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CONTENTS

Sr. No.	TITLE & NAME OF THE AUTHOR (S)	Page No.
1.	**ANTECEDENTS OF NON-GOVERNMENTAL ORGANIZATIONS' EFFECTIVENESS** *DR. M.S.A. MAHALINGA SHIVA, DR. DAMODAR SUAR & DR. SANTANU ROY*	1
2.	**CRITICISING THE IMPLEMENTATION OF THE SERVQUAL MODEL IN GENERIC INDUSTRIES** *TAMEEM AL BASSAM & SARMAD AL SHAWI*	9
3.	**TOWARDS A MODEL FOR ENHANCING CONSUMER TRUST IN AN ONLINE ENVIRONMENT** *PRIYANKA MEHARIA, BISWAJIT PANJA & JUAN HU*	14
4.	**A RESEARCH STUDY ON ORGANIZATIONAL CULTURE IN COMMERCIAL BANKS (A CASE OF SELECTED BANKS IN HAWASSA CITY OF ETHIOPIA)** *DR. BREHANU BORJI & DR. ARAVIND SOUDIKAR*	19
5.	**THE IMPACT OF MICRO FACTOR OPPORTUNITY ON ENTRAPRENEURIAL SUCCESS OF SMES – A CASE STUDY ON COMMERCIAL FAST FOOD SMES** *DR. ANSIR A. RAJPUT, WASEEM AHMED, SYED JEHANZEB JAVED & SEHRISH JEHANGIR*	25
6.	**ANALYSIS OF INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) ADOPTION/USE FACTORS AMONG RWANDAN COMMERCIAL BANKS** *MACHOGU, M. ABIUD & DR. EGWAKHE, A. JOHNSON*	30
7.	**A STUDY ON IDENTIFICATION OF CONTEXTUAL KEY FACTORS IN PERFORMANCE APPRAISAL IN PUBLIC SECTOR ENTERPRISES IN INDIA** *DR. KAIPA RAGHURAM SHASTHRY & DR.VIMALA SANJEEVKUMAR*	35
8.	**GROWTH AND PERFORMANCE OF HOUSING FINANCE COMPANIES IN INDIA: A CASE STUDY WITH REFERENCE TO HOUSING DEVELOPMENT FINANCE CORPORATION** *DR. D. GURUSWAMY*	40
9.	**TRAVEL MOTIVATIONS AND DESTINATION SELECTION: A CRITIQUE** *W.K. ATHULA GNANAPALA*	49
10.	**ROLE OF INFORMATION TECHNOLOGY IN BUSINESS** *DR. R. KARUPPASAMY & C. ARUL VENKADESH*	54
11.	**ASSESSMENT OF SERVICES OF TEACHING HOSPITALS IN THE CHANGING GLOBAL SCENARIO** *ARCHANA MISHRA & DR. RITU BHATTACHARYYA*	58
12.	**PROVOCATIVE SELLING TECHNIQUE AT THE BOTTOM OF THE PYRAMID IN A RECESSIONARY SITUATION: STUDY ON UNIFORM MANUFACTURING INDUSTRY - IN AND AROUND KOLKATA** *BHUDHAR RANJAN CHATTERJEE & SUKANYA CHATTERJEE*	63
13.	**CONSUMER BEHAVIOUR TOWARDS SMALL CARS - A CASE STUDY OF NALGONDA DISTRICT IN A. P.** *DR. G. RAMA KRISHNA, D.K. PRATHIBHA, S. DESE NAIK & A. RAMA CHANDRAIAH*	67
14.	**A STUDY ON THE BARRIERS AFFECTING THE GROWTH OF SMALL AND MEDIUM ENTERPRISES IN INDIA** *DR. KRISHNAVENI MUTHIAH & SUDHA VENKATESH*	77
15.	**A MEDICAL IMAGE COMPRESSION TECHNIQUE** *K. S. SELVANAYAKI & DR. RM. SOMASUNDARAM*	82
16.	**HIGH ENGAGEMENT & LOW ATTRITION – A STUDY OF THE TELECOM INDUSTRY IN INDIA** *LRK KRISHNAN & DR. A SETHURAMASUBBIAH*	85
17.	**ANALYTICAL STUDY ON EMPLOYEE SATISFACTION [CASE STUDY OF GAMMON INDIA LTD. (T & D BUSINESS), MIDC, BUTIBORI, NAGPUR]** *DR. SHINEY CHIB*	96
18.	**INNOVATION IN HIGHER EDUCATION ADMINISTRATION THROUGH ICT** *J. MEENAKUMARI*	104
19.	**THE IMPACT OF WORKING CAPITAL MANAGEMENT ON PROFITABILITY: EVIDENCE FROM SUGAR INDUSTRY IN INDIA** *GOPINATHAN RADHIKA & DR. RAMACHANDRAN AZHAGAIAH*	107
20.	**A STUDY ON MOBILE PAYMENT SYSTEMS AND SERVICES** *CHANDRAKANT D. PATEL*	113
21.	**SERVICE QUALITY IN HIGHER EDUCATION** *DR. NARINDER TANWAR*	118
22.	**CONSUMER BUYING BEHAVIOUR ON MOBILE PHONE: A COMPARATIVE STUDY** *ANIL KUMAR*	122
23.	**EVALUATING FINANCIAL HEALTH OF DR. REDDY'S LABORATORIES THROUGH 'Z' SCORE THEORY- A CASE STUDY** *DR. SHITAL P. VEKARIYA*	128
24.	**EFFECT OF BARRIERS IN CREATION OF KNOWLEDGE** *VIDYA L.HULKUND*	131
25.	**THE ELECTRONIC-NOSE TECHNOLOGIES IN HEALTHCARE AND BIOMEDICINE: A CASE STUDY** *M.NAVEEN KUMAR*	134
	REQUEST FOR FEEDBACK	138

