The Use Of Altman Equation For Bankruptcy Prediction In An Industrial Firm (Case Study)

Khalid Al- Rawi, Al-Ain University of Science and Technology, United Arab Emirates
Raj Kiani, California State University, Northridge
Rishma R Vedd, California State University, Northridge

ABSTRACT

Financial analysis provides the basis for understanding and evaluating the results of business operations and explaining how well a business is doing. In addition, the financial statement analysis can help creditors, investors, and managers answer the following questions: Can the company pay the interest and principal on its debt? Does the company reply too much on non-owner financing? Does the company earn an acceptable return on invested capital? Is the gross profit margin growing or shrinking? Does the company effectively use non-owner financing? Are costs under control? Is the company's market growing or shrinking? Do observed changes reflect opportunities or threats? Is the allocation of investment across different assets too high or too low? Furthermore, financial statement analysis reduces our reliance on hunches, guesses, and intuition. Above all, it reduces risk and/or uncertainty in decision making. Therefore, to reduce risk, uncertainty, and avoid bankruptcy one must appreciate the usefulness of financial statement analysis by using some tools and techniques to evaluate and project the future performance of the firm within a given industry.

The researchers used the Altman z-score analysis to predict a firm's insolvency. The study results for the period 2002-2004 indicated the weaknesses of "Jordan Establishment for Marketing Durable goods". The z-score from the analysis (for the given period) was less than 1.81 (z-score <1.81).

Evidence suggests that the firm has increased its debt and will be facing bankruptcy in the near future. In liquidity ratios, the percentage of the working capital is less than 1, indicating an increase in liabilities over assets. Leverage ratios increased from 41.7% to 56.7%, while inventory turnover decreased by 1.2 times through the given period. Net profit to total sales reduced from (–1.3) to (–1.8) for the same period. Also, the assets return percentage declined from (-9.29%) to (-10.3%), while the stock book value declined from (0.95) JD[1] to (0.67) JD through the given period. The main features provide a gloomy picture and indicate inefficiencies within the firm.

INTRODUCTION

Financial reporting has become an essential component of communication between a business and its stakeholders. Reporting financial information to external stakeholders not involved in the day-to-day management of the business requires a carefully balanced process of extracting the key features while preserving the essential, integrity, objectivity and core of information.

The published annual report is the most important way for a firm to communicate with its external stakeholders. Even when the highlights of the annual report have been pre-announced to interested parties, the document remains as the key to reassurance on the financial position and past performance of the organization (Weitzman, 1996).

[1] Jordanian Dinar = §3.3 USD.

The main objective of this study is by using Altman z-score analysis to predict insolvency rather than estimating future trends from historical data. The predictive approach encourages the researchers to develop explanations for short term financial fluctuations and perhaps help management to predict the financial results in their firm for near future.

In this research we used the last three annual financial reports (200-2004) of "Jordan Establishment for Marketing Durable Goods". Based upon our financial analysis for the firm under study, we have concluded that the firm is not on a going concern in the future. Therefore, we believed that the predictive results are important and will be a helpful management tool to foresee short term outcomes for the firm and how to deal with financial difficulties facing them.

LITERATURE REVIEW

Financial longevity of a business is a concern to internal and external stakeholders. Internal stakeholders might be interested in whether skills are transferable, while external stakeholders might be concerned directly with their investment or profits (Mossman et al, 1998). To address these concerns, it may be of particular importance to the industry to predict bankruptcy or financial distress. While various models are widely accepted, Aziz and Dar (2006) illustrate that the multiple discriminate analysis (MDA) and the Logit models are highly accurate with error rates of 15% each. While the MDA model uses a bankruptcy score calculated by a linear equation to determine the probability of bankruptcy, the Logit model predicts the probability "as a dichotomous dependent variable that is a function of a vector of explanatory variables" (Aziz and Dar, 2006). In the past, researchers have compared different bankruptcy models (i.e. Uni variate, MDA, Logit, etc.) and have concluded that despite certain practical and theoretical limitations, the Altman method is superior due to its simplicity, practicality, and accuracy (Collins, 1980; Mossman et al, 1998).

