

THE DRY PORTS: A REVIEW OF THE CONCEPT AND ITS APPLICATIONS IN TURKEY

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Abstract

As a point of intersection, ports play an important role between those in need of logistics services and companies offering logistics services. Rather than being just simple transshipment hubs, Ports recently have become integrated logistics centers in continuous transport chain and these changes are heavily dependent upon the supply chain strategies of main port users. Although these developments positively effects the handling volume in terminals, the rising quantity have increased the work load of the terminals, along with increasing congestion level and dwell times in terminal areas. At this point, port managers and logistics service providers seek to find better solutions for port users, and dry ports are one of the solutions used for this problem around the world. Dry ports reduce congestion and increase efficiency in seaports and improve logistics services for port users in hinterland of the ports. Although the idea of dry ports is certainly not new, there are limited examples in Turkey. The main purpose of the paper is to explain the dry port concept and its categories with examples from the world. In addition, initial example applications of the dry ports in Turkey are presented with its advantages and disadvantages which are investigated by empirical studies.

Keywords - Container, Dry port, Hinterland, Logistics, Inland terminal, Intermodal Transport, Seaport

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1. INTRODUCTION

Depending upon the increasing global production and consumption, container transportation has been rising constantly since it first appeared on early 1960s. According to the Review of Maritime Transport (UNCTAD 2013) container transportation covers 16 per cent of global seaborne trade by volume and more than half by value.

Considering the continuously increasing demand for this transportation service, all the actors which are involved in this sector have the need of finding out solutions both for economical and operational concerns. For instance, the vessel operators order larger vessels in order to meet the demand which also helps to reduce the unit costs and thus increase the economies of scale. Larger vessels and larger flows of containers rise as an essential issue which pressures container terminals in an operational manner. In order to cope with the operational challenges caused by the increasing cargo flow, these terminals carry out heavy investments such as capacity expansion, purchasing of convenient equipment and adding intermodal options for strengthening their hinterland linkages.

For all these challenges, the concept of dry port can play a supportive role as it is a logistics center which can provide services such as handling, storage, stuffing/un-stuffing, consolidation, customs clearance and container maintenance. By performing these operations dry ports relieve the seaports and may also provide improved logistics solutions for shippers in the port's hinterland.

2. LITERATURE REVIEW

Inland intermodal terminals are important nodes in the transport network and have attracted considerable attention (Roso, 2007). Intermodal terminals have been extensively studied by many researchers. However, the related literature does not cover many researches focusing on the dry port concept in particular. Besides the definitions of the concept and the roles, they hold vary from one paper to another. Thus, the outcomes and the suggestions of these papers may create conflicts and lead readers to different approaches. In this manner, it would be useful to present the common grounds of the definitions of "dry port" collected from the related literature.

One of the earliest dry port research works was completed by Beresford and Dubey (1990). Usually located at strategic places near gateway seaports, industrial areas or along major transportation axes, dry port plays significant roles in optimizing all activities to ensure cargoes can be delivered from one end to another in an efficient manner (Juhel, 1999).

In many ways, a dry port conducts functions very similar to contemporary seaports, especially its role as the distributional nodal points along intermodal supply chains (Meersman et al. 2005).

In its original form UNCTAD (1982) defined ‘dry ports’ as an inland terminal to and from which shipping lines can issue their bill of lading. It was further defined as an inland common user facility that fulfilled a number of traditional port functions, such as temporary storage and customs transit, via various modes of transport with customs clearance and related agencies handling cargoes of different types (Cullinane and Wilmsmeier, 2011).

A general definition of the dry port concept propounded by Leveque and Roso (2002) is as follows: A dry port is an inland intermodal terminal directly connected to seaport(s) with high capacity transport mean(s), where customers can leave/pick up their standardized units as if directly to a seaport.

A dry port can be understood as an inland setting with cargo-handling facilities to allow several functions to carry out, for example, cargo consolidation and distribution, temporary storage of containers, custom clearance, connection between different transport modes, allowing agglomeration of institutions (both private and public) which facilitates the interactions between different stakeholders along the supply chain, etc (Ng and Gujar, 2009).

Dry ports can be categorized into three as close, mid-range and distant. Woxenius et al. (2004) describes distant dry ports as the most conventional of the three. These kind of dry ports are beneficial for opening up new markets by increasing seaports’ access to areas outside their traditional hinterland. Woxenius et al. (2004) states that a mid-range dry port is consequently situated within a distance from the seaports generally covered by road transport and creates value by serving as a consolidation point. Woxenius et al. (2004) states that a close dry port consolidates road transport to and from shippers outside the city area offering a rail shuttle service to the port relieving the city streets and the port gates. Figure 1 shows examples of each dry port types and their connections to the seaports and the shippers.

