Saurashtra University

Re – Accredited Grade 'B' by NAAC
(CGPA 2.93)

Parmar, Danabhai J., 2006 , *A Comperative Study of Managerial Decision of Selected Units of Saurashtra Units,* thesis PhD, Saurashtra University

THESIS

ON

A COMPERATIVE STUDY OF MANAGERIAL DECISION OF SELECTED UNITS OF SAURASHTRA REGION

SUBMITTED BY :

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FOR

Ph. D. Degree in Management

Under

The Faculty of Commerce

SAURASHTRA UNIVERSITY

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CERTIFICATE FROM GUIDE

This is to certify that thesis titled "A COMPERATIVE STUDY OF MANAGERIAL DECISION OF SELECTED UNITS OF SAURASHTRA REGION" Submitted by *Mr. DANABHAI JESINGBHAI PARMAR* for the award of degree of DOCTOR OF PHILOSOPHY in management under the faculty of commerce, Saurashtra University, Rajkot is based on the research work carried out by him under my guidance and supervision. To the best of my knowledge and belief, it has not been submitted for the award of any degree or diploma.

Guide

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DECLARATION

STATEMENT – I

I hereby declare that the thesis submitted by me on the topic **"A COMPERATIVE STUDY OF MANAGERIAL DECISION OF SELECTED UNITS OF SAURASHTRA REGION"** is prepared by me after studying various references. I also declare that the research work is my original work and has not previously submitted to this or any other University for any degree or award.

STATEMENT – II

The title of my topic is **"A COMPERATIVE STUDY OF MANAGERIAL DECISION OF SELECTED UNITS OF SAURASHTRA REGION"**. The study is mainly based on secondary data and supported with primary data available about corporate sector of Saurashtra region. The main sources of data are annual reports of the selected units of Saurashtra region, published report, journals and websites.

                                                            Researcher

Date :

Place : Rajkot

                                                    (Mr. DANABHAI J. PARMAR)

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Preface

Today industry is one of the pioneers for economic growth of country as a whole. There are many units in industrial sector like textiles, chemical, consumer goods, oil, gas, soda ash, bearing, cement, fertilizer, petroleum etc., which play a significant role in the rapid growth and development of the country. There are enormous changes during past 15 years, especially after the globalization (1991), in manufacturing and technology of information processing. They have dramatically affected the managerial decision-making system. It creates drastic changes in business environment. Now, in this environment those who are not working with management, with strategy or logic, they can not survive for the purpose of managing several business activities like production, marketing, finance and personnel etc. Effective and efficient decision making mechanism must be there.

For the purpose of taking several managerial decisions, business enterprise makes extensive use of financing data, reports and other needful information. It is essential to evaluate all such information use in taking managerial decision. Most of the business enterprises use several statistical techniques to analysis and evaluate all collected information. The key area of my research work is a comparative study of managerial decision and usefulness of statistical tools in managerial decision-making.

The title of the topic of this study is **"A COMPERATIVE STUDY OF MANAGERIAL DECISION OF SELECTED UNITS OF SAURASHTRA REGION".**

There are about 77753 public limited companies listed with stock exchange of India, which have been working in India. Out of them more than 30 public limited companies have been working in Saurashtra region of Gujarat state. The researcher has selected 9 companies as a sample for the study. The present study is made of ten years from 1994-95 to 2003-04.

The study is based on the secondary data and supported with primary data, which are drawn from annual published reports of selected units of Saurashtra region. The primary data is collected by personal contact, through

questionnaire, focus group discussion etc. The other data source is from website, commercial journals, magazines, newspapers, accounting literature etc. have been also used in this study.

I express my sincere thanks and gratitude to **Dr. Girishbhai C. Bhimani**, professor, Department of Business Management, Saurashtra University - Rajkot, who has provided me remarkable and meticulous guidance in my research work from the beginning to the end.

I also express my sincere thanks and gratitude to **Dr. Pratapsinh L. Chauhan,** Professor & Head, Department of Business Management, Saurashtra University – Rajkot, who has provided me remarkable guidance and inspiration in my research work. I am grateful to the honorable principal **Dr. K. R. Parmar** and principal **Dr. J. S. Ramdatti,** who is a source of inspiration of my research work.

I deeply express my thanks to professors **Shri D. R. Rathod, R. V. Keshwara, Jayesh P. Motivaras, H. S. Raninga** and **Smt. Ansuyaben Chaudhari**, who have helped me extremely.

I express my deep sense of gratitude to the executives of selected companies for providing their annual reports and accounts as this work of research was based on this information.

Last but not least, my parents, my wife **Divya** and my kids **Vandana, Deepika & Virat** have provided me with an opportunity of full co-operation and freedom. So how can I forget to express my feeling of thanking them?

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CHAPTER – I

OVERVIEW OF THE SELECTED INDUSTRIES

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1) **INTRODUCTION**

2) **HISTORY AND DEVELOPMENT OF SELECTED CORPORATE UNITS**

3) **IMPACT OF GLOBALIZATION ON INDUSTRIAL SECTORS**

4) **INDUSTRIAL POLICY AND GROWTH AND DEVELOPMENT**

5) **MANAGERIAL DECISION-MAKING SYSTEM**

6) **SUMMARY**

(1) <u>**INTRODUCTION**</u>

I would like to overview regarding the selected industries of Saurashtra Region for my Research study work. Industries are one of the forms of business enterprise. Industry means the unit, which convert the raw material into the finish goods. Industry is the manufacturing unit which is engaged in business of producing the finished goods and put into the market for sales to the final consumer or other industry. For further process, industry is concerned with the large as well as small scale production plant. After the globalizations, so many industries are developed in India with different types of product.

Saurashtra region is distinguished area rather than any other place, from the geographical point of view; there are many potential natural resources for the development of Saurashtra economy. Today, science and technology has more developed. The world is progressing and changing very fast. So every country has to join the economic process. If they want to do speedy economic progress, they must join with them.

From the rank of industrial sector in Indian economy, the development of industrial sector in Gujarat has developed very well. In this ever-changing world, nothing can be static; the business is no exception to this.

Today industry is one of the pioneers for economic growth of country as a whole. Industrial sector provides several kinds of products and services to the society, nation and all other business sectors. At present, nothing can be done without industrial development. There are many units in industrial sector likewise textiles, chemicals, consumer goods, oil, gas, soda ash, bearing, cement etc. especially cement and soda ash industries are the major part of these sectors. Main reasons for development of cement and soda ash industries in Saurashtra are plentiful availability of natural resources and cheap and long sea transportation services. But since last few years so many industrial sectors situated in Saurashtra region are facing various serious problems. Therefore they are suffering from fluctuation period. Up and down situation is found in development of such industrial sectors. One of the strong reasons for such unlikely situation is market of the product and lack of proper

managerial decision-making system. Marketing is the eyes and ears of a business and it is responsible for keeping the business in close contact with its environment and informed event that can influence its operations. On the other side managerial decision making system is one of the unique and powerful tools of controlling and administrating the business activities. At present market for product and managerial decision-making system are both more or less equally important pillars of an enterprise.

(2) HISTORY AND DEVELOPMENT OF SELECTED CORPORATE UNITS

Every unit is running from decades, possesses a glorious history. The history means the post performance of the company the earning capacity and the present standing in the market is the result of the effort done in post.

There are certain measurement for growth and development of industrial sectors. These measurements are increasing shareholders value, achieving global leadership, creating jobs and access high quality human resources. Contributing to national exchequer, gross domestic product, building and increasing brand recognition, good organizational structure, establishing strong team of leaders and highly appreciable social responsibility. The company whether it is family managed business or professionally managed should be fully committed to sustainable development. The company should be customer centric, nimble footed, performance driven and accountable on all fronts.

I have selected nine large-scale units located in Saurashtra Region, which are as follows.

➜ ABRASIVES UNITS

Abrasives Industries means those, which are involved with the production of Amry products. When the crushing process was started in the world, such types of industries were on demand. So many promoters changed their mind and invest in such type of industries. Such industries produce Amry products like glass paper; grinding wheels, white cement etc.

➔ ORIENT ABRASIVES LTD.

The company is engaged in the production and selling of Fused Aluminum Oxide Grains, Calcined products, Bonded Abrasives, Refractories, Monolithic and Ceramic paper. The company has manufactured facilities at Porbandar (Gujarat), Bhiwadi (Rajasthan) and Salem (Tamilnadu). The company was incorporated in the year 1971, initially it setup the Abrasives Grains Division in Porbandar, Gujarat state for manufacture of fused alumina grains in 1975. There after the company established the Bonded Abrasives Division and the Refractory Division in 1980 and 1985 respectively at Bhiwadi, Dist. Alwar, Rajasthan. The Salem plant was setup in the year 1998 at Tamilnadu. Initial investment of unit located in Porbandar was 13 crores, whereas total investment as on 31-3-2004 was more than Rs. 50 crores. Installed capacity of the company for different product is about 1,00,000 M.T. P.a. whereas utilized capacity in the year 2003-2004 was about 90000 M.T. that it 90% of installed capacity is utilized.

[SOURCES: - WEBSITE - PROFILE OF COMPANIES]

Before Orient Abrasives Ltd. established, only 2 more units were established before this

♦ Carborandum Universal.

♦ Grindwell Newton.

So this unit had a big opportunity to earn profit.

Today, ORIENT ABRASIVES LTD. covers about 60% of total market.

→ **PROFITABILITY REVIEW.**

The sales data operating profit (PBT) and Net Profit Ratio of the company for the last ten years are as under;
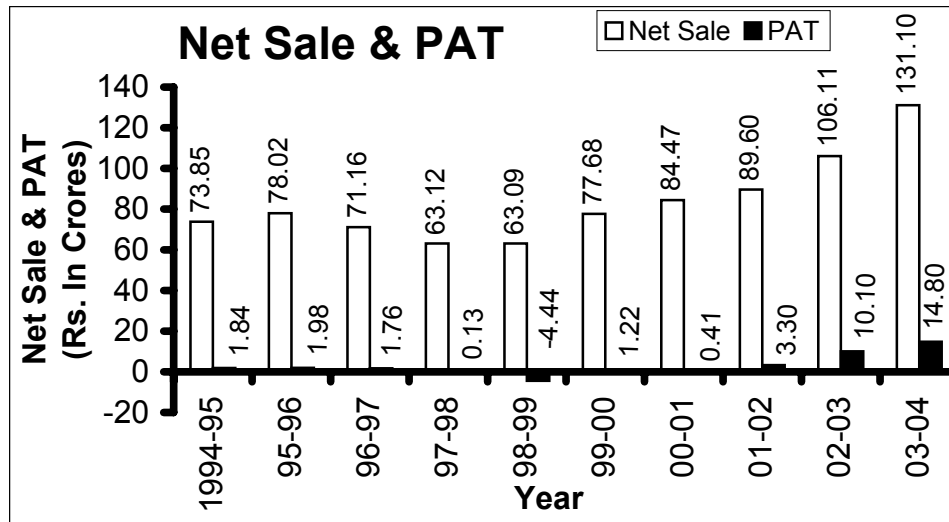
Chart No. 1.1

[SOURCES: - ANNUAL REPORT OF OAL 1994-95 TO 2003-04]

From the above **chart no 1.1** it clears that there is more fluctuation with regard to selling efficiency and profitability during the period from 1994 – 95 to 2003 – 04 but since 2002 –2003 and onward, there is considerable change in this situation. Company has taken effective step to improve the profitability and selling efficiency.

