Oiler, Limburg in 2002 after which the ships movement average fell down to 12%\(^{55}\).

The researcher noticed continuous declination in the number of the ships entering the Yemeni ports. There were 3296 ships in 2000 and 2813 ships in 2004\(^{56}\). These terror and piracy activities in the Red Sea negatively affected the sea transportation and the Yemeni foreign commerce and resulted in increasing the insurance fees of the sea transportation of the navigational lines entering Yemen. On the other hand, the result of the high fees imposed on containers’ delivery (regarding transit) in the Yemeni ports was that these containers changed their tracks into other competitive neighboring ports like Djibouti, Salah and Ras Jebel Ali\(^{57}\). For example, the fee of the containers delivery was between 80 and 120 USD, whereas it was only 60 USD in the competitive ports\(^ {58}\). Besides, the Yemeni ports lack the basic infrastructure and the necessary equipments for containers’ delivery which results in the ships’ delay in the port.

**Air Ports and Air Transportation**

In addition to the limited air fleet during the period which consisted of 9 airplanes, 4 of them were airbus 310-300; two were 330-200 and 3 were boing737-800\(^ {59}\), the international and other air ports were still not qualified, especially Aden and Sana’a International Ports. They were below the international standards and not qualified to meet the expectations of tourism sector and the activation of the transportation sector, in addition to the absence of the private sector in the air transportation activities and the activities of airports operation and services.

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55 The Economical and Social Plan for Poverty Combating, 2006-2010, ibid, p118
56 These figures have been taken from The Ministry of Transportation, Transportation is the Nerve of Development, ibid, p90
57 The researcher mentioned that in the discussion of the transportation effect on economy and Yemen.
58 An interview with the Minister of Transportation in Al-Saeeda Satellite Channel in 13/2/2012 while he was talking about the transportation in general
59 The Ministry of Planning and International Cooperation, the fourth five-year plan, p119

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During that period, there were no serious and actual investment plans to promote the services offered by the airports, especially the main airports. Also there were no marketing plans for the airports. To state it more precisely, the airports in that period suffered from carelessness except some investment projects, most of which have not been executed till now either for financing problems or the wrong selection of executing company. In the 11th National Anniversary of the Yemeni Reunification (22nd of May, 1990), the project of re-qualifying Aden Port was inaugurated with an amount of 25 million USD\(^6^0\) for a group of developmental projects\(^6^1\).

Another project related to Sana’a International Airport with an amount of 500 million USD was financed by the Arab Fund for Development to be executed in three stages ending in 2006\(^6^2\). But because the Chinese executing company (BUGC) did not commit to the contract’s items, the Cabinet cancelled the contract, and now another company is being qualified to finish the works\(^6^3\).

Other investment projects were in consideration* but all these investment projects will face obstacles as did the previous ones, either because of looking for finance resources or because of preparing the studies which consume time and money. So the project stays under studying for many years consuming the money dedicated for it. This happens for many projects due to the spread of corruption which did harm to the transportation sector and the national economy as whole.

The researcher noticed that all the policies of skies opening, lowering the fees down, providing the competitive facilities, and inviting the private sector to offer the ground services and freight delivery in the airports, in addition to allowing private airlines companies were in the plan, but unfortunately nothing was executed. Five year plans 2001-2005. He also noticed that there was a sort of stagnancy in goods’ charging and discharging in the local airports during the period from 2001-2005, when the indicator stopped at 2000 tons for all the

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60 The General Administration for Projects and Planning, Civil Aviation, and Meteorology Authority – A Historical Note on the Yemeni Airports, 2006, p10
61 These projects are discussed in air transportation structure (third chapter).
62 The Ministry of Transportation, Transportation is the Nerve of Development, ibid, p113
63 CAMA, Civil Aviation and Meteorology Authority, April – June, 2010, issue7, p26
* These investment projects has been mentioned while discussion air transport structure (chap 2)
years\textsuperscript{64}, that attributed to poor infrastructure including inadequacy and efficiency of equipments, high costs of air freight, long procedures at Yemeni airports.

In respect of operation activity at international airports, indicator of discharged and charged goods in 2001 was 15000 ton, this number rose up to 18000 ton in 2005 which reflect fossilization if we take in to consideration long period(5 years), this resulted from irregularity of Yemenia flights and in ability of attraction of air transport companies because of current situation of infrastructure.

3.7.6. The Third Five-year Plan (2006-2010):

- **Roads and Land Transportation:**
  - Completing the main and international roads’ projects which are under construction to join the different parts of the country using modern roads network.
  - Protecting the current roads network and continuing the periodical maintenance works, especially for the asphalt roads.
  - Activating the law of the Roads Maintenance Fund and its modifications to get 5% per one benzene liter and one diesel liter as well.
  - Imposing the tariffs of axial weight and roads’ taxes in the light of the successful experiences of the developing countries.
  - Decreasing the traffic crowd inside the cities the round lines and distributing the movement on the main road lines to suit the constructional expansion.
  - Updating the roads’ control system and safety equipment, and conducting the periodical surveys of the roads network.
  - Committing to the total dimensional and axial weights of the vehicles and constructing and operating the axial weight stations.
  - Improving the current rural roads and re-qualifying a large portion of them to easily goods and services’ transportation with minimum costs.
  - Qualifying the cadre in consultants and engineering works.
  - Reinforcing decentralization and activating the Local Authority role in executing and controlling the projects.
  - Completing the issuance of transportation sector organizing legislatives.

\textsuperscript{64} Ministry of Transportation, O.p, cit., p117
- Encouraging the private investments in all the kinds of land transportation.

- Decreasing people and goods transportation fees to decrease the production costs.

- Changing the branches of the Public Transportation Establishment to head offices for people transportation among the governorates.

**Ports and Sea Transportation:**

- Completing the by-laws, laws and the legislatives which organize the establishments and the public bodies in sea transportation.

- Improving the administrative and financial performance to promote the production quality.

- Re-structuring the National Navigation Company and Yemen Marine Lines Company.

- Improving the Yemeni Ports’ capabilities, their services and safety equipment to promote their competitive performance regionally and internationally.

- Deepening the current ports’ berths and providing the equipment and machines necessary for the charging and discharging works, besides taking care of the ports’ maintenance programs and machines.

- Encouraging the private sector’s expansion in doing a lot of activities and ports’ services, and giving goods’ charging and discharging to the private companies.

- Improving ships’ maintenance and services.

- Activating Aden Free Zone’s role, especially in storing activities, exports’ returning and its activity to the Yemeni ports.

