

DETERMINATION OF FINANCIAL SOUNDNESS OF PHARMACEUTICAL COMPANIES LISTED IN BSE: THE APPLICATION OF ALTMAN'S Z-SCORE MODEL

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Abstract

There is an increase in the prediction of bankruptcy through models after the financial crises happened in 2008. This study aims to examine the financial soundness of the companies listed in the Pharmaceutical sector companies in Bombay stock exchange. Companies have developed various systems for alarming models to predict the bankruptcy situation and the most admired model is Altman Z score model. This model examines the financial soundness of company aiming of financial distress of that particular company. This paper examines the financial distress risk for the Pharmaceutical sector companies listed in Bombay stock exchange and threat of bankruptcy can be examined by this model.

Keywords: Altman, Z-score, Healthcare, BSE, Financial distress.

INTRODUCTION

The Pharmaceutical companies have also come to be marked by the outsourcing; which means many companies make a contract with outsider supplier and research firms or some specialty manufacturers to carry out parts of the drug evolution process for them. And other companies seek to conserve maximum of the processes within their own company. Since the pharmaceutical industry is possessed largely by profits and competition with each other. To check the feasibility of company is being bankrupt can be done through Altman Model (**Altman 1968**). The Z model popularly known as ALTMAN Z-Score Model, Propounded by Professor of University of New York, USA in 1960's. The model was elaborated through five ratio's combination and reflects the bankruptcy stages of a firm/company. The concept was evaluated in 1960's, new for the firm's at that time. Altman used multivariate techniques to find out the crux.

REVIEW OF LITERATURE

In this time suggested that a gap has arisen between —theory (more rigorous statistical techniques with sophisticated models) and practical (traditional ratio analysis with data from financial statements) – and empirical verification would ensure that that gap could be bridged again. The questions which ratios are the most important in detecting bankruptcy potential, what weights should be attached to those ratios and how the weights should be established, needed to be answered and concluded that the overall performance of the India Cements Ltd. is good (**Altman 1968**). The term Financial Distress is a situation where a firm's operating cash flows are not sufficient to satisfy current obligations and the firm is forced to take corrective action. Financial distress may lead a firm to default on a contract, and it may involve financial restructuring between the firm, its creditors and its equity investors. Sometimes, financial distress leads to bankruptcy. This paper uses Z-score model (Altman's 1968) to predict risk of financial distress of Alembic Pharma, from the year 2004-2010. It is obvious that the Z-score model of alembic pharma is in the grey zone, indicating poor financial performance. Manages should take immediate actions to turn around the company's results. (**D. SASIKALA 2011**) This paper is an attempt to bring home to the readers the concept, practice and the new approach to profitability, liquidity, assets management and overhead cost structure analysis. This research has work with selected oil refineries. The refineries like BPCL, IOC, HPCL, MRPL, NRL, and CPCL for 10 the period 2007-08 to 2011-12. The financial performance of oil refineries has been measure through various tools like DuPont analysis for ROE, Ratio analysis, Edward Altman model and overhead cost structure. The statistical techniques like analysis of variance and factor analysis are also used for testing the hypothesis. Financial ratios are the simplest tools for evaluating the financial performance of the firm. (**D. Sanghani**