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   STATEMENT OF THE PROBLEM

   OBJECTIVES

   HYPOTHESES

   RESEARCH METHODOLOGY

   RESULTS & DISCUSSION

   FINDINGS

   RECOMMENDATIONS/SUGGESTIONS

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EVALUATING FINANCIAL HEALTH OF DR. REDDY'S LABORATORIES THROUGH 'Z' SCORE THEORY- A CASE STUDY

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ABSTRACT

Most of the internal users as well external users like shareholders, government, bankers, creditors, financial institutions etc. focus on the success and solvency position of the company with whom they are dealing. The absolute figures presented in financial statements and accounts do not serve this object. As there are many accounting tools like ratio analysis, decision theory etc. used for analysis but again they shows absolute result through which the present position can be judged not the future. Edward Altman, Professor of Finance at New York University was the first person who developed a model known as "Z score Model" to predict the financial health of the business enterprise. In the present research paper an attempt is made to predict the financial health of Dr. Reddy Laboratories for the 2001-02 to 2010-11 i.e. for 10 years using modified Altman's model.

KEYWORDS

Pharmaceutical company, Active Pharmaceutical Ingredients (APIs), Custom Pharmaceutical Services (CPS)

INTRODUCTION

The Z Score is also a critical business tool which utilizes to inform how to improve the financial health of the business. Z Score factors that contribute to under-performance; working capital, earnings retention, profitability and leverage can be isolated. This enables managers to initiate actions to improve the score of these factors contributing to financial unhealthiness. Focus areas for managers to improve Z Score are on earnings/ (losses), capital expenditures, equity and debt transactions. It includes:

1. Earnings increases working capital and equity.
2. Adjust EBIT by adding back interest expense.
3. Adjust EBIT by adding back income tax expense.
4. Acquiring new long term debt increases working capital, total liabilities and total assets.
5. Depreciation and amortization expense is already included in the earnings but it will increase working capital as noncash items previously deducted.
6. Capital Expenditures decrease working capital as cash is used to pay for them.

