APPLICATION OF ALTMAN’S Z SCORE MODEL TO EXAMINE FINANCIAL SOUNDNESS OF PUBLIC SECTOR TEXTILE INDUSTRY IN MAHARASHTRA-A STUDY OF SELECTED UNITS

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Abstract-Indian Textile Industry is one of the leading textile industries in the world. The economic liberalization of Indian economy in 1991 gave the much needed thrust to the Indian textile industry, which has now successfully become one of the second largest in the world. There are many states like West Bengal, Tamil Nadu, Gujarat, Kerala and Maharashtra which are textile hub of the Country. Among them Maharashtra is one of the giants in the textile manufacturing and also the one to owe highest industrial outputs in the textile sector. There are abundant natural resources, skilled manpower and premiere R&D centers. Additionally bulk of raw material available is all responsible for pushing down the cost of textile industry. Due to all these favorable factors, it contributes highest FDI in the country and highest contribution to India’s GDP. This industry comprises of both Public and Private sector textile units. Though it is leading textile producing state but it is struggling hard to uphold and maintain its position. Therefore, it is important to check the financial health of Public sector textile units in Maharashtra. In the present study researcher has identified various significant ratios to evaluate and predict the financial health of selected public textile units with the help of Altman’s z score model.

Keywords: Indian Textile Industry, Maharashtra’s Textile Industry, financial performance, Altman’s Z score.

1. INTRODUCTION

The term Textile comes from the Latin word “Texere” meaning "to weave". The art of textile making started to develop in the Stone Age. Weaving is a craft developed initially in a very crude and under developed form with the advent of agriculture. The art of weaving was slowly developed from the weaving of strips into mats and baskets. (Ghosh and shukla,n.d) Today, Indian Textile Industry is one of the leading textile industries in the world. After the economic liberalization of Indian economy in 1991, the opening up of economy gave the much needed thrust to the Indian textile industry, which has now successfully become one of the second largest in the world. It plays a major role in the economy of the country as it earns about 27% of the total foreign exchange. Further, the textile industry of India contributes nearly 14% of the total industrial production and also contributes around 4% to the GDP of the country. The industry is the largest in the country in terms of employment generation. (International Trade Division, 2014).

2. MAHARASHTRA & ITS TEXTILE SECTOR

Maharashtra has a booming economy which is based on the edifice of a strong infrastructural foundation. The state has a well balanced economic and social structure and is rich in two main industries i.e. Sugar and Textile. This state is one of the giants in the textile manufacturing and also the one to owe highest industrial outputs in the textile sector. It accounts for about 65 million kg of cotton production which is 25% of the country's total. The textile industry of the State holds a strategic importance in the country as it is the single largest employer and contributes around 27% of India's total exports. The state contributes 10.4 per cent to the country's textile and apparels output. Also, the state accounts for 10.2 per cent of the country’s employment in the sector. It produces 12 per cent of India's total production and has an installed capacity of 1.66 million spindles, equivalent to 17 per cent of the country's capacity. (Doing Business in Maharashtra, n.d)

Maharashtra is also one of the largest producers of cotton in India. Furthermore, there are abundant natural resources, skilled manpower and premiere R&D centers. Additionally bulk of raw material available is all responsible for pushing down the cost of textile industry. Due to all these favorable factors, it contributes highest FDI in the country and highest contribution to India’s GDP. Maharashtra Textile Industry basically comprises of both private as well as public textile units. Both these sectors deal in Spinning and Composite (Non SSI & SSI). In order to check the financial performance of Public sector textile

DOI Number: https://doi.org/10.30780/IJTRS.V04.I08.001
units in Maharashtra, the researcher has selected four public sector textile units, deals in Spinning and Composite (Non SSI & SSI) that have greater influence on the overall economic performance of the state. For the purpose of critical financial analysis, four key units of public textile units in Maharashtra were selected. A brief profile of the selected textile firms of the state which deals in Spinning and Composite (Non SSI & SSI) are:

<table>
<thead>
<tr>
<th>Company</th>
<th>Product Portfolio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barshi Textile Mills, Barshi- Maharashtra</td>
<td>Yam, Polyester Filament Yarn, Aloe Yarn, Hemp Yarn, Texturized Yarn</td>
</tr>
<tr>
<td>India United Mills No 5, Mumbai-Maharashtra</td>
<td>Yam Manufacturers, Textile Mills</td>
</tr>
<tr>
<td>Podar Mills, Mumbai- Maharashtra</td>
<td>Textile Manufacturers, Yam Manufacturers.</td>
</tr>
</tbody>
</table>