- Completing the sea navigation safety insurance system and protecting the sea environment from contamination.

- Improving the capabilities and the qualification of human resources working in the ports’ activities and sea transportation.

**Airports and Air Transportation:**

**Meteorology and Civil Aviation:**

- Executing the administrative, legislative and establishment reformation of the Public Airlines Authority, organizing the works of the different bodies of the airports, and completing the regulations.
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- Adopting the open skies policy beginning with opening Aden and Hodiedah airports for air charging and discharging processes.
- Preparing an economical study for the tariffs of the local and international transportation based on service’s level and operation cost.
- Improving the aviation system services.
- Encouraging the private sector to invest in airports services, especially land services and air charging.
- Improving the centers and institutes of airlines and air meteorology and inspection distribution.
- Training and qualifying air transportation cadre.

**Yemeni Airline:**

- Restructuring the Yemeni Airlines.
- Studying the possibility of constructing private airlines companies in the internal transportation field.
- Updating the air transportation fleet by chartering and purchasing two planes with the capacity of 50-70 seats to work in the internal airlines, and chartering a plane for air charging.
- Opening 11 international line and 6 internal airlines and re-operating the suspended airlines.
- Improving the marketing activity and opening new sales’ offices inside and outside the country.
- Developing the administrative experiences of those working in the Yemeni Airlines.\(^{65}\)

3.7.7 Evaluating performance of the third five-year Plan 2006-2010:

**Roads and Land Transportation:**

**Roads:**

Out of the statistics the researcher got from the concerned authorities regarding roads and their lengths during the third five-year plan (2001-2010), he noticed that that there was an increase in the asphalt roads’ lengths. The lengths of the asphalt roads which join the cities were

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\(^{65}\) The Ministry of Planning and International Cooperation, the Social and Economical Development Plan to Combat Poverty, 2006-2010, Ibid, pp115-120

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about 11394.8km\textsuperscript{66}, whereas they were about 15328.7km in 2009 and in the beginning of 2010\textsuperscript{67}, but they did not reach the length specified by the plan which aimed at increasing the lengths of the of the asphalt roads to become 19107 km.

In respect of the rural roads, the government adopted a program to improve the rural roads in order to bring the rural areas out of the isolation state, encourage their economical growth, providing more work chances, and reinforcing the decentralization and social participation in roads’ projects execution. In its first stage, 2001-2005, the program could construct and asphalt 31 roads with 940km long and which cost 85 million USD. The second stage, 2006-2010, was co-financed by the governments and many granters, the most important of who was the World Arab Fund for Economical Development\textsuperscript{68}. According to the field work done by the researcher, he finds that there are many difficulties facing the rural roads sector. These difficulties are the difficult natural topography, scattered settlements of people and earth deviations, in addition to the extreme lack of preparing the consultant companies and qualified national contracting companies to execute the rural roads sector projects.

By studying the government plan for roads sector and its actual execution, he finds that many of the policies were not executed. These policies relate to:

- Continuing the periodical maintenance of the asphalt roads.
- Activating the roads’ maintenance law and its modifications to get 5% of each benzene and diesel liter.
- Committing to the law of vehicles’ total axial and dimensional weights, and constructing and operating the axial weight’s stations.
- Updating roads’ managing system and safety devices.

All what have been discussed above form the basic policies for roads protection and activating their role in the society assistance. Unfortunately, all these policies were not put into actual use. The government report which was issued by the Ministry of Public Works indicated that the lengths of the asphalted

\textsuperscript{66} The Ministry of Planning and International Cooperation, the Annual Statistics Book,2006, Ibid, p161
\textsuperscript{67} The Ministry of Planning and International Cooperation, the Annual Statistics Book,2009, Ibid, p243
\textsuperscript{68} Ministry of Planning and International Cooperation, the Third Five-year Plan, Ibid., 2006-2010, p115
roads in Yemen in 2010 were 16579 km. This necessitates that the future governments have to evaluate the roads sector which faces many problems either in the investment side or in renewing maintaining the already executed roads. The last one of these problems was the protest organized recently by the Yemeni Contractors’ Union to get their money from the ministry which, according to the statement of the Minister, was more than 600 milliards YR. The Minister confessed that the financial obligations of the ministry, according to the ministry strategy, till 2012 were about 900 milliards YR. And what worsened the situation was that the ministry report showed that there was a drawback in the Roads’ Maintenance Fund’s performance. This drawback was clearly shown in the way the asphalt roads were damaged due to the absence of the financial resources to execute, improve and maintain the roads. The report mentioned that more than 4146 km of the roads suffers of gravels spread on the asphalt surface which make it become rough. The report also mentioned that the amount of money deserved, according to 2011 law, was 25 milliards and 537 millions YR. when the levy was not more than 820 millions YR, in addition to the subsidy by the Ministry of Public Works which was 4 milliards and 500 million YR. The report also mentioned that the financial gap was 20 milliards YR. This financial gap was because the authorities defined by the law to provide the fund resources which were 5% of the benzene and diesel sales and 2% of the recorded roads construction receipts. The report stated that the fund did not receive the deserved incomes according to the modified law of incomes no. 27, year 2000. The total amount of the investments in roads maintenance financed by the fund and the government from 1996 to 2011 was 38,046,628,340 YR.

Another problem foiled the execution of the roads sector’s policies was that policies and plans concerning roads construction are decided by the Ministry of Constructions and not by the Ministry of Transportation. This resulted in a contradiction between the two ministers regarding the specializations. This contradiction negatively affected the plans execution. It is supposed that these policies are the concern of the Ministry of Transportation because it identifies the

69 An Official Report by the Ministry of Public Works, discussing the roads’ state, 26 September Newspaper, an official newspaper, issue no. 1619, 9/2/2012, p16,
70 A personal interview by the researcher with the general manager of the Transportation Ministry Office, 15/1/2012
priorities of roads construction according to the economical and social importance. Then the Ministry of Constructions should execute these policies. The Minister of Transportation confirmed that there is a contradiction between the Ministry of Transportation and the Ministry of Constructions and the Traffic General Office regarding the roads. This contradiction impeded the aims and policies’ achievements until now.\footnote{Al-Saeeda Satellite Channel, an interview with the Transportation Minister in Yemen, 13/2/2012}

**Land Transportation:**

**Indicators:**

Regarding the land transportation, the increase in the number of goods’ transportation vehicles at the beginning of 2010 was about 41206 vehicles and about 35403 for the vehicles used for people transportation.\footnote{The researcher collected the statistics from the Annual Statistics Book, 2006, p.161 and the Annual Statistics Book, 2009, which was issued in June, 2010, p243. Both of them were issued by the Ministry of Planning and International Coopreation.}

**Legislations:**

By looking at the legislative side, the ministry during the third five-year plan (2006-2010), headed for issuing the following legislatives:

- The act of organizing the land transportation for goods by lorries and its modification of 2007.
- The act of land transportation activities of the macro-buses’ passengers and its modifications of 2008.

