

## ANALYSIS OF INDUSTRIES BECOMING SICK BY RATIO ANALYSIS

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**Abstract-** Industries becoming sick has become a great problem everywhere in this industrial world especially in the 3<sup>rd</sup> world countries. Many researcher have been done to analyze the problem and suggest opinions about solving this problem as huge amount of capital is lost if an industry becomes sick and go out of business. If the numbers become multiple, such happenings might affect national economy and thus it draws attention of political and business leaders besides new entrepreneurs of the country. In this paper an attempt has been made to analyze this problem by using financial ratio analysis. Various financial ratios of two numbers of medium and large industries of one industrial corporation in Bangladesh have been calculated by using actual financial data of the industries. The data has been analyzed and a correlation has been shown with various financial ratios with the industries becoming sick. The authors hope that the findings of the analysis will attract attention of academicians, industrialists, political leaders, and the owners of the industries which are becoming sick and will also show a guiding path to new entrepreneurs.

**Key Words:** Sick industries, Financial ratios, Operations of an industry in Bangladesh.

### 1. Introduction

Ratio analysis is one of the tools of financial analysis. Using this tool one can analysis and say, whether an industry is a healthy unit or a sick unit. [1,2,3]

Ratio analysis is defined as the systematic use of various ratios to interpret the financial statements so that the strength and weakness of a firm, as well as its historical performance and current financial condition can be determined.

### 2. Ratios:

Ratios used in this study are:

1. cash flow ratio,
2. Net income/ Profitability ratio,
3. Debt ratio,
4. Liquid assets/ total assets ratio,
5. Current ratio,
6. Turnover ratio,
7. Cost ratio,
8. Altman ratio
9. Risk /Leverage ratio

**Cash flow ratio:** It is the ratio of cash flow (Profit before interest, tax and depreciation) to the sales or cash flow to the total assets or cash flow to the total debt.

$$\text{Cash flow} = \frac{\text{Cash Flow}}{\text{Sales}}$$

**Profitability Ratio:** Profitability ratio measures the success of the firm in earning a net return on sales or on investment. Since profit is the ultimate objective of the firm, poor performance here indicates a basic failure that, if not corrected, would probably result in the firm's going out of business.

$$\text{Profit Margin} = \frac{\text{Net income}}{\text{Sales}}$$

**Debt ratio:** This ratio equals total debt (Total liabilities) divided by total assets that can be calculated by using the balance sheet data.

$$\text{Debt ratio} = \frac{\text{Total debt}}{\text{Total assets}}$$

The debt to total assets ratio is also called debt ratio. Generally, creditors prefer a low debt ratio as it implies a greater protection of their position. A debt ratio generally means that the firm must pay a higher

interest rate on its borrowing; beyond some point, the firm will not be able to borrow at all.

**Liquid / total assets ratio:** This is the ratio of current assets to the total assets.

$$\text{Total assets ratio} = \frac{\text{Current Assets}}{\text{Total Assets}}$$

**Current ratio:** The current ratio is the ratio of total current assets to total current liabilities. It is calculated by dividing current assets by current liabilities.

$$\text{Current ratio} = \frac{\text{Current assets}}{\text{Current liabilities}}$$

**Turnover ratio:**

(a) Inventory turnover: Inventory turnover equals cost of goods sold divided by average inventory. Therefore, both balance sheet and income statement data must be used. Inventory level may be changed significantly during a known year and it is particularly important here to use a yearly average rather than the year end amount.

$$\text{Inventory turnover} = \frac{\text{Cost of goods sold}}{\text{Average inventory}}$$

(b) Fixed assets turnover: This ratio is computed by dividing net sales by fixed asset and equals :

$$\text{Fixed assets turnover} = \frac{\text{Net sales}}{\text{Fixed assets}}$$

**Cost ratio:** Cost ratio is the ratio of operating expenses to sales.

$$\text{Cost ratio} = \frac{\text{Operating expenses}}{\text{Sales}}$$

**Altman's ratio:** It is the ratio of profit before interest and tax to the total assets.

$$\text{Altman ratio} = \frac{\text{Profit before interest}}{\text{Total assets}}$$

**Risk/Leverage Ratio:** The term leverage may be defined as the employment of an asset or sources of funds for which the firm has to pay a fixed cost or

fixed return. There are two types of leverage: Operating and Financial.

