# Envisioning Financial Stability and Bankruptcy of Selected Paint Manufacturing Companies Listed in BSE

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Abstract: This study attempts to measure the financial stability and bankruptcy of the Paint industry taking top five companies listed in Bombay Stock Exchange (BSE) for the period of FY16 – FY20. In order to achieve our objective we have used DuPont Analysis and Altman Z-score. DuPont Analysis and Altman Z score helps the investors to identify the company's financial strengths and the possibility of bankruptcy. An investor can compare the operational efficiency and measure the financial soundness of the companies in same industry. DuPont analysis is based on the analysis of Return on Equity (RoE) and Return on Investment (RoI). It decomposes RoE into three different drivers: Net Profit Margin, Asset Turnover and Equity Multiplier. It decomposes RoI into two different drivers: Asset Turnover and Profit Margin. Based on the findings, Asian Paints and Berger paints have better RoE and RoI indicates the financial reliability of these firms is strong. Altman Z score model is based on five financial ratios: Working Capital to Total Assets, Retained Earnings to Total Assets, Earnings before interest and tax to Total Assets, Net worth to Total Liabilities and Net Sales to Total Assets. Based on the findings, Asian paints, Berger paints and Kansai Nerolac are in safe zone indicates these firms will not get into bankruptcy in near future.

Keywords: Financial Stability, Bankruptcy, DuPont Analysis, Altman's Z score.

### 1. Introduction

In recent times, growth in India's paint sector has been an outlier in the overall consumer space. The industry witnessing that there is a gradual shift in consumer preferences from whitewash to quality paints. The market value of Paint industry has grown from Rs. 159bn in FY08 to Rs. 520bn in FY20

Indian economy has seen a rapid growth in corporate sector. Corporate companies are running with the motive of making profit. Every investor is very keen in knowing the financial soundness of the companies, so that they can take right investment decisions. Not only investors, many banking companies and financial institutions can take right decision to finance companies.

F. Donaldson Brown developed DuPont model in early 1920s with an idea for assessing profitability and risk.

Financial profitability is a mean to know the company's ability to generate earnings based on its expanses and other costs. It helps to evaluate the success of a company. Whereas Return on Equity is an accounting ratio helps to assess the company's profitability. It indicates the amount of profit gained as a percentage of the fund invested by the shareholders. It mainly helps the investors who are looking for new investment opportunities, they can compare the RoE of different companies in the same industry and can choose the one which gives them the greatest profit for the amount they invested.

Edward Altman developed Z score in late 1960s providing investors about an idea of analysis the overall financial wellness of a company.

Financial Distress or insolvency is a condition where companies are unable to meet or pay its financial obligations. When companies become bankrupt, it creates huge loss for shareholders, banking companies as well as the entire economy. Moreover company's failure does not happen all of a sudden, but it is a long term observable fact. It is important for every company to check their financial soundness regularly to avoid unexpected failures.

# 2. Review of Literature:

GnyanaRanjanBal (2015), Study the prediction of financial distress using Altman Z score of select FMCG companies for a period FY11 to FY15. The study aims to use Altman Z score to predict the probability of financial distress. Z score of the selected companies for the last year 2015 shows sound financial position and less chance of bankruptcy in near future.

Vandana Samba and Dr. VaniHarpanahalli (2020), A study on bankruptcy using Altman Z score prediction model of VAMA infrastructure private Ltd, for a period of FY14 -FY18. The study intends to examine the financial distress and bankruptcy. The overall Z score shows Grey Zone from 2014 to 2018, which indicates that there may be a chance for the company to get into bankruptcy in future.

Apporva D.V, Sneha Prasad Curpod, Narmatha M (2019), Application of Altman Z score model on selected Indian companies to predict bankruptcy. The study aims to check the accuracy and effectiveness of the model in predicting bankruptcy of 7 companies listed in BSE. It concludes that the model is 85% accurate, not 100%

M MSwalih, K B Adarsh and M MSulphey (2021), A study on financial soundness of Indian Automobile industries using Altman Z score for the period FY16 – FY20. The study aims to assess financial soundeness and helps investors to find healthy companies. It concludes that Indian automobile industry is healthy and are not prone to bankruptcy in near future.

Dr. Nilam Panchal (2017), Predicting Bankruptcy of selected firms by applying Altman Z score model for the period FY13 -FY17. The study aims to estimate bankruptcy. Z score for all the companies shows safe zone, which indicates the companies are free from bankruptcy.