Chart No 1.2
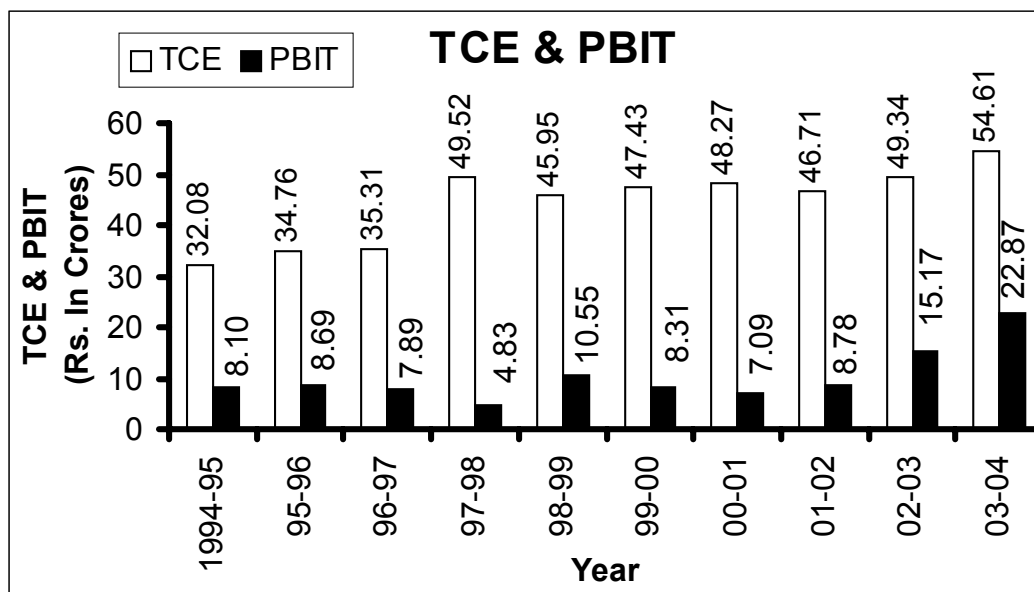
[SOURCES: - ANNUAL REPORT OF OAL 1994-95 TO 2003-04]

From the above **chart no 1.2** we can conclude that the total capital employed of the company has been increasing since 1994-95 to 2003-04. It was Rs 32.08 crores in the year 1994-95 and reached to Rs 54.61 in the year 200304. PBIT was also fluctuated during same period. There is a significant variation in fund utilization efficiency of the company during the period from 1994 – 95 to 2003 – 04.

REVIEW OF FINANCE

The company is having both kind of fund namely own fund and borrowed fund authorized capital is Rs. 1375 Lacs divided into 97.50 Lacs equity shares of Rs 10 each and 4 Lacs 15% Redeemable Preference Shares of Rs. 100 each. The paid up capital is of Rs. 699.23 lacs as on year ended 31-03-2004 divided in 4 lacs Redeemable Preference Shares of Rs. 100 each Equity shares of Rs. 299.980 divided into Rs 10 each fully paid. The long-term Debt Equity Fund and debt Equity ratios of the company for the last Ten years are as under.

Chart No. 1.3
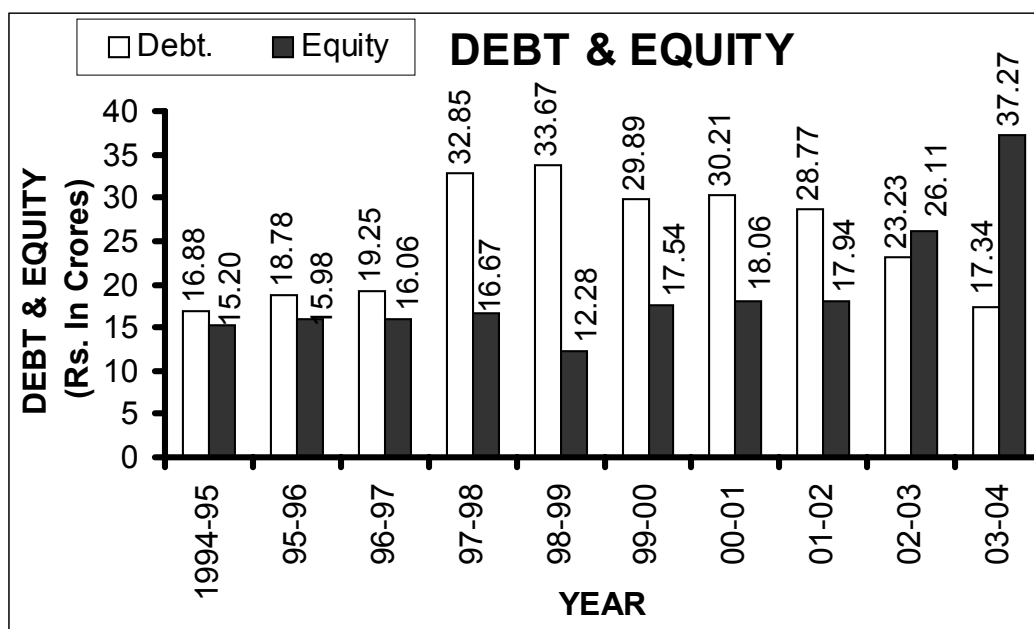
[SOURCES: - ANNUAL REPORT OF OAL 1994-95 TO 2003-04]

From the above **chart no 1.3** it clears that company using liberal debt raising policy so debt equity ratio is more than 1:1 during the period from 1994 – 95 to 2001 – 02 but from 2002 – 2003 it is decreasing, company has repaid the debt to reduced the cost of interest. The company has decided to raise the

required fund through retain earning and other cheaper financial instrument. Company has decided to change from liberal debt raising policy to strict debt raising policy due to considerably decrease in Bank Interest Rate and repaying old debt securities and benchmarking for new cheap debt securities to raise the require fund.

The earning per share and dividend per share of the company is shown as under.

Chart No 1.4

EPS & DPS
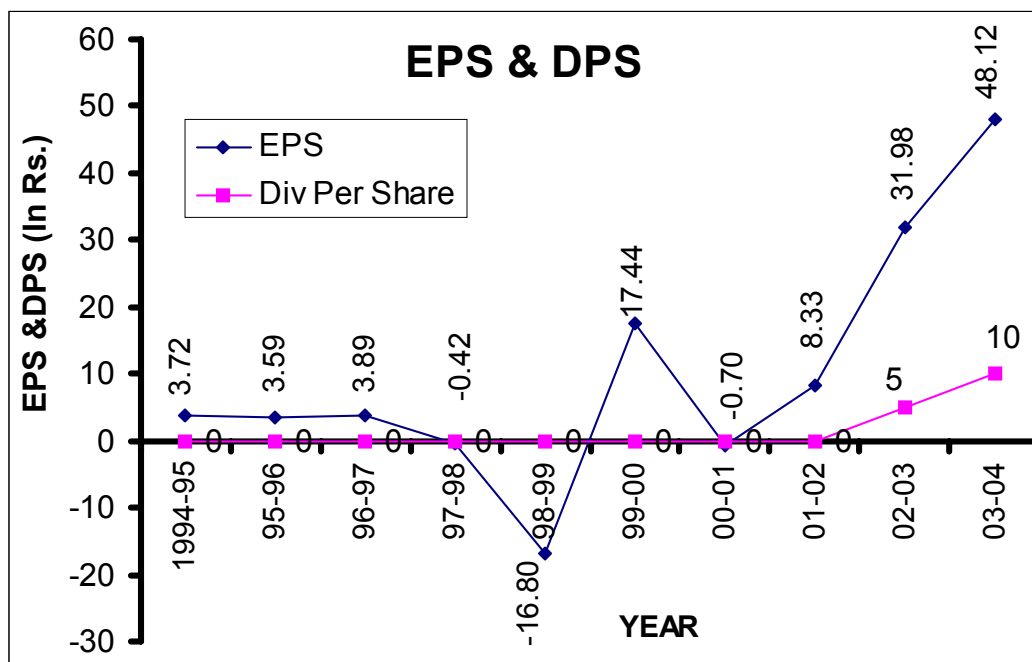
From the above **chart no 1.4** it clears that there are more ups and downs in EPS and MVPS during the period from 1994–95 to 2003–04. During the period 1994–95 to 1996–97 there was no more ups and down in ESP but in the year 1997–98, 1998–99 and 2000–01 EPS was nil during these years company was adversely effected due to lack of demand competition recession period in engineering industries power problem etc. Turnover of the company was considerably decreased and other side there was significantly increase in cost of productions, so margin of profit was not adequate to give some earning to equity share holders but from the year 2001–2002 and onward company has taken major step to decrease cost of interest cost of production

and increase the turnover as a result earning available to Equity shareholders has increased, it effect on EPS.

→ THE COMPANY IS LISTED AT FOLLOWING.

Stock Exchanges

1. The Stock exchange, Mumbai.

2. The Kolkata Stock Exchange Association Ltd.- Kolkata

During the year 2003–2004 the company was awarded ISO 9001:2000 Certification regarding standardization of processes and systems at its plants located at Bhiwadi.

→ INTRODUCTION ABOUT CEMENT INDUSTRIES

In modern era, there are many multistory buildings, small houses, towers, roads, dams etc. for all this purpose cement is a basic material. We can't think about construction of such a big dams, building, houses etc. without cement. Cement proves the doorstep for modernization and development and because of all this, cement industry has become important part in individual life and also in an economy.

The construction industry notices the remarkable growth in the developing countries especially in last few decades. There is growth by leaps and bounds in the industry, which would ultimately results in to the big market for the cement industry.

India is developing country and as we know India is also with the same condition with the large countries in the matter of technology. In India, production of cement was started when India was slave. In India, there was ACC Company in the field of production of Cement and now as we know, there are about 111 companies in the field of cement production in India.

At present, there are only two foreign companies namely Lafarge and Zuary are producing cement, which is selling approximately 5% of share total sale of cement. Other companies are Indian companies and they are

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satisfying total demand of the country and also these companies are exporting cement to the various countries of the world. Also the raw material of the cement is purchased within the country. So we say that India is totally dependent country in the field of cement production.

At present all the machineries are purchased from various countries and total 1,35,000 persons are employed in the cement industries.

Total investment in cement Industry is more than Rs. 25000 crores.

[SOURCES: - WEBSITE - PROFILE OF CEMENT INDUSTRIES]

Out of all the companies of cement Industry, L&T Company is at first rank in production and sales of cement

There are many leading companies in India in the field of production. Some of leading companies are. (1) ACC Cement (2) Grasim Industries (3) L & T (4) Gujarat Ambuja Cement LTD. (5) India Cement (6) Birla Corporation Limited (7) Madras Cements (8) Lafarge India Ltd. etc.

➔ <u>GUJARAT AMBUJA CEMENT LTD.</u>

Every unit is running from decades, possesses a glorious history. The history means the past performance of the company the earning capacity and the present standing in the market is the result of the effort done in past, GACL has also an interesting history.

Initially, in India, there was scarcity of cement. It was sold just like goods sold on ration card and at that time there were few leading companies who had totally control over market. In that period, production and sales of cement was controlled and regulated by government near about 1982. Cement industry was liberated.

GACL is a joint venture of Gujarat Industrial Investment Corporation Limited and Sekhsaria Group. They had launched it in 1983. The project was decided to locate at Mahuva in Bhavnagar district. But due to non-Co-operation and unfavorable circumstances, the location has to be shifted to some other place.

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The Board of Directors has started the different areas and decided to implement their project at Vadnagar of Kodinar taluka in Junagadh district. The construction of plant and building commenced in November 1984.

Government of Gujarat extended its full co-operation in establishing the unit and also in acquiring mines on leased basis. GEB has provided power for the plant construction of double circuit feeder.

The India Technical and Economic service Limited, was appointed as consultant and surveyor for construction of meter gauge railway line from Kodinar to Vadnagar. The company completed all the basic infrastructure facilities required in September 1986. The Gujarat Ambuja Cement Limited produces cement by dry process technology. This technology is brought from KRUPP POLYSTUS (Germany)

In February 1992, they have started for setting a new plant at Ambuja nagar for adjustment to the exiting plant, with the capacity at 9.4 lacs tones per annum. The challenging job completing the project Keeping low cost, completed within record time 13 months. Thus they implanted Gujarat Ambuja -11 unit in raising demand of cement in modern market.

Performance position is the measurement of growth and development of business units. The company's profitability and financial performance is measured using some profitable and financial ratio like Net Profit Ratio, Return on Investment, Debt Equity Ratio, Earning Per Share and Dividend Per Share.

