Empirical study of the Logistical Role of Sea ports

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Abstract

Iran may be remarked for having high and exceptional geopolitical position in the area and world and potentially it is counted as a logistic country. Thus, due to this vintage of strategic situation of the country by enhancing and progressing the ports of the country and also developing the value added servicing in the ports can be advantageous for national reproduction and income and prepare the seeds for the high success fields of the maritime great industry and port’s logistic on which guarantee the employments, eradicating deprivation, economic growth and technology upgrading. So it is clearly obvious to see the port’s economic lead toward the creating and supporting the value giving supplementary activities in these few decades ago, and by this recognizing the train of the whole port activities of the value added policy. Ports are changed from traditional shape onto a modern condition and this made it a golden opportunity for the economic situation growth in the ports and beside to the suitable geographical position of the countries that by using and implementation some value add activities and management can reach to the independence national impure reproduction without oil resources, all are surveyed in this study.

Keywords: Logistic Centers, Iranian Seaports, Third-Generation Ports, Logistic Value Added

1. Introduction

In the last two decades’ changes and shifting in the production processes and comprehensive distribution of the trading support system show that value added enhancement in the ports are not only based on the growth of the trade and cargo handling issues but it cites the ports as an important and unique trading supports in the international business servicing (UNESCAP, 2009). Creating and developing the logistic activities implementation will not only benefits the port’s economical functions and the enhancement of the merits but attract and ensure the stability of the existed customers and fresh customers, in the other hand, it also will improve and maintain the competitiveness situation in the ports (Slack, 1999). So from this point we understand the necessity of the implementation of the suitable strategies for improving the logistic centers in the ports (Meidutë, 2005).

So for this purpose, ports should change their transformational mood from the old form to the logistic centers of the transportation on which update with modern international transportation structure (UNESCAP, 2002). Hence, this mark is not only benefits the port’s economical functions and the enhancement of the merits but attract and ensure the sustainability of the customers and also will improve and maintain the rivalry situation in the ports, from this view, the matter is very important to consider for the developmental of the port’s logistic centers. Nonetheless, there are far steps for getting access to this condition, means ideal settlements for rivalry with World modern ports such those in the southern edge of the Persian Gulf and Oman sea like Jabal Ali and Dubai. In our country, ports are in the shifting mood from the traditional way onto a playing the role of the goods process and distribution. Even now, some of the country ports are involved in traditional works and considered of the first generation rather than second or third. It is notable to mark here that not all of the ports are appropriate geographically to being in a market condition or become a center of good distribution. Some ports because of the shortcoming that they face already are poor from situational points for being in a third world port class. Therefore the only feasible procedure that a port can undergone in order to improve itself from this lack of facility, is the initializing of the logistic activities and from its benefits, one can look and study the
economic landscape of the ports and consider the logistic center as one of the ways of getting value added(Tsamboulas & Kapros, 2003).

2. The importance of the logistic and its infrastructures in Iranian seaports

Nowadays, in inter-connected world, World trading is running by the World logistic activities network on which is going to improve as fast as possible. But the facility of the access to the international markets through this network depends on country’s logistic factors such trading face, transportation foundation and domestic markets condition(Beth, 1985). Logistic consist of a range of activities on which covers the trading matters such transportation, storing, unifying and detecting customs processes and also may consider distribution and financial systems of a country. in general, it is an international trading structure to construct a World logistic service by rivalry network. The improvement and the enhancement of the logistic function is one of the vital assets for the country progress, recently(Bichou and Gray, 2004a). Because of this point that logistic has a significant impact on economic activities of countries. And this impact is doubled when speaking about Iran; due to strategic situation that Iran has from the geographical position, it has a special capability to be a logistic cycle between Asia and Europe and from another side it can be a communicative cycle between middle Asian countries and the free water on which surrounding it. This special situation, merely, can be a leading point toward the economic evolution if it is put under the attention. Another important asset that we can cite here about Iran is its situation in strategic geographical position with 3000 kilometers of watery border in north and south of the country that made it an elite position in international transportation and the vicinity with the high trafficking World ports. This potential by developing logistic centers in Iran’s trading ports and also increasing the services of value added in ports can be beneficial in producing national impure reproduction and country income and pave the way for the great success and activities in a great maritime industry on which guarantee employment, deprivation eradication, economic growth and technology upgrading.

