A STUDY ON INTERNAL FACTORS ANALYSIS OF INDUSTRIAL SICKNESS: WITH REFERENCE TO PRIYADHARSHINI SPINNING MILLS LIMITED

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ABSTRACT

Industrialization is a best and perfect strategy for fast economic growth of a country, especially developing countries such as India, Bangladesh, Thailand etc., follow this strategy. It is not only limited to growth matter but also extended to attainment of self-reliance. Industrial development is based on many factors. They are availability of natural resources, size of the country, agriculture productivity, rate of population, efficient system of transportation and communication, educated labour force, effective banking system and government policy at macro level. Proper functional management like financial management, human resource management, production management, marketing management, management information system, research and development activities are require at micro level. If micro and macro things are not to minimum extent the companies in the industry become sick and it leads to slow growth rate in the economy. To get more clarity in this area, the present study takes Priyadarshini Spinning Mills Limited, Hyderabad as a reference to elucidate the sickness in the textile industries. Here we try to highlight Priyadarshini Spinning Mills Limited why it has been registered as sick at BIFR and preventive strategies for elimination of sickness are mentioned. In this regard, statistical tools like Altmas Z score is used to know the level or severity of sickness as well as factor analysis (SPSS) is used to find the reasons of sickness in the company. Statistical tools like Altmas Z score is used to know the level or severity of sickness as well as factor analysis (SPSS) is used to find the reasons of sickness in the company with the help of structured questionnaire.

Key Words: *Sickness, Textile Industry, Performance Indicator, Strategies, Working Capital*

Introduction

A sick unit is that which incur the cash loss for one year and likely to continue incurring losses in current year and the following year as well. This unit has an imbalanced financial structure at the same time. According to the Industrial company act 1985 a sick industrial company is a company which is registered for not less than seven years and at the end of the corresponding financial year it has accumulated net loss equal to or exceeding its net worth. In addition to it this company has the characteristics of cash losses in the respective financial year and it's just preceding year. In Company's act 2002 it is clearly denoted that a company is declared as sick unit when it will be failed to repay the debt amount in any three consecutive quarter after the demand of the respective creditors.

We can say the unit is actually sick:
1. A complete or partial erosion of net worth by 50% or more percentage.
2. The respective unit being closed for minimum 6 months or more.
3. Unable to pay the installment against the loan amount.

According to state financial corporation (SFC) if a unit is not able to pay the interest on loan and borrowings or the principal amount in some cases then it is the indictor of initial sickness in it.

Signals of Industrial sickness:
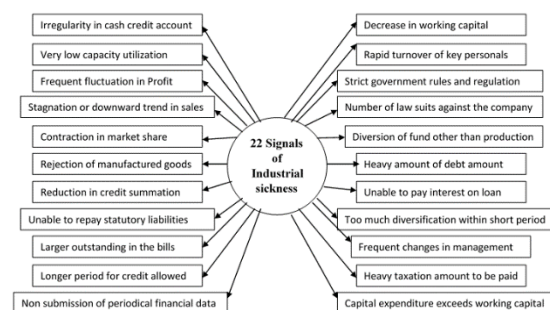
Signals of Industrial sickness

Review of Literature:

Dr. Jay Desai and Nisary A Joshi (2015) have tried to examine the performance of the Z Score Model as a default prediction model. For this the Discriminant Analysis is used. Based on this model he has mentioned various steps to come out from the sickness. Dr. Krishna Avatar Goyal and Ravinder Kumar (2014) have tried to do early prediction of sickness of scooter India limited for taking revival and rehabilitation steps. The authors have tried to prove the statement of BIFR for Scooter India Limited (Case Number 504/1992). Here the author is used multiple discriminate analysis (MDA) i.e. Z score test to estimate the level of concerned industry. Dr. Krishna Avatar Goyal (2013) mentioned in his research paper about the sickness of some India Industrial Unit prior before for which the required revival steps can be taken. According to him the more focus would be given to the current sick industries rather than the sick closed industries.　S. Christina Sheela and K. Karthikeyan (2012) expressed that shareholders and stake holders focus on the success and solvency position of the company with whom they are dealing. Financial statements may not reveal the perfect information to fulfill the objective. The authors took Edward I Altmas Z Score Model to predict the financial health of the selected companies. S. Pungavanam and Suresh Babu (2012) have shown that to maintain a good position in the global market the financial health of a company should be good. In this paper the authors had tried on account of BHEL (Ranipet) to show its sickness related to financial health and validity of the company.
As per the above reviews of various authors we can say that Altmas Z score is the best predictor for finding sickness in the companies.