2015) it has advocated that financial ratios to show the financial position and performance analysis of Bangladesh Shilpa Bank. He showed that techniques of financial analysis can be used in the evaluation of financial position and performance of financial institution as well as non financial institutions even Development Financial Institutions (DFI). Altman (1968) used financial ratios to predict corporate bankruptcy. He found that the bankruptcy model has an accuracy rate of 93% and is very successful in predicting failed and non-failed firms. **(Hannan &Shaheed 1979)** Used financial ratios to show the financial position and performance analysis of Bangladesh Shilpa Bank. He showed that techniques of financial analysis can be used in the evaluation of financial position and performance of financial institution as well as non financial institutions even Development Financial Institutions (DFI). Altman (1968) used financial ratios to predict corporate bankruptcy. He found that the bankruptcy model has an accuracy rate of 93 per cent and is very successful in predicting failed and non-failed firms. **Hannan et al (1979)** used Altman's MDA model to check the bankruptcy position of Chittagong Steel Mills Ltd. The author found that absences of realistic goals, strict govt. regulation are the main reasons for the lowest level of bankruptcy **(Saleh et al 1996)** —An Analysis of the Efficacy of the Altman and Springate Bankruptcy Models in Companies Listed on the Stock Exchange of Thailand| This thesis was written to present the findings of a research study which compares the predictive ability of the Altman (1968) and Springate (1978) Multiple Discriminant Analysis models of bankruptcy prediction. A sample of 30 bankrupt and 30 solvent firms was taken from the database at the Stock Exchange of Thailand which ranged from the years 2006 – 2012. The results of the study indicate that while both models exhibit predictive accuracy at various rates over the time frame studied neither model proves to be statistically significantly better at predicting the bankruptcy status of a firm. Even so, this study still adds incremental knowledge in two ways. First, the bankruptcy models are being used to predict delisting instead of bankruptcy filing. Second, using an established model in various markets such as Altman's (1968) Z-score as a baseline predictor and comparing to the Springate (1978) model which has not been applied in the Thai market, specifically in predicting a firm's delisting. **(Michael Haseley 2012)**. Testing of Altman's Z-Score model, a case study of Dunlop India Ltd., this research paper published in Indian Journal of Research. This paper attempts to study how much Z-score is viable in bankruptcy of the said company. The Altman's Z-score has been employed to investigate the risk of financial distress of Dunlop India Ltd. from 2007-08 to 2011-12 **(Partha Ghosh 2013)**. Z-Score Estimation for Indian Banking Sector| From traditional times the Z-score values have been constantly used for prediction of Bankruptcy. This has been vital to both the lenders and investors whose returns are based on solvency estimates. The terms of credit have gone an U-turn from the traditional times to the modern scenario today. The basic concern of prediction is to evaluate the terms of credit and ensure repayment safely. Z-score has been used as a tool to evaluate the credibility of the firms. This paper provides the Z-score value for the public sector banks. This value is useful when these banks demand loans from the RBI or any other funding agency. The usage of back propagation neural network is to forecast the internal parameters of Z-score and then use these internal parameters to forecast the Z-score value up to 2020. Thus the paper emphasizes the usage of BPNN for prediction of bankruptcy for public sector banks in India **(Roli Pradhan 2014)**. In the study, we conducted an empirical investigation of whether it is possible to rely on two versions of the Altman Model (1968) to predict financial failure of publicly traded companies in Israel between 2000 and 2007. The findings of the study indicated that given the sample and the study term, the preferable model for predicting financial failure of Israeli companies is the Ingmar version of the Altman Model with a critical value of 1 and with the addition of the grey area. In particular, a survival index above 1 predicts a high likelihood of survival, while a lower index predicts low likelihood of survival. According to our study, the model is able to predict bankruptcy of companies with a 95% accuracy rate one year prior to bankruptcy and with an 85% accuracy rate two years prior to bankruptcy **(Shilo Lifschutz & Arie Jacobi 2010)**.

Research Methodology

Research is a systematic and scientific search for relevant information on a specific subject, the process used to collect information and data for the purpose of decisions, systematic inquiry that investigates hypothesis, suggests new interpretations of data and poses new questions for future research to explore. In short, research means a detailed study of a subject, especially in order to discover new information or reach new understanding information and facts for the advancement of knowledge. Research methodology term is usually considered to include research design, data gathering and data analysis (C R Kothari,2015)

Objectives of study

1. To find out the relationship between liquidity, solvency and profitability of selected pharmaceutical companies.
2. To predict the pharmaceutical companies bankruptcy structure.

Hypothesis of Study

1. There is no significance difference between the relationship between liquidity, solvency and profitability of selected pharmaceutical companies.
2. There is no significance difference between bankruptcy structure in pharmaceutical companies.

To check the consistency and stability of selected companies time period should be longer. So, the period of study has considered for ten years i.e. financial year 2004-2005 to 2013-2014. The universe of the study consists of all the limited companies working in India and listed in stock exchanges of India. In the present study, the analysis of Thirty Pharmaceutical companies in India having time span of 2004-2005 to 2013-2014. The selection of pharmaceutical companies of Indian Pharmaceutical Industry is based on the segment that the companies which produce medicines and other pharmacy products. Overall, ten companies have selected. Analysis has done through SPSS software.