Various authors (Dugan and Zavgren, 1989; Chen and Shimerda, 1981) have outlined seven financial factors that can help to predict financial distress: return on investment, financial leverage, capital turnover, short-term liquidity, cash position, inventory turnover and receivables turnover. By using financial ratios, the accuracy of predicting bankruptcy of a firm is greater than 90% (Chen and Shimerda, 1981). The Altman model uses various ratios[2] to consider the seven factors noted above. It should be noted that some researchers (i.e. Morris, 1998) argue that in so far as bankruptcy is due to unforeseeable events and therefore, it cannot be predicted.

FINANCIAL ANALYSIS DEFINITION:

Financial data analysis is a basis for understanding and evaluating the results of business operations. In addition, financial statement analysis can help creditors, investors, and managers answer the following questions: Can the company pay the interest and principal on its debt? Does the company rely too much on non-owner financing? Does the company earn an acceptable return on invested capital? Is the gross profit margin growing or shrinking? Does the company effectively use non-owner financing? Are costs under control? Is the company's market growing or shrinking? Do observed changes reflect opportunities or threats? Is the allocation of investment across different assets too high or too low? Therefore, financial analysis may be defined as "the judgmental process which aims to evaluate the current and past financial positions and the results of operations of a firm, with the primary objective of determining the best possible estimates and predictions about future conditions and performances" (Samules,1995).

The analysis of a firm's financial statements is undertaken with the purpose of extracting significant information relating to firm's objectives, profitability, efficiency and degree of risk. This is achieved by using ratios

[2] A company failure or bankruptcy model based on multiple discriminatory analysis developed by Prof. Edward Altman of New York University in 1968. This Z Score model combines five different financial ratios: [(networking capital)/ (total assets), (retained earnings)/ (total assets), (earnings before interest and taxes)/ (total assets), (market value of common and preferred)/ (book value of debt), (sales)/ (total assets) to determine the likelihood of bankruptcy amongst companies. Firms that have a Z-Score more than 3 are considered to be healthy and, therefore, unlikely to enter bankruptcy. Z-Scores in between 1.8 and 3 lie in a gray area.

relating to key financial variables and analysis of the statements and the notes relating there them. Because ratio analysis employs financial data taken from the firm's balance sheet, statement of retained earnings, and income statement, these reports and their interrelations must be mastered to fully understand the significance of the various financial ratios (Betker, 1995).

The basic financial statements include:

A. Balance sheet, which shows the firm's financial position at a specific time.

Assets:

1. Assets arranged in order of liquidity
2. Current assets converted to cash within one year or operating cycle whichever is longer.
3. Fixed assets tangible resources of a relatively permanent nature that are being used in the business and not intended for sale.

Claims:

1. Current liabilities must be paid off within one year or operating cycle whichever is longer,
2. Long-term debts with maturity greater than one year.
3. Stockholders equity represents ownership of the firm.

B. The income statement reports the income and expenses of operations during a period of time.

C. The statement of retained earnings shows the amount of net income reinvested in the business.

1. Retained earnings shows the amount of net income reinvested over a period of years.
2. Retained earnings are not usually held in cash, but invested in other assets of the firm.

The information contained in the firm's financial statements is historic. Accounts are prepared for the firm's financial year and only become available some months after the end of that year (Beranek, Robert, and Brooke, 1996).

IMPORTANCE OF FINANCIAL ANALYSIS

The type of information required from the analysis of financial statements may vary depending upon the user for whom the information is required. Management's responsibility is to employ resources efficiently to meet the objectives of the business (Foss, 1995).

Investors need information to help them to decide whether they should buy, hold, or sell. Furthermore, investors are interested in financial information that enables them to asses the ability of the firm to pay dividends (i.e., return on investment) for their stocks (Helfert, 1991). Employees and their representatives are interested in information about the stability and profitability of their employers. Lenders are interested in information that helps them determine if their loans will be paid when due. Suppliers or trade creditors providing goods and services are interested in information that enables them to decide whether to sell to the enterprise and to determine whether amounts owed to them will be paid when due. Creditors are likely to be interested in an enterprise over a shorter period than lenders unless, they depend on the enterprise as a major, continuing customer (Horne and James, 1998). Customers have interest in information about the continuance of an enterprise, especially when they have a long term involvement with, or dependence on the enterprise. Governments and their agencies are interested in the allocation of resources, and therefore in the activities of a firm. They also require information in order to regulate the activities of firms, assess taxation, and provide a basis for national income and economic statistics. Firms affect members of the public in a variety of ways. Financial statements may assist the public by providing information about the trends and recent developments in the prosperity of the firm and the range of its activities (Higgins, 1995).