3. The changing role of ports

These days, the commercial success of a port could stem from a productivity advantage in traditional cargo-handling service, from value-added service, or from a combination of the two. Productivity advantages come mainly from economies of scale and economies of scope, suggesting that the most productive ports will be those that are equipped to handle large cargo volumes and/or significantly reduce unit costs through efficient management(Bichou and Gray, 2005). Shippers and carriers select individual ports not only based on their cargo handling service capabilities, but also on the benefits they are capable of “delivering” (Bichou and Gray, 2005). Unless a port can deliver benefits that are superior to those provided by its competitors in a functional aspect, port customers are likely to select ports based merely on price(Bowersox et al., 2002). This fact raises the question of how a port can achieve value differentiation. In the 1970s, almost every port provided the same basic package of services to almost every customer. Nowadays, however, it is more difficult for ports to compete on the basis of cargo-handling service. There has been a convergence of technology within cargo-handling service categories. This means that though new technology may sometimes provide a window of opportunity for productivity improvement, in many cases that same technology is also available to competitors. It is no longer possible to compete effectively on the basis of basic, traditional functions. Thus, there is a need for ports to seek out new means of gaining a competitive edge (Bowersox et al., 2002). The late 1980s saw the emergence of major changes. Customers began to ask ports to provide a greater variety of services (Chen and Paulraj, 2004). Providing value-added services is a powerful way for ports to build a sustainable competitive advantage. Shippers and port customers are becoming increasingly demanding. Customers now tend to look at value-added logistics services as an integral part of their supply chain. As a result, ports must attempt to satisfy these needs by offering differentiated services. This poses a particular challenge for port management. Studies show that the most successful ports are those that not only have a productivity advantage in cargo-handling services, but that also offer value-added services(UNESCAP, 2002). Thus, there are several available options for ports to choose from, as shown in the simple matrix in figure 1.
The ports providing traditional services in the bottom left hand corner of the matrix are indistinguishable from their competitors. The only option for such ports is to move to the right side of the matrix, toward productivity-advantage leadership, or to move upwards, towards value-added service leadership. We have found that there continues to be a need for ports that provide the basic, traditional cargo-handling function, and that there continue to be many customers for such services. Perhaps it is for this reason that many ports in developing countries still concentrate on improving their productivity with regard to traditional port functions. However, it is clear that, in the future, there will be fewer ports that prosper only in this area. Rather, we will see the dominance of superior service leaders that possess both a productivity advantage and a value-added service advantage. In between traditional service ports and superior service ports are the leading-edge service ports. These are the ports that are on their way to becoming superior service ports (World Bank, 2001). A number of ports have responded to this trend by focusing on value-added services as a means of gaining a competitive edge. Ports can experience synergistic benefits from the logistics centers to provide value-added services. It is advantageous for a port to also be a logistics center, since the logistics center can attract cargo that can be shipped through the port (Rodrigue et al., 2009). There is a positive correlation between cargo flows at the logistics center and the number of ships calling at the port. In other words, the cargo attracts the ships, and the ships attract the cargo. The port benefits by generating increased revenue and creating jobs. The port can profit not only from the logistics center itself, but also from the increased flow of cargo through the port. Thus, an ideal port should provide a diverse range of services that are highly integrated. As such, there is a need to seriously consider the increasing importance of ports in logistics management (UNESCAP, 2002).

4. Literature review

Some authors have then applied the terminology to the development of hierarchical classifications of logistics centers according to different criteria. For example, Wiegmans et al. (1999) classify five different types of freight terminal based on geographical coverage, volume, and terminal capacity, ranging from the intensive operations of a XXL or Main port Terminal such as a major seaport to the small-scale operations at an S or Local Terminal.

After a comprehensive literature review of various definitions of logistics centers, Rimiené and Grundey (2007) produced a 3-level hierarchy of their classification of logistics facilities according to their role in the supply chain and similarities to one another (Figure 1). According to Rimiené and Grundey (2007), the 1st level indicates the smallest scope of activities, with the highest scope defined by the 3rd level. The intersection arrows between different levels show that the names of connected facilities can transfer between levels depending on the individual activities of each center, and the definition employed by individual authors. The closest connections in definition are represented by unidirectional arrows.
Notteboom and Rodrigue (2009) have expanded on their categorization of logistics centers and utilize them to form a functional and added value hierarchy (Figure 2). The categories in this example are grouped according to three levels ranging from the broad transportation and value added activities at a Gateway (Level 1) terminal, to the specific function performed by a Satellite Terminal (Level 4). A more detailed overview is provided in Table 3.

According to Notteboom and Rodrigue (2009), the functions of inland logistics zones and facilities range from simple cargo consolidation to advanced logistics services. Many locations have assumed not only a significant number of traditional cargo handling functions and services, but have also attracted many additional logistics services, acting as distribution centers, shipping agents, trucking companies, freight forwarders, container repair facilities and packing firms. This classification shows the clustering of inland terminals and logistics activities, and also the degree of specialization each offers with respect to different freight and logistics processes. These facilities have become excellent locations for consolidating a wide range of ancillary logistics services and a host of logistics companies Figure 3 represent the Freight Terminal Hierarchy and Added Value.