**Restructuring:**

The ministry tried to restructure the Land Transportation Establishment, through establishing three local establishments in Sana’a, Aden and Hadhramout and continued the procedures for importing 40 modern macro-buses of 50 passengers each, for the local establishments. It also tried to encourage and involve the foreign investments in land transportation. So it exempted the macro-buses and other passengers transporting means from the customs and dealt with them according to the investment law. The number of the companies specialized in the passengers’ transportation (external transportation) increased from 2 to 23.
companies. The same case for the internal transportation companies where the number became five instead of one.

- The Public Land Transportation Establishment was established under a presidential decree to organize and control transportation activities and services in goods and people’s transportation to meet the economical development demands and services.

- Also the presidential decree no. 535, 25/12/2007 to construct land ports in all the land outlets.

- Then, the Cabinet issued decree no. 149, year 2009 to form the National Committee to facilitate the commerce and transportation. The job of the committee was to study the problems hindering the execution of the international commerce procedures in Yemen to decide the reasons and to suggest the successful solutions to overcome such problems.

Despite all these legislatives and new bodies construction, the problem was that the policies related to land transportation were not execute. The reason for that was that the corruption spread in this sector, in addition to the reasons discussed in evaluating the five-year plans from 1990 till now. What confirmed that was what happened to the Public Land transportation Establishment. All its macro-buses were destroyed due to carelessness and corruption which the establishment suffered from even after it was changed into local land transportation establishments. Regarding the importing of 40 macro-buses to the local land transportation establishments, these macro-buses have not been imported till now. It resulted in destroying this governmental establishment, despite the fact that if it had been given enough care, it could have improved the land transportation and created an atmosphere of competition.

The general manager of the Ministry of Transportation Office exposed in a personal interview that the bitter situation of the land transportation Yemen he said that all the transportation plans and policies were mere written documents, and that there the private companies working in land transportation can get the work permits easily, but never consult or return to the ministry while executing the plans and the work. Also they do not take into consideration the country needs and demands, and the populous areas as well because of corruption and these

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73 The Ministry of Transportation, Transportation is the Nerve of Life, Ibid., pp32.33
companies leverage\textsuperscript{74}.

Furthermore, the income of some outlets was begotten by the customs in a clear violation of the law. Even the foreign debts which could be useful for the land transportation section were thwarted because of the government wrong procedures, as it was the case of the debt provided by Belgium for 30 years with minimum interests. Unfortunately, none knows about its destiny because it has been somewhere in the governments’ lobbies for seven years\textsuperscript{75}.

\section*{Ports and Sea Transportation :}

\subsection*{Indicators:}

The official statistics of the concerned authorities indicated that the commercial movement and the ports activities in Yemen did not record any positive indicators. And by studying the number of the ships entering the Yemeni ports, it was clear that there were 2831 ships in 2009\textsuperscript{76}, whereas the number of the ships entering the Yemeni ports in 2005 was 3070\textsuperscript{77}. It means that the number of the ships entering the Yemeni ports was downwards. The same was for the handled containers in the Yemeni ports. In 2005, they were (515740) TEU compared to 2010 when they became (632075) TEU\textsuperscript{78}.

\subsection*{Legislatives :}

Within the legislatives which tried to execute the third five-year plan (2006-2010), there were a number of by-laws and decrees issued by the Transportation Ministry in 2007 and 2008 as follows:

- Act of organizing the procedures of combating the contamination caused by the litters thrown from ships.

- Act of organizing the procedures of combating the contamination caused by the ships’ sewage.

\textsuperscript{74} An Interview with the general manager of the Ministry of Transportation Office for land affairs on 22/2/2012
\textsuperscript{75} Al-Saeeda satellite channel, an interview with the Minister of Transportation, 13/ 2/ 2012
\textsuperscript{76} The Ministry of Development and International Planning, the Annual Statistics Book, 2009, June-2010, ibid, p253
\textsuperscript{77} The Ministry of Transportation, Transportation is the Nerve of Life. Ibid., 2009, p90
\textsuperscript{78} Ministry of planning and Int. cooperation, annual statistic book, 2006 ,p.170 & Annual statistic book, 2010, p.246
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- Act of organizing the procedures of combating the contamination caused by the harmful bottled materials.

- Act of organizing the procedures of combating the ship’s oil contamination.

- Act of organizing the procedures of the marine commercial works for ships and goods.

- Act of organizing the procedures of foreign ships’ inspection and activating the state control over it in the regional waters and ports.

- In addition, the decree of the Prime Minister no. 97, year 2008, approved the Emergency National Plan of combating the contamination of the sea environment caused by oil.

Restructuring:

In 2007, the ports’ establishments were restructured into three establishments: Aden Gulf Ports Establishment, Arab Sea Ports Establishments, and Red Sea Ports Establishments, by the presidential decrees no. 61, 62, 63 respectively.

- Restructuring the National Navigation Company and Yemeni Marine Lines Company by the ministerial decree no. 174, year 2006 which approved the establishment of a company for marine transportation with the co-ownership the private sector. Now, there is an endeavor to attract strategic co-partners and update the National Ships’ Docks’ Company within continuing the private sector management program of the marine establishments.

Encouraging the private sector participation:

- Involving the private sector, providing work permits for goods’ delivery, marine proxies, and providing ships with fuels and food stuffs, for many companies and the private sector agencies in all the country ports.

- Signing a minutes for constructing a company co-shared by both Dubai Ports International Company and the governmental Aden Gulf Ports Company with a joint stock of 50% each to operate
Aden Container Terminal which was set into actual use in November, 2008.

**Joining the Regional and International Organizations:**
- The International Maritime Organization (IMO)
- The Understanding Memorandum of the Indian Ocean Countries
- The Regional Authority for protecting the Red Sea and Aden Gulf environment
- The International Association for Navigation Assistance
- The British Hydrographic Bureau

**Piracy Growth in Aden Gulf, Indian Ocean, and Red Sea:**

During the last few years, Aden Gulf and the marine lines passing through it have been affected by the piracy attack. The focus of these piracy attacks which began in Aden Gulf was to a large extent in 2008 and 2009. Actually these piracy attacks targeted the patrols MSPA which was established in 22\textsuperscript{nd} of August, 2008 and the ships in Aden Gulf which is near the Yemeni beaches. Because there were problems in that safe area, it was replaced by another two mile width passage in the south recommended by internationally.