RESEARCH METHODOLOGY

The research methodology included:

(1) Personal interview with the heads of the marketing and financial departments.
(2) Analysis of financial statements for the last three years. This was to investigate the perceived importance of the firm's failure and insolvency.
(3) Due to the importance of percentage of the market price to the face value of the firm's stock, we used the average stock price mentioned officially in the newspaper, and Amman financial Market Bulletin, for the concerning period (2002, 2003, and 2004), ranging (0.462JD-0.479JD-0286JD) respectively.
(4) Finally, we used Altman equation for insolvency prediction (Altman, 1968, p592). The Altman Z-score was calculated using the following equation:

$$\text{Z-score} = 1.2\left\{\frac{\text{Net working capital}}{\text{Total Assets}}\right\} + 1.4\left\{\frac{\text{Retained earnings}}{\text{Total Assets}}\right\} + 3.3\left\{\frac{\text{Earning before interest and tax}}{\text{Total Assets}}\right\} + 0.6\left\{\frac{\text{Market value of Equity}}{\text{Book value of Liabilities}}\right\} + 1.0\left\{\frac{\text{Sales}}{\text{Total Assets}}\right\}$$

When using this model Altman concluded:

Z-score < 1.81 = high probability of bankruptcy.
Z-score > 3.0 = low probability of bankruptcy.
Z-score 1.81- 3.0 = indeterminate.

For the study purposes the researchers used:

$$\frac{\text{Net working capital}}{\text{Total Assts}} = X_1$$

$$N \quad \frac{\text{Retained Earnings}}{\text{Total Assets}} = X_2$$

$$\frac{\text{Earnings before interest and tax}}{\text{Total Assets}} = X_3$$

$$\frac{\text{Market value equity}}{\text{Book value Liabilities}} = X_4$$

$$\frac{\text{Sales}}{\text{Total Assets}} = X_5$$

Eidleman (1995) defines each of the above ratios as follows:

X1: is a liquidity ratio. The purpose is to measure the liquidity of the assets "in relation to the firm's size".
X2: is an indicator of the "cumulative profitability" of the firm over time.
X3: is a measure of the firm's productivity, which is essential for the long-term survival of a company.
X4: defines how the market views the company. The assumption is that with information being transmitted to the market on a constant basis, the market is able to determine the worth of the company. This is then compared to the firm's debts.
X5: describes this as a "measure of management's ability to compete". However, Eidleman cautions that the ratio varies across the industry.

INDICATORS OF FAILURE

The financial manager has a dual responsibility in relation to financial difficulties. If the firm has financial problems, it is obvious that management ability may make the difference between losing the firm and rehabilitating it as an on going enterprise. When other firms fall into financial difficulties, knowledge of the rights of creditors may make the difference between large losses and small or no losses. Firms that fail usually do not measure up in managing credit risks, the skill that firms are supposed to perform best. Poor loan performance is one prominent indicator; the larger its allocation to loans, the more failure-prone the firm tends to be. Also, a low capital ratio increases the chances of failure. Similarly, firms with large purchased funds positions are more likely to fail. The ratio of commercial and industrial loans to total assets is an apparent precursor to failure.

In general failure is either:

- Economic – A firm's revenues do not cover costs.
- Financial – Financial failure signifies insolvency, and we have:
    1. Technical insolvency, when a firm cannot meet its current obligations as they come due even though its total assets may exceed its total liabilities.
    2. In bankruptcy sense, if firm's total liabilities exceed its total assets, the net worth of the firm is negative.

INDICATORS TO PREDICT CORPORATE INSOLVENCY

Many formerly highly rated companies' encountered financial difficulties in the early 1990s. The problems ranged from temporary liquidity, to need to restructure, to ultimate insolvency. Although financial ratios taken individually can indicate strengths and weaknesses, there may nevertheless be satisfactory explanations where ratios appear out of line.

A number of researchers have attempted to discriminate between financial characteristics of successful firms and those facing failure. The objective has been to develop a model that uses financial ratios to predict which firms have the greatest likelihood of becoming insolvent in the near future. Altman is perhaps the best known of these researchers. He uses multiple discriminate analyses, which is also used in this study. In the United Kingdom (UK), Taffler (1982) has been the most prominent researcher. His discrimination points of view were:

1) Earnings before interest and tax / Total Assets = EBIT / Total Assets

2) Total Liabilities / Net capital employed

3) Quick Assets / Total Assets

4) Working capital / Net worth

5) Cost of sales / Stock

In both Altman's and Taffler's models, the profitability ratio (EBIT to total Assets) was the most important discriminator between insolvent and solvent firms. A firm is successful in generating profits if it can overcome short-term liquidity problems. Also, if a firm makes profit but is otherwise being poorly managed it is likely to prove an attractive takeover target.