The leverage associated with investment activities is referred to as operating leverage.

$$\text{Operating leverage} = \frac{\text{Sales} - \text{stock consumed}}{\text{Profit before interest \& tax}}$$

While leverage associated with financing activities is called the financial leverage.

$$\text{Financial leverage} = \frac{\text{Profit before interest \& tax}}{\text{Profit before tax}}$$

### 3. CASE STUDIES

Eastern Tubes Limited (Case study-1)-History: Eastern Tubes Ltd was established in 1964 by the Bawani Industrial group at their own cost located at 374, Tejgaon Industrial Area, Dhaka. It was a private limited company till 1970. After liberation, by the Presidential Order of 1972 (P.O.No.27), the industry was declared as a Nationalized industry and the responsibility of management has been vested upon the then Bangladesh Steel & Ship Building Corporation (presently named as Bangladesh Steel & Engineering Corporation). In 1973, ETL started its commercial production. The Industry has the following related information as shown in Table 1.

Table-1: Basic information of Eastern Tubes Limited

Land area:	1.03 acres
Authorized capital:	25.0 lac Taka
Paid up capital:	17.0 lac Taka
Attainable Capacity:	9.0 lac pcs
Product:	Fluorescent Tube Light 4'-00, 40 watt and 2'-00, 20 watt
Raw material:	Lampshell, Exhaust and support tube, filament, lead in wire, base cap, chemicals (butyl acid), argon gas, mercury gas etc.
Annual production target:	7.0 lac pcs.

In the following the firm's actual financial ratio data has been tabulated, the conclusion has been discussed after the tabular results. We have used the following explanations for ratio keys: Ratio keys (explanation of keys is given in Appendix-1) are

tabulated in first column and in subsequent columns results for the yearly period under consideration have been mentioned.

### 3.1 Remarks on ratio analysis (Case study -1):

**Cash flow ratio:** From the results of ratio keys 1, 2 and 4, it is found that the sample industry is in sick position as these ratios show gradual declination if considered on average basis and forgetting the occasional random fluctuations.

**Net income ratio:** From the results of ratio keys 5, 6 and 8 as shown below, it is seen that the sample industry is in sick position.

**Debt/Total assets ratio:** From the results of ratio key 9 and 11, we found that in the first four years though the industry seems to be in a little bit better position but the last four years' result show the industry again has become sick.

**Liquid assets/ Total assets:** From the ratio key 15, it is seen that the results continuously going on lower trend i.e. the sample industry may survive.

**Liquid assets/Current debt:** Ratio key 19 is also used for prediction of sickness and from the result, we found that in last five financial years the trend is lower, i.e. the industry is becoming sick.

**Turnover ratio:** Ratio 21, 24 and 26 are the keys for revival but from the result, it is seen that the sample industry is going to be sick. Ratio key 22, it is the key for prediction of sickness and from the result, we found that the industry is becoming sick. Ratio key 23 is the key for prediction of sickness as well as revival and from the result it is seen that the industry may survive.

**Cost ratio:** Ratio key 40, it is for prediction of sickness and from the result it is seen that the sample industry is becoming sick. Ratio key 44, it is for prediction of revival and from the result it is seen that the condition of the industry is becoming sick.

### Case Study-1: EASTERN TUBES LIMITED

#### Group A: Prediction of Sickness

Ratio key	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11
7	0.04	0.03	0.01	0.01	0.02	0.01	0.01	-0.04
9	0.26	0.23	0.20	0.19	0.19	0.20	0.21	0.21
11	0.36	0.33	0.30	0.29	0.30	0.31	0.37	0.37
19	4.84	5.31	5.92	6.13	5.97	5.95	5.32	5.33
22	0.28	0.27	0.46	0.55	0.63	0.77	0.51	0.67
31	2.13	2.31	2.55	2.58	2.57	2.43	1.91	1.88
33	1.81	1.85	1.80	1.05	1.17	2.71	2.56	-0.48
34	1.31	1.41	2.30	2.58	1.06	1.01	1.02	0.99
35	2.37	2.61	4.14	2.69	1.24	2.74	2.10	-0.48
36	4.76	3.93	5.66	5.35	6.11	6.32	5.14	4.93
40	0.24	0.24	0.29	0.44	0.38	0.46	0.44	0.61

