Literature Survey

Traffic and capacity analytics for major ports

1. **An integrated berth allocation and yard assignment problem for bulk ports: Formulation and case study**

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The impact of globalization on maritime transportation has led to its enormous growth over the last decade. Due to the rapid increase in sea-borne demand, large emphasis is placed on making ports more efficient, by promoting the effective utilization of available resources. Therefore, the role of optimization becomes crucial, as port operators aim for the cost-effective option of maximizing port efficiency, rather than the costly alternative of expanding existing capacity. One of the most important seaside planning problems that has received a great deal of attention in research streams is the assignment of quay space to incoming vessels; it is known as the Berth Allocation Problem (BAP). Even though it has been studied extensively, there remain certain unaddressed gaps. Relatively little attention has been focused on the operation of bulk ports, in which terminal operators are concerned with integrating and managing the sea-side area (wharf) and the buffer area for storage. The cargo type must be explicitly known to the bulk port operator, who in turn assigns to it the best storage area and the use of appropriate specialized equipment for loading and discharging. It is evident that the integration of the BAP with yard assignment is necessary, in order to maximize efficiency and obtain the optimal berthing plan in bulk ports. Thus, the current paper studies the integrated dynamic hybrid berth allocation and yard assignment problem (BYAP) in the context of bulk ports.

2. Atul Deshmukh, "Indian Ports – The Current Scenario" Working Paper No. 14, Dr. Vibhoothi Shukla Unit in Urban Economics & Regional Development, Mumbai

Jose Tongzon, (2001) used Data Envelopment Analysis (DEA) to provide competence measurements for four Australian and twelve other global vessel ports. Research has shown that the ports of Melbourne, Rotterdam, Yokohama and Osaka are the greatest incompetent ports, based on continuous and adjustable returns to scale norms, largely due to the massive loose in their vessel berths. J. Wu, Yan, & Liu (2010) results indicated that the number of berths and the capital deployed are the most sensitive measures impacting performance of most container ports.

3. Cheon, S. (2007). The productive efficiency of ports: lessons from the Pacific Rim Seaport's corporatization and Strategic Management: University of California at Berkeley, Institute of Urban and Regional

Cheon (2007) examined that port efficiency is formed not only by the strength of interplanetary rivalry, but also by the aptitude of port specialists to device groundbreaking official practices in the context of a internationalized, modest world trade arrangement.

4. Dwarakish & Salim (2015)

Dwarakish & Salim (2015) studied the role played by ports in the development of a nation. Gaur et al., (2011) argued that, although major programs and actions are launched to upsurge the size of seaports, there is a lack of immediate need to increase the efficiency of port operations. J. Wu, Yan, & Liu (2009) extended the Doyle and Green model by considering the DMU groups to determine the final cross-efficiency. A new approach based on the crossefficiency assessment method is being developed and applied to the efficiency analysis of 28 container ports in 12 Asian countries.

5. Valentine & Gray (2001)

Valentine & Gray (2001) studied that the simple structure is the most efficient form of organizational structure, whilst ownership structure does not appear to have any significant influences upon efficiency. Organizational restructuring of an inefficient port must not been seen

in its own right to be the panacea, but must go hand-in-hand with new financing and investment