Objectives of the study:

➢ To give a proof by empirical study (using Z score test) that Priyadarshini Spinning Mills Limited unit is really moving towards sickness.
➢ To know the reasons of Priyadarshini Spinning Mills Limited unit became sick.
➢ To suggest revival strategy measures for Priyadarshini Spinning Mills Limited come out from the sickness.

Research Methodology:

The present paper is concerned with the analysis of the Priyadarshini Spinning Mills Ltd. This study is based on primary and secondary data. The data has collected from the sources like company employees, Annual reports, Indian Economy reports, Ministry of Textiles Government of India reports, various text books and newspapers and journals. Various websites are taken as the reference for this paper. Structured questionnaire has prepared and approached the employees (150) in Priyadarshini Spinning Mills Limited unit to conduct personal interview with them regarding sickness of the unit. Altmas Z Score tool used to prove the sickness and exploratory factor analysis also used to know the reasons of sickness in the company.

Theoretical Framework:

Altmas Z score is used to find out the probability of bankruptcy in corporate sector. It is a valuable predictor of financial distress in the corporate world. It was introduced by Edward Altman in 1968 for measuring a company's financial health. He checked up several financial ratios based on financial reports of various companies. He combined various ratios linearly and got one empirical equation which can predict the risk of the corporate failures. It was done using Multiple Discriminant Analysis with combined set of 5 financial ratios to come up with the Z score.

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

Where

X_1= Working Capital /Total Assets

X_2= Retained Earning / Total Assets

X_3= Earnings before Interest and Taxes/ Total Assets

X_4= Market Value of Equity / Book Value of Total Debt

X_5= Sales / Total Assets

Situation	Z- Score	Zone	Remarks
I	Below 1.8	Not Healthy	Failure certain. Financial embarrassment is very high
II	Between 1.8 and 2.7	Poor Healthy	Good chances for the company going bankruptcy within two years.
III	Between 2.7 and 2.9	Healthy	The failure in the company is

			uncertain to predict.
IV	Above 3.0	Too Healthy	Company health is viable and not fails. It is in safe side

Company details: Priyadarshini Spinning Mill Limited

Priyadarsini Spinning Mill Limited is an ISO 9001 certified Company. It is also listed in BSE having manufacturing facilities for yarn and yarn dyeing. It was established in 1981 with the capital amount of Rs.8 Crore (Rs 800 Lakh). The industrial area of this company is located 70kms from Hyderabad houses which has the area of 65 acres. This area covers both the spinning mill and yarn dyeing units. Among these two units the spinning mill has 51,000 spindles where polyester and viscose blended yarn is used to produce to meet the demand of domestic market. The second unit is used for dying cotton, viscose and polyester. Along with this operation blending also is done in this unit. The second unit has the capacity of 10 tons per day. Along with the profit making Priyadarshini has focused on qualitative products and the effective and efficient customer services. Along with a safe, challenging, friendly and rewarding work environment for employees this company also serves and supports the society by so many socioeconomic and environmental projects. For 100% cotton yarn this company also has been certified as Oeko-Tax 100.When we will see its CSR activity It always focus on the upliftment of the backward classes of society. In its steps it includes building of classrooms and bus stops in nearby villages and supplying drinking water to nearby village during summer. For the education of under privileged children Priyadarsini has donated 15 acres of land to build a school.