RESEARCH ANALYSIS AND RESULTS

The readers cannot easily answer questions about a firm's profitability and risk from the raw information in financial statements. However, financial ratios analyses permit the analyst (1) to evaluate the past performance and current financial position of a firm and (2) to project its likely future performance and condition.

Basic Financial Ratios - ratio analysis is basic to understanding and evaluating the results of the firm operation.

A. Liquidity ratios: measures the firm's ability to meet its maturing short-term obligations.
B. Leverage ratios: measure the extent to which the firm has been financed by debts. Creditors look to the equity to provide a margin of safety, but by rising funds through debt, owners gain the benefit of maintaining control of the firm with a limited investment.
C. Activity ratios: measures how effectively a firm is using its resources.
D. Profitability ratios: measures management's overall effectiveness as shown by the returns generated on sales and investment.
E. Valuation ratios: measures the ability of the firm in encouraging investors and buying its stocks.

Ratios alone may mean little. It is only when they are related to composite ratios of the industry, or ratios of the same firm compared over a number of time periods, that they acquire more significance.

Appendices 1, 2 and 3, illustrate the Balance Sheet, the Income Statement, and the Statement of Cash Flow of the period 2002, 2003, 2004 respectively. Trend analysis involves computing the ratios mentioned above for the given period to assess whether the firm is improving or deteriorating to achieve comparative analysis. Table (1) represents the firm comparative analysis for the key ratios of the firm.

Table (1): Basic Ratios for the period (2002-2004).[3]

2002	2003	2004	Ratio formula	The Ratio
Liquidity Ratios				
-31844580	-92989110	-15849117	Current Assets-Current Liabilities	Working Capital
72.6%	49.81%	33.5%	Current Assets/Current Liabilities	Current Ratio
28.21%	20.27%	11.48%	CurrentAssets-Inventories-Prepaid/Current Liabilities	Acid Test
2.73%	1.76%	1.19%	Cash/Current Liabilities	Quick Ratio
Leverage Ratios				
41.72%	49.04%	56.75%	Total Liabilities/Total Assets	Liabilities/Assets
58.28%	50.96%	43.24%	Total Equity/Total Assets	Equity/Assets
71.57%	96.24%	131.24%	Total liabilities/total Equity	Liabilities/Equity
-1.96 Times	-1.6 Times	-2.03 Times	Net Profit-Losses/Interests	Average-Interest Coverage
Valuation Ratio				
0.953JD	0.840JD	0.679JD	Net worth/No. of Stocks	Book Value Ratio
974.68%	-433.09%	-175.46%	Average stock price/Dividend	Stock Market/Value Ratio
48.48%	56.89%	42.12%	Stock Market Value/Book Value	Market Value/Book Value Ratio
Activity Ratios				
1.21 Times	1.22 Times	0.94 Times	Production Cost/Inventory Average	Inventory Turnover
298 Days	295 Days	383 Days	Inventory Average/360	Inventory Average Period
4.03 Times	5.31 Times	4.59 Times	Deferred Sales/Average Receivable Period	Average Collection Turnover
89 Days	68 Days	78 days	Average Receivable/360	Inventory Collection Period
0.12 Times	0.12 Times	0.11 Times	Sales/Average Assets	Assets Turnover
0.12 Times	0.12 Times	0.11 Times	Sales/Average Fixed Assets	Fixed Assets Turnover
0.69 Times	0.68 Times	0.61 Times	Sales/Average Current Assets	Current Assets Turnover
Profitability Ratios				
8.59%	10.1%	-7.61%	Total Profit/Sales	Profit Ratio
-83.02%	-55.27%	-36.72%	Net Profit/Sales	Net Profit Ratio
-10.38%	-6.69%	-2.9%	Net Profit/Total Assets	Assets Revenue Ratio
-19.36%	-11.61%	-4.74%	Net Profit/Net Equity	Net Equity Revenue Ratio
-16.30%	-11.61%	-4.74%	Net Profit/No. of stocks	Stock Dividend Ratio

LIQUIDITY RATIOS RESULTS

Note that the working capital ratio is less than one, which reflects the increase in the current liabilities, and the burden of debt financing. Current liabilities increased from (3 M JD) to (15 M JD), the current ratio decreased from (72%) to (33%) and the quick ratio from (28%) to (11%) within the three-year period. Therefore the firm is unable to meet its maturing debts.