→ **PROFITABILITY REVIEW**

Chart No 1.5
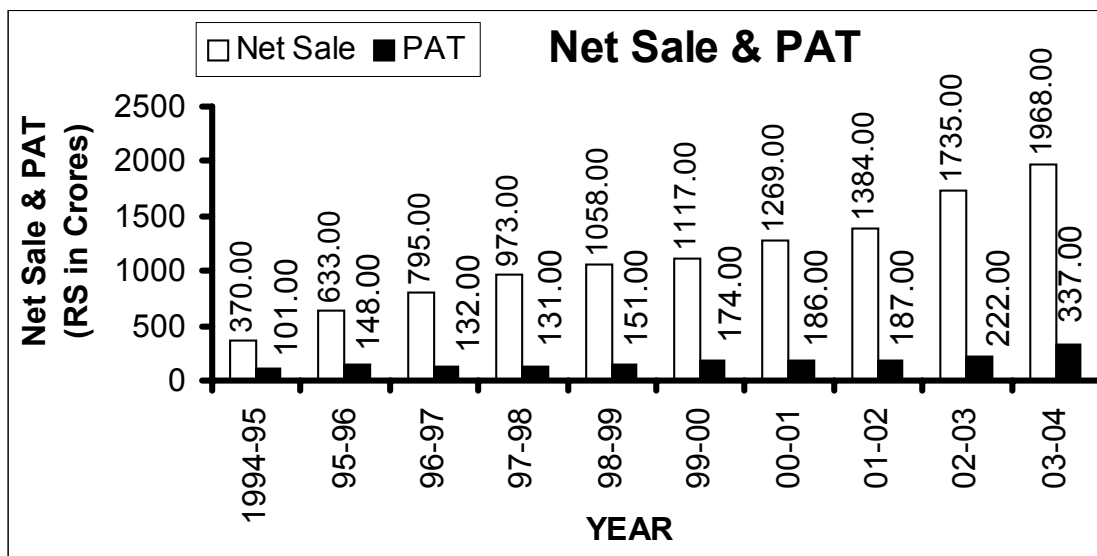
[SOURCES: - ANNUAL REPORT OF GACL - 1994-95 TO 2003-04]

From the above **chart no 1.5** it clears that the sales performance of the company is looking well during the period from 1994–95 to 2003–04, that is due to continuously increase in demand of cement. The Indian economy has been Upswing during the period 94 – 95 to 2003-04. As a result of this GDP rate is also going to increase every year. Therefore company is getting good opportunity for pushup the market of cement. The business activities in term of turnover & earning of the company are shown in the form of chart as under.

Chart No 1.6
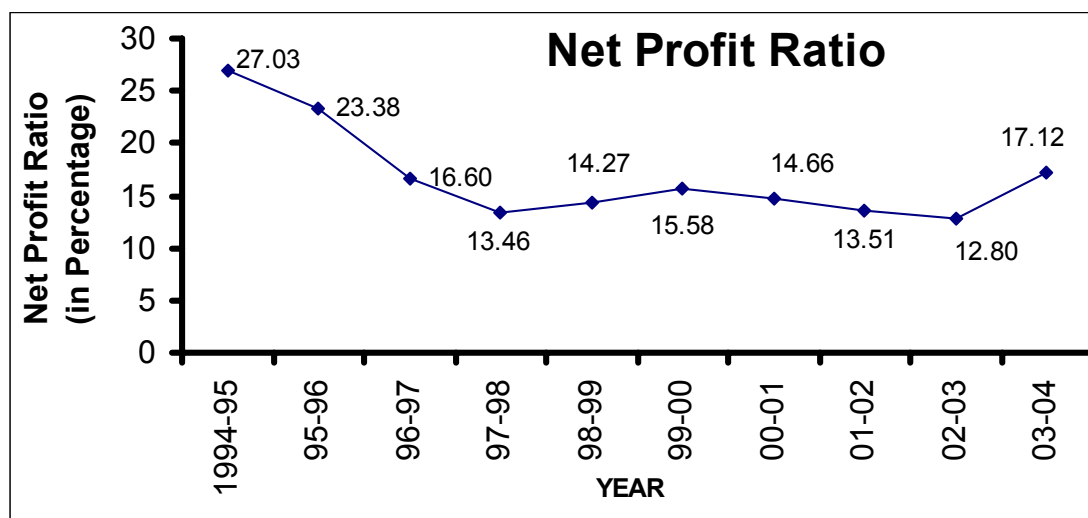
[SOURCES: - ANNUAL REPORT OF GACL - 1994-95 TO 2003-04]

From the above stated **chart no 1.6** it clears that turnover of the company is increasing every year but on other side earning is continuously decreasing from 1994 – 95 to 1997 – 98. That is due to continuously increase in cost of coal, Raw material, power, freight, interest etc. so margin of profit is decrease competition is increase and price of cement is also decrease but from 98 – 99 earning is start to increase. The new government (BJP) announced lot many project for growth of economy. New government has emphases on education agriculture water and measures for all alleviating rural poverty and improving rural infrastructure development. Demand and price of cement is increased. On other side company has undertaken powerful cost cut measurement, which made control on total cost and increase the earning. The company is earning good profit especially from 98–99 and onward.

Chart No 1.7
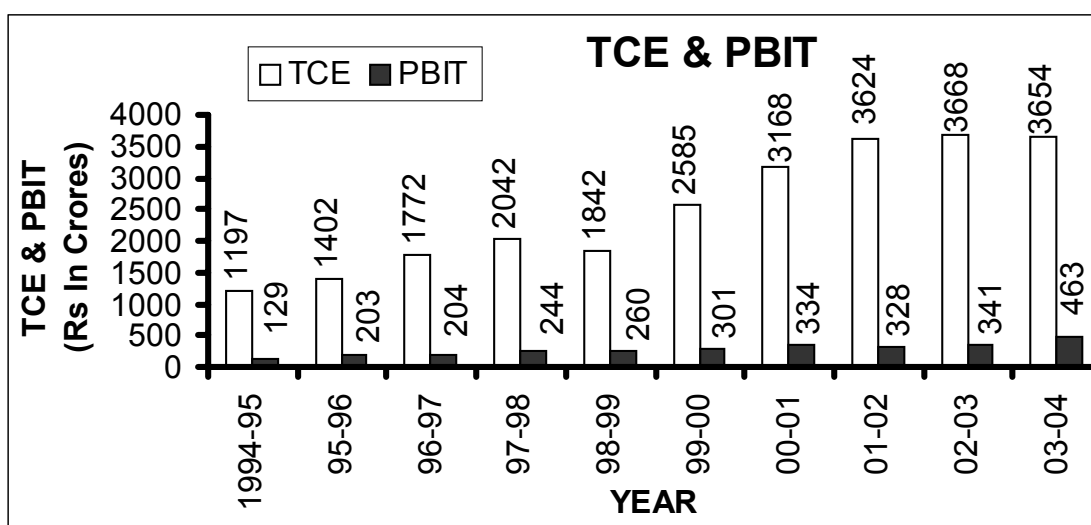
[SOURCES: - ANNUAL REPORT OF GACL - 1994-95 TO 2003-04]

From the above **chart no 1.7,** we can observe that TCE of the company was in increasing trend since 1994-95 to 20003-04. Total capital employed in the year 1994-95 Rs 1197 crores, it was reached to Rs 3654 crores in the year 2003-04. It increased by more than 3 times during such period but with low increase in PBIT.

There was no significant increase in Rate Of Return on investment. It indicates inefficient use of fund in business activities.

→ FINANACIAL REVIEW

The company has authorized capital as on 31-03-2004 was Rs 400 crores, divided in to 25 crores equity shares of Rs 10 each and 15 crores as preference share of Rs. 10 each and Rs. 179.40 crores paid up capital consisting 17.94 crores equity shares of Rs 10 each fully paid.

Chart No 1.8
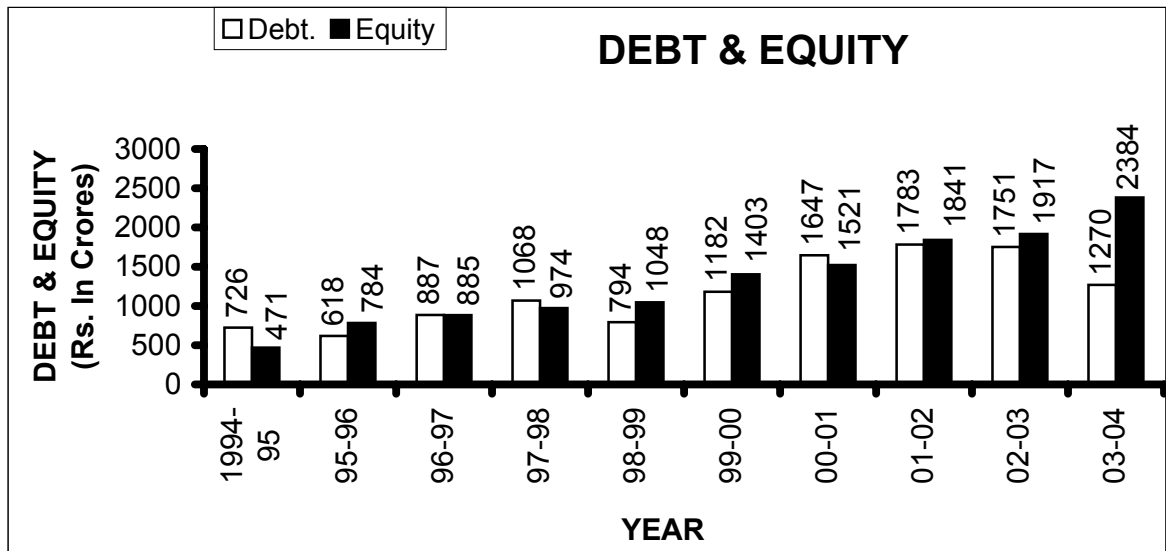
[SOURCES: - ANNUAL REPORT OF GACL 1994-95 TO 2003-04]

Above **chart no 1.8** shows that the company has constructed it's capital structure with the help of borrowed fund and own fund. The borrowed fund in 1994–95 was Rs. 726 crores where as in 2001–02 it was increase to Rs 1783 crores and in 2003–04 it was decrease to Rs 1270 crores. It shows that there is more fluctuation in borrowed fund used by the company. It indicates that the company is using non-conservative debt-equity policy. Debt equity ratio was highest in the year 1994–95 i.e. 1.54: 1 times where as lowest in 2003–2004 i.e. 0.53: 1 times on other side EPS is negatively correlated with the debt equity ratio that is with increase in debt equity ratio EPS decrease and vise versa. Therefore we can say that cost of interest adversely effect on EPS but on other side we can says company can maintain EPS at reasonable rate due to benefit of trading on equity.

→ AWARDS

With its development company has received so many awards by government, in the field of production, quality pollution etc.

1. Best productivity performance Award, in year 1991-92 by National Productivity council of India.

2. Rajiv Gandhi Notional quality Award in 1991-92 for Reorganization of quality management.

3. Best energy performance Award in 1991-92 by Notional Productivity Council.

4. Certificate for Merit for Cement and Cement Clinker Exports in 1993-1994 by chemical and Allied production export promotion council.

5. Award for Highest Export.

6. Green land Society Notional Award in 1995 for excellence in industries

7. Economic times Harward Business School Association Award for Corporate Excellence.

8. Mines safety award.

9. Award for Zero pollution.

→ **Contribution to Social Responsibility and Community Development**

Gujarat Ambuja Cement Ltd. believes that responsibility to society and the environment does not merely stop at complying with stated norms and laws. In fact, it goes far beyond this and is an ever-evolving commitment. It also said that an efficient profitable cement company meant ensuring that our surrounding communities and environment grew and prospered along with us. This company always uses natural resources as material to the best use and conserves power and flues for the nation through using alternative sources and by rehabilitant used mines into green spots and water reservoirs. Company has also founded Ambuja Cement foundation for rural development when the 2001 earthquake in Gujarat demolished millions of houses and lives. ACC has done constructive work to help the effective people. It encourages water harvesting project, health care, education and women development models in about 500 villages across the plants and grinding facilities in different parts of the counting. Gujarat Ambuja Cement Ltd has constructed

many temples, Roads, Schools and pilgrimage centers in different cities of India.

→ STOCK EXCHANGE WITH WHICH COMPANY'S EQUITY SHARES AND OTHER SECURITIES LISTED

(a) EQUITY SHARES

The equity shares are at present listed at the following stock exchange.

(1) The Stock Exchange, Mumbai.

(2) National Stock Exchange of India Ltd.