BRIEFING OF DR. REDDYS LABORATORIES

Established in 1984, Dr. Reddy's Laboratories Ltd. is an integrated global pharmaceutical company, committed to providing affordable and innovative medicines for healthier lives. Through its three businesses - **Pharmaceutical Services and Active Ingredients, Global Generics and Proprietary Products** – Dr. Reddy's offers a portfolio of products and services including Active Pharmaceutical Ingredients (APIs), Custom Pharmaceutical Services (CPS), generics, biosimilars, differentiated formulations and News Chemical Entities (NCEs).

Global Generics business helps to reduce drug costs for individuals and governments by bringing generic drugs to market as early as possible, and making them available to as many patients as possible. Despite the great advances of medical science, there are still many unmet medical needs. The Proprietary Products businesses address some of these unmet medical needs, by developing and bringing to market new drugs.

Through innovation in science and technology, combined with a deep understanding of underlying disease pathways, company develop and commercialise new formulations of approved products. It also develops new chemical entities with improved and well-characterised safety and efficacy profiles.

OBJECTIVE OF THE STUDY

1. To evaluate efficiency and financial performance of the selected company.
2. To forecast financial health of the company.

RESEARCH METHODOLOGY

The present study is based on secondary available on web sites of the company. The period of the study is 2001-2011. The present study is based on K.B.Mehta's Model, the modified version of Altman's model to analyses about the financial health of the Dr. Reddys Laboratories.

LIMITATION OF THE STUDY

1. The present study is based on secondary data.
2. Data are collected only for ten years.
3. Data of only one company has been selected.

REVIEW OF LITERATURE

William H. Beaver (1967) slected five ratio out of thirty financial ratios to study the financial health of 79 successful units and 79 unsuccessful units. The ratios were (i) cash flow to total debt (ii) net income to total assets (iii) total debt to total assets (iv) networking capital to total assets and (v) current assets to current liabilities. It was observed that cash flow to total debt had maximum prediction power among different ratios in the study.

V.Dheenadhyalan (2008) adopted Z score to prredict the corporate failure of steel authority of Indian Limited. The Z score of SAIL showed a rising trend throught the study period and it was concluded that the financial health of the SAIL was good.

Prof. Adward Altman (1968) selected five ratios of twenty two initially considered. He took 33 successful units and 33 bankrupt firms and developed a model popularly known as 'Z score model'.

Johah Aiyabei (2002) applied Z score model to examine the financial performance of small business firms based in kenya and discussed the theoratical aspect of a financially distressed firm based on a cyclical concept.

Mansur A. Mulla (2002) conducted a study to evaluate financial health of textile mills by using Z score model.

In the Indian context, **L.C.Gupta** (1979) attempted a refinement of Beaver's method with the objective of building a forewarning system of corporate sickness. A simple non-parametric test for measuring the relative differentiating power of the various financial ratios were used. The test is based on taking a sample of sick and non-sick arraying them by the magnitude of each ratio to be tested, selecting a cut of point which will devide the array into two classed with a minimum possible number of misclassification and then computing the percentage classification error.

Selvam, M. and others (2004) made a study to predict the financial health and viability of India Cement Ltd. they concluded that the cement company under the study was just on the range of financial collapse.

Krishna Chaitanya (2005) measured the financial distress of IDBI with the help of Altman's Z score to predict that IDBI is not in the health zone and is likely to be insolvent in the near future.

THEORY OF Z SCORE

The generic Z Score is the distillation into a single measure of a number of appropriately chosen financial ratios, weighted and added. If the derived Z Score is above a calculated score, the firm is financially healthy, if below the cut-off, it shows financial failure. The Z Score was first developed by NYU Professor Edward Altman. The Z Score methodology was developed to provide a more effective financial assessment tool for credit risk analysts and lenders. It is employed by credit professionals to mitigate risk in debt portfolios and by lenders to extend loans. It is widely utilized because it uses multiple variables to measure the financial health and credit worthiness of a borrower. The Z Score is an open system and it allows users of the Z Score to understand the variables employed in the algorithm.

The original Z Score formula was as follows:

$Z = 0.012T_1 + 0.014T_2 + 0.033T_3 + 0.006T_4 + 0.999T_5$.

