

Financial Distress Situation of Listed Malaysian Shipping Companies from 2008 to 2014: Using Altman's Z- EM Score

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Abstract

The main purpose of this paper is to analyse the financial distress situation of Listed Malaysian shipping companies. This paper also analyses the relationship of the company performance with financial distress variables. A secondary data of selected shipping and transportation service provider's annual reports from 2008 to 2014 were retrieved from Kuala Lumpur Stock Exchange website. A panel data analysis using Altman's Z- EM score model and least squares dummy variable (LSDV) model were performed. Findings reveal that most of the shipping companies in Malaysia are suffering from the burden of the financial crisis. Ordinary least squares T-tests revealed a significant positive relationship between financial variables and company performance.

Keywords: Shipping Companies, Financial performance, Multiple Discriminant Analysis, Altman's Z- EM score.

I. Introduction

The shipping industry has always played an important role in developing a strong economy in Malaysia. It has eased and stabilized transportation of exports and imports, created revenues and employment opportunities. The industry has also induced growth of private sector support industries such as maritime education, ship repair and ship building. As of 2010, this industry has created employment opportunities to about 20,953 personnel, and generated RM 14.9 billion in revenues (Hasan, 2013).

Lately, Asian financial crisis in 1998 and global recession in 2008 impacted the Malaysia shipping industry. Unrelenting low freight rates and escalating costs forced the shipping industry to contract their operations. The Malaysian fleets started to fall from 1998. In 2004, the bulk carrier fleets diminished followed by tanker fleets in 2009 and the container fleets in 2012 (Yusoff, 2015). Many shipping companies in Bursa Malaysia were de-listed due to financial instability. Halim Mazmin Berhad, Swee Joo Berhad and recently Global Carrier Berhad have been a few observed (Sunbiz, 2014). This creates a necessity for all shipping companies either listed or not listed to measure their financial stability to avoid insolvency or bankruptcy.

According to Mohammed & Kim-Soon 2012, the Altman Z score model was a useful tool for predicting the bankruptcy of companies. There were two Z models, namely five variable model and four variable model. The five variables Z model was used to predict manufacturing companies' financial distress and the four variables Z model were used in non-manufacturing and services companies. Only a few papers were cited in the literature using the four variable Z model.

The focus of this paper is to analyse the financial distress of selected Malaysian listed shipping companies and the relationship between company's performance and financial distress variables. The outcome of this study will create awareness to shipping companies as well as the local authority and regulatory bodies to plan ahead for sustainability of this industry.

II. Shipping Industry in Malaysia

Since the introduction of the Merchant Shipping Ordinance in 1952, the shipping industry in Malaysia has grown to become a global competitive maritime nation (Khalid, 2005). Two commercial areas were serviced in the Malaysia shipping industry, namely deep sea shipping and short sea shipping. Deep sea shipping relates to the trading across the oceans and nations, on the other hand short sea shipping trades were limited to near coastal and ASEAN waters.

The shipping industry is a backbone of the Malaysian economy. Currently, an average of RM 120,000 million, contributing to the quarterly gross domestic product (GDP) (Malaysia GDP From Services, 2015) (Hasan, 2013). According to the Department of Statistics, Malaysia, the sea transportation provides paid employment for more than 20,000 people every year with a value of fixed assets more than RM 26,000 million.

In 1980, the Malaysian fleets contribute to 0.135% of the global fleets and rose steadily to 0.969% in 1999. This number stagnated in 1998 showed a decline through the global recession in 2008 and recently the share was about 0.528% of the global fleets (UNCTAD, n.d.). Many shipping companies were registered during the late 90's in the stock exchange. Global Carriers Berhad, MISC Berhad (previously known as Malaysia International Shipping Cooperation), PDZ holdings Berhad and Halim Mazmin Berhad were few of the early listed. Due to high debts, Halim Mazmin Berhad de-listed in 2009 (Worldwide Company Profile, n.d.) and Swee Joo Berhad was de-listed and declared bankrupt in 2011 (SEATRADE, 2011). More recently, Global Carriers Berhad was also suspended by the Bursa Malaysia (The Star, 2014).

The current situation of these shipping companies could have been avoided and the downfall has arrested if the companies predicted their distress condition, applying a scientific analytic approach to their financial health. Not only those companies which were already de-listed and bankrupt, but also the listed and performing companies analyse their financial distress condition to avoid similar situations.