(3) The Culcutta stock Exchange Association Ltd.

(4) The Delhi Stock Exchange Association Ltd.

(b) DEBENTURES

All the outstanding debenture of the company is listed at the wholesale debt segment of the National Stock Exchange of India Ltd.

(C) GDRS

The GDRS are listed at Luxembourg Stock Exchange Societies De la Bourse de Luxembourg, Avenue De la Porte Neuve L-2011 Luxembourg B - P-165.

→ CONCLUSION

Here I would like on conclude that there is good growth and development of Ambuja cement Ltd during the study period 1994–95 to 2003–04. There is lot many opportunities created for business development. Cement industries play a vital role in building a new India. An India that boasts of houses, road, ports, dam, irrigation canals and more

There is remarkable improvement in production, turnover and earning after tax. The company can pay adequate return to its shareholders. One share issued by the company in the year 1985 at Rs 10 has earned a total dividend of Rs 198.80. The said ones share has present market value of

approx Rs. 278.25 per share at the end of year 2003–04 and appreciation of 28 times of original investment.

➔ DIGVIJAY CEMENT COMPANY LTD.

Shri Digvijay Cement Company Ltd is one of the pioneer cement manufacturer incorporated in the year 1945 in Gujarat state by "House Of Bangurs" renewed in the field of trade and industry in the country.

The company has completed his 50 years of successful existence mid has been following the tradition since its establishment.

Acquired by an Aditya Birla Group in 1998, Shri. Digvijay Cement Company Ltd. situated at Sikka in Gujarat offers varieties of cement -53 and 43 grades ordinary Portland cement, Birla Plus Cement, Sulphate Resisting Portland Cement, Oil Well Cement, 53- s Special Grade Cement.

The plant produces 1.08 millions tones cement per annum. The company is well-known for their adaptation of one of the most advanced dry process pre-calcinations technology with sophisticated control instrument for ensuring uniform.

S.D.C.C.L. was hand over to Aditya Birla Group for further advancement in 1998. Promoting the company giving its best management and has now been a reputed cement company as "Aditya Birla Cement".

Aditya Birla Group among the top 3 in production of gray cement in the country, is at the cutting edge of cement technology with annual capacity of 13.41 million tones in Gujarat, Maharashtra, Karnataka, Rajasthan, and Madhya Pradesh with the most advanced and wide marketing network across the country. Apart from this they also have cement plants located in Gurgaon, Naida, Hydrabad, and Chennai.

[SOURCES: - WEBSITE - PROFILE OF THE COMPANY]

➔ REVIEW OF TURNOVER AND FINANCIAL PERFORMANCE

There are certain measurement for growth and development of industrial sectors. These measurement are increasing shareholders value, achieving global leadership, creating jobs and access high quality human resources. Contributing to national exchequer, gross domestic product, building and increasing brand recognition, good organizational structure, establishing strong team of leaders and highly appreciable social responsibility. The company whether it is family managed business or professionally managed should be fully committed to sustainable development. The company should be customer centric, nimble footed, performance driven and accountable on all fronts.

Chart No. 1.9
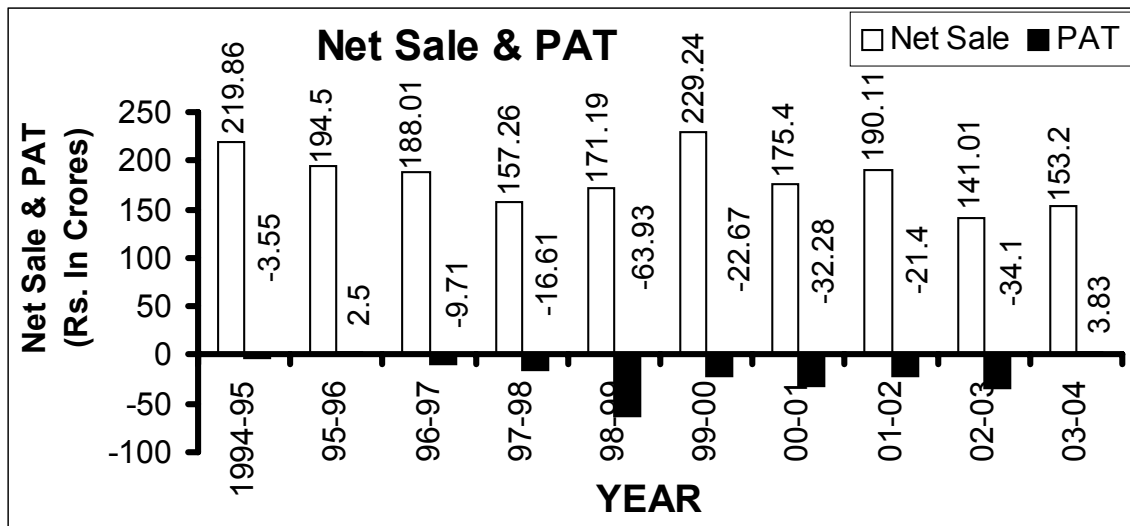
[SOURCES: - ANNUAL REPORT OF DCCL - 1994-95 TO 2003-04]

From the above **chart no 1.9** it clears that the turnover performance of the company is not found satisfactory during the study period. The highest net sales Rs. 229.24 crores in 1999–2000 and lowest Rs. 141.01 crores in 2002–03. Company is suffering from fluctuation period.

Chart No 1.10

Net Profit Ratio

Year	Value
1994-95	-1.62
95-96	1.28
96-97	-5.17
97-98	-10.56
98-99	-37.35
99-00	-9.89
00-01	-18.41
01-02	-11.26
02-03	-24.18
03-04	2.5
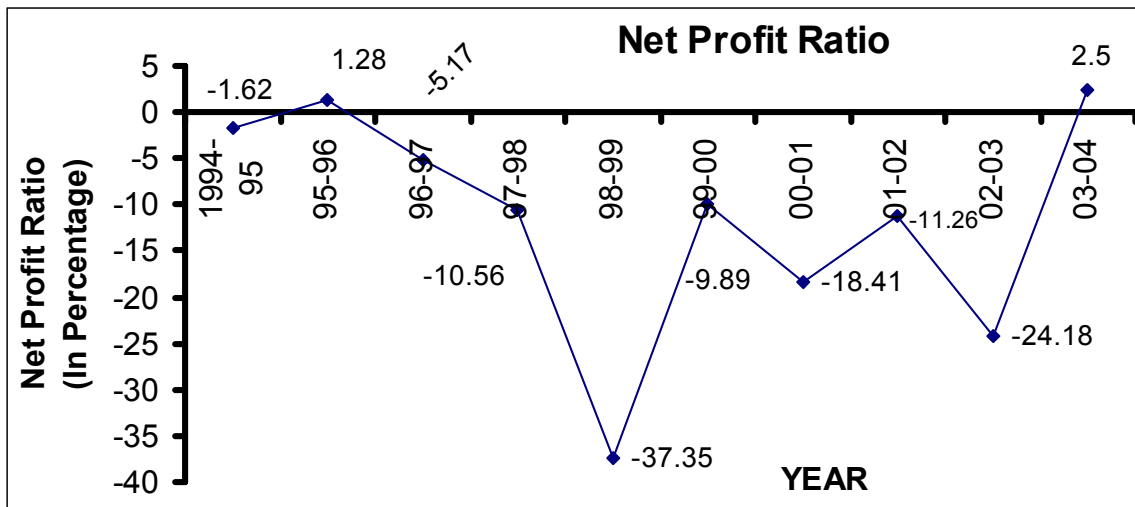
[SOURCES: - ANNUAL REPORT OF DCCL - 1994-95 TO 2003-04]

From above **chart no 1.10** it clears that the profitability of the company is also too much bad, it was occurring all most loss during the period.

Chart No 1.11

DEBT & EQUITY

Year	Debt	Equity
1994-95	66.51	64.04
95-96	71.68	65.62
96-97	46.49	47.93
97-98	55.79	18.69
98-99	177.66	8.43
99-00	216.57	8.43
00-01	220.71	8.42
01-02	228.97	8.64
02-03	238.52	8.88
03-04	196.26	8.88
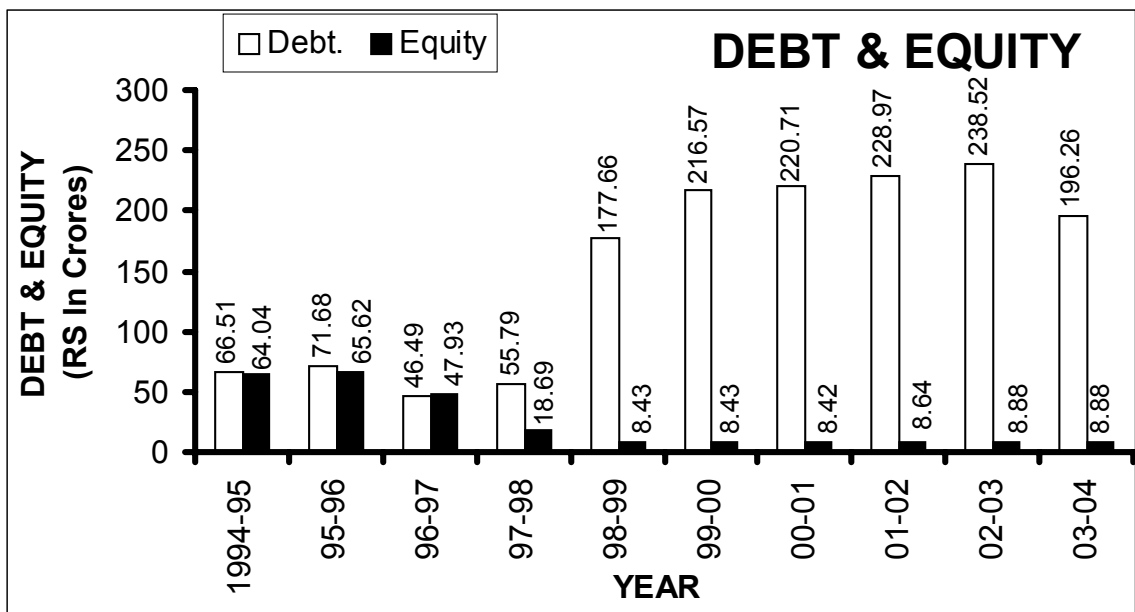
[SOURCES: - ANNUAL REPORT OF DCCL - 1994-95 TO 2003-04]

From the above **chart no 1.11** it clears that the debt equity ratio is also too much high during the study period. As compare to equity amount of debt is always more, company is not in position to earn EPS as well as to pay dividend to the shareholders during the study period. Company is continuously making effort to improve its position company has made the efforts in research and development. As a result of above all the effort company can improve the quality of product, increase export sale, reduce the

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cost of production make product development etc. Gradually company can control on its bad position and entered in good position. In the year 2003–04 Net Profit was 2.5% and return on investment was 24.21% Debt Equity Ratio also decreased from 26.89 to 22.13 times in the year 2003–04.

EPS of the company is Rs. 5.14 per share in the year 2003–04, where as in past it went down up to Rs. –85.75 per share in the year 1998–99. It indicate worst financial position of the company, company has not paid dividend since 1994-95 to 2003-04.

Company's shares are listed with The Stock Exchange Mumbai.

→ ACHIEVEMENTS

The company has been performing various tasks and has been the most reputed cement manufacturing Cement Company with wide range of products has also been successful in achieving.

→ Award Of National Productivity Council For Capacity Vitalization

→ Chemical & 'Allied Product Export Promotion In Recognition Of Export Achievement Of Cement In 94-98.

→ INFORMATION ABOUT SODA ASH CHEMICAL INDUSTRIES

The industries of Soda Ash or any other industries of chemical i.e. chemical industries are mainly in the private sector but it also found in public sector in minimum case. The soda ash factory developed more in Gujarat because of easily availability of raw-material and other location factors and in all over the world the India has large amount of soda ash industries due to availability of all the factors related to production. In India, So many industries, which is away from the Gujarat, they import the raw-material like salt and limestone, which is main raw materials for production of soda ash, is from Gujarat. Gujarat also exports salt and limestone to other countries because it situated at the boundary of Arabian Sea and the mines of limestone is mostly in Gujarat.