In 2010, the pirates could expand their attacks area to cover the western and northern parts of the Indian Ocean. It was clear that the number of the attacks in Aden Gulf was fewer than that of the attacks in the Indian Ocean. Towards the end of 2010 and the beginning of 2011, there were 22 ships seized near Somalia’s beaches, one of them was the Ice Berg Ship with 9 Yemenis on board. Fourteen ships were got back during the period between November, 2010 and January, 2011.

During the summer seasonal winds of 2011 and because of the bad climate conditions in the Indian Ocean and Aden Gulf, the piracy attacks moved into the Red Sea. During the period from July to September 2011, 90 piracy attacks were announced; most of them were in the south of the Red Sea. The number of the commercial ships seized in the middle of October, 2011 declined to 9 ships. Three ships were kidnapped only in the previous six months and recently a piracy

79 The Ministry of Transportation, Transportation is the Nerve of Life. O.p, cit., 2009, pp38-41
accident happened in 20 August near Salalah Port.\(^80\).

**Yemen Role in Combating Piracy:**

The Yemeni Cabinet approved a memorandum of understanding between the countries of the sub-regime of the Western Indian Ocean, the Aden Gulf and the Red Sea Area to control and eradicate piracy and armed robbery against ships.

Yemen is preparing to sign the memorandum and to oversee the preparation for the regional meeting on the second memorandum of understanding which is expected to be held in Sana’a during the period 27-30 October 2009 as well as work to complete the procedures for the establishment of a regional centre for the exchange of information on piracy and armed robbery against ships to the Red Sea and Aden Gulf in Yemen.

There a need to provide a security warning system that sends a warning from the ships in the event of exposure to risks including piracy, the automated tracking system tracks the ship in the course of an ongoing proceeding, and the automatic identification system is to provide information on the ship to the other ships and ports, and the coastal station as well as development of systems and controls, including coastal, whereby achieving the transfer of information with accuracy and speed.\(^81\)

In this context, the government of Yemen strived representative by Transportation Ministry in association with coast guards for combating the piracy and armed robbery through the following actions:

- Regulations movement of ships in the regional waters and international shipping routes, association with coast guards forces through establishing radar stations along the Yemeni coastal line aims to monitor the identification and exchange the information (VTS).
- Establishing (DGPS) centers related to helping the ships to locate

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\(^80\) Aden Gulf Ports Establishment, Aden Port, a periodical issued by the General Administration for Media, Planning, and Marketing, issue no. 36, 2011, p3

its destination and location and keeping oversee accuracy of information, especially at the time of damage of satellite.

- Establishing of (NAVATEX) related to providing the information and publishing the shipping information to ships.

- Establishing of building of maritime regional center for exchanging the information in respect of combating the piracy and armed robbery against ships, its duty for maritime coordination and boosting the marine security in the region.82

However, there are many legislatives and plans for upgrading the seaports and marine transportation, but in fact all these legislatives and plans necessarily need to be in to practice.

In addition, there was no comprehensive marine law for the marine considerations in Yemen. Regarding the marine environment and safety, there must be a comprehensive law related to the signed international agreement concerning the marine activities. The General Authority for Marine Affairs had to sign the important international agreements in which Yemen is not a party. Such agreements were the international agreement to combat ships’ contamination (MARPOL), which was issued by the International Marine Organization and the International Work Organization 147, which is called the Commerce Navigation Agreement for the least standards to be applied by Yemen on the foreign ships.83

On the other hand, until now, Yemen does not have governmental marine transportation because the two ships owned by this company are old and out of service. This is considered a considerable shortcoming in the marine transportation. Despite all these policies which could not find a governmental company for marine transportation during all that period in addition to the old equipments and apparatuses of the National Company for ships’ docks finding strategic copartners to activate the company’s role

82 Transportation Ministry, Projects of Public Authority of Marine Affairs, May, 2009, p59
83 Al-Midama Nasser, the system of the state port inspection and the application obstacles in Hodiedah Port , the Arab Academic for Science and technology and Marine Transportation, Alexandria, a master degree in Marine Transportation Technology, 2006, p136
in the necessary maintenance services for the marine equipments and equipments is still going on.

The ports and marine transportation suffer from accumulative problems beginning with necessary infrastructure and facilities for receiving the ships going on to the unqualified successive administration, the absence of the ports’ efficient marketing policies to attract the navigation lines ending with piracy and terrorism in the whole region, especially in Yemen and their negative results on the Yemeni commerce movements by cancelling the insurance on the ships entering Yemen and shifting the marine lines routes into the neighboring ports. What worsened was the high cost of ships’ charging and discharging in the Yemeni ports compared to the neighboring ports, especially in Aden Ports for the containers which is operated by Dubai International Company for ports. The cost of containers’ charging and discharging reached from 80-120 USD in Aden Port for containers compared to 60 USD in the neighboring ports, especially the transit related containers. This caused a problem for transit commerce in Aden Port.

The plan indicated that Aden Terminal for Containers should be given to Dubai Ports’ Company so that Aden Port became an international port managing the transit activity for the Red Sea, Aden Gulf and the Indian Ocean to attract the main lines’ ships which use liner line system to serve Europe and Asia lines. But because Dubai Ports Company adopted this policy, the result was that transit ships changed their track to the competitive neighboring ports. The following table shows the contracts’ inequitable stipulations of Aden Port with Dubai Ports Company compared to another contract of a competitive port, Jeddah Port, also with Dubai Port Company.
### TABLE No. (3.1) : Comparison between the advantages of contract Dubai company with Jeddah and Aden ports:

<table>
<thead>
<tr>
<th>Item</th>
<th>Jeddah Port contract</th>
<th>Aden Port contract</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rent port</td>
<td>20 years</td>
<td>35 years</td>
</tr>
<tr>
<td>Port equipment</td>
<td>State ownership remains</td>
<td>Sold to Dubai Port</td>
</tr>
<tr>
<td>Equipment Check</td>
<td>Before receiving the port and at the expense of the contractor</td>
<td>After receipt of the harbor and at the expense of the government</td>
</tr>
<tr>
<td>Number of stations leased</td>
<td>One station</td>
<td>Two Station</td>
</tr>
<tr>
<td>The current value of the equipment</td>
<td>Undefined</td>
<td>$ 80 million</td>
</tr>
<tr>
<td>Equipment value in the contract</td>
<td>Undefined</td>
<td>$ 35 million</td>
</tr>
<tr>
<td>Government income</td>
<td>65%</td>
<td>Imponderable</td>
</tr>
<tr>
<td>Collecting cash</td>
<td>Monthly</td>
<td>Annual</td>
</tr>
<tr>
<td>The list of port fees</td>
<td>Approved by the State</td>
<td>Sanctioned by the operator</td>
</tr>
<tr>
<td>Insurance of new equipment</td>
<td>There explaining the agenda</td>
<td>No Approved</td>
</tr>
<tr>
<td>Obligations on the state after the contract is signed</td>
<td>Available</td>
<td>Approved</td>
</tr>
<tr>
<td>Commitment to employ national workers</td>
<td>Binding within the schedules attached</td>
<td>Non-binding</td>
</tr>
<tr>
<td>Special programs for work safety</td>
<td>Available</td>
<td>No Approved</td>
</tr>
<tr>
<td>First Aid and medical treatment</td>
<td>Available</td>
<td>No Approved</td>
</tr>
<tr>
<td>Electricity price</td>
<td>According variables</td>
<td>Fixed for a period of 35 years</td>
</tr>
<tr>
<td>Marketing port</td>
<td>Set a budget</td>
<td>Unknown budget</td>
</tr>
<tr>
<td>Guarantees provided to the government</td>
<td>Hundred million Saudis</td>
<td>Nothing</td>
</tr>
<tr>
<td>Insurance on plant and equipment</td>
<td>Available</td>
<td>No</td>
</tr>
<tr>
<td>Oblige the contractor to deal with national institutions</td>
<td>Binding</td>
<td>Non-binding</td>
</tr>
<tr>
<td>Waive the contract or part thereof</td>
<td>Approval of the State</td>
<td>Without the consent of the State</td>
</tr>
</tbody>
</table>
### Item | Jeddah Port contract | Aden Port contract
--- | --- | ---
Mortgage project | No possible | Possible
Dispute settlement | Kingdom | Outside Yemen
Improve the port at the expense of the contractor | 84.5 million SR | Zero
Ownership of the port | 100% of the state | Non-exclusive ownership of the state
Equipment repaired during the troubled decade | Replaces the contractor at his own expense | There is no such item
Current employment | Binding | Non-binding
The government's right to refuse inappropriate staff | Full right | There is no right
The contractor Oblige to provide furnished housing | Binding | Non-binding
Case of failure of the contractor maintenance port | Deducted from the value of the security | No
Contract implementation | Fine 5000 SR per day | Nothing

Source: Ahmed Saeed Al-dahi- Aden port- the economic importance of and unfair negligence- Issue 48, May 2008-pp. 21-23

The above table shows that the operation contract of Aden port with Dubai Company had not contained any concessions in favour of Aden port, as all aspects of contract was for interest of Dubai Company, on the contrary, contract of Jeddah port with Dubai Company was in favour of Jeddah Port, such situation has affected operations of Aden Port adversely, this is confirm unfair negligence towards Aden port from policy makers.

However, in the following, the researcher will expose the investment plan for Hodiedah and Aden Ports 2006-2010, and the drawbacks accompanying it:
### The Investment Plan for Aden Port 2006-2010

**TABLE No. (3.2) : Approved annual appropriations for projects in the government budget, spending actual financial and completion rate during the Third Five-Year Plan period for development 2006-2010.**

<table>
<thead>
<tr>
<th>No.</th>
<th>Project Name</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>Total</th>
<th>Financial &amp; Completion rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Updating equipment port of Aden</td>
<td>421,000</td>
<td>84,704</td>
<td>965,000</td>
<td>652,468</td>
<td>75,614</td>
<td>1,691</td>
<td>1,132,000</td>
</tr>
<tr>
<td>2</td>
<td>Develop and update</td>
<td>135000</td>
<td>53,553</td>
<td>430000</td>
<td>26,640</td>
<td>944,000</td>
<td>12,830</td>
<td>240,000</td>
</tr>
<tr>
<td>3</td>
<td>Supply boats guidance - port of Aden</td>
<td>314,000</td>
<td>302,462</td>
<td>410,000</td>
<td>1,718</td>
<td>407,386</td>
<td>1,432</td>
<td>464,000</td>
</tr>
<tr>
<td>4</td>
<td>Study the development and deepening of berths- Mualla</td>
<td>90,000</td>
<td>0</td>
<td>10,000</td>
<td>1,760</td>
<td>7,000</td>
<td>0</td>
<td>-</td>
</tr>
<tr>
<td>5</td>
<td>Complete computer system</td>
<td>22000</td>
<td>1,733</td>
<td>22,000</td>
<td>3,308</td>
<td>22,000</td>
<td>0</td>
<td>30,000</td>
</tr>
<tr>
<td>6</td>
<td>Supply and installation of a floating dock and restoration of lighthouse building and housing workers- Mayoon</td>
<td>8000</td>
<td>0</td>
<td>8,000</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>16,000</td>
</tr>
<tr>
<td>7</td>
<td>Authority Support of organization</td>
<td>73,000</td>
<td>10</td>
<td>93,000</td>
<td>22,668</td>
<td>55,000</td>
<td>32,636</td>
<td>59,000</td>
</tr>
<tr>
<td>8</td>
<td>Prepare a study to expand and develop the technical department</td>
<td>58,432</td>
<td>24,715</td>
<td>440,000</td>
<td>8,878</td>
<td>2,000</td>
<td>0</td>
<td>42,000</td>
</tr>
<tr>
<td>9</td>
<td>Supply floating crane</td>
<td>12,000</td>
<td>0</td>
<td>10,000</td>
<td>0</td>
<td>3,000</td>
<td>0</td>
<td>11,000</td>
</tr>
<tr>
<td>10</td>
<td>Supply and installation of the vessel monitoring system</td>
<td>90,000</td>
<td>349</td>
<td>160,000</td>
<td>68</td>
<td>2,000</td>
<td>0</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>1,223,432</strong></td>
<td><strong>467,526</strong></td>
<td><strong>2,548,000</strong></td>
<td><strong>717,508</strong></td>
<td><strong>1,518,000</strong></td>
<td><strong>48,589</strong></td>
<td><strong>1,978,000</strong></td>
</tr>
</tbody>
</table>