Altman's Z score as predictor of financial distress

There are many ways to predict financial distress for non-manufacturing firms. The most commonly used practice is the Altman Z score (2000). This model is the most useful tool in predicting and proved better than other models (Alkhatib & Bzour, 2011) (Karamzadeh, 2013).

Jordanian listed companies (Alkhatib & Bzour, 2011), (Alareeni & Branson, 2012), Indian airline companies (Pardeshi, Bisoyi, & Patil, 2012), sugar manufacturing units (Reddy & Reddy, 2013), the Indian logistics industry (Tyagi, 2014), Kenya supermarkets (Shisia, Sang, Waitindi, & Okibo, 2014) and cement industry of Bangladesh (Mizan & Hossain, 2014) were some analyses in recent studies. There were a number of recent studies in Malaysian listed companies (Mohammed & Kim-soon, 2012) (Ng, Mohammed, Ahmad, & Huam, 2013), Malaysian construction companies (Alfan & Zakaria, 2013) and government linked companies (Khaliq, Altarturi, Taker, Harun, & Nahar, 2014).

Altman's Z-score is a reliable tool deciding the financial bankruptcy of the firm and judging its financial position (Tyagi, 2014) by assessing, maintaining and monitoring the financial health and insolvency risk of the companies (Pardeshi et al., 2012) (Shisia et al., 2014).

The original Altman Z score was developed by Edward Altman in 1968. It consists of five multivariate ratios namely working capital to total assets ratio, retained earnings to total assets, earnings before tax and interest to total assets ratio, the market value of equity to book value of total liabilities and sales to total assets ratio (Altman, 1968). Since the model required stock price data, which could not be obtained for private companies, a revision was proposed in 2006 (Muminović, Pavlović, & Cvijanović, 2011). In the revised model, the market value was substituted by book value. At the same time, a new emerging market (EM) score was developed with four multivariate ratios for non-manufacturing and services companies. But, the new Z – EM score omitted the inputs of sales to total assets ratio (Altman, 2000).

Currently, two Altman Z-score were considered. The first one is for the manufacturing companies and the other one is for the emerging market/ non-manufacturing companies. Table 1 illustrates some of the studies done on the method apply to the manufacturing companies and few non-manufacturing companies.

Table 1: Literature review on multiple discriminant analysis

No	Author(s)	Firm	Analysis	Outcomes
1	(Alkhatib & Bzour, 2011)	Jordanian listed companies	MDA using Altman and Kida models	Altman's Z score better than Kida's Z score
2	(Choy, Munusamy, Chelliah, & Mandari, 2011)	Malaysia listed companies	MDA and logistic regression	There is a relationship within company performance and stock prices.
3	(Apergis, Sorros, Artikis, & Zisis, 2011)	Listed companies from Paris, London and Frankfurt	Descriptive analysis, Panel Integration and co-integration analysis, and Dynamic OLS	Positive cross correlation between the Altman Z score and the firm stock price
4	(B. C. F. Yap, Munuswamy, & Mohamed, 2012)	Malaysia failed and non-failed public companies	Logistic regression	The developed logit model found significant in their discriminating abilities.
5	(Mohammed & Kim-soon, 2012)	Malaysia listed companies	MDA and T-test	Altman model and current ratios are useful tools for investors to predict financial failures of companies
6	(Li & Rahgozar, 2012)	US public traded companies	MDA	The original Altman Z score model performs equally well in predicting bankruptcy for both manufacturing as well as non-manufacturing companies.
7	(Alareeni & Branson, 2012)	Jordanian industrial and service companies	MDA and Mann-Whitney test	Altman Z score (1993) model is less useful in predicting the financial failures of service companies than the Altman Z score (1968) model
8	(Pardeshi et al., 2012)	Indian airline companies	MDA	The Altman Z score helps the companies in reducing the rate of bankruptcy by identifying and control the variables that induce the financial failure
9	(B. C.-F. Yap, Clayton, & Mohamed, 2013)	Malaysia listed manufacturing sector	Cluster analysis And Multiple Discriminant Analysis (MDA)	Liquidity, profitability and solvency ratios are predicting of companies' potential.
10	(B. C.-F. Yap, Mohamad, &	Malaysian listed consumer sector,	ANOVA and Post hoc comparisons.	Financial ratios, stable over time, but difference across the industry