The chemical industries such as the Hindustan Organic Chemicals Ltd. is the only central public sector unit engaged in manufacture of basic organic pharmaceutical, pesticide, Dyes-intermediates and plastic in India

Chemical industry has high rate of technological changes and there is urgent used for up gradation of technology. A major trust also requires to be given research and development activities in chemical industry.

In the 7th plan (1985-1990) to bring about improvement of chemical industries in existing process and technologies to obtain higher yields.

There are so many chemical industries which produced soda ash are situated but few of are as: 1) Saurashtra Chemicals Ltd (Birla) 2) Gujarat heavy chemicals Ltd. 3) Tata chemicals Ltd. 4) Nirma chemicals Ltd. 5) Dhangadhra chemical works 6) Spane chemicals Ltd. 7) Susan chemicals Ltd. 8) Lupin Chemicals Ltd. 9) Orchide chemical works 10) Hex chemical Ltd. 11) Toticonin alkalics.

[SOURCES: - WEBSITE OF PROFILE OF CEMENT INDUSTRIES]

➔ **TATA CHEMICALS**

Established in 1939, Tata Chemicals Limited (TCL) owns and operates the largest and most integrated inorganic chemicals complex in the country at Mithapur, Gujarat. The company is among the largest producers of synthetic soda ash in the world and has the largest share of the domestic market.

TCL is also among the nations leading manufacturers of urea and phosphatic fertilizers. Its urea plant, located in Babrala, Uttar Pradesh, is the country's most efficient fertilizer unit, and produces 12 per cent of the country's urea output in the private sector.

In June 2004, the company completed its acquisition of Hind Lever Chemicals Limited (HLCL), a manufacturer of bulk chemicals and phosphatic fertilizers. HLCL's plant at Haldia, West Bengal, is India's largest producer of sodium tripoly phosphate.

Tata Chemicals is a pioneer and market leader in the branded, iodised salt segment. Its salt has a purity percentage of 99.8 percent, the highest in the country.

The company is ISO-9001 certified and has an export presence in South and Southeast Asia, the Middle East and Africa.

TCL is now in the process of expanding its operations globally, and has set itself the objective of becoming the lowest-cost producer of soda ash in the world.

→ Areas of business

Tata Chemicals is organised into three strategic business units: chemicals, food additives and fertilizers.

→ Chemicals

Soda ash is the main product of the chemicals strategic business unit. The plant has an installed capacity of 8,75,000 tones of soda ash per year, nearly 34 per cent of the country's capacity. The company also has salt works spread over 60 sq km at its plant in Mithapur, generating over two million tones of solar salt – the base raw material for almost all the 27 basic chemicals that the company produces. Caustic soda, bromine and bromine-based compounds and gypsum are the company's other main chemicals.

The facility at Mithapur also has a cement plant, which was set up to consume the solid waste generated from the manufacture of soda ash. TCL's cement is sold in the state of Gujarat under the 'Shudh' brand.

→ PROFITIBILITY REVIEW

The company is doing inorganic chemical business but fertilizers. The turnover performance of the company is looking progress. The data of turnover earning and Net Profit Ration for the period 1994–95 to 2003–04 are shown with the help of graph as under.

Net Sale &PAT
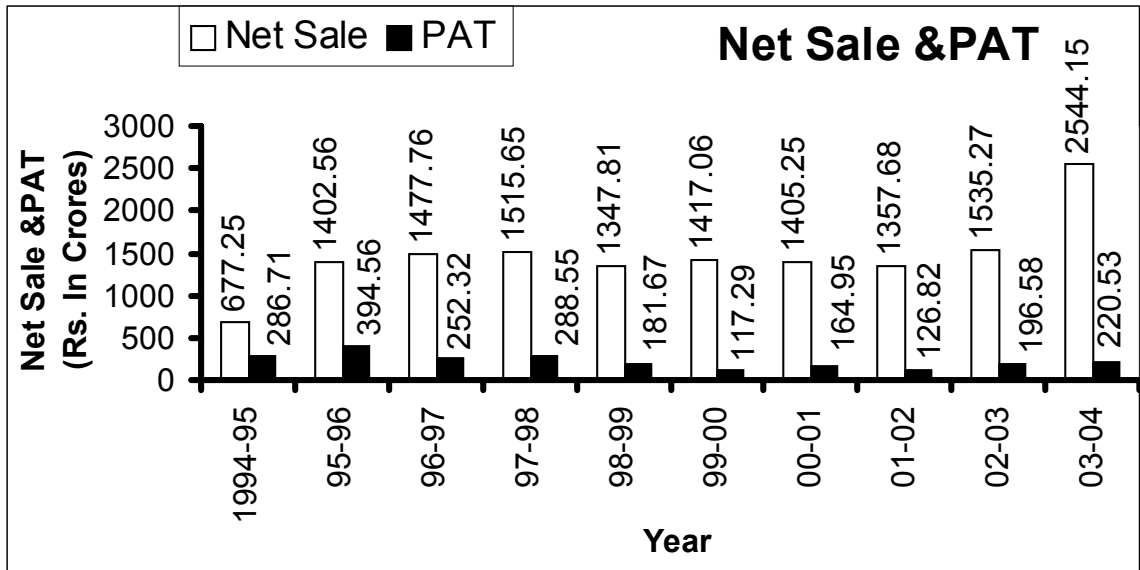
[SOURCES: - ANNUAL REPORT OF TCL - 1994-95 TO 2003-04]

From the above **chart no 1.12** it clears that the turnover of the company is not too much fluctuating for the period from 1995–96 to 2002–03 but it was swing up in the year 2003–04 significantly. In the year 2003–04 the amalgamation of Hind Level Chemical Ltd (HLCL) has been made with Tata Chemical Ltd. The business of bulk chemicals and fertilizers of HLCL besides providing a basket of products to existing customers has strengthened the relationship with major detergent players. So total sales was increase.

Chart No 1.13

Net Profit Ratio
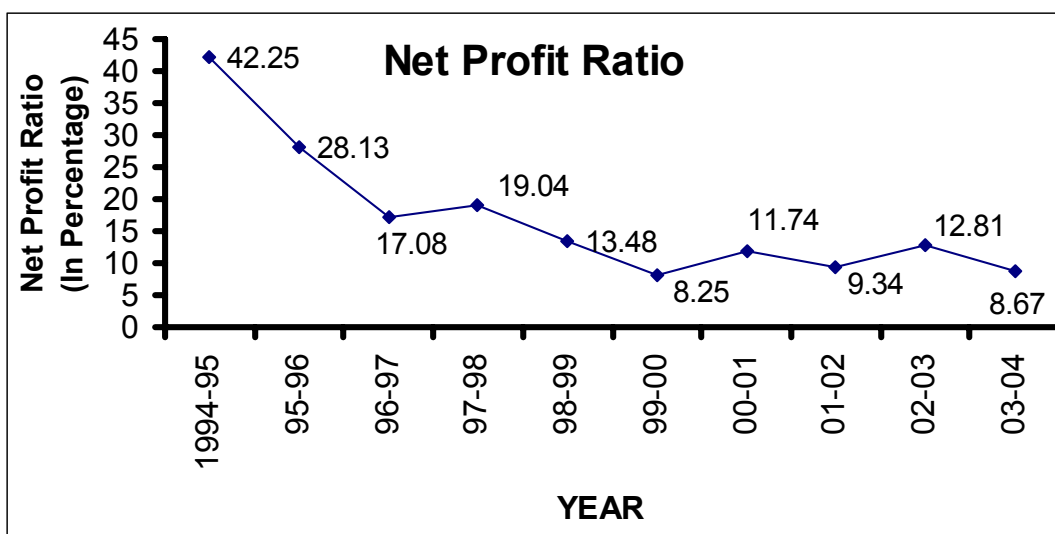
[SOURCES: - ANNUAL REPORT OF TCL - 1994-95 TO 2003-04]

From the above **chart no 1.13** it clears that the lowest rate of earning is in the year 1999–00. The profit before tax of Rs 143.45 crores in 1999–00

was after taking into account profit on sales of shares of Rs 79.95 crores and after setting aside a sum of Rs 120 crores as provision for contingencies. The cyclone and unexpected heavy rainfall that followed it in Jun 1998 damaged soda Ash stock, building and some machinery. The company has to incur huge amount for rehabilitation and reprocessing the product company's sales & profit rose significantly in 2003–04, as a result of amalgamation of Hind Level Chemical Ltd. Despite of very competitions business environment, company maintain its leadership in its key business with market leader in soda Ash with a market share of 32.7% and The National Branded Salt with a market share of 38.6%.

NPR shows decline as compared to the year 2002–03 in the year 2003-04. The decline is as a consequence of the low margins in the complex fertilizer business comprising of DAP, NPK and SSP.

Chart No 1.14

Return On Investment

Data points (ROI In Percentage by Year):
- 1994-95: 14.97
- 95-96: 22.80
- 96-97: 17.57
- 97-98: 17.56
- 98-99: 12.47
- 99-00: 10.89
- 00-01: 11.42
- 01-02: 10.19
- 02-03: 12.26
- 03-04: 11.71
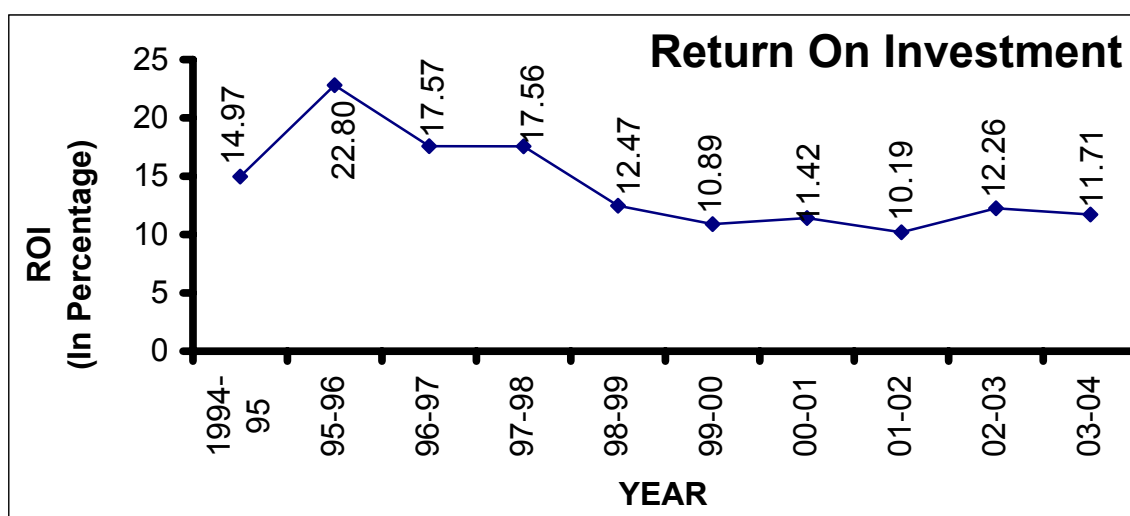
From the above **chart no 1.14** it clears that there was no significant fluctuation in total capital employed of the company during the period from 1994-95 to 2003-04. It was Rs 2565.87 Crores in the year 1994-95 was reached to Rs 3239.77 crores in the year 2003-04, increased by only 26% during 10 years.

Chart No. 1.15

TCE & PBIT

Chart showing TCE (white bars) and PBIT (black bars), TCE & PBIT (Rs. In Crores) on the Y-axis (0 to 3500) and YEAR on the X-axis.

