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Financial performance analysis of Jordanian insurance companies using the Altman z-score model

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Abstract
Financial performance analysis investigates the overall financial health of a firm over a given period of time. It is the process of identifying the financial strengths and weaknesses of the firm by properly establishing the relationship between the items of balance sheet and profit and loss account. It provides a clear guide to evaluate and understand the company's position. The present research has been undertaken to analyze the financial performance of selected Jordanian insurance companies for a period of ten years. Data have been collected through annual reports and Altman Z-Score Model has been applied to examine their financial performance.

Keywords: altman z-score, insurance companies, assets, liabilities, equity

Introduction

Financial performance analysis is the process of identifying the financial strengths and weaknesses of the firm by properly establishing the relationship between the items of balance sheet and profit and loss account. It also helps in short-term and long-term forecasting and growth. The term 'Financial Performance' in broader sense refers to the degree to which financial objectives of the organization have been accomplished. It is a process of evaluating the relationship between the component parts of financial statements to obtain a better understanding of the firm's position and performance. It is used to measure firm's overall financial health over a given period of time and can also be used to compare similar firms across the same industry or to compare industries or sectors in aggregation. It is the process of measuring the results of a firm's policies and operations in monetary terms. Nevertheless, financial performance analysis includes analysis and interpretation of financial statements in such a way that it undertakes full diagnosis of the profitability and financial soundness of the business. The financial analyst program provides vital methodologies of financial analysis. It provides a clear guide to evaluate and understand the company's position. Some of the ways to analyze a company's financial position are: ratio analysis, comparative statement analysis, common size statement, cash flow analysis, decision theory, and so on. In the present research, the financial performance of three insurance companies of Jordan namely Middle East Insurance Company, Jordan Insurance Company, and National Insurance Company has been examined with the application of Altman's Z score Model.

Altman Z-Score Model

Edward Altman, a financial economist and professor at New York's Stern School of Business, developed Altman's Z (the Z-Score) in the year 1968. It has gained acceptance by auditors, management accountants, and database systems in 1980s. Altman's Z-Score formula is a multivariate formula which depends on basic financial ratios to examine the financial performance of a company. It diagnoses the probability that a company will become bankrupt in the next two years. Some research has shown that the model is 72 to 80 percent accurate in predicting bankruptcy one to two years in advance. The original formula was developed on a sample of 66 manufacturing firms. Altman amended the formula to allow its application to certain situations not originally included in the original sample set in the early 2000s. The Z-Score uses various accounting ratios to predict financial distress and future bankruptcy of a firm. To determine the formula, Altman utilized five common business ratios and systematically weighted them in his calculations. The Z-Score was originally constructed as:

$$Z = 1.2\ X_1 + 1.4\ X_2 + 3.3\ X_3 + 0.6\ X_4 + 1.0\ X_5$$

Where:
Z = Discriminate function score of a firm

'Z'-score Components

The Z-score is calculated by multiplying the following accounting ratios, which is efficient in predicting bankruptcy.

- X_1 (Working Capital/Total Assets)
- X_2 (Retained Earnings / Total Sales)
- X_3 (Earnings before Interest and Taxes / Total Assets)
- X_4 (Market Value of Equity / Book Value of Total liabilities)
- X_5 (Sales / Total Assets)

X_1 (Working Capital/Total Assets)	It shows the liquidity position of the company towards the total capitalization.
X_2 (Retained Earnings/Total Sales)	It highlights the amount reinvested, the earnings or losses, which reflects the extent of the company's leverage.
X_3 (EBIT/Total Assets)	It is the measure of the company's operating performance and indicates the earning power of the company. In addition, this is a measure of the productivity of the firm's assets, independent of any tax on advantage factors.
X_4 (Equity/Total liabilities)	It is the measure of the long term solvency of a company. Equity is measured by the combined market value of all shares. While debt includes both, current and long-term liabilities.
X_5 (Sales/Total Assets)	It shows the sales generating capacity of the company's assets and measure of management's capacity to deal with competitive conditions.