Source: Aden Gulf Ports Corporation - Aden Port - annual allocations for approved projects for the third five-year plan (2006-2010)
TABLE No. (3.3) : Actual spending on projects during the Third Five-Year Plan period 2006 – 2010

(Amounts in thousands)

<table>
<thead>
<tr>
<th>No</th>
<th>Project name</th>
<th>Spent Total</th>
<th>Local funding</th>
<th>External funding</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Gov.</td>
<td>Self</td>
</tr>
<tr>
<td>0</td>
<td></td>
<td></td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>1</td>
<td>Updating equipment port of Aden</td>
<td>1,632,037</td>
<td>1,579,826</td>
<td>52,211</td>
</tr>
<tr>
<td>2</td>
<td>Develop and update the Aden port</td>
<td>148,671</td>
<td>73,313</td>
<td>75,358</td>
</tr>
<tr>
<td>3</td>
<td>Supply boats guidance - port of Aden</td>
<td>306,360</td>
<td>250,000</td>
<td>56,360</td>
</tr>
<tr>
<td>4</td>
<td>Study the development and deepening of berths Mualla</td>
<td>1,760</td>
<td>-</td>
<td>1,760</td>
</tr>
<tr>
<td>5</td>
<td>Complete computer system</td>
<td>5,041</td>
<td>-</td>
<td>5,041</td>
</tr>
<tr>
<td>6</td>
<td>Supply and installation of a floating dock and</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>restoration of lighthouse building and housing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Support the organization of Authority</td>
<td>65,774</td>
<td>-</td>
<td>65,774</td>
</tr>
<tr>
<td>8</td>
<td>Prepare a study to expand and develop the technical</td>
<td>33,593</td>
<td>16,469</td>
<td>17,124</td>
</tr>
<tr>
<td></td>
<td>department</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Supply floating crane</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>10</td>
<td>Supply and installation of the VMS</td>
<td>417</td>
<td>-</td>
<td>417</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>2,193,653</td>
<td>1,919,608</td>
<td>274,045</td>
</tr>
</tbody>
</table>

Source: Ministry of Transport, Gulf of Aden Ports Corporation - port of Aden- the Gen. Administration of planning, marketing and media
TABLE No. (3.4) : Stumbling of Development and services projects in the port of Aden. (Gulf of Aden Ports Corporation).

<table>
<thead>
<tr>
<th>No.</th>
<th>Project Name</th>
<th>Location</th>
<th>Cost</th>
<th>Date</th>
<th>Executed Authority</th>
<th>Reasons stumble</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Expand and develop the technical department</td>
<td>Towahi</td>
<td>3,200,000</td>
<td>2003</td>
<td>2006 Gulf of Aden Ports Corporation</td>
<td>Delays in the search for the source of action despite the availability of external financing the study and design</td>
</tr>
<tr>
<td>2</td>
<td>Broaden and deepen the navigation channel</td>
<td>Towahi</td>
<td>14,000,000</td>
<td>2005</td>
<td>2007 Gulf of Aden Ports Corporation</td>
<td>Lack of funding sources for the project, although he is the commitment of the institution, according to the agreement with Dubai Ports World</td>
</tr>
<tr>
<td>3</td>
<td>Replace Dolphin Marina 6 within 6 outside</td>
<td>Towahi</td>
<td>6,000</td>
<td>2005</td>
<td>2007 Gulf of Aden Ports Corporation</td>
<td>Failure to provide adequate provisions for the project and study under way</td>
</tr>
<tr>
<td>4</td>
<td>Develop and deepen berths Mualla (5, 6)</td>
<td>Mualla</td>
<td>4,000,000</td>
<td>2003</td>
<td>2007 Gulf of Aden Ports Corporation</td>
<td>Failure to provide a source of external funding and follow-ups are still ongoing with the central authorities</td>
</tr>
</tbody>
</table>

Source: Gulf of Aden Ports Corporation, the port of Aden, the Gen. Adm. of planning, marketing and media, development projects stalled and the reasons for defaulting.
From the above tables and by comparing the projects of the investment plans 2001-2005 to those of the investment plan 2006-2010, the researcher found out that some projects were not completed, though ten years have passed since they were approved. For example, the project of Aden Port renewing whose financial accomplishment was 63% in both plans. Another example was the project of developing and improving Aden Port buildings and facilities. The financial accomplishment of this project in the second five-year (2001-2005) was about 28%. The same was for the project of improving and deepening Al-Mu’ala Berths, the financial accomplishment of which in the second five-year plan was zero%, whereas it was about 2% in the third five-year plan. Also the financial achievement of the project of studying and expanding the technical section during the second five-year (2001-2005) was zero%, so it was delayed to the third five-year plan (2006-2010) when the financial accomplishment was about 6%.

On the other hand, the third five-year plan (2006-2010) included ten projects with personal and governmental finance of 7,267,432,000. Only an amount of 2,193,653,000 was spent. The financial achievement of all these projects was not more than 30%.

- The absence of sound programming for some projects which are included according to central directives with high costs. For example, the marine trailer whose estimated cost in 2008 was about 7 million Euros.

- The project of repairing/constructing, the two Dolphins Anchor, 6 internal and 6 external, was dedicated 800 million, but no study was conducted to this project. The initial cost of this project was 30 million USD. But it was replaced with non-ready projects like repairing the Waves’ Breaker. This showed the unplanned policies. The technical committee and the bid’s committee did not recommend the contractor to win the project because the bid’s stipulations were not complete.

- The establishment could not finance these projects itself because it has to pay and repay the debts.

- A number of importing/constructing/consulting companies stopped requesting the projects financed by the government because of the
Chapter 3: Logistic Management & Transportation Policy

complex and long procedures it takes to open credits and get their money (another problem besides seeking a foreign finance).

- A number of the contractors stopped requesting the repairing projects related to the sea because no authorities are specialized in the repairing works. So such projects which were important for the port were stopped.

- Scarcity of the legal, administrative, and technical cadre who are specialized and qualified, can prepare the studies and designs, and can check bid’s documents.