Year	TCE	PBIT
1994-95	2563.87	383.85
95-96	2862.10	652.50
96-97	3047.52	535.50
97-98	3116.45	547.32
98-99	3244.09	404.50
99-00	3009.56	327.80
00-01	3049.61	348.13
01-02	3048.67	310.72
02-03	2879.36	352.93
03-04	3239.77	379.42
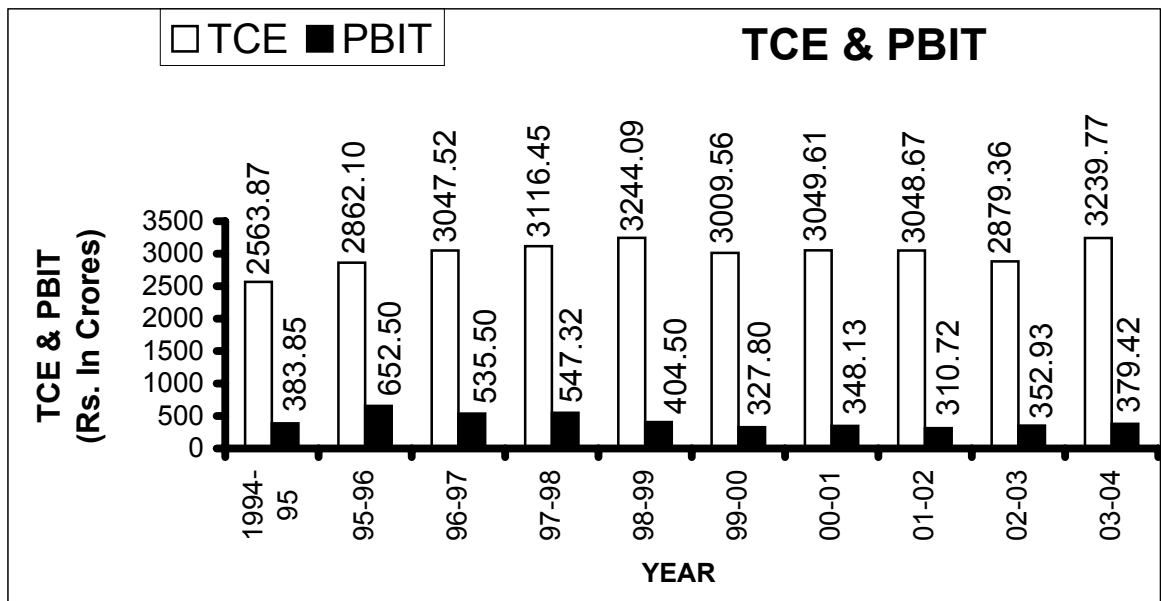
[SOURCES: - ANNUAL REPORT OF TCL - 1994-95 TO 2003-04]

PBIT was also not change considerably, therefore rate of return fluctuated with lower rate it was highest 22.79% in the year 1995-96 and lowest 10.10% in the year 2001-02 which can be seen from the above **chart no 1.15** it indicate that there is significant fluctuation in fund utilization efficiency of the company during study period.

→ **FINANCIAL REVIEW**

Company's capital structure consist borrowed fund as well as own fund. The data regarding debt equity ratio for the period from 94–95 to 2003–04 are shown with the help of graph as under.

Chart No 1.16

Chart shows Debt & Equity (Rs. In Crores) by year:

YEAR	Debt	Equity
1994-95	1526.64	1037.23
95-96	1548.92	1313.18
96-97	1616.06	1431.46
97-98	1527.55	1588.9
98-99	1570.23	1673.86
99-00	1370.23	1639.33
00-01	1146.27	1903.34
01-02	1060.71	1987.96
02-03	816.26	2063.1
03-04	765.54	2474.23
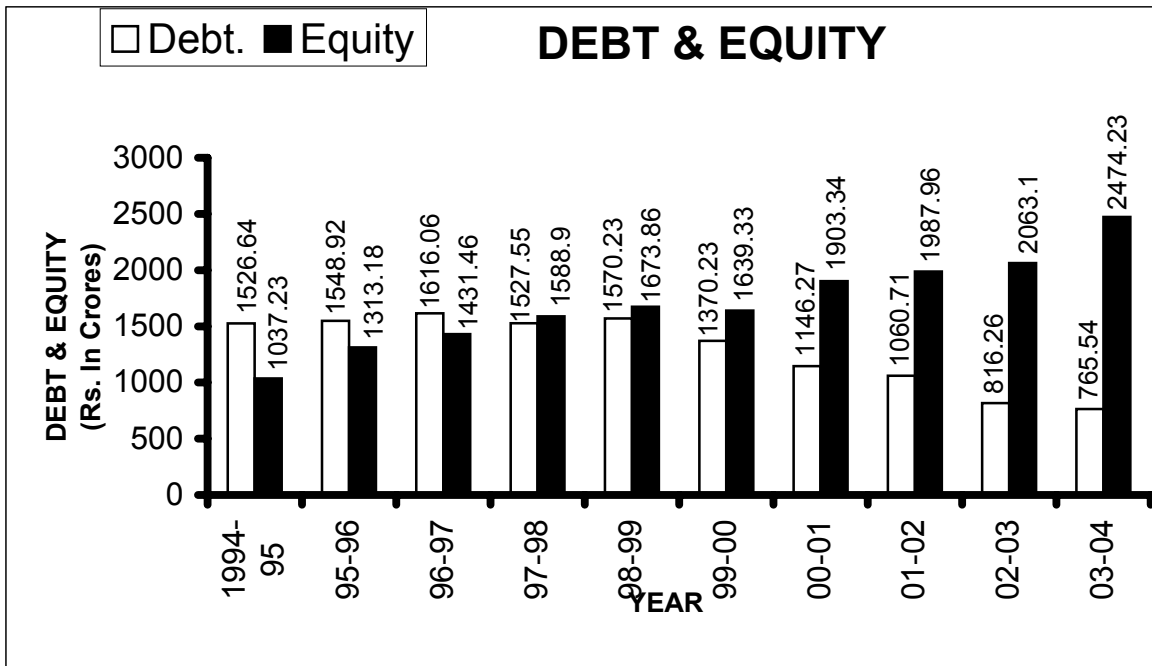
[SOURCES: - ANNUAL REPORT OF TCL - 1994-95 TO 2003-04]

From the above **chart no 1.16** it clears that the debt equity ratio is continuing decrease every year from 1994–95 to 2003–04. it indicates that company reduces its debt burden to save interest cost. But with decrease in debt equity ratio, EPS also decrease. Therefore one of the reasons for decrease in EPS is more burden of cost of interest. As soon as debt equity ratio reached at lowest level EPS is also started to increase.

→ <u>**STOCK EXCHANGE WITH WHICH EQUITY SHARE OF COMPANY LISTED.**</u>

Presently, the ordinary shares of the company are listed on following 6 stock exchanges in India.

(1)   The Stock Exchange, Mumbai (BSE)

(2)   The National Stock Exchange of India Ltd. (NSE)

(3)   The Delhi stock Exchange Association Ltd.

(4)   The stock Exchange, Ahmedabad.

(5)   Madras Stock Exchange Ltd.

(6)   The Calcutta Stock Exchange Association Ltd.

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→ CONCLUSION

Tata Chemical Ltd is one of the leading companies in chemical business in India. The organization structure of the company is not remaining only functional but changed from a functional one to strategic business units. SBU structure envisages clear accountability of financial performance of each business better analysis of business, performance and focus on growth and strategy.

The company has achieved significant savings in cost of borrowing through the on going debt restructuring program. The company set benchmarks for short-term borrowing. To take advantage of the prevailing low interest rate long-term foreign currency loans were raised at the extremely competitive rates.

For Human Resources performance measurement, company uses tools such as balanced scorecard and employment matrix.

At the last we can conclude that Tata chemical Ltd is showing dynamic outlook from the viewpoint of production sales, and financial performance. It also plays vital role for social welfare and rural development. The company is having rich manpower latest technology, extraordinary infrastructure facility, and intellectual and efficient management team.

→ GUJARAT HEAVY CHEMICAL LIMITED

Gujarat Heavy Chemicals Ltd. (GHCL) was commissioned in March 1988, at a cost of US $220 million at Sutrapada, Gujarat. The plant manufactures high-grade dense and light soda ash, for domestic and international use.

Its growth, financial performance and outstanding people and processes distinguish GHCL. GHCL is a customer- focused company committed to leadership through quality. We strive for building trusting relationships, encouraging entrepreneurship and sharing prosperity.

Mission of GHCL is to be a multi-product company manufacturing chemicals, industrial raw materials and other products, using modern technology and serving domestic and international markets.

→ The Plant

GHCL Plant has a production capacity of 525000 MT per annum with capability to convert about 250000 MT into Dense Ash. The major raw materials as salt, limestone and power are all captivity produced. Its Process Engineering and R&D ably support the state of Art Plant, which are staffed by some of the country as best technical brains. Industrial restructuring and technology up gradation are taken up periodically as part of the company's belief in continuous improvement.

[SOURCES: - WEBSITE OF PROFILE OF CEMENT INDUSTRIES]

→ PROFITIBILITY REVIEW

GHCL is one of the dynamic and leading companies in soda Ash product in India. It is profit-earning units, and attends good achievement in growth and development of unit. Its trend regarding growth and development can be envisage through following renew regarding turnover performance and financial evaluation.

→ PROFITIBILITY PERFORMANCE

The company deals with four types of products namely soda Ash, Refined Salt, Yarn spindles and Rotors. Out of them company's main product are soda Ash and Refined Salt.

The company's profitability position can observed with the help of following **chart no 1.17** for the period from 1994 – 95 to 2003 – 04.

Chart No. 1.17
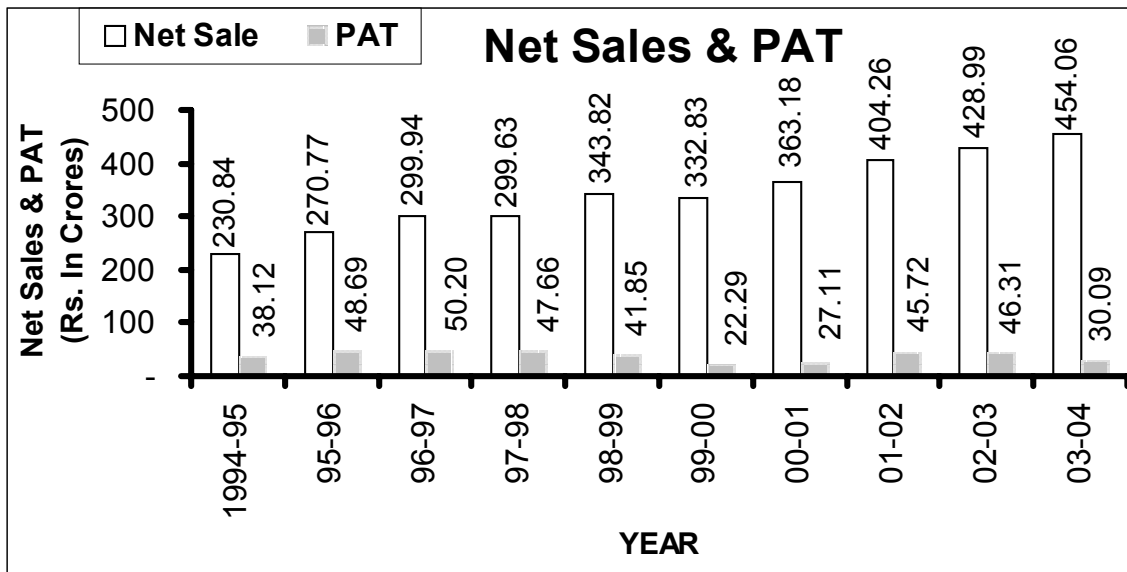
Net Sales & PAT

Net Sales & PAT (Rs. In Crores)

Year	Net Sale	PAT
1994-95	230.84	38.12
95-96	270.77	48.69
96-97	299.94	50.20
97-98	299.63	47.66
98-99	343.82	41.85
99-00	332.83	22.29
00-01	363.18	27.11
01-02	404.26	45.72
02-03	428.99	46.31
03-04	454.06	30.09

YEAR

[SOURCES: - ANNUAL REPORT OF GHCL - 1994-95 TO 2003-04]

Chart No 1.18

Net Profit Ratio

Net Profit Ratio (in Percentage)