	Chong, 2013)	industrial product sector and trading services sector.		
11	(Karamzadeh, 2013)	Tehran listed companies	MDA and logistic analysis	Altman works better in order to predict bankruptcy of companies
12	(Alfan & Zakaria, 2013)	Malaysia listed construction sector	MDA	Altman score enables companies to assess and monitor the financial distress.
13	(Ng et al., 2013)	Malaysia PN17 listed companies	MDA and Descriptive statistical analysis	Altman model 1968 is a successful model to determine the financial situation of companies
14	(Reddy & Reddy, 2013)	Andhra Pradesh, India sugar manufacturing units	MDA	Poor financial performance leads to bankruptcy.
15	(Mizan & Hossain, 2014)	Bangladesh cement industry	ANOVA and Altman Z score	The Altman Z score is best measurement tools for financial decision.
16	(B. C.-F. Yap, Mohamed, & Chong, 2014)	Malaysia industrial product sector	Factor analysis and cluster analysis	Not all financial ratios have clustered abilities
17	(Shisia et al., 2014)	Kenya supermarkets	MDA and inferential Statistical analysis	Altman model contributes in assessing the credit worthiness of companies
18	(Khaliq et al., 2014)	Malaysia government linked companies	MDA and T-test	There is the existence of a significant relationship between current ratio, debt ratio and Z score.
19	(Tyagi, 2014)	Indian logistic industry	MDA and Inferential analysis	The Altman Z score plays a vital role in deciding the financial bankruptcy of a firm.
20	(Nanayakkara & Azeez, 2015)	Sri Lanka public listed companies	MDA and stepwise method	Expand Altman z score with non-accrual based ratios

III. Research Methodology

The scope of the study limited to Malaysian shipping companies which are listed on the Kuala Lumpur Stock Exchange (KLSE). The new Z-EM score model for non-manufacturing and services industries such as shipping use only four variables. These are liquidity, profitability, leverage and solvency ratios. The model is represented by equation 1.

$$Z = 6.56X_1 + 3.26X_2 + 6.72X_3 + 1.05X_4 \quad \text{Eq (1)}$$

Where,

X1 = liquidity ratio : (current assets – current liabilities) / (total assets)

X2 = profitability ratio : (current year retained earnings) / (total assets)

X3 = leverage ratio : (earnings before interest and tax) / (total assets)

X4 = solvency ratio : (book value of equity) / (total assets)

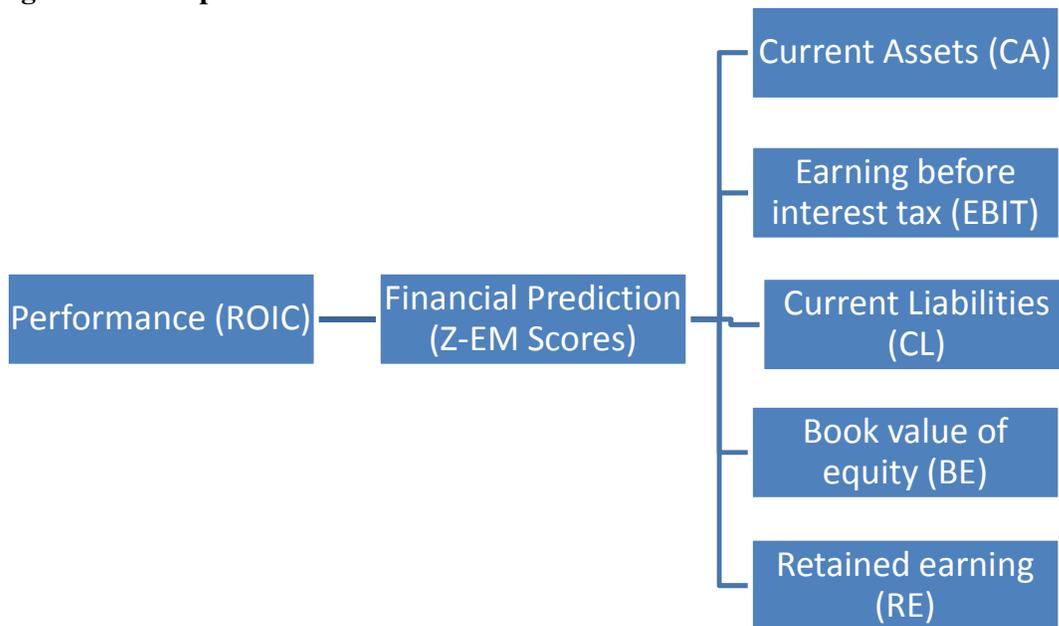
Z = bankruptcy possibility. Below 1.1 is distress, above 2.6 is safe.

