Current practice of coal discharging operation in Malaysian port

Amli Mohamed Amin[*], Syuhaida Ismail[*], Khairul Zahreen Mohd Arof[*]

[*]*Universiti Teknologi Malaysia, Malaysia*

JOMEINO
ISSN:
2522-381X (Print)
2521-7054 (Online)
DOI: 10.31039/jomeino

Received 03 June 2018

Revised 10 August 2018

Accepted 21 September 2018

Citation: Amin A. M., Ismail S., Arof K. Z. M. (2019). Current practice of coal discharging operation in Malaysian port. *Journal of Management, Economics, and Industrial Organization, 3*(1), 18-24. http://doi.org/10.31039/jomeino.2019.3.1.2

Corresponding author:
amli72@yahoo.com

Abstract

Operation delay causes a financial impact to port operation in overall since is a chain process activity. The losses of time during operation was translated to penalty to port operator team. Therefore, this paper comes out with an objective to investigate current practice of coal discharging operation in Malaysian port. This to ensure that any factors led to delay can be detected to avoid subsequent problem especially industrial sectors and Malaysian economics in general. A systematic literature review (SLR) has been conducted to identified the current practice of port from previous research. Data collected from this SLR used in the development of questionnaire. A set of Questionnaire than been distributed to all port handling coal discharge activities in Malaysia. This study managed to collect 82 respondents randomly working in coal discharge team. Based on the SLR and data analysis, this paper found that, focus in coal discharge activities should be on: (1) the good owner, receiving from and delivering good to port; (2) good transmission between ship and coast vice versa; (3) transporting good to port and transmission of good from port; and (4) other criteria. To sum up, the current practice of coal discharging operation in Malaysian port experiencing delay which is not serious yet still affects the cost of operation in overall.

Keywords: *Port operation, Coal discharging, Malaysia.*

Introduction

Coal supplies a third of all energies used worldwide and

makes up 40 percent of electricity generation, thus playing a crucial role in industries similar to iron and steel. Despite legitimate concern about air pollution and greenhouse gas emissions, coal use will be continued to be significant in future (Lin et. al, 2018). Coal is the cheapest source of thermal energy used in industrial sector and has played significant role in industrial development. Coal are transport by shipping in Malaysia, only four port operating coal discharges activities. Delay in coal discharge activities at port led to destructive of electrical energy supplies since it is a primary source in generating electricity. The impact of electricity shortage will subsequently affect many industries and contributed to defect in economic growth (Bekhet and Othman, 2011). As it happened once in 1992, many industries in Malaysia effected due this electricity shortage (Janius *et. al,* 2017). Therefore, this paper comes out with an objective to investigate current practice of coal discharging operation in Malaysian port.

1. Literature review

Source of electricity in Peninsular of Malaysia is coming from various medium, namely gas-fired, coal fired (combination gas and coal), oil fired, biomass, hydro power and natural gas. Fitch Ratings (2016) expects coal-fired power generation to provide 55 percent of Peninsular Malaysia's electric generation in 2017, from 45 percent in 2016. Coal-fired electricity costs about 25 percent less than piped natural gas-based generation, and about 75 percent less than liquefied natural gas-based generation, (Kamarul, 2016). However, to meet the local demand, many independent power producers in Peninsular Malaysia produce the source of electrical supply and sell to Tenaga Nasional Berhad (TNB), the single largest electrical company in the country.

Ali at. el. (2017) who study on Port of Bandar Abbas, Iran found a new mathematical model for allocation and scheduling of vessels at multiple marine container terminals of the same port, considering the access channel depth variations by time of day is able to improve the existing port operations and significantly decreases delayed vessel departures. The operational data was available for the time period between 2005 through 2012 for approximately 7,800 vessels. The finding indicates that container berth scheduling problem can significantly improve vessel scheduling and reduce delayed vessel departures especially during high demand periods.

However, Ali at. el. (2017) found the average reduction in delayed departures per vessel is not solely dependent either on the total volume or the vessel inter-arrival time (namely there are some other predictors that have to be considered in the regression models such as vessel size, storage yard utilisation, average quay crane productivity etc.). The relationship between the response variable and predictors may be non-linear. Unfortunately, study does not specifically aim on the operation teams which is among the key factor contributing to the delays. Therefore, this paper focus on port operation team as the key player in this industry in identifying the currents practice of coal discharging operation.