Data Analysis:

Table No: 1 Various Details of Priyadarshini Spinning Mills Limited. (Lakhs)

Year	Net Sales	EBIT	Total Assets	Working Capital	Retained Earnings	Total Liabilities	Market value of equity
2005-06	146.4	14.8	132.3	30.2	0	94.05	301.2
2006-07	185.2	16.9	160.8	32.1	0	120.5	226.3
2007-08	195.54	12.6	162.87	26.69	0	125.71	176.15
2008-09	180.7	10.19	150.93	20.26	0	115.61	107.37
2009-10	192.43	13.87	153.34	31.64	0	118.02	140.6
2010-11	259.62	21.07	152.98	36.93	0	108.93	845.62
2011-12	172.62	-38.54	79.03	1.69	0	77.93	582.8
2012-13	115	-13.11	22.5	-52.25	0	60.13	128.42
2013-14	35.24	-4.72	12.02	-57.36	0	61.31	75.72
2014-15	39.11	-0.51	6.04	-58.66	0	60.39	61.6

Source: Priyadarshini Spinning Mills Company Website

Table No: 3 Calculations for Various Ratios Used in Z Score Model for Priyadarshini Spinning Mills Limited

Year	X_1	X_2	X_3	X_4	X_5
2005-06	0.228	0	0.1120	3.202	1.1058
2006-07	0.1999	0	0.100	1.877	1.151
2007-08	0.1638	0	0.077	1.401	1.200

2008-09	0.134	0	0.067	0.9287	1.1972
2009-10	0.2063	0	0.090	1.1913	1.254
2010-11	0.241	0	0.137	7.7629	1.69708
2011-12	0.0213	0	-0.48	7.4785	2.1842
2012-13	-2.322	0	-1.71	2.135	5.1111
2013-14	-4.772	0	-0.392	1.2350	2.931
2014-15	-9.71	0	-0.084	1.0200	6.475

Table No: 4 Statements Showing the Z score Health Zone for the Priyadarshini Spinning Mills Limited

Z Score Model Financial Health
$$= 1.2\,X_1 + 1.4\,X_2 + 3.3\,X_3 + 0.6\,X_4 + 1.0\,X_5$$

Year	2005-06	06-07	07-08	08-09	09-10	10-11	11-12	12-13	13-14	14-15	Avg.
Z Score	3.67	2.84	2.49	2.13	2.51	7.09	5.08	-2.05	2.24	-4.84	1.56

Here the Altmas Z score value is 1.560091. It means that it is in I situation and the Z score is below 1.8 which represents certainty of failure. Company became sick due to various internal and external factors. In the context of Priyadarshini Spinning Mill we were able to get various reasons which made the company sick. These reasons belong to all the managerial and operational departments of this company. All the details we have collected from employees from the company in different levels of Management by collecting responses with a structured questionnaire.

Now we will study the internal causes of industrial sickness with the help of factor analysis**.** The construct of enterprise based sickness is been interpreted as involving the aspects of subsets of factors or variable, operationalized with the aid of the Marketing, Human Resource, Production, Financial Management and Corporate planning. The company based "internal mismanagement" is regarded as "firm based" influence that seems to lead to corporate sickness. The unit based "firm specific" factors were classified as (1) "Marketing Problems", (2) "Human Resource Related Problems",(3) "Production Related Problems" and (4) "Finance Related Problems" as well as the related (5)"Corporate Planning Related Problems".

Principal Component Analysis for "Internal" Factors:

The constituent factors were subjected to respective factor analysis for evaluating the extent to which the chosen scale items and sub scale items actually group together and project their identity as a combined or single factor. The notion of factor loadings in the principal component analysis facilitated such an observation in the form of pattern matrix. The oblimin rotation method was leveraged to achieve the pattern matrix for the factors representing the perceived external environment scale. The use of factor analysis across SPSS statistical software facilitated the determination and the interpretation of the lateral factor based structure that exists amongst the chosen variables in the scale.