#### Group B: Prediction of Revival

Ratio key	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11
15	1.24	1.21	1.18	1.18	1.15	1.17	1.13	1.11
21	0.01	0.02	0.01	0.03	0.04	0.05	0.14	0.12
24	6.20	6.62	7.67	9.95	9.51	10.09	8.63	9.14
26	4.99	5.48	6.49	8.45	8.24	8.64	7.64	8.21
38	0.24	0.20	0.18	0.17	0.19	0.10	0.08	-0.10
44	0.12	0.10	0.09	0.06	0.06	0.05	0.07	0.05

#### Group C: Prediction of Sickness as well as Revival

Ratio key	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11
1	0.18	0.16	0.15	0.17	0.21	0.12	0.12	-0.14
2	0.04	0.03	0.02	0.02	0.02	0.01	0.02	-0.02
4	0.10	0.09	0.08	0.07	0.09	0.05	0.04	-0.05
5	0.13	0.10	0.06	0.06	0.13	0.04	0.04	-0.23

6	.003	0.02	0.01	0.01	0.02	0.01	0.01	-0.03
8	0.07	0.06	0.03	0.02	0.05	0.02	0.01	-0.07
23	0.24	0.30	0.26	0.16	0.18	0.17	0.58	0.25
30	0.03	0.03	0.02	0.01	0.02	0.01	0.01	-0.02

**General Electric Manufacturing Co. Ltd. (Case Study-2)- History:** The project was taken up 1965 on the basis of a feasibility report (Prepared by M/S AEI (overseas) Ltd, UK), the project was financed under USSR credit. The implementation of the project was completed in 1978. The plant came into operation in 1981.

The project was converted into public limited company in December, 1979, and was renamed as General Electric Manufacturing Company Ltd. (GEM Co. Ltd.). This company is now controlled by Bangladesh Steel & Engineering Corporation (BSEC). The company has the following data during establishment as shown in Table 2.

Table-2: Basic information of General Electric Manufacturing Co. Ltd.

Land area:	107 acres
Authorized capital:	Tk. 75.0 crores Taka
Paid up capital:	Tk.58.51 crores Taka
Attainable Capacity	1850 M. Ton
Product:	Three phase transformer, 33/11 KV, Circuit breaker, Isolator, Lighting arrestor,
Raw material:	Silicon steel sheet, copper strips, super enamel copper wire, M.S. sheet, H.T insulator, transformer oil etc.
Annual production target:	1875 Nos. of 200 KVA Transformers.

The same ratios as those mentioned in Section-2 have been used in this study also similar to that in case study -1.

### Case Study-2: GENERAL ELECTRIC MANUFACTURING CO. LTD.

#### Group A: Prediction of Sickness

Ratio key	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11
7	-0.13	-0.17	-0.10	-0.14	-0.10	-0.07	-0.05	-0.05
9	0.54	0.80	0.91	1.13	1.66	4.44	7.18	13.17
11	0.74	1.05	1.14	1.42	2.05	5.07	7.73	16.53
19	1.20	0.88	1.02	0.93	0.85	0.81	0.78	0.78
22	2.32	1.76	1.15	0.73	1.23	0.93	0.79	0.82
31	1.67	1.49	1.29	1.22	1.06	0.66	0.60	0.46
33	0.57	0.67	0.08	0.16	-0.52	5.40	2.71	2.09
34	0.71	0.77	0.59	0.58	0.43	-0.24	-0.96	-1.65
35	0.40	0.52	0.05	0.09	-0.22	-1.30	-2.60	-3.45
36	5.08	3.93	3.12	2.78	2.91	3.97	4.69	2.82
40	0.65	0.65	0.32	0.25	0.34	0.21	0.19	0.22

### 3.2 Remarks on ratio analysis (Case study -2):

**Cash flow ratio:** From the results of ratio key 1, 2 and 4, it is found that the sample industry may survive.

**Net income ratio:** From the results of ratio key 5, 6 and 8, it is seen that the Sample industry may survive.

**Debt/ total assets ratio:** From the results of ratio key 9 and 11, we found that sample industry at present is in sick position.

**Liquid /Total assets:** Ratio key 15, it is for prediction of revival but from the results, it is seen that the sample industry is becoming sick.

**Liquid assets/ Current debt:** Ratio key 19, it is for prediction of sickness but from the result we can say that the sample industry is becoming sick.

**Turnover ratio:** Ratio key 21, 24, and 26 are the keys for revival, but from the result it is seen that the sample industry may survive. Ratio key 22 is the key for prediction of sickness but from results it is seen that the industry may survive. Ratio key 23 is the key for prediction of sickness as well as revival but from the result it is seen that the industry may survive.