S. Christina Sheela, Dr. K .Karthikeyan, (2012), Financial performance of Pharmaceutical Industry in India using DuPont analysis, European Journal of Business and Management for a period of FY03 to FY12. This study attempts to measure the financial performance of Pharmaceutical industry taking top three companies. It concludes that the three companies are significant at their level. RoE and RoI are the most important mode to measure the profitability of a firm.

HakSeon Kim, A study of financial performance using DuPont analysis in food distribution market for a period FY13 to FY15. This study attempts to measure the financial performance of the food distribution company. It concludes RoE and RoI is the most complete measure of profitability of a firm.

# 3. Data and Methodology:

The present paper analyses the financial wellness and the probability of bankruptcy of selected companies by applying DuPont analysis and Z score. For the purpose of the study, top five Indian companies listed in BSE from paint industry has been selected namely Asian Paints, Shalimar Paints, Akzo Nobel, Kansai Nerolac Paints and Berger Paints. The period of data for study ranges from FY16 – FY20 from moneycontrol.com. The methodology used in the study is explained as below.

# 3.1. Assessing Return on Equity using DuPont analysis:

DuPont Analysis is an extended version of Return on Equity and Return on Investment formula. It helps to identify the strengths and weaknesses of similar companies using 4 variables from the company's financial statements namely Net Income, Net Sales, Total Assets and Total Shareholder's Equity.

DuPont Analysis (ROE) = Net Profit Margin \* Assets Turnover \* Equity Multiplier

Where,

Net Profit Margin = Net income / Net Sales

Assets Turnover = Net Sales / Total Assets

Equity Multiplier = Total Assets / Total Shareholder's Equity

**3.2.** Assessing Return on Investment using DuPont analysis:

DuPont Analysis (ROI) = Net Profit Margin \* Assets Turnover

Where,

Net Profit Margin = Net income / Net Sales

Assets Turnover = Net Sales / Total Assets

# 3.3. Prediction of Bankruptcy using Altman Z score:

Z score helps to assess the probability of insolvency and to measure the credit worthiness using 8 variables from the company's financial statements namely Current Assets, Current Liabilities, Total Assets, Total Liabilities, Earnings before interest and tax, Retained Earnings, Book value of Equity and Net Sales.

Z score = 1.2A+1.4B+3.3C+0.6D+1.0E

Where

A = Working Capital / Total Assets

B = Retained Earnings / Total Assets

C=Earnings before interest and tax /Total Assets

D = Book Value of Equity / Total Liabilities

E = Net Sales / Total Assets

The common criteria for interpretation based on financial figures only:

- i. Z score is above 3.0 The Company is free from bankruptcy. (Safe Zone)
- ii. Z score between 2.7 and 2.99 The company should exercise Alert / Caution.(Caution Zone)
- iii. Z score between 1.8 and 2.7 The company is going to bankrupt within two years of operation
  - from the date of financial figures.(Caution Zone)
- iv. Z score below 1.8 Chance of bankruptcy is very high. (Distress Zone)

# 4. Data Analysis and Interpretation:

Table 1. DuPont Analysis for the period 2015 – 2016:

Particulars	Asian Paints	Asian Paints Berger Paints		Akzo Nobel	Shalimar Paints
Net Profit Margin	0.124	0.086	0.239	0.081	0.013

Research Article

Assets Turnover	1.351	1.468	1.162	1.291	1.029
Return on Assets	0.168	0.126	0.278	0.105	0.013
Equity Multiplier	110.101	41.489	60.131	43.773	103.245
Return on Equity	18.497	5.228	16.716	4.596	1.342

Interpretation:

From the above table it is inferred that Berger paints sold its products at a lower profit margin(8.6%) but has high Asset turnover ratio (1.468) indicating that the company was making large number of sales i.e., Return on Investment. Moreover Berger paints seems less risky since its financial leverage (41.489) was very low. Return on Equity was 5.228. Investor can invest in Berger paints

Shalimar Paints Return on Equity (1.342) was very low due to excessive leverage (103.245), investing in Shalimar paints seems to be more risky compared to other companies.

#### Kansai Shalimar **Particulars Asian Paints Berger Paints** Nerolac Akzo Nobel **Paints Paints** 0.129 0.102 0.126 0.091 -0.028 Net Profit Margin 1.213 1.323 1.114 1.365 0.654 Assets Turnover Return on Assets 0.156 0.135 0.140 0.124 -0.018 129.497 40.353 141.042 Equity Multiplier 35.431 67.475 20.201 4.783 9.447 5.004 Return on Equity -2.539

# Table 2. DuPont Analysis for the period 2016 – 2017:

Interpretation:

From the above table it is inferred that Akzo Nobel sold its paint products at a lower margin (9.1%) but has high asset turnover ratio (1.365) shows that the company efficiently utilizes its assets to generate revenue. Akzo Nobel seems to be less risky since its leverage (40.353) was very low. Return on Equity was 5.004. Investor can chose Akzo Nobel to make their investment.