Table 1: Altman Guidelines

Situation	Z-Score	Zone	Remarks
I.	Below 1.8	Red Zone	There is a high probability that the business will face financial distress in near future and the business may need desperate measures to survive in the market
II.	Between 1.8 and 2.99	Yellow Zone	The firm falls in the gray area that means there is less probability that the firm will face financial distress in the near future.
III.	3.0 and above	Green Zone	The business is financially sound and there is very less probability that the firm will face financial distress in future.

Literature Review

Mansur and Mulla (2002) [10] made a study in Textile mill with the help of Z score model for evaluating the financial health with five weighted financial ratios and revealed that cement Industry's financial health especially India Cements Limited is sound. In the study conducted by Ramaratnam and Jayaraman (2010) [12] made an attempt to analyze and predict the financial health of the select companies of Indian steel industry by way of applying Altman's Z – Score. The study revealed that all the selected companies are financially sound during the study period. Kavitha and Palanivelu (2013) examined the financial performance of NSE listed steel Company with the help of Altman's Z-Score. It has been found unpredictable and unhealthy zone for all the companies but their short term solvency positions was satisfactory. The research conducted by Kumari (2013) [9] examined the financial performance of public and private sector banks in India by applying the Altman Z score model and found that the financial conditions of all banks were sound except Canara bank and Kotak Mahindra bank. Kalaiselvi and Vadivel (2015) [6] in the study entitled, *"Financial Health Analysis of Large Scale Oil and Natural Gas Companies in India – With Special Reference to Select Oil and Natural Gas Companies"* made an attempt to analyze the financial health of GAIL, ONGC, IOC, BPCL, HPCL and OIL by the way of applying Altman's Z-Score model over a period of 10 years. This investigation showed that GAIL, ONGC, and OIL have registered decreasing trend over the period of analysis. OIC, BPCL and HPCL have increasing trend and also excellent financial viability position throughout the study. Kumar, Vasu, and Narayana, (2016) [7] in the research entitled, *"A Study On Financial Health Of Steel Authority Of India Ltd.*" probed the financial performance of SAIL by using Altman's Z score model. The author used various ratios like Current ratio, quick ratio, gross profit ratio, net profit ratio, operating profit ratio and earnings per share ratio and reveals there is a positive correlation between liquidity and profitability ratios except ROTA and the calculated Z score values indicates company is in healthy zone. Khan, Filho and Madeira (2016) [8] in the research paper entitled, *"Evaluating the Financial Health of Indian Oil Corporation Limited by Using 'Z'- Score Model"* explored the financial performance of Indian Oil Corporation Limited by applying Altman Z Score Model of corporate bankruptcy. The period of the study was five years from 2010-11 to 2014-15 and data have been collected through annual reports of Indian Oil Corporation. The Z value after the application of Altman Z Score model was 2.7624 which documents that the financial position of the company was sound. IOC falls in yellow zone or healthy zone. The study revealed that there is no scope of bankruptcy or any cause of concern in the coming years as regards the financial health of IOC and the investors have their safe investments.

Objective of the study

The objective of the study is to analyze the financial performance of selected insurance companies of Jordan with the application of Altman's Z score Model. The selected companies are Middle East Insurance Company, Jordan Insurance Company, and National Insurance Company.

Hypotheses Development

Ho_1 : Middle East Insurance Company is not at the edge of bankruptcy.

Ha_1 : Middle East Insurance Company is at the edge of bankruptcy.

Ho_2 : Jordan Insurance Company is not at the edge of bankruptcy.

Ha_2 : Jordan Insurance Company is at the edge of bankruptcy.

Ho_3 : National Insurance Company is not at the edge of bankruptcy.

Ha_3 : National Insurance Company is at the edge of bankruptcy.

