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Assessing Financial Soundness of Tannery Industry in Bangladesh: An Empirical Investigation Using Z-Score

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Abstract

There are lots of techniques available for measuring the financial health of a business firm. But the Altman's Z-score has been proven to be a reliable tool across contexts. Bangladesh tannery industry is a unique one because the industry earns $1 billion-a-year by exporting leather. The main objective of the study is to assess the fundamental financial health of this industry using Z-score model. All listed tannery firms are considered in this study and the observed period is from 2010 to 2014. The required information has been collected from the annual reports of the selected companies and from other sources. The study revealed that two firms, Apex tannery and Bata Shoe, are financially sound whereas other three are not in a good position. The findings of the study can be useful for the managers to take financial decision, the stockholders to choose investment options and others to look after their interest in the leather manufacturers of the country.

Keywords: Tannery industry, Financial soundness, Prediction, Z-score

1. Introduction

Financial analysis is the process of identifying the financial strengths and weaknesses of the firm by properly establishing relationship between the items of the balance sheet and the profit and loss account (Pandey, 1979). Financial sustainability of businesses can be of great importance for the firms doing business with them. It is also important for the management and employees. So, judging the financial capacity of businesses carries enormous information for the institutions and people around it. The measurement of financial soundness shapes the decisions of them.

For measuring the financial health of a business firm, there are lots of techniques available. But the Altman's Z-score has been proven to be a reliable tool across contexts. This model devotes to predict possibilities of bankruptcy of manufacturing concerns. There is evidence that it has 76.9% accuracy in predicting the bankruptcy of the underlying sample (Begley et al. 1996). Altman (1968) defines five predicted factors that can be used to test the validity of Multivariate model. The model is based on financial ratios. Using financial ratios to predict bankruptcy can be accurate up to 90% (Chen and Shemerda, 1981).

2. Overview of Tannery Industry in Bangladesh

Leather is the basis of one of the oldest industries in Bangladesh and plays a significant role in the national economy with a good reputation worldwide. This is an agro-based by product industry with locally available indigenous raw materials having a potential for export development and sustained growth over the coming years. Bangladeshi leather is widely known around the world for its high qualities of fine grain, uniform fiber structure, smooth feel and natural texture.

The leather sector accounts for about 4% of total exports earnings of Bangladesh. Nevertheless, it is a major export commodity after ready-made garments and jute products and its development is considered by the Government a priority for export diversification and employment generation. So it is a matter of great concern to assess the financial health of the firms in the industry and predict the bankruptcy possibility.

Bangladesh tannery industry is a unique one because Bangladesh's leather exports are a $1 billion-a-year industry, according to the Bangladesh Export Promotion Bureau. Competitive prices and improved quality have attracted an increasing number of importers from Asia and Europe. The Government of Bangladesh has indentified the leather sector as one with considerable growth and investment potential ranked fifth in the export earning sector.

However, the entire leather sector meets only 0.5% of the world's leather trade worth US$75 billion. There are about 113 tanneries in Bangladesh that produce 180 million square feet of hides and skins per year. In addition there are about 30 modern shoe manufacturing plants engaged in the production of high-quality footwear, with over 2500 smaller footwear manufacturers also present in the sector. There are around 100 small-to-medium leather goods manufacturers, and a small number of niche larger manufacturers**.** So it is a matter of great concern to assess the financial health of the firms in the industry and predict the bankruptcy possibility.

3. Literature Review

Financial ratios are the simplest tools for evaluating the financial performance of the firm Wen-Cheng LIN et. al. (2005). One can employ financial ratios to determine a firm's liquidity, profitability, solvency, and capital

structure and assets turnover.

Altman used multiple discriminate analyses (MDS) in his effort to find out a bankruptcy prediction model. He selected 33 publicly traded manufacturing bankrupt companies between 1946 and 1965 and matched them to 33 firms on a random basis. The result of MDS exercise yielded equations called 'Z' score that correctly classified 94% of the bankrupt companies and 97% of the non bankrupt companies a year prior to bankruptcy. This percentage dropped when trying to predict bankruptcy two or more years before it occurred. The ratios used in Altman model are working capital over total assets, retained earnings over total assets, earnings before interest and taxes over total assets market value of the equity over book value of total liabilities and sales over total assets.

Fieldsend, Longford and McLeay, (1987) explained how financial ratios can also give mixed signals about a company's financial health, and can vary significantly among companies or industries over a time. Other factors should also be considered such as a company's products, management, competitors, and vision for the future. Krishan Chaitanya (2005) used Z model to measure the financial distress of IDBI and conclude that IDBI is likely to become insolvent in the years to come. Also in study conducted by (Nair, 2013) on the Indian pharmaceutical companies' financial performance, found that 48 % of the companies were likely to be financially distress and 9% of the companies were financially distressed due to decreased EBIT. Recently (Karamehic, 2013) also analyzed the financial performance of the United States Pharmaceutical industry and forecasted that the industry's profits were likely going to decline in the future.