2. Methodology

Data collected for this paper are from questionnaire survey that distributed randomly in four ports handling coal discharge activities. After designing process of the questionnaire, it is first

been distributed to ten respondents currently working in management team in port handling coal discharge activities for pilot study also known as reliability test. Once the Cronbach alpha analysed from the pilot study is equal or more than 0.6, the questionnaires are distributed to expected respondents working in coal discharge activities and if not, the questionnaire should be redesigned (George & Mallery, 2007). The Likert scale used in this paper are as follows.

Table 1: Likert scale rating on agreement

Indication	Likert Scale
Strongly disagreed	1
Disagreed	2
Neutral	3
Agreed	4
Strongly Agreed	5

The analysis of the data includes; (1) frequency; (2) mean values; (3) relative importance index (RII) and rank based on RII. The result, analysis and discussion are discussed in the next section.

Table 2: Level of agreement/importance in comparison with relative importance Index (RII) scale

Scale Range	Level of Agreement/ Importance
RII less than 60%	Disagreed / not important
RII equal or more than 60%	Agreed / important

Source: Adopted from Jarkas and Bitar (2011)

3. Results, analysis and discussions

This section will be presenting the result, analysis and discussion on the current practice on coal discharging operation by Malaysian port. This section will be divided in to four subsections namely: (1) goods owner, receiving from and delivering goods to port; (2) port, goods transmission between ship and coast vice versa; (3) ship, transporting goods to port and transmission of goods from port and; and (4) other criteria. Cronbach alpha analysed from the pilot study is 0.9853 which is mean the designed the distributed questionnaires from pilot study is reliable and can be proceeded to be used for data collection (George & Mallery, 2007).

3.1 The current practice of coal discharging operation in Malaysian for criteria goods owner, receiving from and delivering goods to port

Table 3 shows the results and analysis on the current practice of coal discharging operation in Malaysian port for the criteria goods owner, receiving from and delivering goods to port. From the table, only one item above three. According to Al-Mayahi (2018) as mention in sub-section 3.3.1, frequency analysis mean value more than three are consider as high agreement from the

overall respondent. Therefore, from the study, it be concluded that current operation in coal discharging operation in Malaysian port experiencing delay due to shortage of trucks. Even the other items did not reach a mean value more than three, the consideration of the item should not be ignored. Any event to led to delay should be avoid because it resulting the increment of operation cost.

Table 3: The current practice of coal discharging operation in Malaysian port for criteria goods owner, receiving from and delivering goods to port

The current practice	Frequency					Mean	RII	Rank
	1	2	3	4	5			
1. This port experiences delay of discharge operation of good due to financial and administrative matters	23	14	32	13	3	2.52	50	2
2. This port experiences delay of discharge operation of good due to unpreparedness	21	19	30	13	2	2.48	48	3
3. This port experiences delay of discharge operation due to financial and administrative matters	25	20	29	6	5	2.36	46	4
4. This port experiences delay of discharge operation due to improper packing of good	30	13	26	12	4	2.38	46	4
5. This port experiences delay of discharge operation due to shortage of trucks	8	15	22	26	14	3.27	64	1

3.2 The current practice of coal discharging operation in Malaysian port for criteria port, goods transmission between ship and coast vice versa

Table 4 shows the current practice of coal discharging operation in Malaysian port for the criteria port, goods transmission between ship and coast vice versa. All the items have mean value less than three indicating that the respondents are likely disagreed with the items.

Table 4: The current practice of coal discharging operation in Malaysian port in port, goods transmission between ship and coast vice versa

The current practice	Frequency					Mean	RII	Rank
	1	2	3	4	5			
1. This port experiences delay of discharge of operation due to ship pass and quarantine formalities	20	21	29	14	1	2.47	48	8
2. This port experiences delay of discharge operation die to deficiency of vertical transportation equipment	14	15	30	20	6	2.87	56	1
3. This port experiences delay of discharge operation due to deficiency of discharge horizontal equipment	12	16	34	17	6	2.87	56	1
4. This port experiences delay of discharge operation due to quay traffic	24	14	22	20	5	2.62	51	5
5. This port experiences delay of discharge operation due to inelasticity of container yard	13	20	28	21	3	2.78	55	4
6. This port experiences delay of discharge operation delay in start and early finish	12	21	27	21	4	2.81	55	4
7. This port experiences delay of discharge operation due to unpreparedness of relevant contractor	14	18	25	21	7	2.87	56	3
8. This port experiences delay of discharge operation due to pass and formalities	14	25	31	9	6	2.62	50	6

3.3 The current practice of coal discharging operation in Malaysian port for the criteria ship, transporting goods to port and transmission of goods from port

From the table 5, it shows that the respondent is most likely disagree with the item listed in the questionnaire. This indicating that the current practice of coal discharging operation in Malaysian port for the criteria ship, transporting goods to port and transmission of goods from port are in the good situation but the items listed should be considered even it is not in the high mean but the number of respondents agreed is considered high since the mean value nearly three.