Source: Government of Maharashtra, Co-operation, Marketing and Textile Department Government of Maharashtra

3. REVIEW OF LITERATURE

The review of literature is being done to find out available literature in the field of financial performance analysis and also to find out the gap of such performance in public textile units in Maharashtra. The researcher has presented some of the excerpts of various studies conducted by the financial analysts in the past. Some studies are directly related and some are indirectly. The available literature has helped the researcher to find out the research gap. Kumar and Kulkarni (2012) had conducted analysis of the Gujarat textile industry where various ratios like current and quick ratio, current asset on total asset, sales, turnover etc. were analyzed with the help of ANOVA. Channar and Ram (2011) concludes that overall performance of the textile sector was adversely affected by crisis due to various factors like obsolete technology, unavailability of high quality raw material, unskilled labor etc. Eljelly (2004) in his study explained the relation between profitability and liquidity by using Correlation and regression analysis and concluded that the cash conversion cycle is widely accepted measure of liquidity than the current ratio that affects profitability. Bhayani (2003) in his book entitled “Practical Financial Statement Analysis” made an attempt to conduct financial analysis. The study covered 16 public limited cement companies in private sector. He tried to do the analysis of profitability, working capital, capital structure and activity of Indian cement industry. In his research he revealed various problems of cement industries and suggested remedies for the problems. He also suggested various measures for the improvement of profitability and techniques of cost control.

4. STATEMENT OF THE PROBLEM

The Indian textile in general and Maharashtra’s textile industry in particular has in-born strengths like availability of all types of fibres in the textile value chain, huge geographical infrastructure, recognition of India in its design capabilities, rising exports and support of the various Ministries of the Government. Even then this industry lags behind its competitors at global front and is struggling hard with some structural problems like infrastructure, fragmented industry structure, and high transaction cost affecting the global competitiveness of the industry. Therefore the question arises:

- What are the factors responsible for slower growth rate of Public sector textile units in Maharashtra?
- What is the reason behind unsatisfactory performance of public sector textile units in Maharashtra?

Keeping the above issues in mind it becomes necessary to analyze the financial performance for a comprehensive evaluation of public textile units in Maharashtra in order to find out actual problem of these sectors. The main thrust of the present study is to find out the main reason behind the suffering and losses of public textile units in Maharashtra.

5. RESEARCH GAP

Review of literature done above highlights that very few studies till date have been conducted to analyze financial performance of public sectors of Indian textile Industry in general and public sectors of textile units of Maharashtra in particular.

6. SCOPE OF THE STUDY

Financial analysis of public sectors of textile mills in Maharashtra is done for the period of 10 years staring from F.Y 2006-07 to F.Y 2015-16. Financial performance of the sector is measured on the basis of liquidity, solvency, turnover, profitability and expenses. For the purpose of study 4 public units of textile in Maharashtra are taken into consideration.
7. IMPORTANCE OF THE STUDY

Public sector of this industry is unable to perform satisfactorily though they have various benefits at their side. Therefore, it is the need of the hour to investigate and find out the possible reasons for poor performance of public sector and also figure out the causes for the slow pace of growth of textile industry in Maharashtra. Findings of this study will be beneficial to different groups like

- Management in financial planning
- Financial projections and business forecast
- Government and policy makers
- Bankers, the other financial institutions
- Investors and other market participants
- Guide for conducting further research

8. OBJECTIVES OF THE STUDY

The objective of the study is to:

- To predict the financial distress of textile units under the study with the help of Altman Z score model.
- Draw conclusions and make recommendations for further growth & development of the sectors.

9. HYPOTHESIS / POSTULATES OF THE STUDY

- Financial health of the selected public textile units is not in the healthy zone.
- Financial health of the selected public textile units is in the healthy zone.

10. RESEARCH METHODOLOGY

The research is based on secondary data. The collection of the quantitative data is done through the sources such as publish annual reports of the companies published, data from Ministry of textile, books, journals, CMIE prowess database etc.

11. RESEARCH DESIGN FOR FINANCIAL ANALYSIS

During the study the researcher has found that only 5 textile units in public sectors are operating in Maharashtra, out of which data of one unit is not available. Therefore remaining four has being selected for the study.