In Bangladesh Z score model has also been used in different studies. Chowdhury and Barua (2009) applied Z score model to the Z category shares traded in DSE to judge financial distress risk of each share. They used 53 companies' data of the years 2000-2005 to calculate Z-score. They argued that the Altman's Z score model, though may not be fully applicable for companies in Bangladesh, yet proves its strong validity and correctness in predicting distressful status of the Z category companies. Mizan, Amin, and Rahman (2011) conducted a study for the prediction of bankruptcy of the pharmaceutical industry in Bangladesh. They used the Altman Z-score Model for this purpose where sample size was six leading companies of this industry. Their study reveals some valuable findings like, two firms are found financially sound having no bankruptcy possibility in the near future and other companies are found to be unsatisfactory and they have a significant likelihood of facing financial distress in the near future. They also stated that market value of equity of most of the firms is not reflecting the fundamentals of the respective companies. Mizan and Mahabbat (2014) applied Z score model to the Cement Industry in Bangladesh. They used all listed cement companies in the study for the period 2006 to 2010. Their study revealed that two companies are financially sound where three are not a financially good position.

4. Objectives of the study
The objectives of the study are;
- To know about the brief overview of tannery industry in Bangladesh
- To assess the fundamental financial health of the leather industry of Bangladesh
- To examine the financial soundness of tannery industry through using Z-score model

5. Methodology of the Study
The study focuses on the leather industry of Bangladesh. There are two stock exchanges in Bangladesh-Dhaka Stock Exchange (DSE) and Chittagong Stock Exchange (CSE). In 2015, five Leather companies were listed on DSE and CSE (Table 1). Thus, all inclusive sampling technique is followed for the current study. The required information has been collected from the annual reports of the selected companies.

Table 1: Listed Tannery Companies in Bangladesh

SL	Name	Market Category	Year of listing on DSE	Year of listing on CSE
1	Apex Footwear Limited (APEXFOOT))	A	1993	1995
2	Apex Tannery (APEXTANRY)	A	1985	1995
3	Bata Shoe (BATASHOE)	A	1985	2004
4	Legacy Footwear (LEGACYFOOT)	B	2000	2000
5	Samata Leather Complex Ltd. (SAMATALETH)	Z	1998	1998

Source: DSE (2015) and www.cse.com.bd

As the biggest and oldest stock exchange of Bangladesh, I consider the market price of DSE. Other data have

been collected from other different sources including the internet and dailies of the country. For predicting bankruptcy, the Altman Z score have been used. Through the following equation possibility of bankruptcy of the industry has been judged;

$Z = 1.2X_1 + 1.4X_2 + 3.3X_3 + .6X_4 + .999X_5$

Where,

X_1 = NWC/TA [It is the ratio between the Net Working Capital (NWC) to Total Asset (TA) of the firm. This ratio measures the state of liquid assets of the organization in respect to the total asset. The value of this ratio indicates the firm's capacity to pay the immediate or short-term obligation of the business];

X_2 = ARE/TA [Accumulated Retained Earnings (ARE) to Total Asset (TA) is the ratio that measures the accumulated profitability of the business. Usually, business retains profit if it has a good forecast of investment opportunities. In case of financially sound business organization the ratio will be higher];

X_3 = EBIT/TA [This is the ratio of Earnings Before Interest and Taxes (EBIT) to Total Asset (TA). It a measure if efficiency of an organization by separating the leverages. The value of this ratio signifies the capacity of the firm to generate sufficient earnings to pay off its interest payment obligation. The lower value of the ratio indicates the lower capacity of the firm to pay the interest against borrowing;

X_4 = MVE/BVD [This is the ratio of Market Value of Equity(MVE) to Book Value of Debt (BVD). It injects the market force in the prediction model as the reality is that there is direct impact of a firm's financial health on the price of shares in the market]; and

X_5 = S/TA [Sales (S) to Total Asset (TA) is the measure of the firm's efficiency in converting its asset into sales. The higher value provides evidence of better capacity of the organization to generate revenue from the present asset based].

The bankruptcy possibility of a company depends on the value obtained by using the formula. The following will be applicable for the values of Z-score:

if, Z>2.99, the business is financially sound and there is least probability that the firm will face financial distress;

if, Z<1.80, there is a high probability that the business will face financial distress in near future and the business may need desperate me assures (such as mergers) to survive in the market; and

if, 1.8<Z<2.99, the firm falls in the gray area that means there is less probability that the firm will face financial distress in the near future.

