

HANDLING EFFICIENCY OF CONTAINERS AT
PORT OF TANJUNG PELEPAS, (PTP),
MALAYSIA

LOKE KENG BIN

MASTER OF SCIENCE
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**HANDLING EFFICIENCY OF CONTAINERS AT
PORT OF TANJUNG PELEPAS, (PTP),
MALAYSIA**

Dedication to my dearest family members

Loke Chia Eng, Ang Siew Hong,

Loke Keng Hooi, Loke Guan Chong, and

LOKE KENG BIN

My dear friend, Pong Hock Sin

**Thesis Submitted in Fulfilment of the Requirement for the
Degree of Master of Science in the
Faculty of Maritime Studies and Marine Science
Universiti Malaysia Terengganu**

June 2007

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Abstract of thesis presented to the Senate of Universiti Malaysia Terengganu

In fulfillment of the requirement for the degree of Master of Science

HANDLING EFFICIENCY OF CONTAINERS AT
PORT OF TANJUNG PELEPAS (PTP), MALAYSIA

LOKE KENG DIN

June 2007

Chairperson : Prof Madya Dr. Subarudin bin Dahir' Abd Hamid

Members : Tuan Haji Abdul Rahim bin Yusoff

Dedication to my sincere family members:

Loke Chin Eng, Ang Siew Hong,

Faculty : **Loke Keng Hooi, Loke Geok Cheng, and**

my dear friend, Foong Hock Sin

A study was done to look into the handling efficiency of a container port, Port of Tanjung Pelepas (PTP). Three major aspects that affect the handling efficiency were analysed namely the transshipment operations, variables of vessel calls and human factors.

Transshipment processes included 3 operations, namely ship, quay transfer and container yard operations. For ship operations, secondary data was collected and observations (see and pier charts) were used to analyse the delay factors. The quay transfer and container yard operations, surveys were conducted and about 200 respondents were interviewed. Frequency and regression analysis were used to analyse the delay factors on the basis of the information.

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

**HANDLING EFFICIENCY OF CONTAINERS AT
PORT OF TANJUNG PELEPAS, (PTP), MALAYSIA**

LOKE KENG BIN

June 2007

Chairperson : Prof Madya Dr. Saharuddin bin Dato' Abd Hamid

Members : Tuan Haji Abdul Rahim bin Ibrahim

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A study was done to look into the handling efficiency of a container port, Port of Tanjung Pelepas (PTP). Three major aspects that affect the handling efficiency were analysed namely the transshipment operation, variables of vessel calls and human factors.

Transshipment processes included 3 operations, namely ship, quay transfer and container yard operations. For ship operation, secondary data was collected and correlations test and pie charts were used to analyse the delay factor. For quay transfer and container yard operations, surveys were conducted and about 201 respondents were interviewed. Percentage and frequency tables were used to analyse the delay factors on the latter two operations.

For variables of vessel calls, secondary data was collected and correlations test was done to determine the influence of the handling efficiency. For human factors, surveys were conducted and Kruskal-Wallis and Mann-Whitney tests were used to analyse the variables.

For ship operation, stevedore delays (82.6%) were found to be the most significant factor that affected the handling efficiency. This is further supported by an r-value of 0.831. The delay factors were found to give effect on stevedore delays namely shift change (0.828), waiting for prime movers (PMs) (0.716) and hatch closing (0.713). However, result of pie chart showed that waiting for PMs gave the highest percentage in the ship operation processes, i.e. 41.2%.

For quay transfer operation, waiting times for rubber-tyred gantry cranes (RTGs) was categorised as the 'often' delay factor with the percentage of 29.6%. Meanwhile, for container yard operation, waiting times for PMs (24.1%), RTGs break downs (33.0%) and the need for turning 90⁰ (30.7%) were found to be the 'often' delay factors in the operation.

For variables of vessel calls, results showed that the total moves (0.877), total loads (0.804) and total discharges (0.716) contributed to a significant impact on berth turnaround times.

As far as human factors are concerned, Kruskal-Wallis test showed that the educational background (0.005) and job specifications (0.000) might affect the degree of job involvement.

In conclusions, the results indicated that interference between vehicles/machines is considered the main bottleneck for the transshipment operation. For variables of vessel calls aspect, total moves, total loads and total discharges showed a strong correlation with berth turnaround times. For human factors aspect, results indicated that educational background and job specifications have a significant relationship with job involvements.

LOKE HONG HUP

Jan 2017

Penyeras : Prof Madya Dr. Saibudin bin Dato' Abd Hamid

Akai : Tuan Haji Abdul Razak bin Ibrahim

Penyeras : Mr. Mubal Firat Ismail CMIL I

Pasukan : Pengajian Marketing dan Sales Maria

Suatu kajian penyelidikan dijalankan ke atas kecekapan pengendalian perhubungan kontena di Pelabuhan Tanjung Pelepas (PTP). Tiga aspek utama yang termasuk dalam kecekapan pengendalian diwujudkan, iaitu operasi transshipment (kecekapan operasi), variabel kapal panggilan (variables of vessel calls), dan faktor manusia (human factor).