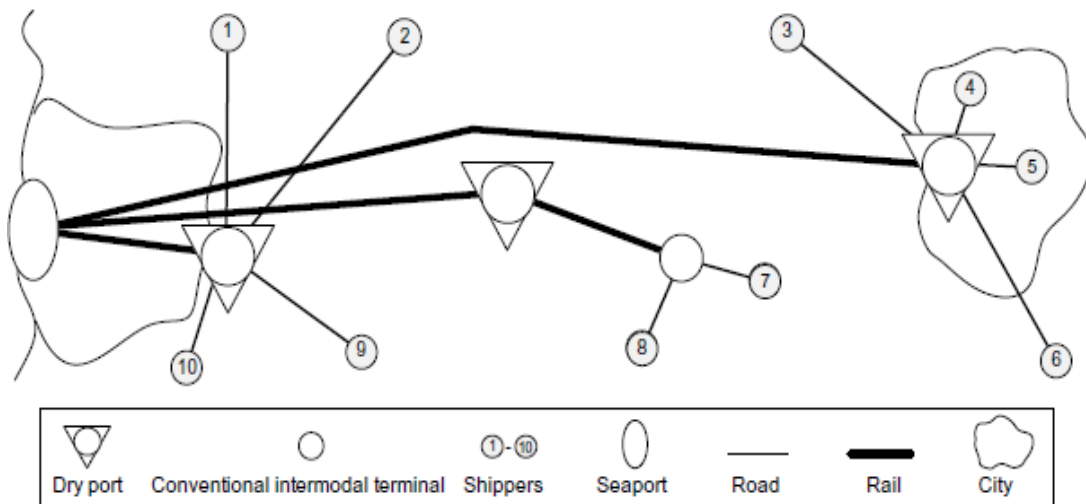


Fig 1. Comparison Between Conventional Hinterland Transport and An Implemented Dry Port Concept

Source: Roso, 2009

The literature review which presents the objectives and the results on dry port related papers is shown in the table above. The literature between 2007 and 2010 generally focuses on the roles and potential benefits of the dry port systems as they are newly established nodes and

their functions are not totally understood by the users. Between 2010 and 2013, it is seen that more detailed and focused researches are held by the authors.

Table 1 Literature Review

Authors	Objective	Results
Jaržemskis and Vasiliauskas (2007)	to introduce the dry port concept as a solution for reducing seaport complexity and bottlenecks	The results clarify the role and the functions of the dry ports as a newly introduced concept and suggests co-operation with the seaports in order to create win-win situation
Roso (2008)	to investigate and define impediments to a close advanced intermodal terminal – dry port implementation.	The results show that the most common factors that impede dry port implementation are infrastructure, land use, environment and regulations.
Roso, Woxenius and Lumsden (2009)	to extend the theory behind the dry port concept and to define three dry port categories; distant, midrange and close.	The results show that the dry port concept can help identify ways of shifting freight volumes from road to more energy efficient traffic modes that are less harmful to the environment, relieve seaport cities from some congestion and facilitate improved logistics solutions for shippers in the port's hinterland.
Roso and Lumsden (2010)	to clarify the concept by showing potential discrepancies or agreements between theory and practice by presenting the previous research.	The results show that a dry port especially creates two main advantages: improved customer service and creation of new jobs in the area.
Ng & Cetin (2011)	to find out the differences between the characteristics of dry ports in different regions and with different locational conditions.	Results indicate that the spatial dynamics of dry ports in developing economies are different from Western, advanced economies due to geographical diversifications, the different paces of regional development and local practices.
Cezar-Gabriel (2011)	to evaluate the performance of existing dry ports in order to analyze their effects on reducing the seaport congestion	The paper states that dry port implementation is not a straightforward solution for the seaport terminal decongestion it can, nevertheless be part of the solution. Also the results show that the dry port performance depends on the quality and

		quantity of ways of land access such as railway and road.
Henttu and Hilmola (2011)	to choose the number of dry port installations, which offer the greatest cost savings. So the paper discusses which dry port locations should be maintained under a scenario in which the number of dry ports in a system needs to be reduced.	The results show that a greater number of seaports enhances the cost-efficiency of the dry port network in Finland and the overall level of inland transportation
Do , Nam and Le (2011)	to evaluate the conditions to construct dry ports in Indochina Area including three countries Vietnam, Laos and Cambodia	The paper suggests a dry port system for the region which promises to bring many benefits for Indochina region.
Milinaric, Rogic and Rozic (2011)	to present the methodology of determining the network of dry port terminals in real environment.	The results proved the acceptability of such a methodological approach, and the carried out research resulted also in the offering of solution of the dry port of the Port of Rijeka.
Padilha and Ng (2012)	to investigate how seaport development has affected the evolutionary pattern of dry port configuration in the State of Sao Paulo; and why dry ports in the State of Sao Paulo have not been able to develop in line with Brazil's economic growth	The paper finds out that various factors, notably institutional barriers, have led to significant deviations in the evolution of Brazilian dry ports.
Beresford et al. (2012)	to suggest possible solutions to the problems identified during the establishment of mature dry port facilities, with priority being given to establishing a clear legal definition of what dry ports are.	Different dry ports in China are at different stages of development. This is determined by their core functions and institutional expectations.
Ng, Padilha and Athanasios Pallis (2013)	to analyze how institutional framework affects the bureaucratic and logistical roles of dry ports in emerging economies.	The results show that excessive bureaucracy and complicated import/export processes might encourage companies to use dry ports located nearby, where informal practice and face-to-face contacts may facilitate custom clearance.
Zeng, Maloni, Paul and Yang (2013)	to fill the gap by combining practitioner interviews, publicly available data, and	The results show that although the trade volume of China is increasing rapidly, the dry port

	industry and academic literature to provide an overview of dry ports in China.	operators see potential return on investment for dry port development risky.
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All the papers mentioned in the table propound various definitions of the dry port concept. In order to point out the common grounds of all these definitions, the characteristics of the dry ports can be listed as follows;