Explanation and analysis of facts and figures

Altman found that Ratio's put a great effect on company's performance and to investigate the same thing he had evaluated 66 companies and their 22 type of ratio's and moreover classified the ratios in five parts as follows:

1. Ratio related to Liquidity
2. Ratio related to profitability
3. Ratio related to Leverage
4. Ratio related to Solvency
5. Ratio related to Activity

The Find out the value of Z the formula is as under:

$$Z = 6.56T1 + 3.26T2 + 6.72T3 + 1.05T4$$

$$T1 = (\text{Current Assets}-\text{Current Liabilities}) / \text{Total Assets}$$

$$T2 = \text{Retained Earnings} / \text{Total Assets}$$

$$T3 = \text{Earnings before Interest and Taxes} / \text{Total Assets}$$

$$T4 = \text{Book Value of Equity} / \text{Total Liabilities}$$

Remarks showing Indicator for Altman's Z score model:

1 If the value shows the figure Less than 1.1 it reflects the firm/company status as Insolvent- and also shows the distress period.

1 Value Between 1.1-2.66 shows the Healthy sign for firm/company and company may bankrupt in coming time.

2 Value above 2.6 reflects the secure situation for a company and financial matters have a great impact on solvency and considered to be safe.

T1 working capital / total asset

Working Capital is also known as life blood of business and it works like a fuel for business, as the whole of the activities of business depends upon working capital for day to day work or operations. Company is efficient, healthy and liquidity is there can be better judged with the help of working capital. Working capital comprises stock, bills receivable, trade debtors, bills payable, trade creditors and cash due within a year. Working capital may be of two types i.e positive working capital and negative working capital. Positive working capital shows that a firm can pay its liabilities of short run positively and vice versa for negative working capital..

The total assets reflect the value of firm and the T1 value calculation is as follows:

$$T1-\text{Working Capital/Total assets}$$

T2 retained earnings / total assets

Retained Earnings are the amount kept by business for reinvesting as the percentage of some amount saved and is not paid to shareholders as dividends. Retained Earnings to Total Assets ratio. Thhe calculation is as follows:

$$T2-\text{Retained earnings/total assets}$$

T3 Operating earnings / total assets

Operating earnings basically deals with earnings before interest and taxes and ratio of EBIT over total assets reflects situation and condition of profitability and assets position of a company.

This ratio is calculated as follows:

T4-Earnings before interest and tax /Total assets

T4 Market value of equity / book value of total liabilities

Market Value of Equity is the total current market value of all common and preferred shares on the other side Book Value of Total Liabilities is the sum of all current and long-term liabilities of a firms' balance sheet.. For calculation of debt-equity ratio divide the firm's equity with the total amount of debt.

Z-SCORE EXPLANATION

Table- 1 Z-Score indicator Table for Sun Pharma ltd.

S. No.	Year\Company name	Z-Score	Zones of discrimination	Indicator	Indicator(Based on Average of all years selected)
1	2013-2014	-1.61754	Distress Zone	Insolvent	0 (Insolvent)
2	2012-2013	0.01637	Distress Zone	Insolvent	
3	2011-2012	0.73568	Distress Zone	Insolvent	
4	2010-2011	1.65505	Distress Zone	Insolvent	
5	2009-2010	0.64055	Distress Zone	Insolvent	
6	2008-2009	0.04544	Distress Zone	Insolvent	
7	2007-2008	0.06833	Distress Zone	Insolvent	
8	2006-2007	0.23256	Distress Zone	Insolvent	
9	2005-2006	-0.78688	Distress Zone	Insolvent	
10	2004-2005	-1.39066	Distress Zone	Insolvent	

Structure of Z score and Its Results for Sunpharma

It has deduced from the above table that the most of the Z values are less than 1.1 the minimum Standard level fixed under Altman's Z score model and also reflects the distress Zone for Pharmaceutical firms/companies. The Average proportion shows the zero(O) value of Z-Score and moreover reflects that in all the years Sunpharma Ltd. Was in distress Zone and declared as insolvent as per the model as shown.

Table 2 Z-Score indicator Table for Lupin Ltd.

S. No.	Year\Company Name	Z-Score	Zones of discrimination	Indicator	Indicator(Based on Average of all years selected)
1	2013-2014	-0.6258	Distress Zone	Insolvent	-0.00000020 (Insolvent)
2	2012-2013	1.02289	Distress Zone	Insolvent	
3	2011-2012	0.34644	Distress Zone	Insolvent	
4	2010-2011	-0.85406	Distress Zone	Insolvent	
5	2009-2010	1.07627	Distress Zone	Insolvent	
6	2008-2009	1.06532	Distress Zone	Insolvent	
7	2007-2008	0.15967	Distress Zone	Insolvent	
8	2006-2007	-1.76596	Distress Zone	Insolvent	
9	2005-2006	0.58608	Distress Zone	Insolvent	
10	2004-2005	-1.40187	Distress Zone	Insolvent	

4.21.1 Structure of Z score and Its Results Lupin

It has deduced from the above table that the most of the Z values are less than 1.1 the minimum Standard level fixed under Altman’s Z score model and also reflects the distress Zone for Pharmaceutical firms/companies. The Average proportion shows the zero(O) value of Z-Score and moreover reflects that in all the years Lupin Ltd. Was in distress Zone and declared as insolvent as per the model as shown.