Shalimar Paints Return on Equity (-2.539) was very low due to excessive leverage (141.042), investing in Shalimar paints seems to be more risky compared to other companies.

Particulars	Asian Paints	Berger Paints	Kansai Nerolac Paints	Akzo Nobel	Shalimar Paints
Net Profit Margin	0.118	0.089	0.11	0.075	-0.168
Assets Turnover	1.221	1.309	1.128	1.218	0.549
Return on Assets	0.144	0.117	0.124	0.091	-0.092
Equity Multiplier	143.694	40.612	76.636	47.807	130.401
Return on Equity	20.692	4.752	9.503	4.35	-11.997

### Table 3. DuPont Analysis for the period 2017 – 2018:

Interpretation:

From the above table it is inferred that Berger paints sold its products at a lower profit margin(8.9%) but has high Asset turnover ratio (1.309) indicates that the company was making large number of sales i.e., Return on Investment. Moreover Berger paints seems less risky since its financial leverage (40.612) was very low. Return on Equity was 4.752. Investor can invest in Berger paints

Shalimar Paints Return on Equity (-11.997) was very low due to excessive leverage (130.401), it clearly shows that Shalimar paints has higher leverage, making it a riskier investment compared to other companies. Table 4. DuPont Analysis for the period 2018 – 2019:

Particulars	Asian Paints	Berger Paints	Kansai Nerolac Paints	Akzo Nobel	Shalimar Paints
Net Profit Margin	0.113	0.082	0.083	0.072	-0.284
Assets Turnover	1.182	1.389	1.201	1.391	0.485
Return on Assets	0.134	0.114	0.099	0.100	-0.138
Equity Multiplier	169.705	44.925	83.835	46.007	55.245
Return on Equity	22.740	5.121	8.299	4.601	-7.624

Interpretation:

From the above table it is inferred that Berger Paints sold its paint products at a lower margin (8.2%) but has high asset turnover ratio (1.389) shows that the company efficiently utilizes its assets to generate revenue.

Berger paints seems to be less risky since its leverage (44.925) was very low. Return on Equity was 5.121. Investor can chose Berger paints to make their investment.

Shalimar Paints Return on Equity (-7.624) due to excessive leverage (55.245), investing in Shalimar paints seems to be more risky compared to other companies.

Particulars	Asian Paints	Berger Paints	Kansai Nerolac Paints	Akzo Nobel	Shalimar Paints
Net Profit Margin	0.135	0.104	0.098	0.089	-0.111
Assets Turnover	1.251	1.298	1.081	1.144	0.641
Return on Assets	0.169	0.135	0.106	0.102	-0.071
Equity Multiplier	168.419	50.505	90.622	51.072	50.574
Return on Equity	28.463	6.818	9.606	5.209	-3.591

Table 5. DuPont Analysis for the period 2019 – 2020:

Interpretation:

From the above table it is inferred that Berger Paints sold its paint products at a margin (10.4%) but has high asset turnover ratio (1.298) shows that the company efficiently utilizes its assets to generate revenue. Berger paints seems to be less risky since its leverage (50.505) was very low. Return on Equity was 6.818. Investor can chose Berger paints to make their investment.

Shalimar Paints Return on Equity (-3.591) due to excessive leverage (50.574), investing in Shalimar paints seems to be more risky compared to other companies.

Companies	2016	2017	2018	2019	2020			
Net profit Margins (%)								
Asian Paints	0.124	0.129	0.118	0.113	0.135			
Berger paints	0.086	0.102	0.089	0.082	0.104			
Akzo Nobel	0.081	0.091	0.075	0.072	0.089			
	I	Asstes Turnover R	atio (No. of times)	)				
Asian Paints	1.351	1.213	1.221	1.182	1.251			
Berger paints	1.468	1.323	1.309	1.389	1.298			
Kansai Nerolac	1.162	1.114	1.128	1.201	1.081			
Financial Leverage (No. of times)								
Shalimar Paints	103.245	141.042	130.401	55.245	50.574			

Table 6. Companies with healthy DuPont Component trend:

Interpretation:

From the above table it is inferred that out of top five paint companies listed in BSE,

i. Three companies have a gradual increase in net profit margins during FY16 and FY20. Higher profit margin with stable sales will have constructive impact on the ROE.

ii. Three companies have a gradual increase in asset turnover ratio during FY16 and FY20. Higher ATR shows the companies utilizes its assets efficiently to generate revenue and it will results in higher RoE.

iii. Only one company reduces its leverage ratio during FY16 and FY20. Lower leverage ratio indicates lower utilization of debt to fund the company's asset.

