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Prediction of financial distress using Altman Z-score: a study of select FMCG Companies

KEYWORDS: Liquidity ratios, Altman Z-score, FMCG Companies.

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ABSTRACT *The objective of the paper is to apply Altman's Z-score to predict corporate bankruptcy of select FMCG Companies. The study ranges for a period of five years from 2011 to 2015 for five select FMCG Companies. By applying Z-score and select liquidity ratios the study concludes that the investors can use this model to analyze financial position of the companies. In case of our select data, Z-score of all companies for current year shows sound financial position and less chances of bankruptcy in near future. Further the study suggests that the companies should regularly estimate Z-score for making strategies to improve their financial position.*

1. Introduction:

As an emerging economy India is constantly attracting many foreign companies since 1991 (after adoption of LPG). For which Indian economy has seen a rapid growth in its' economy and corporate sector. Despite the fact corporate sector is doing well every investor are interested in knowing the exact financial position of the company, so that they can take rational decision and avoid suffering from inherent credit risk. Especially this is also very necessary for banking companies and financial institution to be more cautious while financing a corporate, as whenever companies become bankrupt it causes a huge loss for them and also for whole economy.

Financial distress or bankruptcy of corporate means an inability of the companies to pay its liabilities. Whenever a company goes for bankruptcy it causes banks, suppliers, shareholder a huge loss. That's why many investors are interested to predict the exact financial position and also the chances of bankruptcy in near future.

Moreover the corporate failure is not a sudden incident it is a long term phenomena. The earlier the company will be aware about their position the better decision they can take to turn around the company. So for the companies also it is important to check their financial health regularly to avoid sudden corporate failure.

The literature shows a numerous techniques to predict the financial distress; still Altman Z-score is one of best model with a high degree of accuracy. And studies also shown that Altman Z-score can be use to know the warnings of bankruptcy and to take corrective measures for it (Bhatt, 2012). The present paper analyses financial health and chances of bankruptcy of select companies by applying different ratios and Z-score.

2. Literature Review

Many studies have been conducted since 1960 regarding the corporate failure and many sophisticated methods have been developed still the original idea of Altman (1968) and Beaver (1966) seems to most powerful one (Sandian and Porporato(2007). Sandian and Porporato (2007) study the usefulness of ratios in predicting the corporate bankruptcy in Argentina. With the study of 22 bankrupt and healthy companies they conclude that solvency and profitability ratios are being widely used, and also it depends upon the preference of decision maker which model to use. Still Z-score can be used for this purpose as it uses both solvency and profitability indicators.

Collins(1980) makes a comparison between different models to assess the bankruptcy, the study finds though many models provide good results still Z-score proves to be better one.

Zavgren and Friedman (1988) study the utility of bankruptcy prediction models in security analysis. They found that bankruptcy predictive models can be used to assess publish financial statement in security analysis.

Pompe and Bilderbeek (2004) examine predictive power of different financial ratios. From the study of small and medium size firms in different phases of bankruptcy they found that every ratio has some indicative power of financial distress.

Grice and Ingram (2001) analyses the genaralibility of application of Z-score. The study finds negative results in application of Z-score in recent periods and to manufacturing firms, but positive results for predicting distress other than bankruptcy as it was originally developed for bankruptcy.

Bal and Raja (2013) studies the earnings management and techniques to predict solvency position. Their study uses Z-score to predict financial distress of IOCL and concludes that as per original Z-score the financial position of the company is not that much good.

Though there are several studies has been made in this context, still may be very less studies has been made in Indian Context especially in case of FMCG Companies. The present study uses Z-score to predict the possibility of bankruptcy in select FMCG Companies.

3. Data and Methodology

The study intends to use Altman's Z-score to predict the probability of financial distress of select Companies in near future. For the purpose of study five companies from FMCG sector of India has been selected namely as Britannia Industries, Colgate Palmolive(India), Emami, Godrej consumer products and Hindustan Unilever. The data for study ranges from the year 2011 to 2015 from moneycontrol.com and money.rediff.com. The methodology used in the study is explained as below:

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3.1 Liquidity Analysis: To analyze liquidity following ratios have been calculated

Current Ratio: This ratio explains the relationship between current assets and current liabilities of a business.

Current Ratio= Current Asset/Current Liabilities

Quick Ratio: Quick ratio indicates whether the firm is in a position to pay its current liabilities within a month or immediately.

Quick ratio=Quick Asset/Current liabilities

Quick Assets = Current Assets – Stock – Prepaid Expenses

3.2 Prediction of Bankruptcy using Altman's Z-score
Among different techniques to predict financial distress, the discriminant analysis as given Altman (1968, 1983) is most effective and typically used one. The original model of predicting bankruptcy (Altman, 1968) is

Altman's Z-score (original model)
$Z = 1.2X_1 + 1.4X_2 + 3.3X_3 + 0.6X_4 + 1.0X_5$

WhereX_1 = Working capital/Total assets,X_2 = Retained earnings/Total assets,X_3 = Earnings before interest and taxes/ Total assets,X_4 = Market value equity/Book value of total liabilitiesandX_5 = Sales/Total assets.