6. Results and Findings

The ratio of the NWC (Net Working Capital) to TA (Total Asset) has been presented in Table 2. The ratio is very important to understand the liquidity position of the selected firms. By nature, the leather manufacturers require huge working capital to carry out smooth business operation. Among the firms, the APEXTANRY (Apex Tannery) has the highest mean value of the ratio, indicating better working capital management practices within the organization. The other two companies that are the BATASHOE (Bata Shoe) and LEGACYFOOT (Lagacy Footware) have better mean values of the ratio. Only one company that is SAMATALETH (Samata Leather) has a lower ratio below 10%, indicating marginal condition in managing the working capital. The NWC/TA ratio also indicates the capacity of an organization to meet up the immediate short term obligations or the current liabilities. Industry average is positive over the years.

The ratio of ARE (Accumulated Retained Earnings) to TA (Total Asset) is a very important parameter to assess the fundamental soundness of a business firm. Calculation (Table 3) is showing that four of the selected five companies have positive average ratio. The ratios signify that they have incurred profit during the observed period. The BATASHOE has a significant higher average value of the ratio that is 37.90%. Only one company that is SAMATALETH has a negative ratio over the years.

BATASHOE has the highest mean value of the EBIT (Earnings before Interest and Tax) to TA (Total Assets) ratio (23.56%) among the companies that is shown in table 4. This ratio measures the efficiency of business in converting its assets into sales. The next one is APEXTANRY showing the mean ratio of 9.6%. The negative value is with SAMATALETH (-0.65%). The EBIT/TA ratio of APEXFOOT and LEGACYFOOT is not competitive.

The ratio of MVE (Market Value of Equity) to BVD (Book Value of Debt) is representing in table 5. For all the companies, the ratios are very high during the year 2010. BATASHOE has the highest average value of the ratio (8.2892) and it shows the highest variation (SD=0.9619). The ratio of MVE/BVD indicates the confident of the common stockholders on the performance of the company.

The ratio of Sales to Total Asset (S/TA) of the selected companies has been depicted in table 6. It is the ratio that indicates the capacity of the company to generate sales revenue by using the available assets of the company. The higher ratio indicates better efficiency of the company to generate revenue by utilizing assets. It can be found that three companies, as APEXFOOT (1.2158), APEXTANRY (1.9755) and BATASHOE (1.7879), are performing almost in the same level during the observed period. Again the highest value remains with the BATASHOE and the others two are following it. But, the other two companies, LEGACYFOOT

(0.3269) and SAMATALETH (0.2957) are not going with the industry. They have lower capacity in generating sales revenue. It is noted that the industry average of this ratio is consistent over the years.

The calculated Z score of the selected leather manufacturers of the country has been shown in table 7. If we look into the values, the BATASHOE is showing a very consistent performance during the period, and the average value of Z score stands at 8.5504. The next best company is APEXTANRY which has average Z score of 3.9252. So, it can be concluded that BATASHOE and APEXTANRY have no possibility of financial distress in a near future. Another Company which is APEXFOOT, average Z score is good which is 2.0412 but the company has a lower Z score on the year 2014.On the other hand, average Z score of the companies, LEGACYFOOT (1.9805) is greater than 1.80.

But SAMATALETH (0.7965) is below 1.8. None of the observed years' Z score of SAMATALETH is indicating sound financial condition. The company is at the verge of financial distress. So, the managements of the company is in need of restructuring decision – within or outside of the organization. The financial condition of the company is a matter of great concern for the stockholders and other stakeholders.

Industry average Z score from the year 2010 to 2014 is higher than 2.99. So, at present the tannery industry is financially sound though only one firm is in the verge of bankruptcy. Investors should consider this matter seriously.

7. Conclusion

The fundamental financial health of a business firm is the main concern for the stakeholders. On the basis of the financial soundness, they take a decision regarding their possible involvement with a particular firm. The Altman Z score is the best measurement that can shape the decision of the stakeholders. The current study has been conducted to assess the financial health of the firms under the tannery industry of Bangladesh. The study revealed that among the five firms, two (APEXTANRY and BATASHOE) are financially sound as they have higher Z score than the benchmark (2.99). Another two firms that is APEXFOOT and LEGACYFOOT are in the gray area that is the firms are financially sound, but the management requires special attention to improve the financial health of the organization. Otherwise, the firm may face financial distress in the long run. The only firm SAMATALETH is at serious risk of financial distress. Thus, the management should take necessary steps to reverse the situation, and the general investors should be careful in investing in the stocks of the company. So, the findings of the study can be useful for the managers to take financial decision, the stockholders to choose investment options and others to look after their interest in the in the concern leather manufacturers of the country.