LEVERAGE RATIOS RESULTS

During the given period, the burden of the firm's debt increased as a ratio of *Liabilities/Assets* from 41.7% to 56.7%, which affects its ability to obtain loans from creditors. The owner's contribution decreased from 58% to 43% for the given period, which is an indication to high level of debt in the capital structure. The number of times interest covered by current earnings has increased from 1.6 times to 2 times, which implies that it is necessary for the firm to capitalize its interest due to its inability to pay.

[3] The researcher asked the Financial Manager to review these results, which represent the fair Analysis.

ACTIVITY RATIOS RESULTS

Inventory turnover, which measures the efficiency of inventory utilization, has decreased from 1.2 to 0.9. Trend analysis demonstrates the increasing period of inventory from 298 days to 383 days, and therefore the increased average receivable from 94 to 4.5. The turnover concept is extended to show that low assets turnover, which affects the efficiency of the firm's investment in the fixed assets.

PROFITABILITY RATIOS RESULTS

Analysis of this group of ratios was not encouraging. The net profit to the total sales is negative (1.3, 1.5, 1.8) respectively. The firm has maintained the decline assets return, in dropping substantially from (-2.9%) to (-10.3%). Both percentages reflected the poor performance of the management's overall effectiveness on sales and investment, as annual profit per share increased negatively from (4.7%) to (16.35).

VALUATION RATIOS RESULTS

The dividend yield ratio expresses the most recent annual gross dividend as a percentage of the current market value. *The actual Book value for the stock of the firm is declining from (0.95 JD) to (0.76 JD) within the given period, which also affected the percentage of the market value for each share. This ratio dropped from 48% to 42% for the given period. The indication is that the firm's sales prices are relatively low and that its cost is relatively high.*

To support the ratios analysis, the researchers used Altman Z-score equation, indicating *increasing risk of bankruptcy*.

Table (2) is a brief summary of financial statements analysis of the firm the period (2002-2004) using Altman equation.

Table (2): Result Analysis by Using Altman equation for the period (2002-2004)

2002	2003	2004	
-3184458	9298911	-15849117	Net Working Capital
49029990	49566927	47099615	Total Assets
-6.49%	-18.76%	-33.65%	X1
-1432109	-4741160	-9631332	Accumulated Losses
4902990	49566927	47099615	Total Assets
-2.90%	-9.57%	-20.45%	X2
-1423109	-3318051	-4890172	Net Profit/Losses
49029990	49566927	47099615	Total Assets
-2.90%	-6.69%	-10.38%	X3
13860000	14370000	8580000	Share's Marketing value
20453099	24308087	26730947	Total Liabilities
67.76%	59.12%	32.1%	X4
3875753	6003670	5890043	Sales
49029990	49566927	47099615	Total Assets
7.90%	12.11%	12.51%	X5
-0.08%	-0.23%	-0.40%	0.012* X1
-0.41%	-1.34%	-2.86%	0.014*X2
-0.10%	-0.22%	-0.34%	0.033*X3
0.41%	0.35%	0.19%	0.006*X4
0.08%	0.12%	0.13%	0.010*X5
-0.10%	-1.32%	-3.28%	Z

Z- Values for the three given years were less than 1.81 (z-score < 1.81 = high probability of bankruptcy)

LIMITATIONS OF THE STUDY

Despite all the research supporting z-score analysis, it is important to realize that evidence regarding its shortcomings also exists. *For example, Steven Hall (2002) provides some reasons why the method should be used carefully: 1) when the Altman model was designed, the research was primarily from manufacturing firms and hence, it may not apply to all industries; 2) the bankruptcies studied by Altman were for the period between 1946-1965. As most large firms operate in several industries, matching can be difficult*. It is not clear if past experience will always be transferable to future situations given the dynamic environment in which business operates. The model may need to be adjusted so the weights assigned to each ratio can truly reflect today's financial conditions. Grice and Ingram (2001) also question whether Altman's model is as useful now as it was when developed. They pondered if the model was as successful with non-manufacturing firms as with manufacturing firms. Finally, the authors set out to determine if the model could predict "financial stress conditions other than bankruptcy". *They concluded that the z-score analysis is not as successful in predicting recent firms as it was in the past. The authors also found that the model was useful for predicting financial distress other than bankruptcy, but mainly for manufacturing firms*. Hall (2002) *states that the model applies only if the financial statements being reviewed accurately represent the position of the company (i.e. sales have not been inflated, or expenses, liabilities or losses have not been hidden to alternate the profitability of the firm).*