T_1 = Working Capital / Total Assets.

T_2 = Retained Earning / Total Assets.

T_3 = Earning Before Interest and Taxes / Total Assets.

T_4 = Market value of Equity / Book value of Total Liabilities.

T_5 = Sales / Total Assets.

PROF. K.B.MEHATA'S MODEL: INDIAN SCENARIO

Prof. K.B.Mehata has modified Altman's model as per Indian condition.

$Z = 0.717X_1 + 0.845X_2 + 3.107X_3 + 0.42X_4 + 0.995X_5$

X_1 = Net Working Capital to Total Assets which measures liquid assets in relation to the size of the company.

X_2 = Retained Earning to Total Assets which measures profitability.

X_3 =Earning Before Interest and Taxes to Total Assets which measures operating efficiency apart from tax and leveraging factors.

X_4 = Book value of Equity to Book value of Total Debts shows long term solvency position.

X_5 = Net Sales to Total Assets Standard measure sales generating capacity.

According to him following three situations arises,

1. If Z score is < 1.2 then it shows Bankruptcy Zone. Its failure is certain.
2. If Z score is between 1.2 and 2.9 then it shows Grey Zone. In this situation failure is uncertain to predict.
3. If Z score is > 2.9 then it shows Safe Zone. Its shows good financial health of a unit.

TABLE 1: VARIOUS DATA OF DR. REDDYS LABORATORIES

YEAR	NET WORKING CAPITAL (NWC)	TOTAL ASSETS (TA)	RESERVES	EARNING BEFORE INTEREST & TAX (EBIT)	NET SALES	BOOK VALUE OF EQUITY	BOOK VALUE OF DEBT
01-02	1,011.89	1,471.79	1,419.73	470.77	1,493.87	1,457.99	13.82
02-03	1,151.71	1,835.69	1,768.66	431.15	1,533.84	1,806.92	28.76
03-04	929.84	2,105.24	2,008.76	303.35	1,661.22	2,047.02	58.22
04-05	1,366.20	2,347.33	2,035.82	44.38	1,548.76	2,074.08	273.23
05-06	1,599.92	3,186.02	2,223.79	263.78	2,003.26	2,262.14	923.87
06-07	2,773.62	4,703.26	4,289.40	1,357.68	3,783.26	4,373.36	329.90
07-08	1,960.26	5,274.09	4,727.72	582.60	3,343.89	4,811.81	462.31
08-09	2,412.30	5,899.40	5,174.90	729.50	3,999.50	5,259.10	640.30
09-10	1,764.10	6,477.80	5,830.20	1,084.80	4,395.60	5,914.60	563.20
10-11	2,741.60	7,465.00	5,935.60	1,051.90	5,188.50	6,020.20	1,444.80

Source: Data collected from money control.com

TABLE: 2 CALCULATIONS OF VARIOUS RATIOS USED IN Z SCORE OF DR. REDDYS LABORATORIES

	FINANCIAL RATIO	01-02	02-03	03-04	04-05	05-06	06-07	07-08	08-09	09-10	10-11	Mean
X_1	NWC to TA	0.68	0.63	0.44	0.58	0.50	0.58	0.37	0.40	0.27	0.36	0.481
X_2	RETAINED EARNING TO TA (Reserve to TA)	0.96	0.96	0.95	0.87	0.70	0.91	0.89	0.87	0.9	0.79	0.88
X_3	EBIT to TA	0.32	0.37	0.14	0.02	0.08	0.28	0.11	0.12	0.16	0.14	0.174
X_4	BVE to BVD (Equity to Debt)	105.50	62.83	35.16	7.59	2.44	13.25	10.40	8.21	10.50	4.17	26
X_5	NET SALES to TA	1.02	0.83	0.79	0.66	0.63	0.80	0.63	0.67	0.6786	0.69	0.739

Note:

Retained earning is not avilable, therefore reserve is considered as retained earning

As book value of Debt is not availbale, debt eauity ratio is used to replace it.