A secondary data for current assets, current liabilities, current year retained earnings (accumulated earning/ losses of present year minus the previous year), earnings before interest and tax, book value of the equity and total assets was collected from selected shipping companies. The annual reports of the ten shipping companies listed in KLSE (period of 2008 – 2014), five of them were deep sea shipping companies and the rest were short sea shipping companies.

The data analyses were carried out in two stages. Firstly, gathered data was analysed to compute Z-EM scores and the linear trend were identified. Secondly, a panel regression was

conducted to analyse the performance of the company. The conceptual framework for the panel regression is shown in figure 1.

Figure 1: Conceptual framework



The performance of the company was measured using return on invested capital (ROIC) which was computed using the following equation.

$$\text{ROIC} = (\text{current year earnings before tax}) / (\text{previous year non-current liabilities} + \text{current total equity})$$

The current assets, current liabilities and book value of equity was gathered from annual reports of the companies. The retained earnings have obtained by deducting the previous year's accumulated earnings/losses from the current year figures. The following hypotheses were tested using least square dummy variable model.

H₁₀: ROIC has no relationship with Z-EM scores.

$$\text{ROIC}_{it} = \beta_0 + \beta_1 Z_{it} + \beta_2 \text{DV}_i + \varepsilon_{it} \quad \text{Eq(2)}$$

Where,

ROIC = Return on invested capital

Z = Z-EM Scores

DV = A dummy variable (consider as one if the company operates in deep sea shipping trades)

H₂₀: Z-EM scores have no relationship with CA, CL, EBIT, BE and RE

$$\text{LZ}_{it} = \beta_0 + \beta_1 \text{LCA}_{it} + \beta_2 \text{LCL}_{it} + \beta_3 \text{LEBIT}_{it} + \beta_4 \text{LBE}_{it} + \beta_5 \text{LRE}_{it} + \beta_6 \text{DV}_i + \varepsilon_{it} \quad \text{Eq(3)}$$

Where,

LZ = Natural logarithm of Z-EM scores

- LCA = Natural logarithm of current assets
- LCL = Natural logarithm of current liabilities
- LEBIT = Natural logarithm of earnings before tax
- LBE = Natural logarithm of book value of equity
- LRE = Natural logarithm of retained earnings
- DV = A dummy variable (consider as one if the company operates in deep sea shipping trades)

All the variables in equation 3 converted to the natural logarithm values to harmonize the units between the variables. Since all the variables in ratio scale, no conversion of units were applied to equation 2. The E-views software was utilized for this purpose.

IV. Empirical Evidences

Table 2 exhibit the list of companies and the their financial state. Since the Global Carriers Bhd listed in PN17 (Practice Notes 17 - A listed company that is financially distressed or does not have a core business or has failed to meet minimum capital or equity) in KLSE, the annual report for the year 2014 could not be obtained.

Table 2: Summary of Z-EM scores of Listed Malaysian Shipping Companies (2008 – 2014)

	2008	2009	2010	2011	2012	2013	2014
Global Carrier	Distress	Distress	Grey	Distress	Distress	Distress	NA
MISC Bhd	Grey	Distress	Grey	Distress	Distress	Grey	Grey
PDZ	Safe	Grey	Grey	Grey	Safe	Grey	Grey
Maybulk	Safe	Safe	Safe	Safe	Grey	Grey	Grey
Habour link	Safe	Grey	Grey	Grey	Grey	Grey	Grey
Hubline	Grey	Grey	Grey	Distress	Distress	Distress	Distress
Perisai	Distress	Grey	Distress	Distress	Safe	Distress	Distress
Tanjung	Safe	Distress	Distress	Distress	Distress	Safe	Safe
Alam Maritime	Grey	Grey	Distress	Grey	Grey	Grey	Grey
Sealink	Grey	Grey	Grey	Grey	Grey	Distress	Distress

All data were analysed using Altman Z-EM score. From the table 2, it is seen that in 2008, 40% of shipping companies were in the safe zone, 40% were in grey zone and the rest 20% were in distress zone. The situation changed in 2009, where the percentage of companies in safe zone dropped to 10% and more companies shifted in to grey and distress zones. In 2013, five companies were in the grey zone, four in distress zone and only one company was found in safe zone. For reporting purposes, the linear forecast trends were plotted for all the companies. The results are presented in Appendix A. MISC Bhd. , Perisai Petroleum Teknology Bhd. , Tanjung Offshore Bhd. and Alam Maritim Resources Bhd. has shown an upward drift. Others were suffering a downward drift.