Methodology

The study is based on the secondary sources of data collected from the published annual reports of the selected insurance companies for a decade. Besides, the

data has been collected from the articles published in various business newspapers, journals, and internet. The sample size of the study is three insurance companies: Middle East Insurance Company, Jordan Insurance Company, and National Insurance Company. The period of the current study is ten years from 2005-06 to 2014-15. Altman's Z score Model has been used as the statistical tool to analyze the financial performance.

Profile of Selected Jordanian Insurance Companies

Middle East Insurance

Middle East Insurance Company is the second oldest Jordanian Insurance Company. It was established in Amman in the year 1962. The company is wholly owned by the private sector. Shareholders are prominent businessmen, bankers, industrialists and merchants. It is a composite company writing all classes of insurance; Life and Non-life. It is recognized leader in the local insurance market, fully computerized and aim at developing and advancing the local insurance market.

Jordan Insurance Company

Jordan Insurance Company is a full-service insurance company established in the year 1951 in Jordan. Its headquarter is located in Amman. Imad Abdel Khaleq is the present General Manager and Mustafa Dahbour is the Deputy General Manager of Finance & Administration. JIC offers the following insurance like marine insurance, motor insurance, life insurance, casualty insurance, health insurance, and property insurance. The company is listed on the Amman Stock Exchange's ASE Weighted Index with the symbol "JIC". 10% of the company's stock is owned by Munich Re, a reinsurance company in Germany.

National Insurance Company

National Insurance Company (P.S.C) was established in the year 1965 in Jordan. It provides various insurance products and services in Jordan. Mrs. Manal Hassan Mohamad Jarrar is the General Manager and Mr. Omar Abdul Majid Mahmoud Jaradat is the Assistant General Manager of Finance. It offers property insurance products, including fire and allied perils, all risks, business interruption, and sabotage and terrorism insurance; and marine insurance products comprising marine cargo, hull, and liabilities related to various marine operations.

Data Analysis and Interpretation

In this section, liquidity ratios, working capital ratios, and solvency ratios of the selected companies have been calculated and thereafter Altman Z score model has been applied which gives Z score values of all companies.

Liquidity Ratios of Selected Companies

Table 2 highlights the liquidity ratios (current ratio and quick ratio) of the selected companies from 2006-2015. In case of Middle East Insurance, the current ratio and quick ratio were maximum in the year 2006. So far National Insurance Company is concerned; CR has been reduced from 2.34 in 2006 to 0.93 in 2014. The current ratio and quick ratio were maximum in the year 2012. The table further shows that current ratio was 2.04(maximum) in 2009 in Jordan Insurance.

Table 2: Liquidity Ratios of Selected Companies

Years	Middle East Insurance		National Insurance		Jordan Insurance	
	Current Ratio	Quick Ratio	Current Ratio	Quick Ratio	Current Ratio	Quick Ratio
2006	2.34	1.06	1.10	0.39	1.93	1.10
2007	1.87	0.39	0.87	0.25	1.44	0.57
2008	1.70	0.38	0.91	0.28	1.05	0.49
2009	1.75	0.41	0.98	0.34	2.04	1.15
2010	1.42	0.37	1.06	0.33	1.22	0.59
2011	1.10	0.41	1.29	0.36	1.35	0.61
2012	1.65	0.39	1.62	1.08	1.53	0.64
2013	0.94	0.24	1.36	0.66	1.54	0.54
2014	0.93	0.30	1.34	0.64	1.42	0.65
2015	1.42	0.51	1.22	0.53	1.39	0.57