Grice and Ingram (2001) state that the z-score analysis does not incorporate pre-bankruptcy non-financial events that may result in bankruptcy (i.e. union problems, lawsuits, etc). There is no underlying theory relating to the process by which firms become bankrupt, and therefore more analysis may be needed.

CONCLUSION

Financial ratio analysis has been used to assess profitability and risk, current and future, from the viewpoint of lenders, investors, and other creditors with the firm. Ratios vary depending on the trading conditions. The economic conditions during the periods covered by the accounts being analyzed is an important consideration. *The researchers used Altman Z-scores and ratio analysis approaches to conclude their views why the firm under study went bankrupt. Therefore, we concluded that Altman's model may be used as an indicator and perhaps evidence to determine the firm's bankruptcy- in the future. We know that a mathematical model is an abstraction of reality, therefore, we believe that further evidence and economic indicators may be needed to determine outcome of the firm's future operating activities and its financial position performance.*

Ratios indicated the firm is being run by using assets to generate sales and is ineffective it is in controlling costs, producing profits based on goods and services sold. The level of liquidity puts the firm in difficult economic circumstances. Investor ratios which measure how the price of a share in the stock market compares to key financial markets performance indicators is not encouraging. The dividend yield has fallen and all shares have fallen in price over the years studied.

AUTHOR INFORMATION

Khalid Alrawi is an associate Professor at Alain University of Science and Technology,
UAE. Professor Alrawi earned his Ph.D. degree form Strachlyde University, United Kingdom, England. He is Director of the MBA Program and the Supervisor of the Internship at the University.

Raj Kiani is Professor of Accounting at California State University Northridge, California (CSUN). Professor Kiani earned his Ph.D. in Accounting from the University of Oklahoma, Norman, Oklahoma in 1975. Professor Kiani is involved in scholarly research activities and has published 20 articles in different journals which are all listed in Cabells Directory of Refereed Publications. He is specialized in cost/ managerial, financial, and taxation.

Rishma Vedd is a Professor of Accounting at California State University, Northridge (CSUN). Professor Vedd earned her PhD in Accounting from University of Dundee, Scotland in 1999. In 2005, she received Scholarly Merit award and the University Excellent Teaching award from Thompson Rivers University in Canada. In 2008, she was

presented with Accounting Professor of the Year award from CSUN. Her areas of research include, financial, management accounting and finance. Vedd's articles have been published in the International Academy of Business and Economics, Journal of International Finance & Economics, Journal of Applied Accounting Research, Journal of Problem and Perspectives in Management and Journal of Business Performance Management.

RECOMMENDATIONS:

We recommend that the following steps to be taken to strengthen the firm and improve the market value of its stock and perhaps avoid the bankruptcy if it is possible.

1) Use the decentralization concept in the decision making process, which gives the employees the initiative and responsibility to adapt their behavior and decisions according to changes in the working environment.
2) Confirm that the firm should use consistent accounting policies over time enhancing the cost accounting and information systems if a significant change has taken place.
3) Look carefully at increasing prices or attempting to control costs of goods sold more effectively.
4) Reschedule the debts and increase the liquidity in the future within acceptable ranges. . The firm's total debts (5 M JD), represent 17% of the firm's capital.
5) Since liquidity has fallen within an unacceptable range, depend on short-term loans and shorten the period of credit extended to customers, this should be investigated as a matter of urgency.
6) Manage the inventory on a productive capacity (e.g. control raw materials movement by using a just -in - time inventory system). Also control the movement of stock; the quicker the goods move, the better.
7) Reduce in expenses to meet obligations as they fall due, by timing cash inflows and cash outflows. Operate on a lower current ratio and avoid building up cash flow problems.

Appendix (1): Balance Sheet (Assets) (2002-204) all figures in 000 JD.

