Data Article

Dataset for assessing the efficiency factors in Malaysian ports: Dry bulk terminal

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\section*{Abstract}

This research paper provides for the identification of dry bulk terminal efficiencies on the basis of 10 key performance factors in Malaysian ports. Data were collected from 18 dry bulk ports in Malaysia in 2017 through an online questionnaire and distributed via e-mail. The dispersion of the respondents corresponds approximately to the structure of the Malaysian maritime terminal in dry bulk. The data provides port management perceptions towards 10 variables that have been surveyed. Each perception assessed the level of efficiency factors based on a percentage rate of 100%. Efficiency factors in dry bulk terminals have been identified with varying characteristics based on a descriptive analysis table. The dataset presented consists of a brief analysis of all 10 variables involved, including the minimum, maximum, mean, interquartile median and standard deviation. In addition to the descriptive analysis, the normality test and histogram were also performed. Data can be used to measure ports-efficiency factors in another research.

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Specifications table

| Subject                 | Strategy and Management |
|-------------------------|-------------------------|
| Subject Area            | Key drivers of Port Competitiveness |
| More specific subject area | Dry Bulk Port Operation |
| Type of data            | Table, Graph and Figure |
| How data was acquired   | The data was collected from all of Malaysian Dry Bulk Terminal Ports using questionnaire distributed through email. From the primary sources, the data was digitised from corresponding archive. |
| Data format             | Raw, Filtered and analysed data |
| Data collection parameters | Machines, Conventional labor oriented (CLO), Trucking efficiency minutes, Stockpile Locations |
| Description of data collection | The data was collected from around of Malaysian ports at dry bulk terminal using an online questionnaire distributed to 18 Ports through email. The dispersion of respondents corresponds approximately to the structure of Malaysian maritime at the dry bulk terminal. The data provides full responses from the head of the port management. Each respond assessed the level of efficiency factors by percentage rate given from the total of 100%.

| Data source location | No. | Port | Region | Coordinate |
|---------------------|-----|------|--------|------------|
|                     | 1   | Sandakan | Sabah | 5.8120° N, 118.0769° E |
|                     | 2   | Kota | Kinabalu | 5°58′60.00″N 116°4′0.00″E |
|                     | 3   | Kudat | 6°52′60.00″N 116°50′60.00″E |
|                     | 4   | Labuan | 5.2765° N, 115.2430° E |
|                     | 5   | Bintulu | 3°16′0.00″N 113°4′0.00″E |
|                     | 6   | Tawau | 4.2460° N, 117.8807° E |
|                     | 7   | Lahad Datu | 5.0202° N, 118.3495° E |
|                     | 8   | Tanjung | Manis | 2.1575° N, 111.3391° E |
|                     | 9   | Kuching | 1°33′13.76″N 110°20′7.00″E |
|                     | 10  | Sariket | 2°7′60.00″N 111°31′60.00″E |
|                     | 11  | Sibu | 02°17′16″N 111°49′51″E |
|                     | 12  | Kuantan | Central | 3.9767° N, 103.4242° E |
|                     | 13  | Kemaman | East Coast | 4°24′58.48″N 103°15′18.02″E |
|                     | 14  | Johor | Southern | 1.4438° N, 103.9064° E |
|                     | 15  | Penang | Northern | 5.4098° N, 100.3679° E |
|                     | 16  | Lumut | 4°13′0.01″N 100°37′0.01″E |
|                     | 17  | North | 27.0442° N, 82.2359° W |
|                     | 18  | Westport | Western | 2.9833° N, 101.4190° E |

Data accessibility: [https://data.mendeley.com/datasets/jxj6dt54w6/1](https://data.mendeley.com/datasets/jxj6dt54w6/1)

Related research article: Rozar, N. M., Razik, M. A., & Sidik, M. H. M. (2018). The Factor Analysis of the Antecedents of Dry Bulk Terminal for Port Operation Improvement in Malaysia. International Journal of Engineering and Md. 10(6), 1801–1805.

Value of the data

- In dry bulk terminal, the data encapsulates a large number of Malaysian ports efficiency dataset.
- The data offers insight for assessing Malaysian Ports efficiency in dry bulk terminal where it can be used to comprehend the other terminals of Malaysian ports (e.g. changes in coastal shipping services and port facilities) into regional economic change; in the long run, give broad geographical and temporal coverage of the data.
- The data uncovers the variances of efficiency factors in dry bulk terminal ports and for port managers in order to build a long-term action strategy.
Table 1
Summary of the variable's descriptions.

| Symbol | Descriptions |
|--------|--------------|
| VA. 1  | Machines     |
| VA. 2  | Conventional labor oriented |
| VA.3   | Trucking efficiency < 15 min |
| VA.4   | Trucking efficiency 15 – 30 min |
| VA.5   | Trucking efficiency > 30 min |
| VA.6   | Stockpile Locations < 1km |
| VA.7   | Stockpile Locations 1 km – 3km |
| VA.8   | Stockpile Locations 3 km – 5km |
| VA.9   | Stockpile Locations 5 km – 10km |
| VA.10  | Stockpile Locations > 10km |