***Source*:** Calculated from Annual Reports from 2006-2015.

Working Capital Ratios of Selected Companies

Table 3 highlights the Working Capital Ratios i.e. Inventory Turnover Ratio and Debtors Turnover Ratio of the Selected Companies. In case of Middle East Insurance, Inventory Turnover Ratio (ITR) is increasing from 1.67 to 2.37 and fluctuations during the study period. The high ITR is 3.66 and low ITR is 1.67. Debtors Turnover Ratio (DTR) is fluctuating during the study period. The low DTR is 8.76 in 2014 and high 16.45 in 2008. Overall ITR and DTR are low which indicates poor performance in inventory and debtors during the study period. Moreover, the Working Capital Ratios of National Insurance documents that the year 2007 records minimum ITR (2.16) whereas it was maximum (4.02) in 2013. DTR shows high fluctuations during the study period. It was highest in the year 2011 whilst it was lowest in the year 2014. So, the company takes measures to reduce the days in ICP and DCP. So far as Jordan Insurance is concerned, high ITR was found in 2013 and low (4.44) in 2007. The maximum DTR was 12.44 recorded in 2012. However, it decreased to 8.89 after two years. To conclude, it can be said that ITR and DTR ratios are low in study period of all companies and therefore necessary steps should be taken to improve the ITR and DTR.

Table 3: Working Capital Ratios of Selected Companies

Years	Middle East Insurance		National Insurance		Jordan Insurance	
	Inventory Turnover Ratio	Debtors Turnover Ratio	Inventory Turnover Ratio	Debtors Turnover Ratio	Inventory Turnover Ratio	Debtors Turnover Ratio
2006	1.67	10.64	3.77	9.46	5.36	6.19
2007	1.69	13.01	2.16	10.22	4.44	7.01
2008	2.35	16.45	3.41	9.11	5.41	8.09
2009	1.96	14.15	3.49	9.01	6.05	6.22
2010	2.05	9.01	2.99	8.88	6.03	7.31
2011	2.57	10.03	2.84	12.01	5.87	9.54
2012	2.02	10.98	3.01	9.14	4.75	12.44
2013	2.09	12.86	4.02	6.06	7.11	11.87
2014	3.66	8.76	3.22	5.79	5.57	8.89
2015	2.44	11.01	3.17	7.12	4.83	10.01

***Source*:** Calculated from Annual Reports from 2006-2015

Solvency Ratios of Middle East Insurance Company

Long-term financial soundness (or solvency) of a business is examined by calculating ratios popularly known as leverage or capital structure ratios. Table 4 highlights the solvency ratios of Middle East Insurance. The ratio of working capital to total assets of the company is changed from 0.33 to 0.03 which shows inefficient utilization of the working capital. The retained earnings to total assets are also low. The ratio of EBIT to total assets is low ratio which indicates that operating profit of the company is low. Equity to total assets ratio is low meaning thereby low interest of shareholders due to profit of the company. Besides, Sales to total assets ratio is decreased from 0.92 in 2009 to 0.53 in 2011 and 2012. But it again starts increasing and reached to 0.76 in 2015. The solvency position of Middle East Insurance is not sound.

Table 4: Solvency Ratios of Middle East Insurance

Years	Working Capital/ TA	Retained Earnings /TA	EBIT /TA	Equity/ TA	Sales/ TA
2006	0.33	0.05	0.13	0.45	0.84
2007	0.18	0.04	0.19	0.58	0.69
2008	0.14	0.06	0.09	0.61	0.56
2009	0.11	0.05	0.11	0.44	0.92
2010	0.09	0.09	0.13	0.53	0.57
2011	0.03	0.02	0.12	0.64	0.53
2012	0.13	0.19	0.09	0.49	0.53
2013	0.08	0.17	0.08	0.72	0.67
2014	0.06	0.21	0.19	0.51	0.72
2015	0.05	0.19	0.16	0.65	0.76

TA: Total Assets

***Source*:** Calculated from Annual Reports from 2006-2015

Solvency Ratios of National Insurance Company

Table 5 exhibits the solvency ratios of National Insurance Company. Working capital to total assets ratio of the company varied from 0.08 to 0.19 showing inefficient mobilization of working capital during the study period. Retained earnings to total assets are in poor position. EBIT to total assets is good and represent its good solvency position. Equity to total assets decline throughout the research time period which also indicates that the level of debts in total assets is high as compare to equity. It shows that the company maintains equity position at satisfactory level Sales to total assets position is low but not much poor. The overall solvency position of the company is average.