Table 3 Z-Score indicator Table for Cadila Health

Year\Company name	Z-Score	Zones of discrimination	Indicator	Indicator(Based on Average of all years selected)
2013-2014	-1.50726	Distress Zone	Insolvent	0 (Insolvent)
2012-2013	-0.49805	Distress Zone	Insolvent	
2011-2012	1.85848	Grey Zone	Secure	
2010-2011	1.37861	Grey Zone	Secure	
2009-2010	-0.67025	Distress Zone	Insolvent	
2008-2009	-0.66896	Distress Zone	Insolvent	
2007-2008	-0.10705	Distress Zone	Insolvent	
2006-2007	0.56914	Distress Zone	Insolvent	
2005-2006	-0.02536	Distress Zone	Insolvent	
2004-2005	-0.42929	Distress Zone	Insolvent	

Structure of Z score and Its Results Cadila Health

It has deduced from the above table that the most of the Z values are less than 1.1 the minimum Standard level fixed under Altman’s Z score model and also reflects the distress Zone for Pharmaceutical firms/companies. The Average proportion shows the zero(O) value of Z-Score and moreover reflects that in all the years Cadila Health Ltd. Was in distress Zone and declared as insolvent as per the model as shown.

Table 4 Z-Score indicator Table for Cipla ltd.

S.No.	Year\Company name	Z-Score	Zones of discrimination	Indicator	Indicator(Based on Average of all years selected)
1	2013-2014	-0.30476	Distress Zone	Insolvent	0.0000010000 (Insolvent)
2	2012-2013	1.90642	Grey Zone	Secure	
3	2011-2012	-0.00974	Distress Zone	Insolvent	
4	2010-2011	-1.39237	Distress Zone	Insolvent	
5	2009-2010	-0.97535	Distress Zone	Insolvent	
6	2008-2009	-0.35867	Distress Zone	Insolvent	
7	2007-2008	1.39372	Grey Zone	Secure	
8	2006-2007	-0.00479	Distress Zone	Insolvent	
9	2005-2006	0.24635	Distress Zone	Insolvent	
10	2004-2005	-0.5008	Distress Zone	Insolvent	

Structure of Z score and Its Results Cipla Ltd.

It has deduced from the above table that the most of the Z values are less than 1.1 the minimum Standard level fixed under Altman’s Z score model and also reflects the distress Zone for Pharmaceutical firms/companies. The Average proportion shows the zero(O) value of Z-Score and moreover reflects that in all the years Cipla Ltd. Was in distress Zone and declared as insolvent as per the model as shown.

Table 5 Z-Score indicator Table for Dr. Reddy labs ltd.

Year\Company name	Z-Score	Zones of discrimination	Indicator	Indicator(Based on Average of all years selected)
2013-2014	0.66612	Distress Zone	Insolvent	0.00000100000 (Insolvent)
2012-2013	0.27403	Distress Zone	Insolvent	
2011-2012	-0.18361	Distress Zone	Insolvent	
2010-2011	-0.56431	Distress Zone	Insolvent	
2009-2010	-0.68331	Distress Zone	Insolvent	
2008-2009	-0.4715	Distress Zone	Insolvent	
2007-2008	1.67871	Grey Zone	Secure	
2006-2007	-0.89201	Distress Zone	Insolvent	
2005-2006	-1.45453	Distress Zone	Insolvent	
2004-2005	1.2814	Grey Zone	Secure	

Structure of Z score and Its Results Dr. Reddy Labs

It has deduced from the above table that the most of the Z values are less than 1.1 the minimum Standard level fixed under Altman’s Z score model and also reflects the distress Zone for Pharmaceutical firms/companies. The Average proportion shows the zero(O) value of Z-Score and moreover reflects that in all the years Dr. Reddy Labs Ltd. Was in distress Zone and declared as insolvent as per the model as shown.

Table 6 Z-Score indicator Table for Piramal Ent. Ltd.