12. DATA ANALYSIS & INTERPRETATION

The main objective is to check the financial health of the selected Public textile units in Maharashtra. Various ratios are used for the study. The data of ten years have been analyzed with the help of MS excel software. Z Score Model developed by Altman has given a multi-discriminant formula to access the financial health of the companies based on certain ratios. A specific value is given to each ratio used in determining the Z score. Based on the score of Z score a prediction can be made in relation to the company’s financial position. The original Z-Score Model was based on the market value of the firm and was thus applicable only to publicly traded companies. In 1983 Altman emphasized that the Z-Score Model is a publicly traded firm model and ad hoc adjustments are not scientifically valid. Therefore, Altman in 1983 advocated a complete re-estimation of the model substituting the book value of equity for the market value in X4. (Waseem, 2016)

13. ANALYSIS OF SELECTED PUBLIC TEXTILE UNITS IN MAHARASHTRA USING ALTMAN Z SCORE MODEL

Table-13.1 depicts Z Score Model of Selected Public textile units in Maharashtra from 2006-07 to 2015-16. For the purpose of calculation, various accounting ratios and market-derived price data were considered and following results were drawn.

<table>
<thead>
<tr>
<th>Year</th>
<th>IUM/ Z score</th>
<th>BTM/ Z score</th>
<th>PM/ Z score</th>
<th>TM/ Z score</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006-07</td>
<td>-0.32853</td>
<td>0.713989</td>
<td>-3.44227</td>
<td>-0.32282</td>
</tr>
<tr>
<td>2007-08</td>
<td>-0.28257</td>
<td>0.28681</td>
<td>-0.39827</td>
<td>-0.14122</td>
</tr>
<tr>
<td>2008-09</td>
<td>0.047843</td>
<td>-3.9946</td>
<td>-0.35325</td>
<td>-0.18962</td>
</tr>
<tr>
<td>2009-10</td>
<td>-0.30071</td>
<td>-4.51191</td>
<td>-14.4381</td>
<td>-0.24024</td>
</tr>
<tr>
<td>2010-11</td>
<td>-0.66402</td>
<td>-0.2321</td>
<td>-0.49715</td>
<td>-0.42791</td>
</tr>
</tbody>
</table>

DOI Number: https://doi.org/10.30780/IJTRS.V04.I08.001
Z = 0.717·X1 + 0.847·X2 + 3.107·X3 + 0.420·X4 + 0.998·X5

Where,

- \( Z \) = Discriminant score
- \( X1 \) = Net working capital divided by total assets
- \( X2 \) = Retained earnings divided by total assets.
- \( X3 \) = EBIT divided by total assets
- \( X4 \) = Book value of equity divided by total liability
- \( X5 \) = Sales divided by total assets

13.1 India United Mills

![IUM/Z score graph](image)

**Fig. 13.1 Z-score of India United Mills during 2006-07 to 2015-16**

Source: Prepared by researcher from the Annual reports of India United Mills from 2006-07 to 2015-16 with the help of MS – Excel.

Table 13.2 depicts the Z-Score value of India United Mills from 2006-07 to 2015-16. From the analysis, it is found that the Z-Score of India United Mills has been alarmingly lower during the study period. It has been ranging from -20.70 to 0.04 during the entire study period, and thus fall in the bankruptcy zone (below 1.23 score). As it can be seen from table, Z-score of company shows a poor position, indicating the bankruptcy zone of the company and also predict financial distress for the firm in next few years. Finally, it is revealed that India United Mills has been in condition of financial distress and fall in bankrupt zone during 2006-07 to 2015-16, the company is prone to bankruptcy in coming years.

13.2 Barshi Textile Mills

![BTM/Z score graph](image)

**Fig. 13.2 Z-score of Barshi Textile Mills during 2006-07 to 2015-16**

Source: Calculated by researcher on the basis of Annual reports of selected Public textile units in Maharashtra from 2006-07 to 2015-16 with the help of MS - Excel.

BTM = Barshi Textile Mills, IUM = India United Mills, PM = Podar Mills, TM= Tata Mills

Z = 0.717·X1 + 0.847·X2 + 3.107·X3 + 0.420·X4 + 0.998·X5

where,

- \( Z \) = Discriminant score
- \( X1 \) = Net working capital divided by total assets
- \( X2 \) = Retained earnings divided by total assets.
- \( X3 \) = EBIT divided by total assets
- \( X4 \) = Book value of equity divided by total liability
- \( X5 \) = Sales divided by total assets
Table 13.2 depicts the Z-score value of Barshi Textile Mills from 2006-07 to 2015-16. From the analysis, it is found that the Z-Score of Barshi Textile Mills has been alarmingly lower during the study period. It has been ranging from -7.8 to 0.71 during the entire study period, and thus fall in the bankruptcy zone (below 1.23 score). As it can be seen from table, Z-score of company shows a poor position, indicating the bankruptcy zone of the company and also predict financial distress for the company in next few years. Finally, it is revealed that Barshi Textile Mills has been in condition of financial distress and fall in bankrupt zone during 2006-07 to 2015-16, the company is prone to bankruptcy in coming years.