From FY16 to FY20 Asian paints RoE increased from 18.497 to 28.463 and at the same period the financial leverage also increased from 110.101 to 168.419. Asian paints have higher Return on Equity (RoE) and also higher financial leverage should also be analyzed very closely. Increase in RoE was due to increase in financial leverage and confirmed that it seems to be riskier than earlier.

Company	Year	Α	В	С	D	Ε	Z Score	Zone
Asian Paints	2016	0.244861	0.608748	0.251354	0.009083	1.351357	3.332353	Safe
	2017	0.248025	0.604441	0.234601	0.007722	1.212589	3.135253	Safe
	2018	0.178698	0.603226	0.221849	0.006959	1.220667	3.015897	Safe
	2019	0.150315	0.575904	0.207422	0.005893	1.181964	2.856638	Caution
	2020	0.198067	0.621132	0.228142	0.005938	1.251101	3.114797	Safe
Berger Paints	2016	0.24561	0.518795	0.201844	0.024102	1.46772	3.169313	Safe
	2017	0.255275	0.524502	0.206158	0.028224	1.323202	3.061089	Safe
	2018	0.242596	0.53188	0.184778	0.024623	1.309972	2.970259	Caution
	2019	0.24081	0.544528	0.184252	0.022259	1.389487	3.062186	Safe
	2020	0.17938	0.522529	0.191335	0.0198	1.29782	2.887902	Caution
Kansai	2016	0.464951	0.757833	0.333053	0.01663	1.162453	3.890412	Safe

Table 7. Companies with Z score Trend:

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			0			0		
Nerolac	2017	0.46241	0.759191	0.210467	0.01482	1.114486	3.435679	Safe
	2018	0.410417	0.745397	0.190551	0.013049	1.127886	3.30059	Safe
	2019	0.303221	0.74425	0.156436	0.011928	1.200631	3.129842	Safe
	2020	0.321749	0.758947	0.140852	0.011035	1.081159	3.001218	Safe
	2016	0.28823	0.546179	0.154779	0.022845	1.291508	2.926514	Caution
A 1	2017	0.217405	0.510958	0.173468	0.024781	1.365084	2.928623	Caution
AKZO	2018	0.296202	0.557287	0.128191	0.020917	1.217997	2.789223	Caution
Nobel	2019	0.250584	0.519901	0.152581	0.021736	1.391105	2.936227	Caution
	2020	0.259038	0.512671	0.142983	0.01958	1.144471	2.656648	Caution
	2016	0.055661	0.159111	0.067544	0.009686	1.029721	1.547976	Distress
Shalimar Paints	2017	-0.01747	0.336807	0.013769	0.00709	0.654345	1.154597	Distress
	2018	-0.16871	0.271074	-0.08363	0.007669	0.548723	0.454407	Distress
	2019	0.047303	0.496559	-0.14203	0.018101	0.485205	0.779326	Distress
	2020	-0.08008	0.488752	-0.06771	0.020258	0.641415	1.01827	Distress

### Interpretation:

From the above table it is inferred that out of five paint companies,

i. Asian Paints, Berger paints and Kansai Nerolac are in Safe zone except few years during FY16 and FY20. Z score is above 3, these three companies are completely free from bankruptcy and financial health is very sound. Thus, Investors can make a decision to invest in these companies stocks to earn better return.

ii. Akzo Nobel is in Caution zone in all the years during FY16 and FY20. Z score is closer to 3, this company is going to bankrupt within the next two years and the financial health is weak. Thus, investors may or may not consider purchasing this company's stock because it involves risk.

iii. Shalimar paint is in Distress zone in all the years during FY16 and FY20. Z score is below 1.8, this company is having a high probability of going bankrupt and the financial health is very weak. Thus, investors would not consider purchasing this company's stock furthermore and consider selling this company's stock to keep away from losing their investments.

## 5. Conclusion:

This study observed the applicability of DuPont analysis and Altman Z Score to analyze the financial stability and insolvency or bankruptcy of five paint manufacturing companies. According to DuPont analysis findings, Return on investment and Return on Equity of two companies (Asian paints and Berger paints) are very high which clearly indicates these two companies are financially sound. According to Z score findings, three companies (Asian Paints, Berger Paints and Kansai Nerolac) are in safe zone which clearly shows that these companies will never go bankrupt in near future.

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