- Directly connected to one or more seaport (preferably with rail connection)
- Capable of handling intermodal operations
- Capable of providing value added services (that the seaport might have problems with doing)
- Carrying out the main functions of a port such as storage, consolidation and distribution of the goods
- Providing customs clearance

3. RESEARCH METHODOLOGY

In this study qualitative approach has been applied by conducting semi-structured interviews with two senior employees of Mersin International Port Management Incorporation who are positioned in commerce department. The interviews are carried out on August 12th 2014 via phone. Mersin International Port employees were selected as interviewees as the port is both customer and competitor of Kahramanlı Dry Port which is the only logistics center in Turkey defined as a dry port.

The interview is a short-term, secondary social interaction between two strangers with the explicit purpose of one person's obtaining specific information from the other. Information is obtained in a structured conversation in which the interviewer asks prearranged questions and records answers, and the respondent answers (Neuman 2006).

There are many different types of interviews as well as interview methods and techniques. Based on the structure type, interviews can be categorized into 3 as structured, unstructured and semi structured.

Structured interviews are collections of specific and precisely formulated questions which are asked of a respondent by an interviewer. In the unstructured interviews, the researcher interviews in a very informal way, allowing respondents consider able latitude in what they say. There may not even be pre-formulated series of questions (Bryman 2005).

Berg (2000) defines semi-structured interview as the type of interview which involves the implementation of a number of predetermined questions and/or special topics. In this form of interview the questions are typically asked of interviewee in a systematic and consistent order, but the interviewers are allowed freedom to wander off.

Considering that semi-structured interviews allow interviewees the freedom to express their views in their own terms, this structure type has been found more appropriate for this study.

4. RESEARCH FINDINGS

The outcomes of the semi-structured interview reveal the business connection between MIP and Kahramanlı Dry Port and stands out with its unique presence among logistics systems in Turkey. The following questions and the responses clarify this relationship in detail;

How would you define the business relationship between MIP and Kahramanlı Dry Port?

The interview which is carried out with two senior employees of Mersin International Port concludes that the relation between MIP and Kahramanlı Dry Port can be seen both as a competition and a partnership. The interviewee has stated that considering Kahramanlı Dry Port can handle all the landside operations that MIP performs including import and transit customs clearance, there is a high level competition between two of them especially in CFS operations. Even though MIP has 160.000 m² of CFS area, some parts being specialized for marble and minerals, congestions still occurs from time to time. At this point the services of Kahramanlı Dry Port becomes crucial both for the shippers in the region and the port itself.

How would you explain the supportive role of Kahramanlı Dry Port to MIP?

Being located in 5 km distance to the port Kahramanlı Dry Port can be categorized as a close dry port and with its' supportive role MIP gains a strength against its' competitors such as Limak Iskenderun and Assan Port. The interviewee has mentioned that unlike Marmara or Aegean Region, the rate of temporary admission is quite lower in the hinterland of MIP. Thus, the need for CFS services is higher when compared with above mentioned regions.

How would you explain the competition between MIP and Kahramanlı Dry Port?

When focused on the competition in between, Kahramanlı Dry Port has the upper hand in flexible prices as privatized ports are obligated by the law to apply a single tariff system. On the other hand, the fact that a shipment needs to be transferred from MIP to Kahramanlı Dry Port may cause a disadvantage for Kahramanlı Dry Port against MIP.

5. CONCLUSION

The dry port concept is still evolving and has not reached to its final shape yet. Besides depending upon its distance to the seaport, the role of the dry port may vary. As a result of this the related literature provides various definitions and point of views. However, by all the researchers it is accepted that a dry port must be directly connected to one or more seaports, must be capable of handling intermodal operations and must carry out the main functions of a port such as storage, consolidation and distribution of the goods.

Although Kahramanlı Dry Port creates an important value both for the seaport and the shippers in the region, since it is not capable of carrying out intermodal operations caused by the lack of rail connection, it does not precisely fulfill the characteristics of the concept. Nonetheless, together with MIP the dry port stands out as an exemplary logistics system for other port regions in Turkey considering the mutual benefit created by the both parties which also reflects to the shippers' satisfaction level. Considering the constantly increasing cargo flows, similar logistics applications would also be fructuous for Aliğa Region (Izmir), Ambarlı Region (Istanbul) and Gemlik Region (Bursa).

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