Year	NPR
1994-95	16.51
95-96	17.98
96-97	16.74
97-98	15.91
98-99	12.17
99-00	6.70
00-01	7.46
01-02	11.31
02-03	10.80
03-04	6.63
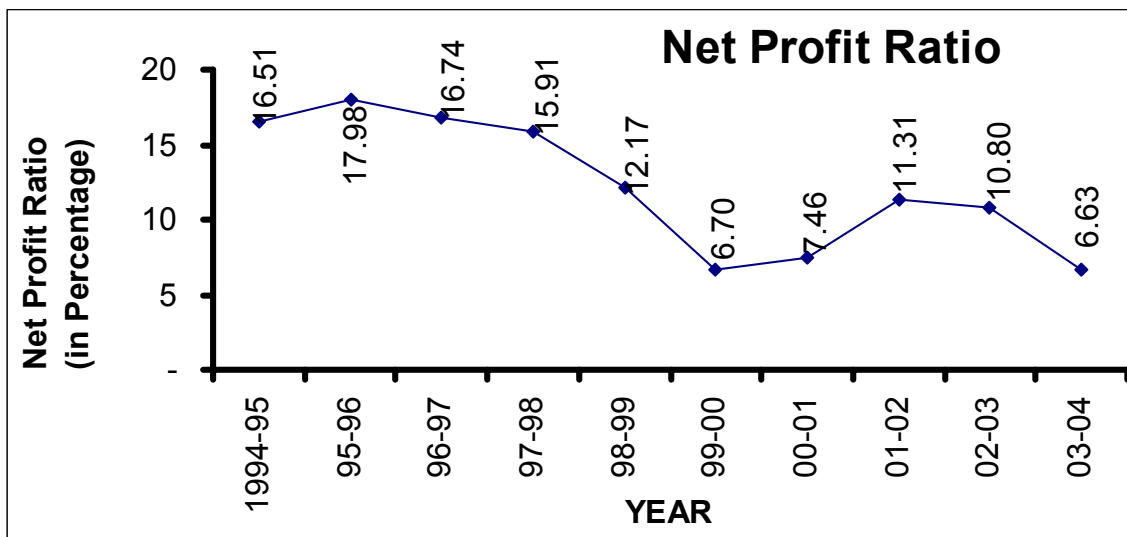
YEAR

[SOURCES: - ANNUAL REPORT OF GHCL - 1994-95 TO 2003-04]

The above **chart no 1.18** clarify that turnover increases every year for the period from 1994–95 to 2003–04 but on other side net profit ratio is decreasing. Highest NPR 17.98% in the year 1995–96 but lowest 6.63% in the year 2003–04 so profitability of the company is going to decrease every year.
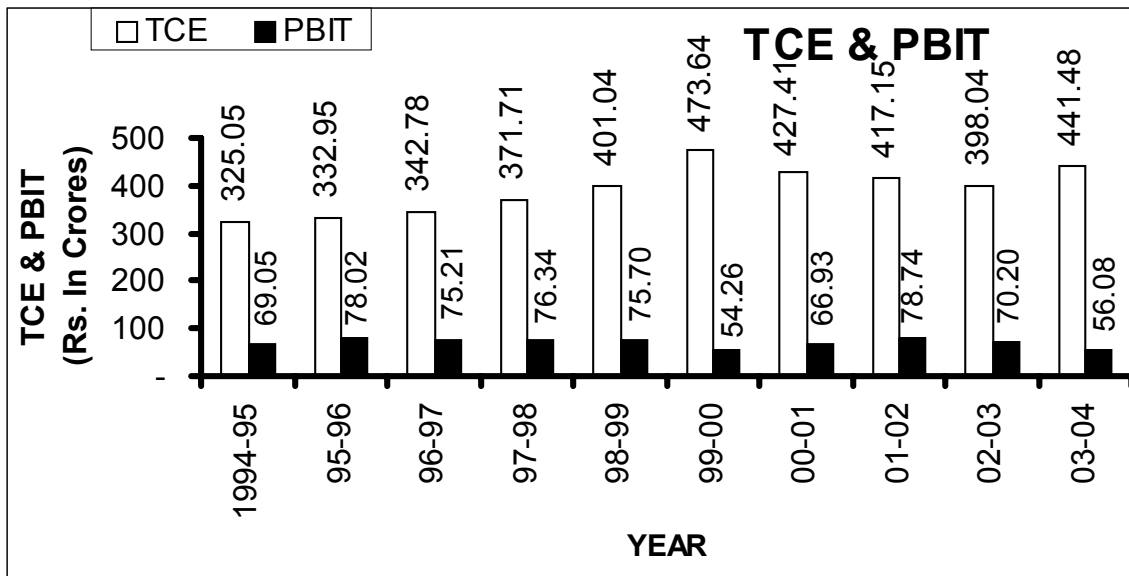
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Chart No. 1.19

TCE & PBIT

TCE & PBIT (Rs. In Crores)

Year	TCE	PBIT
1994-95	325.05	69.05
95-96	332.95	78.02
96-97	342.78	75.21
97-98	371.71	76.34
98-99	401.04	75.70
99-00	473.64	54.26
00-01	427.41	66.93
01-02	417.15	78.74
02-03	398.04	70.20
03-04	441.48	56.08

YEAR

[SOURCES: - ANNUAL REPORT OF GHCL - 1994-95 TO 2003-04]

Chart No. 1.20

RETURN ON INVESTMENT

ROI (in Percentage)

Year	ROI
1994-95	21.24
95-96	23.43
96-97	21.94
97-98	20.54
98-99	18.88
99-00	11.46
00-01	15.66
01-02	18.88
02-03	17.64
03-04	12.70

YEAR
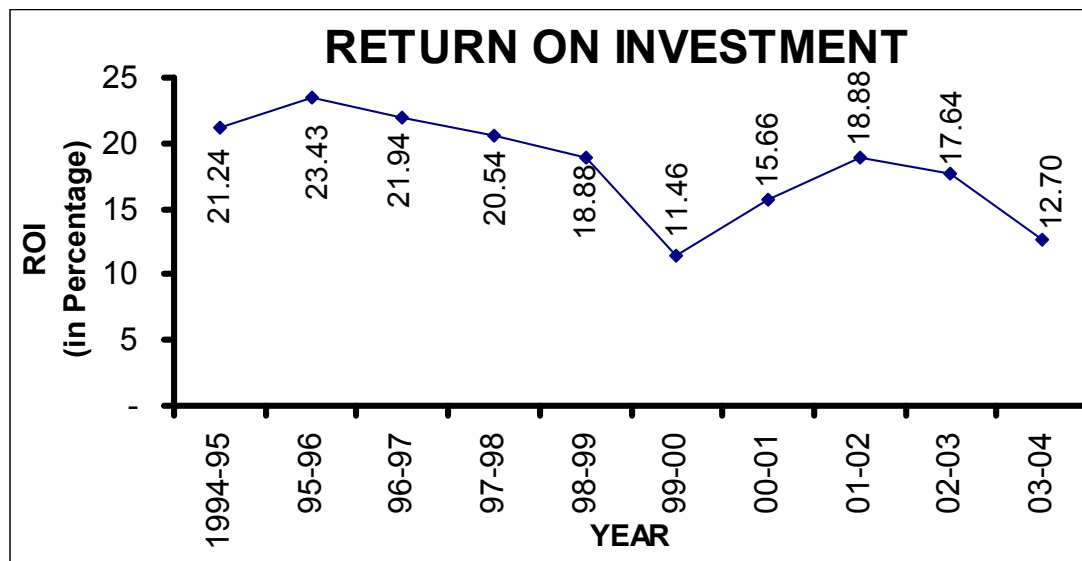
[SOURCES: - ANNUAL REPORT OF GHCL - 1994-95 TO 2003-04]

Profitability is the overall measure of the company's, with regard to efficient and effective utilization of the resources at their command. The profitability is also known as the rate of Return on total capital employed (ROI). It is calculated by Net Profit Before Interest and Taxes with total capital employed. It clears from above **chart no 1.20** that highest ROI of company 23.40% in 1995–96 and lowest is 11.40% in the year 1999–2000. ROI of the company is also decreasing that is due to decrease in NPR every year.

→ **FINANCIAL REVIEW**

Chart No. 1.21
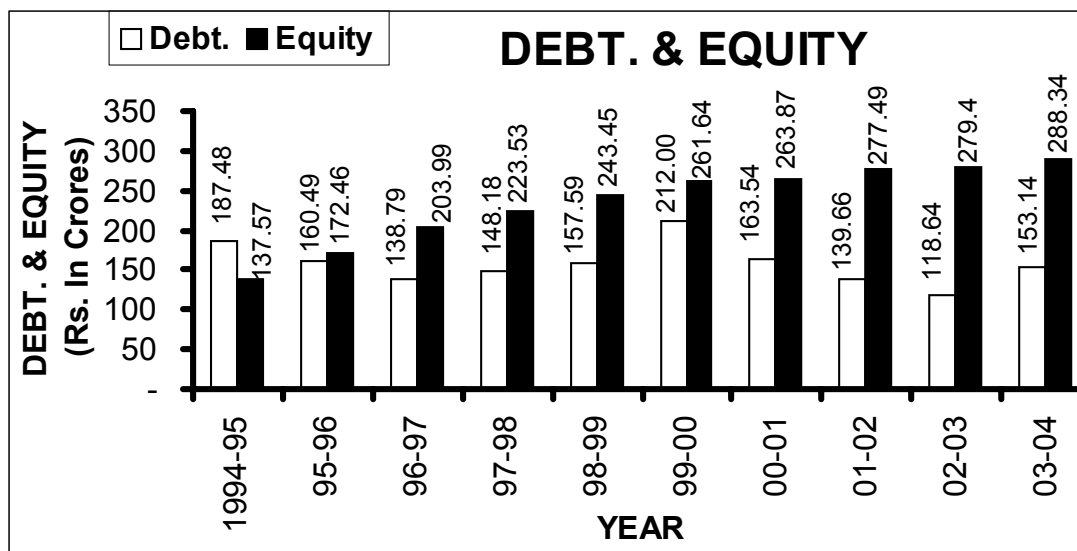
From the above **chart no 1.21** it clears that Debt equity ratio increases the extent of equity covering the debt. It is computed by dividing debt by equity. Normally 2:1 debt equity ratio is considered to be standard. The rate of debt equity ratio is lowest 0.40 in 2002–03 highest 1.36 in 1994–95. The average debt equity ratio for last ten years was 0.707, which is too much less that standard one. It indicates that company follows conservative approach of financial management for formation of capital structure.

→ **CONTRIBUTION IN SOCIAL RESPONSIBILITY AND COMMUNITY DEVELOPMENT**

The company has been actively engaged in the overall growth and development of the plant area over the years the plant of GHCL has become the crux of economic progress of the Sutrapada village and the nearby villages because of the welfare measures initiated by the company. During the drought season the company arranged drinking water for all, the surrounding village as well as contributed to creating a lake at the Badalpara village. Company also helped to NGDS programs and construction of the school at Ajotha, providing tricycles to handicapped person, donated streetlight to Sutrapada village and a computer to Gram Panchayat.

→ STOCK EXCHANGE WITH WHICH EQUITY SHARE OF COMPANY LISTED.

At present company's ordinary shares are listed with the following stock exchange.

1) The Stock Exchange Mumbai.

2) The Stock Exchange Ahmedabad.

3) National Stock Exchange of India Limited Bombay.

→ CONCLUSION

GHCL is having effective and efficient management dynamic manpower, leading in its product as well as having average profitability and financial performance company has design proper and adequate internal control systems to ensure that its assets are safeguarded and protected against unauthorized use of disposition and that the transaction are authorized, recorded and reported correctly. The commercial function of marketing, distribution and finance within the core business of soda Ash division are automated. As a result profitability and financial performance is comparative satisfactory. Company is in position to earn on an average 12.22% net profit on turnover and 18.02 % return on total capital employed.

The organization has continuous employee development programs covering the entire knowledge value, skill spectrum. The company often arranges employees training programs, which covered various issues in management, technology, safety, health and environment. GHCL is in the process of improving the existing performance management system with the help of a reputed HR consulting organization.

GHCL is also in the process of rationalization of the manpower by restructuring the activities to make it more effective, competent, and cost effective.

➔ BEARING INDUSTRY

The term Bearing may be designed as a machine member or element, which supports another moving machine element. It permits the relative motion between the contact surfaces of the member while carrying the load. In short, Bearing is a means of positioning one part with -respect to another in such a way that a relative motion is possible.

The bearing industries in India are one of the relevant origins having completed a small history of 30 years. As far back a 1950, National Engineering Ltd., was the pioneer unit to initiate the production of Bearing in India. The true growth of bearing industries in India was started after 1960 as the industrial policy of government gives suitable jerk after completion of first and second five-year plans. At present there are ten types bearing units, fulfilling the indigenous demand of the country.