Table 5: Solvency Ratios of National Insurance

Years	Working Capital/ TA	Retained Earnings /TA	EBIT /TA	Equity/ TA	Sales/ TA
2006	0.11	0.17	0.17	0.58	1.84
2007	0.08	0.13	0.08	0.69	1.69
2008	0.12	0.12	0.11	0.68	1.56
2009	0.09	0.21	0.13	0.61	0.96
2010	0.18	0.23	0.29	0.54	0.97
2011	0.13	0.14	0.21	0.53	1.84
2012	0.09	0.16	0.13	0.58	1.69
2013	0.19	0.11	0.22	0.63	1.56
2014	0.16	0.13	0.19	0.54	1.86
2015	0.08	0.14	0.16	0.53	1.55

TA: Total Assets

***Source*:** Calculated from Annual Reports from 2006-2015

Solvency Ratios of Jordan Insurance Company

Table 6 exhibits the Solvency Ratios of Jordan Insurance Company. Working capital to total assets ratio of the company varied from 0.11 to 0.19 showing inefficient mobilization of working capital during the study period. The retained earnings to total assets ratio of the company fluctuated and low during the study period which indicates that retained earnings mobilization is low. EBIT to total assets varied from 0.12 to 0.32 shows operating profit of the company is low. The ratio of equity to total assets fluctuated indicating low equity maintained by the company. Sales to total assets ratio decreased year by year indicating that sales of the company low when compared to invest in total assets by the company. Finally the solvency position of the company is average.

Table 6: Solvency Ratios of Jordan Insurance

Years	Working Capital/TA	Retained Earnings/TA	EBIT/TA	Equity/TA	Sales/TA
2006	0.19	0.12	0.17	0.54	1.14
2007	0.18	0.21	0.18	0.53	1.29
2008	0.14	0.22	0.11	0.51	1.36
2009	0.13	0.14	0.13	0.53	1.26
2010	0.12	0.16	0.19	0.59	1.41
2011	0.21	0.19	0.21	0.58	1.44
2012	0.17	0.21	0.17	0.49	1.59
2013	0.13	0.21	0.12	0.62	1.56
2014	0.11	0.13	0.11	0.51	1.46
2015	0.11	0.13	0.13	0.65	1.57

TA: Total Assets
***Source*:** Calculated from Annual Reports from 2006-2015

Calculation of Z-Score Values

Table 7 highlights the Z-Score Values of the selected companies from 2006 to 2015. The overall Z score of Middle East Insurance, National Insurance Company, and Jordan Insurance Company are 1.175, 2.32, and 2.759. The mean Z score of Jordan Insurance Company is 2.759 i.e. maximum among all three companies. Middle East Insurance falls in red zone because Z score is below 1.8 and there is a high probability that the business will face financial distress in near future and concrete steps should be taken by the management to survive in the market. Therefore, the null hypothesis stands rejected and it can be said that Middle East Insurance is at the edge of bankruptcy. However, National Insurance Company and Jordan Insurance Company fall in yellow zone because their mean Z score is below 2.99. There is less probability that the firm will face financial distress in the near future. Hence, the null hypotheses stands accepted and it can be said that National Insurance Company and Jordan Insurance Company are not at the edge of bankruptcy.

Table 7: Z-Score Values

Years	Middle East Insurance	National Insurance	Jordan Insurance
2006	1.57	1.49	3.52
2007	1.44	1.33	2.58
2008	1.28	1.67	2.69
2009	1.11	3.52	2.33
2010	1.13	1.29	3.17
2011	1.22	1.37	2.79
2012	1.08	3.02	2.85
2013	1.49	2.13	2.63
2014	1.29	2.52	2.59
2015	1.36	1.98	2.44
Mean	1.175	2.32	2.759