Table 2
Summary of the Case Processing Summary/ normality test.

| Variables       | Description                   | Statistic | df  | Sig.  | Statistic | df  | Sig.  |
|-----------------|--------------------------------|-----------|-----|-------|-----------|-----|-------|
| VA. 1           | Machines                       | .128      | 18  | .200* | .900      | 18  | .058  |
| VA. 2           | Conventional labor oriented    | .271      | 18  | .001  | .778      | 18  | .001  |
| VA.3            | Trucking efficiency < 15 min   | .237      | 18  | .009  | .938      | 18  | .270  |
| VA.4            | Trucking efficiency 15 – 30 min| .287      | 18  | .000  | .903      | 18  | .066  |
| VA.5            | Trucking efficiency > 30 min   | .262      | 18  | .002  | .858      | 18  | .011  |
| VA.6            | Stockpile Locations < 1km      | .251      | 18  | .004  | .822      | 18  | .003  |
| VA.7            | Stockpile Locations 1 km – 3km | .323      | 18  | .000  | .737      | 18  | .000  |
| VA.8            | Stockpile Locations 3 km – 5km | .358      | 18  | .000  | .710      | 18  | .000  |
| VA.9            | Stockpile Locations 5 km – 10km| .211      | 18  | .034  | .855      | 18  | .010  |
| VA.10           | Stockpile Locations > 10km     | .222      | 18  | .019  | .818      | 18  | .003  |

* This is a lower bound of the true significance.

Lilliefors Significance Correction.

Table 3
Descriptive analysis of Demographic factors in dry bulk terminal for port efficiency.

| Statistic                   | Statistic | Std. Error |
|-----------------------------|-----------|------------|
| VA.1 Mean                   | 524.7222  | 80.38058   |
| 95% Confidence Interval for Mean | Lower Bound | 355.1340 |
| 5% Trimmed Mean             | 494.6358  | 694.3104   |
| Median                      | 475.0000  |            |
| Variance                    | 116,298.683 |        |
| Std. Deviation              | 341.02593 |            |
| Minimum                     | 100.00    |            |
| Maximum                     | 1491.00   |            |
| Range                       | 1391.00   |            |
| Interquartile Range         | 426.50    |            |
| Skewness                    | 1.341     | .536       |
| Kurtosis                    | 2.681     | 1.038      |

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| Statistic          | Std. Error |
|--------------------|------------|
| **VA.2**           |            |
| Mean               | 19.7222    | 3.71519   |
| 95% Confidence Interval for Mean |            |
| Lower Bound        | 11.8839    | 27.5606   |
| Upper Bound        |            |           |
| 5% Trimmed Mean    | 18.0247    |           |
| Median             | 17.5000    |           |
| Variance           | 248.448    |           |
| Std. Deviation     | 15.76222   |           |
| Minimum            | .00        |           |
| Maximum            | 70.00      |           |
| Range              | 70.00      |           |
| Interquartile Range| 12.50      |           |
| Skewness           | 2.085      | .536      |
| Kurtosis           | 5.616      | 1.038     |
| **VA.3**           |            |
| Mean               | 40.8333    | 5.33594   |
| 95% Confidence Interval for Mean |            |
| Lower Bound        | 29.5755    | 52.0912   |
| Upper Bound        |            |           |
| 5% Trimmed Mean    | 40.0926    |           |
| Median             | 40.0000    |           |
| Variance           | 512.500    |           |
| Std. Deviation     | 22.63846   |           |
| Minimum            | 5.00       |           |
| Maximum            | 90.00      |           |
| Range              | 85.00      |           |
| Interquartile Range| 32.50      |           |
| Skewness           | .378       | .536      |
| Kurtosis           | −0.028     | 1.038     |
| **VA.4**           |            |
| Mean               | 43.6111    | 5.18932   |
| 95% Confidence Interval for Mean |            |
| Lower Bound        | 32.6626    | 54.5996   |
| Upper Bound        |            |           |
| 5% Trimmed Mean    | 43.1790    |           |
| Median             | 40.0000    |           |
| Variance           | 484.722    |           |
| Std. Deviation     | 22.01641   |           |
| Minimum            | 5.00       |           |
| Maximum            | 90.00      |           |
| Range              | 85.00      |           |
| Interquartile Range| 25.00      |           |
| Skewness           | .698       | .536      |
| Kurtosis           | .169       | 1.038     |
| **VA.5**           |            |
| Mean               | 15.5556    | 1.93391   |
| 95% Confidence Interval for Mean |            |
| Lower Bound        | 11.4754    | 19.6358   |
| Upper Bound        |            |           |
| 5% Trimmed Mean    | 15.3395    |           |
| Median             | 20.0000    |           |
| Variance           | 67.320     |           |
| Std. Deviation     | 8.20489    |           |
| Minimum            | 5.00       |           |
| Maximum            | 30.00      |           |
| Range              | 25.00      |           |
| Interquartile Range| 11.25      |           |
| Skewness           | .160       | .536      |
| Kurtosis           | −0.956     | 1.038     |