Factor Variance:

The scale (internal related problems) factor variance examination is commonly used test for the assessment of the factorability of the data. The data from the likert scale with regard to constituent factors was subjected to KMO and Bartlett's test respectively.

Table 5.16: KMO-Bartlett's test: Internal Factors

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.885
Bartlett's Test of Sphericity	Approx. Chi-Square	22725.800
	Df	325
	Sig.	.000

The outcomes point towards the state of satisfactory factorability as evident with the Kaiser-Meyer-Olkin Measure of Sampling Adequacy as 0.8885 which is greater than the modest acceptable value of 0.5. The Bartlett's test of Sphericity examines the probability of the correlation matrix as an identity matrix which is useful in estimation of the un-relatedness of the assumed variables and the respective scope for structure determination. The incidence of smaller values less than 0.5 or closer to 0.00 is regarded as beneficial for the overall application of the factor analysis with the collected data. The observed value of "0.00", points towards the usage of the primary data for subsequent factor analysis.

Across the initial analysis, five factors were extracted with eigen values greater than 1with factor one exhibiting 38.4 per cent variance, second one exhibiting 16.3 per cent variance, third one exhibiting 15.6 per cent variance, fourth one exhibiting a variance of 9.9 per cent and fifth one exhibiting a variance of 5.3 per cent respectively.

The Catell's scree plot also serves as a tool for the determination of the factors to be extracted from across the extractive factor analysis. The plot serves as medium of associating the respective eigen values (associated with each individual factor) against the factor. The visible sharp declines point towards the observed variances.
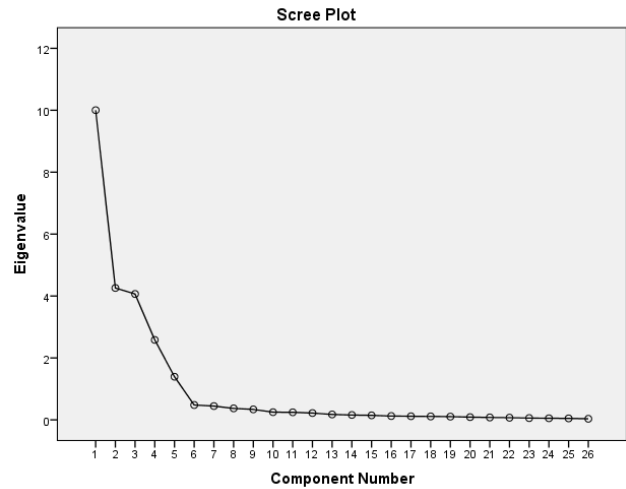
Table 5.17 : Factor Variance Examination: "Firm" based internal Causes

Total Variance Explained						
	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings[a]
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1=Production Related Problems	10.0	38.47	38.47	10.00	38.47	38.47	7.106
2=Human Resource Management Problems	4.25	16.38	54.85	4.25	16.38	54.85	6.281
3=Finance Problems	4.06	15.63	70.48	4.06	15.63	70.48	6.654
4=Corporate Planning Problems	2.58	9.93	80.41	2.58	9.93	80.41	5.052
5=Marketing Problems	1.39	5.358	85.77	1.39	5.35	85.77	5.578
Extraction Method: Principal Component Analysis.							
a. When components are correlated, sums of squared loadings cannot be added to obtain a total variance.							

Figure 1: Scree Plot

The rotated factor based pattern matrix constitutes the rotated factor loadings which seem to represent the weightage across the factor and the respective sub scale item considered for aforesaid factor in question. The reported correlations could assume any value from across (-)1 to (+)1 in this analysis as reported here. For satisfactory conduct, only the factor based sub scale items are retained that are satisfactorily greater than 0.5 and are exhibiting loading against the assumed factor itself.