	2002	**2003**	**2004**
Current Assets: **Cash**	316753	329825	281518
Checks Under Collection	1043937	895129	312731
Trade Debtors	843872	1416702	1503425
Account Receivable(others)	402045	245970	227819
Stock after Provision	5159700	534979	4945064
Letters of Credit	523366	620992	168172
Prepaid Expenses	0	138724	191380
Current Assets (others)	149379	426847	229145
Total Current Assets	8439052	9229168	7859254
Expenses Deferred: Establishment Costs	406882	406882	406882
Expenses Before Operations	22447861	22447861	22447861
Total Expenses Deferred	2386462	2386462	2386462
Fixed Assts: **Land and Building**	406882	406882	406882
Fixed Assets(Net)	37797594	37544415	36447017
Total Fixed Assets	38204476	37951297	36853899
Total Assets	49029990	49566927	47099615

Appendix (2): Balance Sheet (Liabilities) (2002-2004) all figures in 000 JD.

	2002	2003	2004
Current Liabilities: Bank and other Borrowings	6693132	9708273	1037575
Trade Creditors	1404155	2130521	147883
Liabilities(others)	11217	20187	93262
Short-term Notes payable	1864445	4040477	5072273
Short-term Loans	5000000	2500000	5000000
Checks Due	150561	68025	13292
Accruals	0	60596	41886
Total Current liabilities	10623510	18528079	23706171
Long-Term Liabilities: Long-term Notes payable	1829589	780008	522576
Long-term Loans	7000000	5000000	2500000
Total Long-Term Liabilities	8829589	5780008	022576
Equity and Net Worth: Capital	30000000	30000000	30000000
Accumulated Losses	-1423109	-4741160	-9631332
Net Equity	28576891	25258840	20368668
Total Equity and Liabilities	49029990	49566927	47099615

Appendix (3): Income Statement (2002-2004) all figures in 000 JD.

	2002	2003	2004
Sales	3875753	6003670	5890043
- Cost of Sales:			
Finished Products at 1/1	0	1013768	530268
Product Cost	5184537	4913857	5386673
- Finished Products at 31/12	-1013768	-530268	-532976
Cost of Sales	4170769	5397357	5383965
Operating Profit (Gross Profit)	-295016	606313	506078
Other Earnings	132178	23076	24327
Interest Receivable	-725758	-2068755	-2407170
Selling and distribution Expenses	-157031	-32046	-473475
Administration Expenses	-224304	-252664	-295891
Energy Expenses	0	-1264064	-1315912
Other Expenses	0	-41611	-11932
Materials Price Decline Reserve	0	0	-450850
Previous Adjustment	0	0	-465437
Losses of the Year	-1423109	-3318051	-489172
Losses of Previous Years	0	-1423109	-4741160
Losses (circulated)	-1423109	-4741160	-9631332
The Stock share from Net losses	-4.74%	-11.6%	-16.30%
Average of total stock	30000000	30000000	30000000

Appendix (4): Cash flow Statement (2002-2004) all figures in 000 JD.

	2002	2003	2004
Cash flow from Operation: Loss of the Year	-1423109	-3318051	-4890172
Fixed Assets Depreciation	461380	1181514	1239306
Materials Price Decline Reserve	0	0	450850
Year's Adjusted losses	-961729	-2136537	-3200016
Increase/Decrease In Current Assets: Account Receivable	-1245917	-416755	-68572
Checks under Collection	-1043937	148808	582398
Stock at 31/12	-5159700	-175279	-609935
Letters of Credit	-523366	-97626	452821
Account Receivable(other)	-149379	-236192	-34954
Increase/Decrease in Current Liabilities: Accounts Payable	1415372	735336	1090437
Checks(Deferred)	150561	-82536	-54733
Expenses Due	0	60596	-18710
Cash Used in Operation Activities	-7518095	-2200185	1312264
Cash flow from Investment Operations:			
Fixed Assets(bought)	-38665856	-928335	-1411909
Deferred Payment	-2386462	0	0
Net Cash used in Investment	-41052318	-928335	-141909
Cash flow: Financial Operations			
Banks Loans	669312	3015141	629301
Notes Payable	4694034	126451	776561
Loans	7500000	0	0
Capital at Start	30000000	0	0
Net Cash Used in Investment Operations	48887166	3141592	1405866
Net Increase/Decrease in Cash	-316753	-13072	-48301
Cash at 1/1	0	316753	329825
Cash at 31/12	316753	329825	281524

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