**Cost ratio:** Ratio key 40 is for prediction of sickness but it is seen that the results of the sample industry are reverse i.e., the industry may survive. Ratio key 44 is for prediction of revival, and from results it is seen that the condition of the industry is not that good. The condition of the General Electric Mfg. Co. Limited is steel better, it may survive at any time.

#### Group B: Prediction of Revival

Ratio key	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11
15	0.65	0.71	0.93	1.05	1.41	3.59	5.58	10.35
21	0.50	0.34	0.27	0.11	0.09	0.18	0.14	0.45
24	3.37	2.73	1.73	1.07	1.57	1.36	1.17	1.40
26	5.20	3.85	1.86	1.02	1.12	0.48	1.09	0.14
38	0.96	1.17	0.83	0.96	0.77	0.65	0.57	0.34
44	0.05	0.13	0.08	0.26	0.22	0.12	0.20	2.20

#### GRUP C: Prediction of Sickness as well as Revival

Ratio key	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11
1	-0.69	-0.89	-0.22	-0.20	-0.19	-0.06	-0.03	-0.03
2	-0.13	-0.23	-0.12	-0.20	-0.17	-0.15	-0.03	-0.22
4	-0.17	-0.22	-0.10	-0.14	-0.08	-0.03	-0.02	-0.01
5	-0.83	-1.03	-0.28	-0.24	-0.25	-0.11	-0.05	-0.05
6	-0.16	-0.27	-0.15	-0.24	-0.22	-0.23	-0.05	-0.36
8	-0.21	-0.25	-0.13	-0.17	-0.11	-0.04	-0.03	-0.02
23	0.82	0.61	0.28	0.20	0.14	0.35	0.19	0.68
30	-0.21	-0.33	-0.21	-0.33	-0.35	-0.51	-0.14	-1.31

#### 4. Conclusion

The ratio analysis method as outlined in [2] is an important tool to predict the condition of a firm/industry from the point of view of the survival/getting sick. In this study the related financial ratios from actual data collected from the sources [4, 5, 6, 7] related to the organization show the overall conditions of the industries considered as in the case study. We can conclude that although the overall condition of the Eastern Tubes Ltd is relatively better than that of the General Electric Company Ltd., if proper corrective measures are taken the General Electric Company Ltd. will survive and will not become sick ultimately.

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**Annexure 1**  
**List of Ratios Used in the Study**

**Cash Flow Ratios**

Key	Adaptations/Defined as		Remarks
1.	Cash flow/ Sales	Profit before Interest, tax & Depreciation / /Sales	Lower trend indicates sickness
2.	Cash Flow/ Total Assets	Profit before Interest, tax & Depreciation / Capital Employed	Lower trend indicates sickness
3.	Cash Flow/ Net Worth	Profit before Interest, tax & Depreciation / (Share Capital + Reserves )	Lower trend indicates sickness
4.	Cash Flow/ Total Debt	Profit before Interest, tax & Depreciation / (Deferred Liabilities + Current Liabilities)	Lower trend indicates sickness

**Net Income Ratios**

5.	Net Income / Sales	Profit before Tax / Sales	Lower trend indicates sickness
6.	Net Income / Total Assets	Profit before Tax / Capital Employed	Lower trend indicates sickness
7.	Net Income / Net Worth	Profit before Tax / (Share Capital + reserves)	Lower trend indicates sickness
8.	Net Income / Total Debt	Profit before Tax / (Deferred Liabilities + Current Liabilities)	Lower trend indicates sickness

**Debt/ Total Assets Ratios**

9	Current Liabilities / Total Assets	Total Current Liabilities / Capital Employed	Higher trend indicates sickness
10	Long Term Liabilities / Total Assets	Deferred Liabilities + Capital Employed	Higher trend indicates sickness
11.	Current Liabilities + Long Term Liabilities / Total Assets	Deferred Liabilities + Total Current Liabilities / Capital Employed	Higher trend indicates sickness
12.	Current Liabilities + Long Term Liabilities + Preference Stock / Total Assets	(Deferred Liabilities + Total Current Liabilities + Preference Share) / Capital Employed	Higher trend indicates sickness