- Cancelling the bids which do not commit to the legal conditions, as happened for the surveying and guiding boats which were announced in 2008, and the bid of repairing/constructing the anchor, 6 inside and 6 outside.84

The researcher noticed that according to the first phase which cost 200 million USD, the International Dubai Company had to increase the first tank capacity to 1.5 million containers during a period from 3-5 years after receiving the task of operating the tank and to purchase and install the cranes and the equipments of handling the containers on the tank’s berths in addition to constructing a berth which was 400 meter long and 17 meter deep.85

It did not happen because of the company’s unsuccessful operating policy in attracting the international navigation lines due to the high cost of charging and discharging the containers to and from Aden Terminal and Al-Mu’ala Terminal for Containers operated by this company. There were about 370,182 containers in 2010. In addition, the company continued using the old cranes which were possessed by the Singaporean Company which stopped working and did not import or install any new cranes until recently in 2011. This negatively affected the containers’ handling on the terminal’s berth.

It was clear that other competitive ports benefited from this policy at the expense of Aden Historical Port with its unique and closest location to the international navigation lines where this company operates 49 marine stations and

84 Aden Gulf Ports’ Establishment, Aden Port – the interpretative note of the third five-year plan (2006-2010), model no. 4
85 The Transportation Ministry, Transportation is the Nerve of Life, 2009, Ibid.p152
This company operates other competitive ports including Jeddah Port, Dubai Port, Ras Jabal Ali Port, etc. so it was clear that there were hidden forces trying seriously through this company to push Aden Port out of the competition process.

Airports and Air Transportation:

Legislative:

The Cabinet’s decree no. 166, year 2006 embodied the opening of the skies of:

- Aden and Hodiedah Airports in 2006,
- Taiz and Sy’oun Airports in 2007,
- Al-Mukalla Airport in 2008, and
- Sana’a International Airport in 2009.

- Confirming the National Program of the Civil Airlines safety (the second issue, December, 2007) which was prepared according to the verdicts of the Civil Aviation Law and applying the recommendations, standards and work styles in appendix 17 of the International Civil Aviation Treaty and the verdicts of related to aviation safety.

- The Cabinet’s decree for preparing the national transporter for competition.

Restructuring

- An American specialized company was assigned to renew the directions and the potentialities of expanding, developing and solving the problems of the Yemeni Airlines Company. The American Company is still preparing a study in preparation for the executing the projects in stages.

- A committee was formed to from the Transportation Ministry and the Civil Service Ministry prepare a study about the employment inflation in the Yemeni Airlines Company.

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86 This was begotten through the field work by the researcher.
87 The journal of civil aviation and meteorology, a quarterly journal issued by the Civil Aviation and Meteorology Authority, issue no. 7, April – June, 2010, p26
- The structuring of the Civil Aviation and Meteorology Authority is being done by a central team formed from the Authority working with an expert in rebuilding and restructuring the project.

**System Development and Procedures Facilitating:**

- Expanding the computer network, the automatic systems and the electronic card project.
- Completing the automatic connection systems and networks construction to connect the authority to the airports and the company to its offices.
- Preparing and typing services manual and designing the electronic sites of the authority.

**The Investment Plan of the Airports 2006-2010:**

- Initiating the second stage (passenger’s waiting hall) with an executing period of 30 months beginning from 1/4/2006 which cost about 115 million USD. It was financed by the Arab Fund for Development which expected the project’s completion to be in 2009.
- Re-qualifying Aden International Airport with a total amount of 25 million USD.
- The buildings and the constructions of the Soqatra Airport (the tarmac, stadium, the stadium entrance) which cost 2 milliards YR.
- Re-qualifying planes’ tarmac and the stadium with total amount of 700 million And initiating the passengers’ waiting hall construction in Sy’oun Airport with a total amount of about 950 million YR.
- Asphalting the planes’ tarmac abutment in Sada Airport with a total amount of about 1.5 milliards.
- Purchasing two fire extinguishing trailers for Ataq and Sada Airports with a total amount of 240 million YR.

**Updating the Yemeni Airlines Company Fleet:**

- Adding a new plane model Boing (737-800) in 2007 and signing an agreement to update the fleet by importing 10 modern planes expected to arrive in 2013.
Encouraging the Private Sector’s Participation:

- The Cabinet issued a decree to construct and establish a participating company for the internal air transportation. A co-partnership was signed between the Islamic Establishment for Development with 25% of the benefits and the Yemeni Airlines with 75% of the benefits. The capital money was 80 million USD. The first flight of the company was in October, 2008 (Al-Saeeda Company).88

- To typically exploit the airports potentialities and energies, and to make use of the effective administration in operating the airports, tender’s documents were prepared in 2010 using building-operating-transfer) system. The Singaporean Company won the tender.89

   Through the field work, the researcher found the executed procedures as follows:

   - Expanding the computer network, the automatic systems and the electronic card project.
   - Purchasing 10 fire extinguishing carts.
   - Adding a new plane model (737-800) in 2007.
   - Constructing a private participating company for air transportation (Al-Saeeda Company) which began its flight in October, 2008.
   - Re-qualifying Aden Airport with total cost of about 25 million USD.
   - Re-qualifying the tarmac and the landing and taking off area with 700 million YR.

3.7.8 Terror Actions in Transportation Sector:

- A group of Al-Qaeda Organization attacked the American Destructive USS Coal in Aden Port in 12 October, 2001, using a bombing boat. Seventeen American seamen were killed and 28 others were injured.

- In 6 October, 2002 there was a huge explosion by Al-Qaeda people in the building of the Civil Aviation and Meteorology Authority, Sana’a.

88 The Ministry of Transportation, Transportation is the Nerve of Life, ibid, pp42-45
89 The General Authority for Civil Airlines, the General Administration for Projects and Planning- the General Manager of Projects and Planning

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In 3 November, year terrorists shot a plane owned by Hunt Oil Company, so that two people were injured.

In 29 October, 2010, the USA announced that two bombing parcels were discovered in Dubai and Britain coming from Yemen to America. In 5 November, Al-Qaeda announced their responsibility for them to explode in America. Due to this, Yemeni airports safety was doubted worldwide and a number of countries like Germany stopped their flights from and to Yemen, and denied the parcels from Yemen and stopped the charging flights from the Yemeni airports.

The role of Yemen in Combating Terrorism:

With the help of the United States, Yemen played a great in combating terrorism. Yemen was, and is still, an effective partner in combating terrorism who used all the means to combat terrorism. Yemen held dialogues with the extremists from Al-Qaeda and could bring back some of them to the right path. Ministry of the Interior conducted a number of typical attacks against Al-Qaeda. It, Ministry of Interior, announced in 17, March, 2010 that the security people executed 40 typical attacks against terrorists during the period just before the announcement.