A panel regression was also carried out to identify the relationship between performance and Z-EM score variables. Using calculated Z-EM scores above, the relationship between the performances were analysed. Table 3 shows the results of hypothesis test 1.

$$ROIC_{it} = - 0.023 + 0.048Z_{it} - 0.033DV_{it} + \varepsilon_{it}$$

Table 3. Hypothesis test 1 results

ROIC	Test 1***	Test 2***	Test 3***
Intercept, c	-0.023	-0.035***	-0.066***
Z	0.048***	0.094***	0.167***
X1		-0.494***	-1.414***
X2			-0.458***
DV	-0.033*	-0.042**	-0.051***
R ²	0.634	0.764	0.892
Adjusted R ²	0.621	0.752	0.884

***, ** and * are significance levels at 1%, 5% and 10% respectively.

The model was significant at 1%. Thus, the null hypothesis 1 was rejected. There is a strong positive relationship between Z-EM score and performance. If the Z-EM score improved by 1%, the return on invested capital will increase approximately by 4.8%. The results indicated that the operation of short sea shipping company's performance is better than the deep sea shipping company's performance by about 3.3%. The adjusted R² values are increasing when more variables are added. This indicates the theoretical account is reliable.

Since the above test leads to establishing the relationship between Z-EM scores and performance, it was necessary to analyse the effects of accounting variables such as current assets, current liabilities, earnings before taxes, book value of equity and retained earnings to the Z-EM scores. Hypothesis 2 was tested using balanced panel regression. Table 4 displays the results.

Table 4: Result of hypothesis test 2

LZ	Test 1***	Test 2***	Test 3***
Intercept, c	0.483	-0.026	0.681***
LCA	0.128	-0.034	-0.055
LCL	-0.344***	-0.205***	-0.196***
LEBIT	0.072	0.084	0.100
LBE	0.224**	0.537	0.643***
LRE	-0.004	0.021	0.002
DV	-0.320***	-0.314***	-0.234**
LNCA		-0.298***	-0.495***
LNCL			0.077**
R ²	0.570	0.651	0.680
Adjusted R ²	0.521	0.605	0.630

***, ** and * are significance levels at 1%, 5% and 10% respectively.

The test results are significant at 1%. The current liabilities are seen to be negatively related to the Z-EM scores. Meanwhile, book value of equity shared a positive relationship to Z-EM scores. Any reduction in current liabilities by 1% will increase the Z-EM scores by 34.4% and if the firms operated in short sea shipping trades, the Z-EM scores improved by 32%. The Z-EM scores can be improved by 22.4% if the book value of equity is raised by 1%. This model is reliable as the adjusted R² values not decrease with increasing variables.

It is seen generally most of the companies engaged in shipping industry were undergoing a financial distress situation. The short sea shipping trades have performed better than those engaged in deep sea trades. The current liabilities and book value of equity are important for ameliorating the financial distress situations. Minimizing the current liabilities and

optimizing the book value of equity will control the financial situations. Presently, the deep sea shipping companies required more financial support to sustain in the shipping industry.

A good managerial accounting practice may useful to those companies facing the financial distress situation. The execution of the cost-volume-profit (CVP), just in time (JIT) and activity based costing (ABC) could help shipping companies to control their debts and improve the financial distress situation.

V. Conclusion

This study has used a method to demonstrate the financial distress status of particularly shipping companies by using an effective hypothesis framing. In future, a similar study can be expanded to other industry.