TABLE 3: STATEMENT SHOWING CALCULATION OF Z SCORE

	01-02	02-03	03-04	04-05	05-06	06-07	07-08	08-09	09-10	10-11
0.717 X_1	0.4875	0.4517	0.3155	0.4159	0.3585	0.4159	0.2653	0.2868	0.1936	0.2581
0.842 X_2	0.8083	0.8083	0.7999	0.7325	0.5894	0.7662	0.7494	0.7325	0.7578	0.6652
3.107 X_3	0.9942	1.1496	0.4350	0.0621	0.2486	0..8699	0.3418	0.3728	0.4971	0.4350
0.42 X_4	44.31	26.3886	14.7672	3.1878	1.0248	5.565	4.368	3.4482	4.41	1.7514
0.995 X_5	1.0149	0.82585	0.7861	0.6567	0.6268	0.796	0.6269	0.6666	0.6666	0.6865
Z score	47.6149	29.6241	17.1037	5.055	2.8481	7.5431	6.3514	5.5069	6.5251	3.7962

FINDINGS

NET WORKING CAPITAL TO TOTAL ASSETS

The ratio of working capital to total assets shows the liquidity posititon of the company. The ratio of working capital to total assets are calculated in table-2. It is observed from the table that the ratio ranges between 0.27 to 0.68. It indicates that during 2001 to 2007 the company is investing funds too much in current assets instead of investing in potential investments and during 2008 to 2011 the ratio was very low which indicate poor working capital management of the company.

RETAINED EARNINGS TO TOTAL ASSETS

The ratio of retained earnings to total assets indicates what was the proportion of fixed assets financed by the retained earning i.e. reserves. As retained earning is free reserves and cheaper source of finance then debt. Table-2 depicted the said ratio. It is observed that 88% fixed assets financed through the retained earning or reserve. This shows very good position of the company because they are more relying on internal source of financing rather than debt.

EARNING BEFORE INTEREST AND TAX TO TOTAL ASSETS

This ratio express operating performance and productivity of the assets wich is mentioned in table-2. This ratio varies from 0.11 to 0.37. During selected period the operating efficiency of the company is very low. Company is unable to operate the fixed assets properly.

BOOK VALUE OF EQUITY TO BOOK VALUE OF TOTAL DEBTS

This ratio is used to find out the long term solvency of the company. The 1:1 ratio is considered as good because excessive use of debt leads to insolvency. Fixed interest paid on debt where as variable dividend paid on equity. If debt is more than equity then it reduces the profit of the company. From the table-2 it shows that company's equity debt proportion is very strong. Company is relaying more on equity rather than debt. During selected period the solvency criteria of the company is best.

NET SALES TO TOTAL ASSETS

Sales plays very important role in the overall performance of the companies because all the operation are more or less depends on that revenue only. Therefore, higher the ratio indicates the better performance and poor ratio indicates the poor financial management of the companies in the optimum utilisation of its assets in generating the sales. Table-2 shows clear picture about the companies utilisation capacity of asset to convert it into the revenue, which is not a reasonable. It is suggested that the company has to take appropriate steps to improve the level of sales revenue as compared to total assets.

SUGGESTIONS

1. During 2001 to 2007 the company is investing funds too much in current assets instead of investing in profitable investments which indicate poor working capital management of the company. Though the company is having safe position but due to improper working capital management may leads the company towards insolvency. So the company has to adopt proper technique of managing working capital.
2. The operating efficiency is very low is not the good sign for the long period. Company has employ and invvest money only in those fixed assets which improve the efficiency as well as profitability.
3. The company's utilisation capacity of asset to convert it into the revenue, is not a reasonable. It is suggested that the company has to take appropriate steps to improve the level of sales revenue as compared to total assets.

CONCLUSION

The Z score of DR. REDDYS LABORATORIES based on modified Altman's model is ranging from 3.7962 to 47.6149 during the study period (i.e. 2001-02 to 2010-11). It is observed from the table-3 that the company is in safe zone. The financial health of the company is very good and safe for long period of time. This study will be useful for the shareholder of pharmaceutical industry.

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