The legislative, legal and security aspects:

- Constructing the Yemeni Coastguards under the decree of the National Defense Board in September, 2001.
- Ministry of the Interior executed a new security plan beginning in 2002 in several stages to combat terrorism.
- In October, 2004 a presidential decree was issued to construct a section, in Ministry of the Interior, specialized in combating terrorism and the planned crime.
- In 15 April, the Ministers’ Council approved a draft resolution for terrorism combating.
- In 24 June, 2004 the Ministers’ Council approved the political and ideological plan to combat extremism, terrorism, mutiny and racism.
- In 27 January, 2007 the Yemeni government participated effectively in the
international meeting which was held in London to support Yemen in terrorism combating, attended by 21 regional countries.\textsuperscript{90}

**The Role of the Yemeni Ports Authorities:**

The Yemeni Coastguards Authority secures all the Yemeni ports. Since the activation the authority, no terror action has been recorded. The last terror action was the explosion of the French Oiler, Limburg in 2002.

The researcher discussed the procedures done by the ports authorities to ensure the sea security.\textsuperscript{91} And because of that, the main Yemeni ports got certificates for applying the international register, Isps Coda, after they applied all the conditions required to improve the security system in ships and ports. This register embodies specific rules for the security of the ports and the ships targeting those ports.\textsuperscript{92}

**Technology’s Opportunity to Secure Ports:**

There are “low tech” approaches to enhancing security that can work in tandem with sophisticated “high tech” methods so that both complement each other. For gathering intelligence with people on the ground, talking personally to key members of the supply chain, placing human security patrols about the landside, riding boats in the harbor, boarding ships, manually inspecting cargo and demonstrating a leadership presence is a necessary complement to technology.

1. **Shippers and Cargo Data Bases:**

An international information system, administered by DHS, receives and digests massive data in each cargo movement and container. Origins, contents, shippers/ handlers and destinations are analyzed to predict those movements that require more extensive screening at their origin or destination. The effectiveness of this stage totally depends on the reliability of the input data and the federal security system’s ability to correctly select “suspicious” cargo.

2. **Border Barriers:**

\textsuperscript{90} 26 September- an official newspaper, the political department, issue no. 1627, 8 March, 2012, p8
\textsuperscript{91} The researcher mentioned that talking about piracy and sea terrorism, and the role of the ports authorities with the help of the coastguard authority.
\textsuperscript{92} The Transportation Ministry, Transportation is the Nerve of Development, 2009, Ibid., p63
Physical or technical and human barriers at the harbor’s edge and on the port’s perimeter are essential. These include fences, secure portals or gates, and detection equipment in the harbor and at the perimeter are intended to close off access to terrorists while letting necessary cargo movements occur.

3. **Smart Buoys:**

Smart Buoys at harbor entrances are being tested to passively scan ships to detect nuclear radiation. This technology was developed at Lawrence Livermore National Laboratory (LLNL). An article in their journal, *Science and technology Review* offers this technology could play an important role by warning of the presence of nuclear materials in maritime environments…{Designed to} protect military bases … if the new detection devices are successful. They could also be installed in civilian areas such as busy ports.

4. **Container Security:**

Two devices provide another layer of security for container cargo. First, radio frequency indication (RFID) chips can be installed in each container to ensure the container location is constantly known and can be communicated to all who want to know the status of cargo movements. Second, access to containers must be controlled to ensure cargo is trusted. Smart e-seals can ensure containers have not been “tampered with while en route” and these seals can track information on the history of the container and its contents (McCrea 2004). These technologies intend to increase the reliability of trusted movements and enhance the selection of suspicious cargo.

5. **Cargo Scanning:**

Specific screening of any cargo or container is the most significant issue facing DHS and ports. This security strategy that selects certain cargo for further review, based on information channels and software credibility strategy. Using scanning machines supplied by Science Applications International Corporation of San Diego, Hong Kong’s method sends all containers on their chasses through three scans:
(a) Gama ray scan looks at images and densities of content and identifies suspicious objects;
(b) Optical character scan compares this container with database on suspect shippers;
(c) Radiation scans for emissions from nuclear materials that can be withdrawn from the supply chain (with care). The comparative effectiveness of these two strategies is still to be tested.93

However, recently in this respect, ports authorities in Yemen have strived to apply the modern technology at the main seaports through using advanced technology which embody scanning containers at ports to ensure high degree of security and identification the suspicious containers. Moreover, the authorities carried out the physical security at ports through establishing the barriers and fences as well as through spreading the forces over ports.94

Role of Civil Aviation and Meteorology Authority in Terrorism Combating:

The security and the safety of the airlines are the aim of the authority services, especially after the attacks 11 September 2002. So the authority did the following:

- The construction of a specialized section (Airlines Security and Safety) and qualified the cadre in all the airports.
- The project of visual watching system distributed in all the airports (cameras and screens).
- Preparing the different security programs and emergency plans which were tried out.
- The authority along with SIA experienced airlines safety scrutiny in 2006 and then again in 2008. The results of that scrutiny by (IACO) were acceptable.

94 Through survey conducted by the researcher at the main ports
The authority executed the inspection and checking programs in the airports working for different airplanes companies. So it got 91% of (IACO) as a reward for applying the standards recommended by Chicago Treaty.95

But what happened in 29 October because of the bombing parcels which were sent through Sana’a Airport threw aside all these efforts. So the authority came back to the starting point due to the international doubts in the safety of the Yemeni airports.

However, current status of land transportation and roads networks still suffers so many obstacles due to poor policies and legislatives which are not compatible with prevailing situation of this sector, policies of land transportation needs to be in practice, roads policies didn’t heed the priority while executing the projects, lacks feasibility and viability, financing dilemma, therefore roads didn’t achieve the social and economic utility.

Despite many plans and legislatives related to ports and marine transportation in Yemen have been issued, they were not fruitful in reality neither in the country ports’ movement nor in the Yemeni foreign commerce movement as was proved by the previous statistics, current production capacity, the government couldn’t to put the legislations and plans in to practice because of serious causes namely financing shortage, lack the priority and mismanagement.

In respect of airports and air transportation, some of the projects were executed and some legislatives concerning airports and air transportation were issued. These legislatives helped organizing the air transportation movement, to some extent, but did not enhance the air transportation and the infrastructure as it is clear by the indicators and operational capacity. in addition, The researcher noticed that the number of the investment projects to activate the sector was small. This sector was supposed to receive more care to do the expected role in reinforcing the economical development.

In general, transportation policies didn’t achieve their goals in respect of upgrading transportation system in Yemen as whole.

95 The Civil Airlines and Meteorology, a journal by the Civil Aviation and Meteorology Authority, issue no. 7, April – June, 2010, p26