S.No.	Year\Company name	Z-Score	Zones of discrimination	Indicator	Indicator(Based on Average of all years selected)
1	2013-2014	-1.691044	Distress Zone	Insolvent	Insolvent
2	2012-2013	-0.86136	Distress Zone	Insolvent	
3	2011-2012	2.54762	Grey Zone	Secure	
4	2010-2011	1.398736	Grey Zone	Secure	
5	2009-2010	-0.32658	Distress Zone	Insolvent	
6	2008-2009	-0.02356	Distress Zone	Insolvent	
7	2007-2008	-0.123445	Distress Zone	Insolvent	
8	2006-2007	-0.08727	Distress Zone	Insolvent	
9	2005-2006	-0.45213	Distress Zone	Insolvent	
10	2004-2005	-0.26598	Distress Zone	Insolvent	

Structure of Z score and Its Results Piramal Ent. Ltd.

It has deduced from the above table that the most of the Z values are less than 1.1 the minimum Standard level fixed under Altman’s Z score model and also reflects the distress Zone for Pharmaceutical firms/companies. The Average proportion shows the zero(0) value of Z-Score and moreover reflects that in all the years **Piramal Ent. Ltd.** Was in distress Zone and declared as insolvent as per the model as shown.

Table 7 Z-Score indicator Table for Aurobindo ltd.

S.No.	Year\Company name	Z-Score	Zones of discrimination	Indicator	Indicator(Based on Average of all years selected)
1	2013-2014	1.20723	Distress Zone	Insolvent	0.000000 (Insolvent)
2	2012-2013	-1.58495	Distress Zone	Insolvent	
3	2011-2012	0.02358	Distress Zone	Insolvent	
4	2010-2011	1.14191	Distress Zone	Insolvent	
5	2009-2010	-1.1354	Distress Zone	Insolvent	
6	2008-2009	0.17849	Distress Zone	Insolvent	
7	2007-2008	-1.2264	Distress Zone	Insolvent	
8	2006-2007	-0.11451	Distress Zone	Insolvent	
9	2005-2006	-0.3156	Distress Zone	Insolvent	
10	2004-2005	1.4878	Grey Zone	Secure	

Structure of Z score and Its Results Aurobindo Pharma Ltd.

It has deduced from the above table that the most of the Z values are less than 1.1 the minimum Standard level fixed under Altman’s Z score model and also reflects the distress Zone for Pharmaceutical firms/companies. The Average proportion shows the zero(O) value of Z-Score and moreover reflects that in all the years Aurobindo Pharma Ltd. Was in distress Zone and declared as insolvent as per the model as shown.

Table 8 Z-Score indicator Table for Glenmark Ltd.

S.No.	Year\Company name	Z-Score	Zones of discrimination	Indicator	Indicator(Based on Average of all years selected)
1	2013-2014	-1.07208	Distress Zone	Insolvent	-0.000001 (Insolvent)
2	2012-2013	0.17107	Distress Zone	Insolvent	
3	2011-2012	-2.05967	Distress Zone	Insolvent	
4	2010-2011	-0.5456	Distress Zone	Insolvent	
5	2009-2010	-1.17203	Distress Zone	Insolvent	
6	2008-2009	0.46387	Distress Zone	Insolvent	
7	2007-2008	-0.03773	Distress Zone	Insolvent	
8	2006-2007	-0.38995	Distress Zone	Insolvent	
9	2005-2006	0.24273	Distress Zone	Insolvent	
10	2004-2005	3.40052	Grey Zone	Secure	

Structure of Z score and Its Results Glenmark Ltd.

It has deduced from the above table that the most of the Z values are less than 1.1 the minimum Standard level fixed under Altman’s Z score model and also reflects the distress Zone for Pharmaceutical firms/companies. The Average proportion shows the zero(O) value of Z-Score and moreover reflects that in all the years Glenmark Ltd. was in distress Zone and declared as insolvent as per the model as shown.

Table 9 Z-Score indicator Table for Torrent Pharma. Ltd.