(continued on next page)
Table 3 (continued)

| Statistic                          | Mean   | Std. Error |
|------------------------------------|--------|------------|
| VA.6                               |        |            |
| **95% Confidence Interval for Mean**|        |            |
| Lower Bound                        | 18.8889| 3.09320    |
| Upper Bound                        |        | 25.4150    |
| **5% Trimmed Mean**                | 18.4877|            |
| Median                             | 12.5000|            |
| Variance                           | 172.222|            |
| Std. Deviation                     | 13.12335|          |
| Minimum                            | 5.00   |            |
| Maximum                            | 40.00  |            |
| Range                              | 35.00  |            |
| Interquartile Range                | 25.00  |            |
| Skewness                           | .316   | .536       |
| Kurtosis                           | −1.634 | 1.038      |
| **VA.7**                           |        |            |
| **95% Confidence Interval for Mean**|        |            |
| Lower Bound                        | 15.5556| 3.25619    |
| Upper Bound                        |        | 22.4255    |
| **5% Trimmed Mean**                | 14.7840|            |
| Median                             | 10.0000|            |
| Variance                           | 190.850|            |
| Std. Deviation                     | 13.81484|           |
| Minimum                            | 5.00   |            |
| Maximum                            | 40.00  |            |
| Range                              | 35.00  |            |
| Interquartile Range                | 25.00  |            |
| Skewness                           | 1.000  | .536       |
| Kurtosis                           | −0.709 | 1.038      |
| **VA.8**                           |        |            |
| **95% Confidence Interval for Mean**|        |            |
| Lower Bound                        | 13.0556| 3.57320    |
| Upper Bound                        |        | 20.5944    |
| **5% Trimmed Mean**                | 11.1728|            |
| Median                             | 7.5000 |            |
| Variance                           | 229.820|            |
| Std. Deviation                     | 15.15982|          |
| Minimum                            | .00    |            |
| Maximum                            | 60.00  |            |
| Range                              | 60.00  |            |
| Interquartile Range                | 10.00  |            |
| Skewness                           | 2.086  | .536       |
| Kurtosis                           | 4.627  | 1.038      |
| **VA.9**                           |        |            |
| **95% Confidence Interval for Mean**|        |            |
| Lower Bound                        | 6.9444 | 1.15321    |
| Upper Bound                        |        | 9.3775     |
| **5% Trimmed Mean**                | 6.6049 |            |
| Median                             | 5.0000 |            |
| Variance                           | 23.938 |            |
| Std. Deviation                     | 4.89264|            |
| Minimum                            | .00    |            |
| Maximum                            | 20.00  |            |
| Range                              | 20.00  |            |
| Interquartile Range                | 5.00   |            |
| Skewness                           | .773   | .536       |
| Kurtosis                           | 1.762  | 1.038      |

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1. Data description

Table 2 shows the normality test from four different techniques, namely Kolmogorov-Smirnov and Shapiro-Wilk. The normality test was conducted from 10 variables as at Table 1. The result demonstrated that the dataset of Machines (VA.1), Conventional labor oriented (VA.2), Trucking efficiency < 15 min (VA.3), Trucking efficiency 15 – 30 min (VA.4), Trucking efficiency > 30 min (VA.5). These are one of the facilities for Malaysians' port managers to achieve higher level of efficiency in the port operation and it was categorised of cargo handling technology and equipment, and port information technology. Thus, affected in port trade to take initiatives to expand port capacity for trucking efficiency [1–2].

While, at Table 2 shows the normality test for Stockpile Locations as at Table 1. were consisted Stockpile Locations < 1 km (VA.5), Stockpile Locations 1 km – 3 km (VA.6) Stockpile Locations 3 km – 5 km (VA.7), Stockpile Locations 5 km – 10 km (VA.8), Stockpile Locations > 10 km (VA.9) are normal. Table 3 and Fig. 2 show the variability of all variables, i.e. the minimum, maximum, interquartile, median, mean standard deviation, Variance, skewness and Kurtosis. Figs. 1 and 2 show the normality test and histogram for each variable, respectively. The strategic location of a port significantly increases its efficiencies. From Fig. 1, the mean value for 18 ports are mostly equivalent for all types of variables. However, Stockpile Locations 5 km – 10 km (VA.10) consistently showed low value. The results were related with the position refers to of "diversion distance" concept where ships deviate from main trunk routes to the port. It was discussed by [3] said that the centrality of shipping routes is vital not only because it acts a port gateway but also as a hub for transhipment.

2. Experimental design, materials, and methods

In summary, our ports data includes 18 different places. These ports are appearing to be consistently important places for ocean shipping. Others appear in the data in different benchmark years, which indicates real changes in use and was similar with the concept of the study by [4], but in this data has also distinct recording practices at different times and between the sources. Fig. 2 shows the aggregate distribution of the number of appearances of each variables for all ports.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://data.mendeley.com/datasets/jxj6dt54w6/1

Table 3 (continued)
Fig. 1. The normality test chart for port efficiency in dry bulk terminal.
Fig. 2. Histogram analysis for port efficiency in dry bulk terminal.
Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.dib.2020.105858.

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