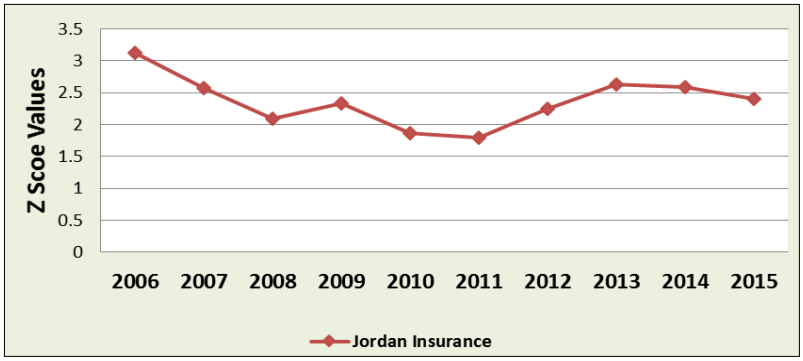

Fig 1: Z Score Values of Middle East Insurance

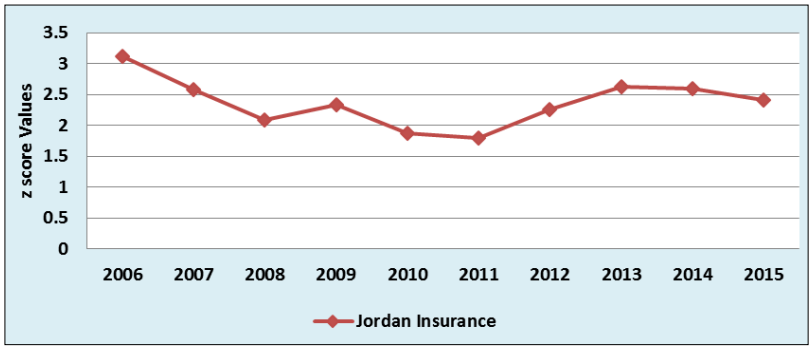

Fig 2: Z-Socre Values of National Insurance

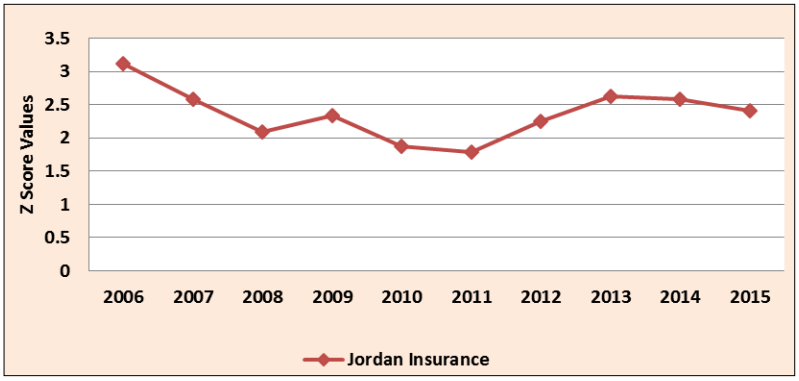

Fig 3: Z Socre Values of Jordan Insurance

Conclusion

Financial performance analysis is the process of identifying the financial strengths and weaknesses of the firm by properly establishing the relationship between the items of balance sheet and profit and loss account. It is a process of evaluating the relationship between the component parts of financial statements to obtain a better understanding of the firm's position and performance. It provides a clear guide to evaluate and understand the company's position. In the present research, the financial performance of selected insurance companies of Jordan has been examined with the application of Altman's Z score Model. It is a multivariate formula which examines the financial performance of an entity with the help of basic financial ratios and explore whether the company will become bankrupt in the next two years or not. The researchers have chosen three insurance companies namely Middle East Insurance Company, Jordan Insurance Company, and National Insurance Company and collected data through annual reports from 2006-2015. The results after applying Z-Score model shows that Middle East Insurance will surely face financial distress in near future because its Z score value is below 1.8. However, National Insurance Company and Jordan Insurance Company fall in yellow zone as their Z score is below 2.99. There are fewer chances that they may face financial distress in the near future. It is recommended that the companies have to take measures in advance to avoid any financial distress in future.

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