5. Standardized Logistics Centre Hierarchy

This hierarchy collapses the five sizes in Wiegmans et al. (1999) and the four levels presented in Notteboom and Rodrigue (2009) into three broad levels based on the scope of activities in Rimienė&Grundey (2007). This approach presents a practical logistics center typology and hierarchy that serves to simplify and differentiate between the varieties of facilities seen in the literature. In general, as these facilities move up the scale in
functionality and value added services they can be understood to incorporate and expand on many of the features of the logistics centers below them in the hierarchy as presented in the Figure 4.

![Figure 4. Standardized Logistics Centre Hierarchy (Rimiené&Grundey, 2007)](image)

6. Logistics Performance Index of Iran

Logistics Performance Index (LPI) is the weighted average of the country scores on the following six key dimensions: efficiency of the clearance process (i.e. speed, simplicity and predictability of formalities) by border control agencies, including Customs; Quality of trade and transport related infrastructure (e.g. ports, railroads, roads, information technology); Ease of arranging competitively priced shipments; Competence and quality of logistics services (e.g., transport operators, customs brokers); Ability to track and trace consignments; Timeliness of shipments in reaching destination within the scheduled or expected delivery time. This measure indicates the relative ease and efficiency with which products can be moved into and inside a country (World Bank, 2012).

In the latest report of the World Bank's Logistics Performance Index published in 2012, Iran ranked 2/49 from the highest 5 mark, this shows that Iran is in the 112 World class among 155 countries. Formerly, in 2005 this World institution was ranked Iran in 2/51 and that's mean it was in the 78 World class among 150 countries. The result of the seven years shows that Iran had dropped in ranks in 34 World class levels and unfortunately we are too far from rival countries. The reason of this drop in rank class from 2/51 to 2/49 is the shortcoming of the improvement speed and functions indexes in Iran rather to other countries, so a lot of countries took a speedy action and they succeed to achieve higher World rank class. Among the area surrounding countries the best selected country from the logistics performance was UAE with 17 World rank class and the lowest rank was dedicated to Iraq with 145 among the world, this statistics based on the conducting of the logistic performance index on which reported by World Bank. So Iran by its special geopolitical situation it remarked logistic country potentially. This indicates that although UAE, Bahrain, Kuwait, Turkish and Saudi Arabia are poorer from geographical situation but they got a better rank than Iran. Noticing that those countries which got a worst rank in logistic performance are limited to land and cannot has a good logistic performance because they depends on the neighborhood countries that may have access to the free water, so it shows the improper situation of Iran from logistic performance point of view in the area (World Bank, 2012).

7. Functions of logistics centers

Logistics centers may perform a number of functions including, but not only the traditional warehousing function of storage. This section describes some of the key functions, all of which may be performed at seaports, although they are not necessarily associated with maritime transport.

8. Storage
This is the traditional function of warehouses. There are various reasons for storing goods, associated with different types of inventory. The following functions of warehouses, although not necessarily new, have been developed in more recent times, and it will be seen that they are not necessarily associated with storage of inventory. Indeed, they are often designed to reduce or even eliminate storage. Modern logistics approaches emphasize flow (in distribution to markets the approach is called flow-through distribution) rather than storage of inventory (Bichou and Gray, 2004b).

9. Materials handling

Coyle and et al (2003) define materials handling as “efficient short-distance movement that usually takes place within the confines of a building such as a plant or a warehouse and between a building and a transportation agency”. Sometimes the term materials management is used. Effective materials management seeks to minimize materials handling, at the same time making effective use of time and space (e.g., stacking goods high in a warehouse, transferring them rapidly to and from factory or transport).

10. Consolidation

Smaller consignments are consolidated at a warehouse and subsequently dispatched as a volume shipment. Consolidation may be in-house or provided by a third party. Freight forwarders offer consolidated services, particularly in international shipping. There is usually an element of storage in consolidation, whilst awaiting departure of the consolidated consignment. The main advantage of consolidation is the saving of transport costs by sending volume or full-load shipments (Van Hoek, 1998).

11. Break bulk

This is the reverse operation to consolidation and, indeed, may be combined with consolidation. In third party consolidated services it is a necessary part of the service, undertaken at the destination (Morash and Clinton, 1997).

12. Cross-docking

Goods enter the warehouse from various suppliers, and are (ideally immediately) transferred to vehicles in the required combinations for shipment to customers (or to a production plant). Cross docking is therefore associated with product assortment or product mixing. In this case, the warehouse is not really used as a storage point but as a transfer location. The term cross-docking refers to the fact that goods move directly across from the receiving dock to the dispatch dock in the warehouse (Morash and Clinton, 1997).

