

Modal Shifting from Road to Coastal Shipping Using a Mobile Harbor*

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Abstract

The purpose of this paper is to suggest the possibility of modal shift by developing a mobile harbor (MH) with a container crane on board for container transport. As per the technical specification of MH, it has 8~15 knots speed, 250TEU laden capacity, 4 meters draft, 92 meters LOA, 26 meters breadth, 30 moves handling rate capacity per hour. With this specification, the strong point of MH is to reduce port time of the mother ship by implementing a cross-docking handling system alongside the mother ship or feeder ship. Furthermore, due to the crane on board, the berthing place will be expanded, i.e. MH is able to approach general cargo handling berth without a dedicated quay crane. The paper concludes that MH may be used as a useful modal shift tool. The transit distance of 100 nautical miles is a decisive point to win the road mode regardless of the ship's speed. If the distance is more than 100 nautical miles, mobile harbor has the competitive advantage in pulling cargo from road transportation mode. Even though the result of analysis shows a positive signal for modal shift, the real situation does not go that way. That means modal shift has several attributes applicable to the real world.

Key words : Mobile Harbor, Economic Analysis, Modal Shift

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I. Introduction

The interest of coastal shipping in South Korea has increased due to the declaration of the green logistics policy by Korea's government in August 2008. The concentration to road transportation has reached 74% of total ton miles whereas the portion of coastal shipping was 18% and that of rail was 8% in 2007. As a result, the problems of road congestion, oil energy consumption, CO₂ emission and road damage drive an interest in coastal shipping. According to a report about the east coast of North America, the criteria of a modal shift from road to sea transportation are suggested as services options, transit time, service cost, documentation and frequency of service and reliability of transportation service.¹⁾ As a result of research, coastal sea is perceived to be reliable by shippers, but a majority of them require a tight delivery window, and so transit time is important. Regarding the documentation issue, which could be a key motivator in choosing a modal option, US shippers were quite concerned about purchasing a service requiring multiple carrier contracts over a single contract. The single contract arrangement gives a greater chance of succeeding. In this paper, the documentation factor of shippers is considered not to be a decisive factor for choosing a modal option under the assumption of providing homogenous service to shippers. As the biggest advantage of the truck mode is flexibility of departure time, coastal shipping has a weak position over coastal sea services mode. The research result by A. Baird is that a portion of shippers have a willingness to switch truck modal to coastal shipping in case of road congestion, even if coastal shipping is operated on a weekly or biweekly service. The result means that flexibility is an important factor for choosing the mode.

The result about the cost of service for a factor of modal shift is that a 10 percent discount is insufficient to trigger switching behaviour to coastal sea but a 20 percent discount is better. Likewise, a 10 percent premium is not a deterrent to the choice of coastal shipping, premium pricing for a better transit time may be acceptable. In the shipper's view, sea transportation is thought to be one of transportation modes. The choice is dependent on transit time, service cost, frequency or reliability from origin to destination.²⁾

1) Mary R. Brooks & J. Richard Hodgson (2006), pp.75-76.

2) Mary R. Brooks & J. Richard Hodgson (2006), pp.76-77.

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