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Table 2: The ratio of NWC/TA of the selected companies

Company/ Year	APEXFOOT	APEXTANRY	BATASHOE	LEGACYFOOT	SAMATALETH	MEAN	SD
2010	0.0853	0.6761	0.2350	0.4311	(0.0698)	0.2715	0.2614
2011	0.0890	0.4606	0.2423	0.5217	(0.0641)	0.2499	0.2204
2012	0.1220	0.4933	0.9697	0.5356	(0.1160)	0.4009	0.3729
2013	0.1211	0.5577	0.2499	0.5505	0.5107	0.3980	0.1789
2014	0.1143	0.5636	0.3142	0.5464	0.1070	0.3291	0.1990
Mean	0.1063	0.5503	0.4022	0.5171	0.0736		
SD	0.0159	0.0740	0.6874	0.0441	0.2314		

Table 3: The ratio of ARE/TA of the selected companies

Company/ Year	APEXFOOT	APEXTANRY	BATASHOE	LEGACYFOOT	SAMATALETH	MEAN	SD
2010	0.1542	0.2152	0.3517	0.0018	(0.2236)	0.0999	0.1969
2011	0.0712	0.1819	0.3031	0.0011	(0.2295)	0.0656	0.1796
2012	0.1200	0.2226	0.3301	0.0007	(0.2860)	0.0775	0.2120
2013	0.1242	0.2800	0.4358	0.0119	(0.4068)	0.0891	0.2863
2014	0.1089	0.2864	0.4742	0.0233	(0.4359)	0.0914	0.3058
Mean	0.1157	0.2372	0.3790	0.0078	(0.3164)		
SD	0.0269	0.0400	0.0651	0.0088	0.0889		

Table 4: The ratio of EBIT/TA of the selected companies

Company/ Year	APEXFOOT	APEXTANRY	BATASHOE	LEGACYFOOT	SAMATALETH	MEAN	SD
2010	0.0585	0.1643	0.2523	0.0352	(0.0084)	0.1004	0.0949
2011	0.0436	0.0740	0.2238	0.0409	(0.0375)	0.0690	0.0857
2012	0.0395	0.0827	0.2441	0.0205	(0.0030)	0.0767	0.0883
2013	0.0397	0.0878	0.2501	0.0188	0.0135	0.0820	0.0881
2014	0.0248	0.0720	0.2077	0.0222	0.0031	0.0660	0.0744
Mean	0.0412	0.0961	0.2356	0.0275	(0.0065)		
SD	0.0108	0.0346	0.0172	0.0089	0.0171		

Table 5: The ratio of MVE/BVD of the selected companies

Company/ Year	APEXFOOT	APEXTANRY	BATASHOE	LEGACYFOOT	SAMATALETH	MEAN	SD
2010	0.9801	1.5472	9.9368	1.9407	0.9304	3.0670	3.4552
2011	0.7516	1.5472	8.6800	1.5761	0.9285	2.6967	3.0095
2012	0.6584	1.1747	8.1069	1.4272	0.8934	2.4521	2.8392
2013	0.5470	0.5416	7.3225	1.2894	1.4664	2.2334	2.5723
2014	0.4040	0.5389	7.3997	1.5313	3.0909	2.5930	2.5881
Mean	0.6682	1.0699	8.2892	1.5529	1.4619		
SD	0.1943	0.4534	0.9619	0.2176	0.8419		

Table 6: The ratio of S/TA of the selected companies

Company/ Year	APEXFOOT	APEXTANRY	BATASHOE	LEGACYFOOT	SAMATALETH	MEAN	SD
2010	1.4820	1.5807	1.8525	0.3112	0.0543	1.0562	0.7279
2011	1.3230	1.5595	1.8744	0.3722	0.0725	1.0403	0.6969
2012	1.1934	1.9211	1.8554	0.3365	0.0001	1.0613	0.7796
2013	1.1426	2.2622	1.7089	0.3007	0.9472	1.2723	0.6689
2014	0.9380	2.5543	1.6483	0.3138	0.4044	1.1718	0.8388
Mean	1.2158	1.9755	1.7879	0.3269	0.2957		
SD	0.1819	0.3871	0.0916	0.0255	0.3555		

Table 7: The Z score of the selected companies

Company/ Year	APEXFOOT	APEXTANRY	BATASHOE	LEGACYFOOT	SAMATALETH	MEAN	SD
2010	2.5799	4.1623	9.4197	2.1113	0.1880	3.6922	3.1318
2011	2.1231	3.5377	8.5340	2.0802	0.1075	3.2765	2.8465
2012	2.0321	3.8004	9.1489	1.9037	(0.0135)	3.3743	3.1295
2013	1.9200	3.9358	7.8362	1.8133	1.9139	3.4838	2.3173
2014	1.5511	4.1899	7.8129	1.9940	1.7868	3.4669	2.3695
Mean	2.0412	3.9252	8.5504	1.9805	0.7965		
SD	0.3322	0.2417	0.6585	0.1105	0.8638		

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