Table 5: The current practice of coal discharging operation in Malaysian port at ship, transporting goods to port and transmission of goods from port

The current practice	Frequency					Mean	RII	Rank
	1	2	3	4	5			
1. This port experiences delay of discharge of operation due to confiscation by port state control	33	17	28	4	3	2.14	41	4
2. This port experiences delay of discharge operation due to deficiency of ship equipment	20	24	22	16	3	2.51	48	2
3. This port experiences delay of discharge operation due to adjusting the balance of the ship	20	20	37	5	3	2.42	47	3
4. This port experiences delay of discharge operation due to improper stowage of goods	14	19	33	17	2	2.69	53	1

3.4 The current practice of coal discharging operation in Malaysian port for other criteria

The result of the survey on current practice of coal discharging operation in Malaysian port for other criteria are shows in Table 5. Most of the respondents are highly agreed (mean value more than three) that the current situation at coal discharging operation by Malaysian port experiences delay of discharge of operation due foul weather and tide prediction. Unlike the criteria, experiences delay of discharge operation due to official and public holiday, respondent is less agreed.

Table 6: The current practice of coal discharging operation in Malaysian port for other criteria

The current practice	Frequency					Mean	RII	Rank
	1	2	3	4	5			
1. This port experiences delay of discharge of operation due foul weather and tide prediction	14	11	20	32	8	3.11	41	4
2. This port experiences delay of discharge operation due to official and public holiday	35	21	20	5	4	2.08	48	2

Conclusion and recommendation

This paper found that, focus on coal discharge activities should be divided into: (1) the good owner, receiving from and delivering good to port; (2) good transmission between ship and coast vice versa; (3) transporting good to port and transmission of good from port; and (4) other criteria. Malaysian port experiences delay of discharge operation due to shortage of trucks under goods owner, receiving from and delivering goods to port criteria and this port experiences delay of discharge of operation due foul weather and tide prediction under other criteria. Even though the other items evaluated through the questionnaire have a mean value less than three indicating that the negative situation appear stated not the current situation happening at Malaysian port in charging coal discharging operation. This study suggests that the delay in coal discharging operation be overcome to avoid consequence problem since is in the process of chain and highly increase the operation cost. The current item evaluated in the questionnaire should be widen and covered bigger area to portray the current situation at coal discharging operation by Malaysian.

References

Al-Mayahi, H. T. A. S. (2018). *Appraisal of communication management improvement in Iraqi architectural firms* (Master of Philosophy). Universiti Teknologi Malaysia, Johor Bahru.

Ali Dadashi, A., Dulebenets, M. A., Golias, M. M., & Sheikholeslami, A. (2017). A novel continuous berth scheduling model at multiple marine container terminals with tidal considerations. *Maritime Business Review, 2*(2), 142–157. https://doi.org/10.1108/MABR-02-2017-0010

Bekhet, H. A., & Othman, N. S. (2011). Causality analysis among electricity consumption, consumer expenditure, gross domestic product (GDP) and foreign direct investment (FDI): Case study of Malaysia. *Journal of Economics and International Finance, 3*(4), 228–235.

George, D., & Mallery, M. (2007). *SPSS for Windows step by step: A simple guide and reference, 14.0 update.* Allyn and Bacon.

Jarkas, A. M., & Bitar, C. G. (2011). Factors affecting construction labor productivity in Kuwait. *Journal of Construction Engineering and Management, 138*(7), 811–820. https://doi.org/10.1061/(ASCE)CO.1943-7862.0000501

Janius, R., Abdan, K., & Zulkaflli, Z. A. (2017). Development of a disaster action plan for hospitals in Malaysia pertaining to critical engineering infrastructure risk analysis. *International Journal of Disaster Risk Reduction, 21*, 168–175. https://doi.org/10.1016/j.ijdrr.2016.12.002

Kamarul Azhar. (2016, July 4). TNB to expand Lumut Port's coal supply facilities. *The Edge.*

Cullinane, K. (2012). *The measurement of port efficiency.* UNCTAD Ad Hoc Expert Meeting on Assessing Port Performance.

Lin, J., Fridley, D., Lu, H., Price, L., & Zhou, N. (2018). Has coal use peaked in China: Near-term trends in China's coal consumption. *Energy Policy, 123*, 208–214. https://doi.org/10.1016/j.enpol.2018.08.058