

**MEASURING EFFICIENCY AND  
PRODUCTIVITY USING DEA MODEL FOR  
CONTAINER TERMINALS IN PENINSULAR  
MALAYSIA**

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FOR CONTAINER TERMINALS IN PENINSULAR MALAYSIA**

**NOR HASNAA' KAMILAH MOHD DALIM**

Thesis Submitted in Fulfillment of the Requirement  
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Management  
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## **DEDICATION**

This research is proudly dedicated

To my dearest parents, Mr. Mohd Dalim Ramli and Mrs. Aroza Mohd Nor

and

To my beloved family

Thanks for your endless love, sacrifices, prayers, support and advices.

Abstract of thesis presented to the Senate of Universiti Malaysia Terengganu in fulfillment of the requirement for the degree of Master Science

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**ABSTRACT**

Ever since higher utilization of container handling, terminal expansion is essential for future demand as throughputs increase in line with new generation of mega-vessels. The attention is focused on the performance of the container terminal by ascending demand for local and international container movements. Therefore, efficiency and productivity are significant indicators for terminal performance. The aim of the research provides three (3) objectives, from classifying of container terminal resources, measuring empirically the efficiency and productivity of container terminals with allocated resources to forecasting container terminal throughputs by ports. This research applies both models of Data Envelopment Analysis (DEA) technique; Charnes, Cooper and Rhode (CCR) and Banker, Charnes and Cooper (BCC). The output-orientated models are applicable and in line for container terminal operation. In addition, forecasting the terminals throughputs is using E-Views

technique. A panel data of six (6) container terminals in Peninsular Malaysia from 2005 to 2015 for 66 Decision Making Units (DMU) are used for analysis. The efficiency results for CCR and BCC models represent 27 and 32 are efficient respectively out of 66 container terminals. The remaining are categorized as inefficient terminals. On the other hand, for Malmquist Productivity Index (MPI), the highest year pairs for constant return to scale and variable return to scale are 2014-2015 and 2011-2012 respectively. Lastly, forecasting results based on E-Views technique showed throughput, efficiency and productivity graph gradually increased for target year 2025. The projection growths in 10 years reach 66.82% in which it is very prospective for container terminal operators in Peninsular Malaysia. Terminal managers should handle operational issues in their terminals to ensure the optimum utilization of existing resources.