**Liquid Assets / Total Assets**

13.	Cash / Total Assets	( Cash + Bank) / Capital Employed	Lower trend indicates sickness
14.	Quick Assets / Total Assets	( Cash + Bank + Sundry Debtors ) / Capital Employed	Lower trend indicates sickness
15.	Current Assets / Total Assets	Total Current Assets / Capital Employed	Higher trend indicates sickness
16.	Working Capital / Total Assets	Total Current Assets – Total Current Liabilities /Capital Employed	Higher trend indicates sickness
17.	Cash / Current Liabilities	(Cash + Bank) / Total Current Liabilities	Lower trend indicates sickness
18.	Quick Assets / Current Liabilities	(Cash + Bank +Sundry Debtors) / Total Current Liabilities	Lower trend indicates sickness
19.	Current Assets / Current Liabilities	Total Current Assets / Total Current Liabilities	Lower trend indicates sickness

**Turnover Ratios**

20.	Cash / Sales	(Cash + Bank) / Sales	Higher trend indicates sickness
21.	Account Receivables / Sales	Sundry Debtors / Sales	Higher trend indicates sickness
22.	Inventory / Sales	Inventory / Sales	Higher trend indicates sickness
23.	Quick Assets / Sales	(Cash + Bank +Sundry Debtors) / Sales	Higher trend indicates sickness
24.	Current Assets / Sales	Total Current Assets / Sales	Higher trend indicates sickness
25.	Net Worth / Sales	( Share Capital + Reserves) / Sales	Higher trend indicates sickness
26.	Total Assets / Sales	Capital Employed / Sales	Higher trend indicates sickness
27.	Cash/ Fund Expenses for Operation (Cash Interest)	(Cash + Bank) / (Operating Expenses + Direct Manufacturing Expenses + Salaries & Wages )	Lower trend indicates sickness
28.	Defensive Interest( Quick Assets / Fund Expenses for Operation )	Quick Assets / (Operating Expenses + Direct Manufacturing Expenses + Salaries & Wages)	Lower trend indicates sickness

Key	Adaptations/Defined as		Remarks
29.	No Credit Interval ( Net Quick Assets / Fund Expenses for Operations )	Net Quick Assets/ (Operating Expenses + Direct Manufacturing Expenses + Salaries & Wages )	Lower trend indicates sickness
<b>Altman's Ratios</b>			
30.	Profit Before Interest & Tax / Total Assets	Profit Before Interest /Capital Employed	Lower trend indicates sickness
31.	Market Value of Equity + Preference / Total Liabilities	(Book Value of Equity + Preference + Reserves) / ( Deferred Liabilities + Total Current Liabilities )	Lower trend indicates sickness
<b>Robert P Abates Ratio</b>			
32.	Inventory Cover for Deficit Quick Ratio	Net Quick Assets / Inventory	Higher trend indicates sickness
33.	Operating Leverage	(Sales – Stock Consumed) / Profit before Interest & tax	Higher trend indicates sickness
34.	Financial Leverage	Profit before Interest & tax / Profit before Tax	Higher trend indicates sickness
35.	Total Leverage	Operating Leverage x Financial Leverage	Higher trend indicates sickness
<b>Short -Term Liquidity</b>			
36.	(Inventory + Sundry Debtors) / (Sundry Creditors + Loans & Advances )	(Inventory + Sundry Debtors) / (Sundry Creditors + Loans & Advances )	Lower trend indicates sickness
<b>Long -Term Liquidity</b>			
37.	Long - Term Debt / (Equity + Share Capital )	Deferred Liabilities / ( Equity + Reserves + Preference Shares )	Higher trend indicates sickness
38.	Cash Flow / Long - Term Debt	( Profit after Tax + Interest + Depreciation ) / ( Deferred Liabilities + Interest )	Lower trend indicates sickness
<b>Cost Ratios</b>			
39.	Stock Consumed / Sales	Stock Consumed / Sales	Higher trend indicates sickness
40.	Wages & Salaries / Sales	Wages & Salaries / Sales	Higher trend indicates sickness
41.	Direct Manufacturing Expenses / Sales	Direct Manufacturing Expenses / Sales	Higher trend indicates sickness
42.	Operating Expenses / Sales	Operating Expenses / Sales	Higher trend indicates sickness
43.	( Sales – Material Cost ) / Sales	( Sales – Material Cost ) / Sales	Lower trend indicates sickness
44.	( Sales – Material Cost ) / Capital Employed	( Sales – Material Cost ) / Capital Employed	Lower trend indicates sickness