13.3 Podar Mills

Source: Prepared by researcher from the Annual reports of Podar Mills from 2006-07 to 2015-16 with the help of MS – Excel.

Table 13.2 depicts the Z-Score value of Podar Mills from 2006-07 to 2015-16. From the analysis, it is found that the Z-Score of Podar Mills has been alarmingly lower during the study period. It has been ranging from -22.87 to 0.49 during the entire study period, and thus fall in the bankruptcy zone (below 1.23 score). As it can be seen from table, Z-score of company shows a poor position, indicating the bankruptcy zone of the company and also predict financial distress for the company in next few years. Finally, it is revealed that Podar Mills has been in condition of financial distress and fall in bankrupt zone during 2006-07 to 2015-16, the company is prone to bankruptcy in coming years.

13.4 Tata Mills

Source: Prepared by researcher from the Annual reports of Tata Mills from 2006-07 to 2015-16 with the help of MS – Excel.

Table 13.2 depicts the Z-Score value of Tata Mills from 2006-07 to 2015-16. From the analysis, it is found that the Z-Score of Tata Mills has been alarmingly lower during the study period. It has been ranging from -15.43 to -0.14 during the entire study period, and thus fall in the bankruptcy zone (below 1.23 score). As it can be seen from table, Z-score of company shows a poor position, indicating the bankruptcy zone of the company and also predict financial distress for the company in next few years. Finally, it is revealed that Tata Mills has been in condition of financial distress and fall in bankrupt zone during 2006-07 to 2015-16, the company is prone to bankruptcy in coming years.
Keeping the Z-score of selected Public textile mills of Maharashtra in consideration, the researcher has observed that the financial health of Public textile units in Maharashtra is falling under Bankruptcy zone (<1.23). It can be concluded that the financial position of public textile units is not good and needs urgent attention of government and policy makers. There is a need of taking proper remedial steps in order to improve working capital, Retained earnings, EBIT and sales so as to bring these units back into safe zone (Above 2.99)

14. FINDINGS FROM MULTI DISCRIMINANT Z SCORE ANALYSIS OF SELECTED PUBLIC TEXTILE UNITS IN MAHARASHTRA

The Z-Score value of selected public textile units in Maharashtra. The researcher has analyzed that during the study period Z-score of India United Mills has been alarmingly lower. It has been ranging from -20.70 to 0.04 and thus fall in the bankruptcy zone (below 1.23 score). It is evident from the table; Z-score of company shows a poor position, indicating the bankruptcy zone and also predict financial distress for the firm in next few years. Also Z-score value of Barshi Textile Mills from 2006-07 to 2015-16 is depicted in table 2. From the observation, it is found that the Z-score of Barshi Textile Mills has been severely lower during the study period ranging from -7.8 to 0.71 and thus fall in the bankruptcy zone (below 1.23 score). Z-score of company shows a poor position, indicating the bankruptcy zone of the company and also predict financial distress for the company in next few years. Finally, it is revealed that Barshi Textile Mills is prone to bankruptcy in coming years.

Furthermore table 2 shows the Z-Score value of Podar Mills from 2006-07 to 2015-16 which has been critically lower during the study period. It has been ranging from -22.87 to 0.49 and thus fall in the bankruptcy zone (below 1.23 score). Owing to financial distress and heavy burden the company falls in bankrupt zone during 2006-07 to 2015-16 and is prone to bankruptcy in coming years.

Moreover, table 2 depicts the Z-Score value of Tata Mills from 2006-07 to 2015-16. The researcher has analyzed that the Z-Score of Tata Mills has been shockingly lower during the study period. It has been ranging from -15.43 to -0.14 and thus falls in the bankruptcy zone (below 1.23 score). As it can be seen from table, Z-score of company shows a poor position, thus, the company is prone to financial distress in next few years.

CONCLUSION

Keeping the Z-score of selected Public textile mills of Maharashtra in consideration, the researcher has observed that the financial health of Public textile units in Maharashtra is falling under Bankruptcy zone (<1.23). It can be concluded that the financial position of public textile units is not safe and needs urgent attention of government and policy makers. There is a need of proper remedial steps in order to improve working capital, Retained earnings, EBIT and sales so as to bring them back into safe zone (Above 2.99)

REFERENCES