S.No.	Year\Company name	Z-Score	Zones of discrimination	Indicator	Indicator(Based on Average of all years selected)
1	2013-2014	0.83735	Distress Zone	Insolvent	0 (Insolvent)
2	2012-2013	0.86023	Distress Zone	Insolvent	
3	2011-2012	-0.80918	Distress Zone	Insolvent	
4	2010-2011	-0.20244	Distress Zone	Insolvent	
5	2009-2010	-0.98162	Distress Zone	Insolvent	
6	2008-2009	-0.11065	Distress Zone	Insolvent	
7	2007-2008	0.07178	Distress Zone	Insolvent	
8	2006-2007	-0.75281	Distress Zone	Insolvent	
9	2005-2006	-1.30066	Distress Zone	Insolvent	
10	2004-2005	1.388	Grey Zone	Secure	

Structure of Z score and Its Results Torrent pharma

In all years, Z-Score of Torrent pharma Ltd. was below 1.1 and that is declining trend of performance. On an average Z-Score value is 0, this is also stating the fact that the Torrent pharma was insolvent. From Table, we can see that Torrent pharma Gross financial position is insolvent and trend shows that performance is getting worse.

Table 10 Z-Score indicator Table for Glaxo Smith Kline Ltd.

S.No.	Year\Company name	Z-Score	Zones of discrimination	Indicator	Indicator(Based on Average of all years selected)
1	2013-2014	1.93595	Grey Zone	Secure	-.00001 (Insolvent)
2	2012-2013	0.80651	Distress Zone	Insolvent	
3	2011-2012	0.47848	Distress Zone	Insolvent	
4	2010-2011	0.51342	Distress Zone	Insolvent	
5	2009-2010	0.44796	Distress Zone	Insolvent	
6	2008-2009	-0.28257	Distress Zone	Insolvent	
7	2007-2008	-0.86684	Distress Zone	Insolvent	
8	2006-2007	-0.93588	Distress Zone	Insolvent	
9	2005-2006	-1.08364	Distress Zone	Insolvent	
10	2004-2005	-1.0134	Distress Zone	Insolvent	

Structure of Z score and Its Results GlaxoSmithKline Ltd.

It has deduced from the above table that the most of the Z values are less than 1.1 the minimum Standard level fixed under Altman’s Z score model and also reflects the distress Zone for Pharmaceutical firms/companies. The Average proportion shows the zero(O) value of Z-Score and moreover reflects that in all the years GlaxoSmithKline Ltd. Was in distress Zone and declared as insolvent as per the model as shown.

Table 11: Anova: Two-Factor Without Replication

Anova: Two-Factor Without Replication				
<i>SUMMARY</i>	<i>Count</i>	<i>Sum</i>	<i>Average</i>	<i>Variance</i>
Row 1	7	82.9	12.16	82.90557
Row 2	7	86.1	11.12	82.3519
Row 3	7	74.94	12.25	85.84749
Row 4	7	75.3	13.12	80.53536
Row 5	7	45.5	16.75	148.2784
Row 6	7	58.1	18.31	144.4337
Row 7	7	65.5	3.30	188.8598

Row 8	7	75.1	8.30	86.9533
Row 9	7	87.9	5.70	72.6567
Row 10	7	78.8	7.00	90.71255
Column 1	10	3E-04	3E-06	20.55328
Column 2	10	71.92119	9.192119	3.156649
Column 3	10	242.3579	23.23579	3.116404
Column 4	10	157.5313	15.55313	1.603718
Column 5	10	25.6332	2.06332	0.047713
Column 6	10	222.1803	21.01803	2.559426
Column 7	10	3E-05	3E-06	30.55328

Source: SPSS Output
Table 12 Anova results

ANOVA						
Source of Variation	SS	df	MS	F	P-value	F crit
Rows	208.1319	9	23.12577	2.863003	0.007788	2.05852
Columns	5909.026	6	984.8377	121.9243	1.43E-29	2.271989
Error	436.1824	54	8.077452			
Total	6553.34	69				

Source: SPSS Output

From the table 11 and 12, it has cleared and concluded that Correlation of T1 with Z is 0.058157 and it is positive hence the null hypothesis is rejected and alternate hypothesis is accepted. Also correlation of T2 with Z, T3 with Z, T4 with Z and T5 with Z are positive so null hypothesis is rejected and alternate hypothesis is accepted. So all null hypotheses will be rejected and all alternate hypothesis will be accepted. It can be found that coefficient of T1=71.92119, T2=242.3579, T3=157.5313, T4=25.6332, T5=222.1803 and Constant C=-3E-05. As R²=100%, all independent variable together explain the dependent variable. Here, Significance level is 0.01 and our Probability (F-Statistics) is 0. So Significance level is 0.01 greater than the Probability (F-Statistics), as a result all alternate hypothesis will be accepted and null hypothesis will be rejected. And the model is good fit. So, there is no Significance Difference between Relationship between Liquidity, Solvency and profit ability of Selected Pharmaceutical Companies.

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