Proses kecekapan mengesyaki 3 jenis operasi, iaitu operasi kapal (ship operations), perhubungan dengan kapal transfer operasi (ship-to-ship transfer operations) dan variabel kapal panggilan (variables of vessel calls). Bagi operasi kapal, data sekunder diperolehi, termasuk data berkaitan di kawasan kecekapan dan data real yang dihidang diportal to untuk mengimbas faktor kecekapan (dolar factor). Bagi operasi perhubungan dengan kapal, data real termasuk kajian mengenai diwujudkan dan diwujudkan ke atas PTP untuk mengimbas faktor

Abstrak tesis yang dikemukakan kepada Senat Universiti Malaysia Terengganu sebagai memenuhi keperluan untuk ijazah Master Sains.

**KECEKAPAN PENGENDALIAN KONTENA DI
PORT OF TANJUNG PELEPAS, (PTP), MALAYSIA**

LOKE KENG BIN

June 2007

Pengerusi : Prof Madya Dr. Saharuddin bin Dato' Abd Hamid

Ahli : Tuan Haji Abdul Rahim bin Ibrahim

Mr. Mohd Rizal Ismail CMILT

Fakulti : Pengajian Maritim dan Sains Marin

Suatu kajian penyelidikan dijalankan ke atas kecekapan pengendalian pemindahan kontena di Pelabuhan Tanjung Pelepas (PTP). Tiga aspek utama yang memberi kesan ke atas kecekapan pengendalian dianalisis, iaitu operasi transhipmen (transhipment operation), variabel kapal panggilan (variables of vessel calls), dan faktor manusia (human factor).

Proses transhipmen mempunyai 3 jenis operasi, iaitu operasi kapal (ship operation), pemindahan dermaga (quay transfer operation) dan yad kontena (container yard operation). Bagi operasi kapal, data sekunder dikumpulkan, kemudian ujian korelasi dilakukan ke atasnya dan carta pai yang dilukis digunakan untuk menganalisis faktor kelewatannya (delay factor). Bagi operasi pemindahan dermaga dan yad kontena, kajian tinjauan dilancarkan dan dijalankan ke atas 201 orang responden. Jadual

peratusan dan kekerapan digunakan untuk menganalisis faktor kelewatan ke atas kedua-dua operasi terakhir.

Bagi kes variabel kapal panggilan, data sekunder dikumpulkan dan kemudian ujian korelasi diaplikasikan untuk menentukan hubungan yang mempengaruhi kecekapan pengendalian (*handling efficiency*). Bagi kes faktor manusia pula, tinjauan dijalankan dan diuji dengan ujian Kruskal-Wallis dan ujian Mann-Whitney digarapkan untuk menganalisis variabel yang berkaitan.

Bagi operasi kapal, kelewatan pemunggah kapal atau '*stevedore delay*' (82.6%) mempunyai pengaruh yang signifikan terhadap kecekapan pengendalian. Hasil keputusannya disokongkan oleh '*r-value*' sebanyak 0.831. Faktor kelewatan yang mempengaruhi kelewatan pemunggah kapal ialah pertukaran syif atau '*shift changes*' (0.828), menunggu '*prime movers (PMs)*' (0.716) dan penutupan petak atau '*hatch closing*' (0.713). Walaupun demikian, carta pai menunjukkan menunggu '*PMs*' adalah faktor utama yang melambatkan proses operasi kapal, iaitu sebanyak 41.2%.

Bagi kes operasi pemindahan dermaga, menunggu '*rubber-tyred gantry cranes (RTGs)*' dikategorikan sebagai faktor kelewatan selalu (*often delay factor*) dengan peratusan 29.6%. Sementara itu, bagi kes operasi yad kontena, menunggu '*PMs*' adalah sebanyak 24.1%, kerosakan '*RTGs*' adalah sebanyak 33.0% dan keperluan memusing 90^o adalah sebanyak 30.7%, dan ketiga-tiga faktor tersebut dikategorikan sebagai faktor kelewatan selalu yang melambatkan keseluruhan operasi yad kontena .

Bagi variabel kapal panggilan, keputusan menunjukkan jumlah pergerakan (total moves) sebanyak 0.877, jumlah muatan (total load) sebanyak 0.804 dan jumlah pemungghahan (total discharge) sebanyak 0.716 memberi dampak yang signifikan ke atas waktu berpaling pengkalan kapal (berth turnaround times).

Bagi faktor manusia, keputusan dari ujian Kruskal-Wallis menunjukkan bahawa latar belakang pendidikan (0.005) dan spesifikasi tugas (0.000), merupakan dua faktor manusia yang mempengaruhi penglibatan tugas (job involvement).

Sebagai kesimpulan, hasil keputusan menunjukkan gangguan antara kenderaan/mesin (interference between vehicles/machine) adalah masalah utama bagi proses transhipmen. Bagi 'variabel kapal panggilan', jumlah pergerakan, jumlah muatan dan jumlah pemungghahan mempunyai perhubungan korelasi yang kuat dengan waktu berpaling pengkalan kapal. Bagi faktor manusia pula, hasil keputusan menunjukkan latar belakang pendidikan dan spesifikasi kerja mempunyai perhubungan yang signifikan dengan penglibatan tugas.