The criteria for interpretation is if Z score< 1.81 then there is very high chance of bankruptcy, Z>2.67 indicates safer zone and the Z-score from 1.81 to 2.67 shows grey area.

Altman's Z-score revised model (1993):
The present study has applied the revised Z-score (four variable model) to predict chances of bankruptcy for select companies. The model is

$Z = 6.56X_1 + 3.26X_2 + 6.72X_3 + 1.05X_{4*}$

Where X_1 = Working capital/Total assets (WC/TA), X_2 = Retained earnings/Total Assets(RE/TA), X_3 = Earnings before interest and taxes/ Total Assets(EBIT/TA), X_{4*} = Net worth or Book value/ Total liabilities (NW/TL).

Criteria for interpretation:
Z score< 1.10 - Very high chance of Bankruptcy,
Z>2.60– Safe Zone
Z = Between 1.10 to 2.60 indicates Grey area.

4. Analysis and Interpretation:
4.1 Liquidity Analysis:
4.1.1 Current Ratio

CURRENT RATIO					
YEAR	**2015**	**2014**	**2013**	**2012**	**2011**
COMPANY'S NAME					
BRITANNIA INDUSTRIES	1	0.84	0.79	0.7	1.04
COLGATE PALMOLIVE(INDIA)	0.8	0.85	1.07	1.09	1.12
EMAMI	1.72	1.83	1.57	1.32	1.5
GODREJ CONSUMER PRODUCTS	0.9	0.73	1.28	1.37	0.91
HINDUSTAN UNILEVER	0.75	0.74	0.76	0.83	0.86

Table: 1 Current ratio of companies (Source: www.moneycontrol.com)

The above table: 1 shows the current ratio of the select companies for the year 2011 to 2015. The current ratio of the companies shows their ability to pay short financial liabilities. The Emami Company is having better liquidity position as compared to others. Among least the Hindustan Unilever shows very less ratio, thus the liquidity position is comparatively bad. In case of Godrej though there is higher ratio in year2015 than 2014, still from overall the liquidity is in decreasing trend.

4.1.2 Quick Ratio

QUICK RATIO					
YEAR	**2015**	**2014**	**2013**	**2012**	**2011**
COMPANY'S NAME					
BRITANNIA INDUSTRIES	0.7	0.47	0.58	0.36	0.5
COLGATE PALMOLIVE(INDIA)	0.53	0.57	0.82	0.76	0.83
EMAMI	1.45	1.41	1.38	1.42	2.59
GODREJ CONSUMER PRODUCTS	0.58	0.39	0.78	0.84	0.58
HINDUSTAN UNILEVER	0.47	0.44	0.45	0.46	0.46

Table: 2 Quick ratios of companies (Source: www.moneycontrol.com)

The above table: 2show the quick ratio of the select companies for the year 2011 to 2015. Quick ratio indicates the ability of the companies to pay very short term liabilities immediately. From the above observation the quick ratio of Emami Company is better than others. Hindustan Unilever shows very low quick ratio as compared to other companies.

4.1.3. Altman's Z-score(revised model)

ALTMAN Z-SCORE(ALTMAN,1993)					
YEAR	**2015**	**2014**	**2013**	**2012**	**2011**
COMPANY'S NAME					
BRITANNIA INDUSTRIES	6.71675	5.6534	4.29283	1.05145	2.75386
COLGATE PALMOLIVE (INDIA)	7.36272	7.62912	11.4304	11.5838	12.162
EMAMI	5.33628	5.83487	5.3777	4.70022	5.21836
GODREJ CONSUMER PRODUCTS	3.07059	2.33864	3.28937	3.27654	3.0292
HINDUSTAN UNILEVER	3.96846	2.88566	2.73315	3.9233	3.62338

Table: 3 Altman's Z-score of the companies.

(Z score< 1.10 - Very high chance of Bankruptcy, Z>2.60– Safe Zone, Z = Between 1.10 to 2.60 indicates Grey area).

The above table: 3 show the revised Z-score of select companies. For the year 2015 the Z-score of all companies show good position and very less chance of bankruptcy (all above limit of 2.60). Except Britannia industries in the year 2012 and Godrej (2014), no company was in financial distress in last five year. The Z-score for last three year of all company is above 2.60 (except Godrej, 2014), which indicates sound financial position of the companies.

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5. Conclusion:

The study concludes that as earlier studies suggests Z-score is one of popular and effective model, all investors should analyze the Z-score of company before investment decision to avoid financial loss because of financial failure. The study applies Z-score in select FMCG companies to analyze the chances of bankruptcy for the period five years. All companies have very good financial position in last three year (except Godrej, 2014). Along with traditional ratios if Z-score will be calculated it will give a better perspective for sound decision making. Also studies may be conducted to develop a model in Indian context.

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