As illustrated above, Kaiser Criteria, percentage of variance and Catell's Scree plot were used as authoritative tools for the estimation of the number of factors to be extracted. All components (factors) with eigenvalues greater than 1 were considered for extraction. Kaiser criteria were used as the tool for shortlisting and extraction of factors when the number of sub scale items in scale is more than 20. As per review of literature and existing practices, the five evident factors with an eigen value larger than numerical one were considered for further research and analysis across extractive factor analysis. The similar variance based trends reflected across the Catell's scree plot mentioned in sections below.

Table 5.19 : Oblimin Rotated Pattern Matrix: Firm based causes as leading to sickness

During on site production problem solving sessions, the management never make an integrated and genuine effort to get all team member's perspectives, opinions and ideas before making a production related decision	HR1		.942			
Manufacturing engineers are seldom involved across production lines to a satisfactory extent before and after the market based introduction of new products	HR2		.811			
Production based problem solving teams seems to have never helped the strategic decision makers and team mates with improved manufacturing processes at this plant	HR3		.871			
Employee teams across the production line feel discouraged while trying to solve their peculiar problems as much as possible	HR4		.925			
Direct labor employees are never ever observed to be made involved to a satisfactory extent across the time of market based introduction of new products or making desired product changes	HR5		.873			
Employees are never ever emphasized cross training at this manufacturing plant which renders them un fit for filling in for others as and when the demand arises	HR6		.905			
No serious attempts have ever been made by the top management to lower the cost of seeking the desired funds	FIN1			.981		
The high input costs seem to be impacting adaptation ability	FIN2			.939		
The firm based management rarely seems to care about the reduction in overall raw material based cost and expenditure	FIN3			.955		
The firm seems to be experiencing high cost of debt due to consistent escalation of project costs and non-operationalization of asset restructuring activities	FIN4			.849		
The firm seems to be experiencing inadequate capitalization cross project lines	FIN6			.897		
The organization based restructuring seems to be have being undertaken negligibly and marginally	FIN8			.926		
The firm never seems to undertake consistent reassessment of outdated product mix	MARK1					.643
The enterprise never seems to test and develop any new product based idea over the course of new product development	MARK2					.925
The firm seems to operate in segments which exhibit consistent poor market demand or loss of marginal income	MARK3					.925

The firm does not seem to rely on market orientation or possessing the market driven market strategy	MARK5					.954
The production lines seems to be more a function of internal obstacles, internal concerns or politics than real time market based needs and aspirations	PROD1	.941				
The firm never seems to restructure the production, the processes and the plant layout to obtain process focus and streamlining	PROD3	.920				
Pace of production seems to be not directly linked with rate of transformation of the customer demand	PROD4	.952				
The plant rarely seems to undergo the desired and preventive maintenance	PROD5	.934				
The management rarely promotes the use of new process technology	PROD6	.925				
Shop floor employees rarely seems to ever lead the product/process improvement efforts or initiatives	PROD7	.967				
The firm seems to be infusing more and irrelevant funds in none core business activities or unrelated aspects of business	CP1				.962	
The leaders in this firm seem to enhance their own self pride until it starts harming the entire system	CP2				.969	
The firm's ability to predict internal or external, changes that could threaten its survival are perceived as ill-developed or limited and conservative	CP3				.909	
The firm seems to be rendered vulnerable in sense that it lacks the essential capabilities to sustain the market based competitiveness	CP4				.926	

Factor Identification

The pattern matrix based factor loadings are enable the identification and interpretation of the aspects of the factors that comprise the enterprise based contextual environmental determinants. The following factors represent the internal factors in the selected corporate company were shortlisted from the textile industry in United Andhra Pradesh. It shows the rotated component matrix depicting the various dimensional elements and their grouping into 5 factors along with their factor loadings. The factors which are derived after the analysis were grouped into five dimensions and are presented in table. Observing the grouped components, Factor 1 which was generated after EFA six variables were encompassed into it (PROD1, PROD3, PROD4, PROD5, PROD6, PROD7) under the dimension of **'Production Related Problems.** The Factor 2 obtained six items which (HR1, HR2, HR3, HR4, HR5, HR6) grouped under the dimension **'Human Resource Management Problems'**. Under the observation of the output, Factor 3 having six items (FIN1, FIN2, FIN3, FIN4, FIN6, FIN8) was labelled under **'Finance Related Problems'** dimension. The obtained Factor 4 with four items (CP1, CP2, CP3, CP4) was identified under the head of **'Corporate Planning'**. The last Emerged factor 5 had only four items (MARK1, MARK2, MARK3, MARK5) and it was named as **'Market Related Problems'**.