Reference

- Alareeni, B., & Branson, J. (2012). Predicting Listed Companies' Failure in Jordan Using Altman Models: A Case Study. *International Journal of Business and Management*, 8(1), 113–127. doi:10.5539/ijbm.v8n1p113
- Alfan, E., & Zakaria, Z. (2013). Review of Financial Performance and Distress : A Case of Malaysian Construction Companies. *British Journal of Arts and Social Business*, 12(11), 143–157.
- Alkhatib, K., & Bzour, A. E. Al. (2011). Predicting Corporate Bankruptcy of Jordanian Listed Companies: Using Altman and Kida Models. *International Journal of Business and Management*, Vol.6(No. 3), 208–215.
- Altman, E. I. (1968). Financial ratios, discriminant analysis and the prediction of corporate bankruptcy. *The Journal of Finance*, 23(4).
- Altman, E. I. (2000). Predicting Financial Distress of Companies: Revisiting the Z-Score and Zeta Models. doi:10.1073/pnas.0703993104
- Apergis, N., Sorros, J., Artikis, P., & Zisis, V. (2011). Bankruptcy Probability and Stock Prices : The Effect of Altman Z-Score Information on Stock Prices Through Panel Data. *Journal of Modern Accounting and Auditing*, 7(7), 689–696.
- Choy, S. L. W., Munusamy, J., Chelliah, S., & Mandari, A. (2011). Effects of Financial Distress Condition on the Company Performance: A Malaysian Perspective. *Review of Economics & Finance*, 1(July 1997), 85–99. Retrieved from [http://www.bapress.ca/Journal-4/Effects of Financial Distress Condition on the Company Performance-A Malaysian Perspective.pdf](http://www.bapress.ca/Journal-4/Effects%20of%20Financial%20Distress%20Condition%20on%20the%20Company%20Performance-A%20Malaysian%20Perspective.pdf)
- Karamzadeh, M. S. (2013). Application and comparison of altman and ohlson models to predict bankruptcy of companies. *Research Journal of Applied Sciences, Engineering and Technology*, 5(6), 2007–2011. Retrieved from <http://www.scopus.com/inward/record.url?eid=2-s2.0-84874707354&partnerID=tZOtx3y1>
- Khaliq, A., Altarturi, B. H. M., Taker, H. M. T., Harun, M. Y., & Nahar, N. (2014). Identifying Financial Distress Firms: A Case Study of Malaysia's Government Linked Companies (GLC). *International Journal of Economics, Finance and Management*, 3(3), 141–150. Retrieved from http://www.ejournalofbusiness.org/archive/vol3no3/vol3no3_4.pdf
- Li, J., & Rahgozar, R. (2012). Application of the Z -Score Model with Consideration of Total Assetss Volatility in Predicting Corporate Financial Failures from 2000-2010. *Journal of Acc*, 12(2), 11–20.
- Mizan, A. N. K., & Hossain, M. M. (2014). Financial Soundness of Cement Industry of Bangladesh: An Empirical Investigation Using Z-score. *American Journal of Trade and Policy*, 1(1), 16. doi:10.15590/ajtp/2014/v1i1/54044