13. Value added logistics (VAL)

Apart from key elements of logistics such as transport and warehousing, there are a significant number of other activities associated with logistics. They are often described as value added logistics (VAL) to distinguish them from mainstream or general logistics services. Value added logistics is a term that is rather loosely applied to a wide range of activities, often referring to any functions performed by a logistics company other than transport or basic warehousing and storage. VAL has been described as a combination of logistical and light industrial activities undertaken by a logistics company to finalize a product (Buck Consultants International, 1997). Preferably, this happens as late as possible in the logistics chain, in a warehouse shortly before sending the product to its final destination (Chen and Paulraj, 2004).

14. Value-Added Services

Generally, the function of a port as a node in the transport chain depends on its location and on the economic and technical developments that exist in its hinterland. Modern production techniques and consumption patterns increase the use of transportation systems beyond levels suggested purely by the growth in trade and commerce. As a result, more specialized handling, storage, and other logistics facilities are needed. More and more, ports...
are becoming part of integrated logistics chains. This process of specialization and changing demands, which has taken place over the last two decades in most Western countries, is now taking place with even greater speed in new market economies. From the port’s point of view, creating new services boosts economic performance as well as its attractiveness to existing and potential clients. This, in turn, can help maintain and improve a port’s competitive position. When assessing the wisdom of developing new services, it is important to pay attention to the value adding potential of the services. This potential can vary product by product and activity by activity. Numerous activities can be classified as value-added services (VAS). Box 11 identifies a number of them. VAS can be divided into value-added logistics (VAL) and value-added facilities (VAF). VAL has two major components: general logistics services (GLS) and logistics chain integration services (LCIS). GLS are, among other activities, loading and unloading, stuffing and stripping, storage, warehousing, and distribution. These are the more traditional logistics activities and do not directly affect the nature of the product as it moves through the port. Beyond these traditional activities, more complex LCIS are being developed. To carry out activities that manufacturers do not consider part of their core business, logistics service providers may take over parts of the production chain (for example, assembly, quality control, customizing, and packing) and after sales services (for example, repair and reuse). However, LCIS are only appropriate for certain types of goods. The products that have the highest potential to benefit from such services include consumer electronics, pharmaceutics, chemical products (except for those carried in bulk), clothing, cosmetics and personal care products, food, machinery, and control engineering products (World Bank, 2001).

The second group of VAS, that is, VAF, is very diverse. These types of activities cannot generally be assigned to a particular type of product or freight flow. It is possible, however, to impute a certain VAF potential by analyzing freight flows such as dry and liquid bulk, general cargo, containerized cargo, and roll-on roll-off. A large container throughput might create the economic basis for establishing container repair facilities, handling vast quantities of chemicals requires port reception facilities, and substantial roll-on roll-off traffic might justify truck maintenance and repair shops. Containerized and general cargoes typically have the highest VAL potential. GLS and LCIS have the best opportunity to serve these cargoes.

The VAL potential for roll-on roll-off is very limited. Trucks with drivers are too expensive to be delayed while the cargo is modified; additionally, these loads are usually customer tailored. VAF, such as tanking, cleaning, repair, parking, security, renting, and leasing facilities have a better potential to serve the roll-on roll off market. Dry and liquid bulk flows have the lowest potential for both VAL and VAF. To provide a favorable environment for VAL and VAF, many ports are developing distriparks. A distripark is an area where companies are established to perform trade and transport related value-added services and can also include locations within the port’s larger hinterland region (World Bank, 2001).

15. Results:

Iran can be a good and proper situation for logistic because of the position that it holds already, reaching the free water and having trading ports in north and south borders of the country will clearly prove this matter. Conducting and developing logistic centers in the ports can increase the new servicing and enhance the function of the port and attract the customers. This matter will pursue the gradual development of the country and in other word will cause changing in the port’s functions toward logistic on which can be beneficial for national economic and will empower the state of the country in the trading and transportation and prepare the fields for value added and the country economic progress. By considering the above mentioned remarks, we can say creating and developing logistic centers in ports are one of the recent needs of the trading ports and also important in the transportation parts in country.

Due to planned timetable for initializing the goals for developing the economic and trading in the area by the fifth developmental determined program on which contains the subtitles such setting logistic parks, setting terminals and compositional transportation towns we should select the suitable planning for developing logistic servicing and help for the implementation. So for providing these function and performance for logistic centers, all of the related companies and above mentioned organization should come into action. Logistic center should be facilitated with all of the logistics performance implementation software and hardware, it is better to equip the stuff and users with all of the needed instruments, too. Logistic center should be provided and facilitated by well-organized wide range transportation pathways such roads, railways, seas, inner water ways and air servicing in order to be able to conduct international transportation for goods network.
REFERENCES