The factors thus can be explained elaborately as follows:

Factor One: Production related problems:

It is the first factor related to production which has a collective reported variance of 38.4%. The factor of "perceived production related problems" was attributed the maximum possible variance and reflects the concerns and anxieties of the employees with regard to lack of consistent knowledge with respect to production related problems. The factor was measured with 20 subscales and identified 6 sub scale items. They are as follows

i) Pace of production seems to be not directly linked with the rate of transformation of the customer demand

ii) It has more internal obstacles, internal politics than real time market based needs

iii) Less promotion of use of new process technology

iv) The sample selected for the study did not focus on restructuring of plant lay out and advancement in production process

v) Shop floor employees rarely seems to product/process improvement effort/initiatives

vi) It rarely seems to undergo the desired and preventive maintenance.

Factor Two: Human Resource Management Problems

The second factor is related to the human resources problems. It has a collective reported variance of 16.3%. The factor was measured with aid of 6 sub scale items were extracted from the analysis out of 17 items. They are as follows.

i) Lack of team work in production activities by the management

ii) Less focus of operation managers across the production line

iii) Production based problem solving teams never helped the decision makers for improvement in manufacturing process.

iv) Employees in production line feel discouraged while trying to solve their peculiar problems.

v) Low level employees never ever satisfactory in making desired product changes

vi) Employees never ever emphasized cross training in the manufacturing plant.

Factor Three: Finance related problems

The third factor is related to financial related problems. It figures out as the most potential factor with a collective reported variance of 9%. The factor was measured with aid of 6 sub scale items were extracted from the analysis out of 17 items. They are

i) The selected sample companies are not focused much on reduction of cost of production.

ii) High input costs seem to be impacting adaption ability

iii) Less care on reduction of overall raw material costs.

iv) It experiencing high cost due to consistent escalation of project costs.

v) Firms experiencing inadequate capital.

vi) Negligible and marginal undertaking of organization based restructuring.

Factor Four: Corporate Planning Problems

The next factor is related to "corporate planning" related problems figures out as the fourth most potential factor with a collective reported variance of 15%. The factor was measured with aid of 4 sub scale items were extracted from the analysis out of 12 items. The subscales are mentioned here as

i) Decision maker of the companies are infusing funds in none core areas of the business activities.

ii) Decision makers of the organization have felt self-pride in their decisions which is harmful to the entire system.

iii) These are not able to focus much on analysis of internal and external factors of the organization as well as the company people fails to estimate the strategies of the competitors in the market.

iv) Firms lack the essential capabilities to sustain the market based competitiveness.

Factor Five: Marketing related problems

The fifth factor which is related to the "marketing management" problems figures out as the fifth most potential factor with a collective reported variance of 5 per cent. It was analyzed with 20 sub scale items and extracted 4 items from the analysis. The sub scale item are as follows

i) Firms never undertaken consistent reassessment of out dated product mix

ii) Firms never test and develop any new product and its development activities

iii) It focused on low demand based segments only

iv) The firms does not rely on market orientation for their products.

Conclusion:

The Altmas Z score has identified that Priyadarshini Spinning Mills Ltd is very weak in its financial position. The reasons of sickness has been identified through expletory factor analysis in factor analysis. Internal mismanagement factors related to Financial Management, Human Resource Management, Marketing management, Production Management, Corporate Planning are the reasons for sickness in the Priyadarshini Spinning Mills Ltd.

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