- Mohammed, A. A. E., & Kim-soon, N. (2012). Using Altman ' s Model and Current Ratio to Assess the Financial Status of Companies Quoted In the Malaysian Stock Exchange. *International Journal of Scientific and Research Publications*, 2(7), 1–11.
- Muminović, S., Pavlović, V., & Cvijanović, J. M. (2011). Predictive Ability of Various Bankruptcy Prediction Z-Score Models for Serbian Publicly Listed Companies. *Industrija*, 39(3), 1–13.
- Nanayakkara, K. G. M., & Azeez, A. A. (2015). Predicting Corporate Financial Distress in Sri Lanka : An Extension to Z-Score Model. *International Journal of Business and Social Research*, 05(03), 41–56.
- Ng, K. S., Mohammed, A. A. E., Ahmad, A. R., & Huam, H. T. (2013). Applicability of Altman's revised model in predicting financial distress: a case of PN17 companies quoted in Malaysian Stock Exchange. *Entrepreneurship Vision 2020: Innovation, Development Sustainability, and Economic Growth, 1993*, 349–358. Retrieved from <http://eprints.uthm.edu.my/4119/>
- Pardeshi, B., Bisoyi, P. L., & Patil, P. C. (2012). A STUDY OF FINANCIAL SOLVENCY OF INDIAN AIRLINE COMPANIES WITH REFERENCE TO Z-SCORE. *International Journal of Research in Engineering, IT and Social Sciences*, 2(11), 319–326.
- Reddy, N. R. V. R., & Reddy, K. H. P. (2013). Financial Status of Select Sugar Manufacturing Units–Z Score Model \n. *International Journal of Education and Research*, 1(1), 1–9.
- Shisia, A., Sang, W., Waitindi, S., & Okibo, W. B. (2014). An In-Depth Analysis of the Altman's Failure Prediction Model on Corporate Financial Distress in Uchumi Supermarket in Kenya. *European Journal of Business and Management*, 6(23), 27–42.
- Tyagi, V. (2014). A Study To Measures The Financial Health Of Selected Firms With Special Reference To Indian Logistic Industry : AN APPLICATION OF ALTMAN ' S Z SCORE. *Industrial Engineering Letters*, 4(4), 43–53.
- Yap, B. C. F., Munuswamy, S., & Mohamed, Z. (2012). Evaluating Company Failure in Malaysia Using Financial Ratios and Logistic Regression. *Asian Journal of Finance & Accounting*, 4(1), 330–344. doi:10.5296/ajfa.v4i1.1752
- Yap, B. C.-F., Clayton, G. J., & Mohamed, Z. Bin. (2013). Using Financial Ratios and Managing Financial Risks in Investing in “Grey” Zone Companies: Evidence from Malaysia. *International Journal of Finance and Accounting Studies*, 1(2), 1–8. doi:10.7575/aiac.ijfas.v.1n.2p.1
- Yap, B. C.-F., Mohamad, Z., & Chong, K.-R. (2013). A Longitudinal and Cross-Industry Study on the Stability of Financial Ratios of Malaysian Companies. *Accounting and Finance Research*, 2(3), 45–52. doi:10.5430/afr.v2n3p45
- Yap, B. C.-F., Mohamed, Z., & Chong, K.-R. (2014). The Effects of the Financial Crisis on the Financial Performance of Malaysian Companies. *Asian Journal of Finance & Accounting*, 6(1), 236–248. doi:10.5296/ajfa.v6i1.5314

Works Cited

- Hasan, H. A. (2013, December). *Malaysia Economic Statistics-Time Series 2013*. Retrieved from Department of Statistics Malaysia: https://www.statistics.gov.my/dosm/uploads/files/3_Time%20Series/Malaysia%20Time%20Series%202013/Penerbitan_Time_Series_2013.pdf
- Khalid, N. (2005, October 20). *The development of ports and shipping sector in malaysia*. Retrieved from maritime institute of malaysia: the development of ports and shipping sector in malaysia
- Malaysia GDP From Services*. (2015, October 12). Retrieved from Trading Economics: <http://www.tradingeconomics.com/malaysia/gdp-from-services>

SEATRADE. (2011, September 22). *Swee Joo to delist from Malaysian stock exchange*. Retrieved from Seatrade Maritime News: <http://www.seatrade-maritime.com/news/asia/Swee-Joo-to-delist-from-Malaysian-stock-exchange.html>

Sunbiz. (2014, October 17). *Global Carriers faces PN17 suspension, delisting*. Retrieved from The Sun Daily: <http://www.thesundaily.my/news/1201750>

The Star. (2014, October 17). *Global Carriers to be suspended*. Retrieved from The Star: <http://www.thestar.com.my/Business/Business-News/2014/10/17/Global-Carriers-to-be-suspended/?style=biz>

UNCTAD. (n.d.). *Merchant fleet by flag of registration and by type of ship, annual, 1980-2015*. Retrieved October 12, 2015, from United Nations Conference on Trade and Development: <http://unctadstat.unctad.org/wds/TableViewer/tableView.aspx>

Worldwide Company Profile. (n.d.). *Halim Mazmin Berhad*. Retrieved October 12, 2015, from Worldwide Company Profile: <http://listofcompanies.co.in/halim-mazmin-berhad/>

Yusoff, N. M. (2015). *Opportunities Lost: The need for a Malaysia Shipping Master Plan. MIMA National Shipping Conference 2015*. Kuala Lumpur: Maritime Institute of Malaysia. Retrieved from Maritime Institute of Malaysia: <http://www.mima.gov.my/v2/data/img/content/OpportunitiesLost-The-needed-for-a-shipping-master-plan-by-Ir-Nordin-Mat-Jusoh.pdf>

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Appendixes

Appendix 1: The forecast linear trend of Malaysian Listed Shipping Companies