The bearing industry is an extremely high precision engineering high-tech industry, with constant advances in metallurgical sciences lubrication and electronic systems etc., which interplay to make the final product.

R & D labs, fully equipped to ensure quality analysis of all types and which can incorporate the latest development into on going product gives the company distinct competitive advantage.

[SOURCES: - WEBSITE OF PROFILE OF CEMENT INDUSTRIES]

➔ AUSTIN ENGINEERING BEARINGS LTD.

The history of Austin Engineering Company Ltd, was started 30 years ago i.e. in 1973 in those years, there was a great need for some automatic industry in the field of bearing particularly in Saurashtra region. A team of 5 top qualified persons decided to produce highly qualified bearing and thus established a partnership firm under the name "Accurate Eng." in 1973.

On 27th July 1978 due to rapid development in demand of bearing, it was converted into private limited company.

The growth & development kept on increasing and in 2nd Nov 1985 this company converted into Public Ltd. company under the name Austin Engineering Company Ltd, and purchase the TRADE Mark 'aec' in year 1994.

Then company has set up its new unit at Patla in 1997 to meet the increasing demand and modern technology and in this year company got a certificate of ISO: 9001:2000 which shows the quality of the product. Company has approved agent in advance countries like U.K. USA Italy to catch up the international market.

[SOURCES: - WEBSITE OF PROFILE OF CEMENT INDUSTRIES]

→ **REVIEW OF TURNOVER & FINANCIAL PERFORMANCE**

With a view to study the turnover and financial performance data regarding turnover, net period, return on investment, Debt equity ratio, EPS and dividend per share for the study period are shown in the following chart.

Chart No 1.22
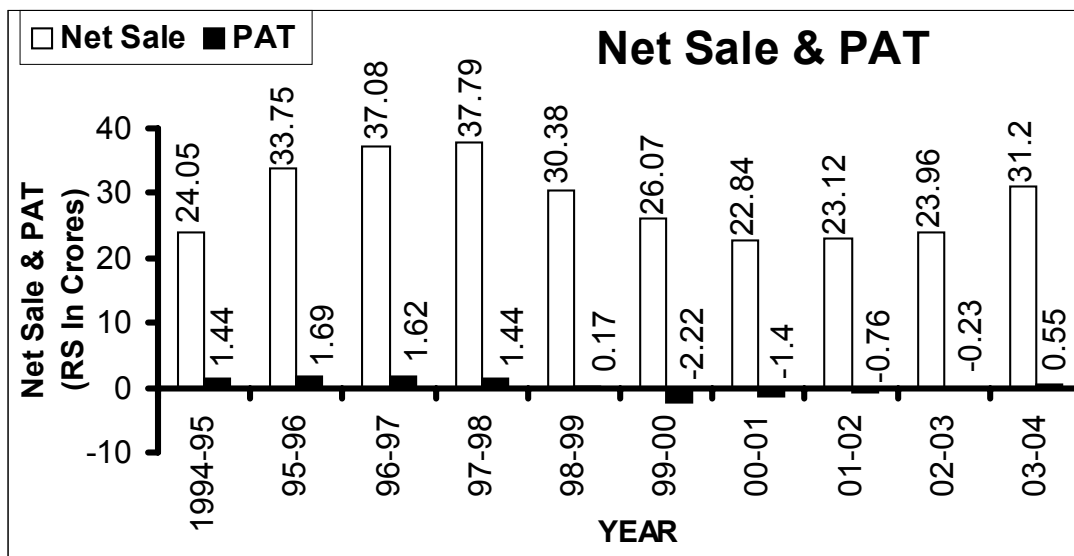
[SOURCES: - ANNUAL REPORT OF AUST. ENG. - 1994-95 TO 2003-04]

The above **chart no 1.22** shows that from 1994-95 to 1997-98 Net sales was increasing and Net Profit Ratio also positive during this period. Return on investment also positive and considerably good during such period but from 99-00 to 2002-03 company was suffering in fluctuation period. There were decreased in net sale negative net profit ratio and return on investment

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considerably too much low. But in the year 2003-04 Net Profit Ratio improved and Return on investment was also good. Therefore we can say that from 1994-95 to 97-98 and in 2003-04 sales performance and profitability were comparatively good and from 1999-00 to 2002-03, they are too much bad.

Chart No. 1.23
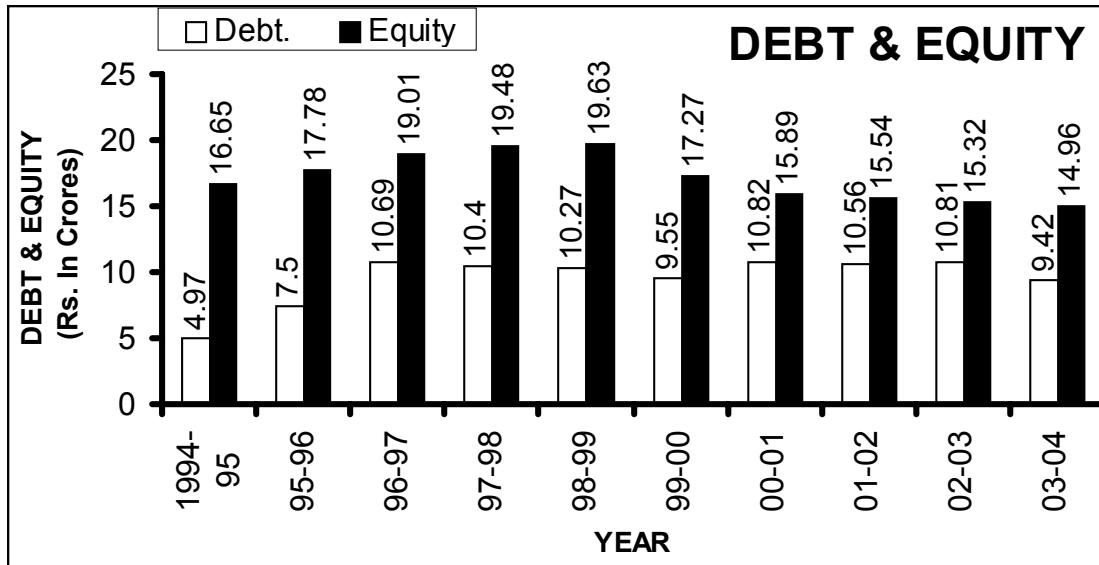
[SOURCES: - ANNUAL REPORT OF AUST. ENG. - 1994-95 TO 2003-04]

From the view point of financial performance Debt Equity Ratio was increasing during the study period. It indicate that additional requirement of fund, company has financed mostly through debt, but amount of debt was always less than equity of the company so long term solvency of company is comparatively sound, lowest Debt Equity Ratio 0.30 in 1994-95 and highest 0.71 in 2002-03. EPS was also positive from 94-95 to 98-99 and in 2003-04. but it was negative from 99-00 to 2002-03. It was badly affected due to lower profitability, company could pay dividend from 1994-95 to 97-98 but that after dividend has not been paid due to inadequate profit.

→ **CONTRIBUTION OF THE UNIT TO THE INDUSTRY & SOCIETY**

Austin Engineering Company Ltd is most popular industry in the field of bearing in India because it is a very successful unit in India.

The contribution of Austin Engineering Company Ltd, is 15% to 20%. Company is one of the leading companies in ball bearing industry. Austin

Engineering Company Ltd, runs 4th in India in all bearing company it also contribution in relation to employment. It gives the employment to near about 900 workers.

This company is also helpful to increase national income of the country. It is also helpful in development of backward area announced by govt. This company raises the standard of living of their employees by providing so many benefits to their workers.

The contribution of this company is remarkable one as it is very efficient in the field of bearing.

→ **CONCLUSION**

The company was badly affected by recession conditions such as reduced rate of growth, slow down in demand and liquidity shortage during the period of 1999-00 to 2002-03. It continuous to be one of the worst hit industries facing combined adverse impact of general recession as well as unhealthy competition from unfairly cheap imports of bearings.

The management has taken several corrective actions such as introduction of various cost cutting measures and concentrating on those markets in it did not cater to in the past. The company has also developed new sizes of bearing to overcome the present situation. The company continues to emphasis on cost reduction and productivity, which helped in improving profitability and turnover performance. The domestic as well as export sales both in industrial and automobile sectors grow well and exceeded the industry performance. Company completely comes out from bad position in the year 2003-04. Net sales during the year 2003-04 were Rs 31.20 crores as against Rs 23.96 crores in 2002-03. The company has earned net profit of Rs 0.55 crores in 2003-04 as against the net loss of Rs 0.23 crores. In 2002-03 the company continued to launch a numbers of new and higher value added products, which will further strengthen the company's competitiveness in the future.

Company's Equity shares are listed with The Stock Exchange Mumbai.

➔ INDIAN RAYON AND INDUSTRY LTD.

Indian Rayon Corporation Limited is incorporated in 1956 Indian Rayon Corporation renamed as Indian Rayon and Industries Limited in 1987 to reflect the diversified activity of the company. Indian Rayon and Industries Limited is a major player in all its key businesses – viscose filament yarn, garments, carbon black, textiles and insulators. The company has also established its presence in the life insurance, Information Technology (IT) and BPO sectors. Indian Rayon and Industries Limited is the Aditya Birla Group's most diversified conglomerate, with a turnover in excess of Rs. 1.714 crore.

➔ A Leading Player

~ The Second largest producer of viscose filament yarn (VFY) in India

~ The largest branded apparel company in India.

~ The second largest producer of carbon black in India

~ Life insurance joint venture, Birla Sun Life Insurance Company Ltd. is India's second largest private sector insurance company.

~ Insulators joint venture with Birla NGK Insulators Pvt. Ltd. Is India's largest and world's third largest producer of insulators.

~ Emerging player in high growth IT services and BPO sector.

→ PROFITIBILITY REVIEW
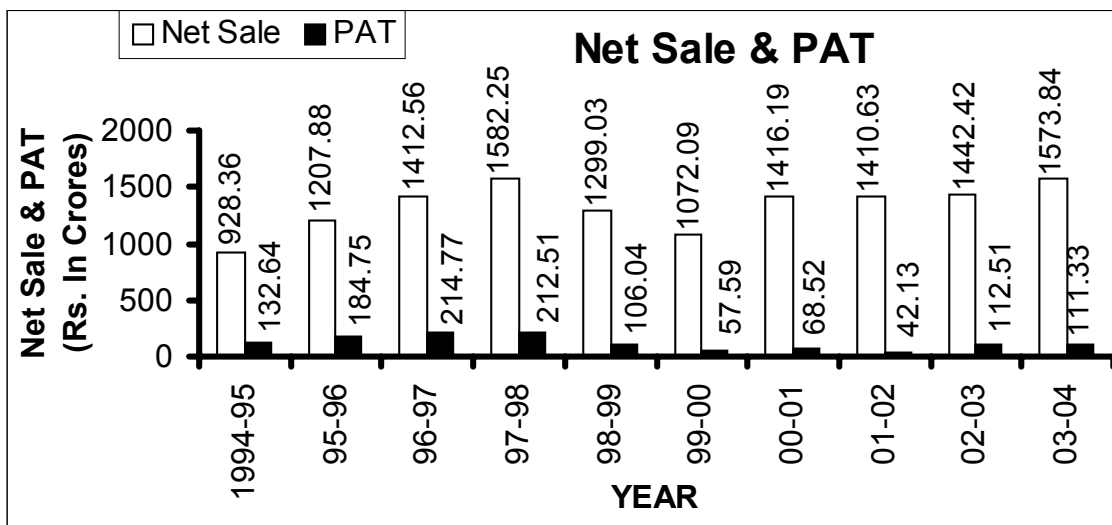
Chart No. 1.24

From the above **chart no 1.24** it clears that turnover of company is increased from 100 to 170 for the period from 1994–95 to 2003–04 where as Net Profit Ratio decreased from 14.29 % to 7.07 % for the same period. It indicates that margin of profit decrease so profitability of the company is badly effected like, competition, increase cost of production, cost of marketing etc.

Chart No. 1.25
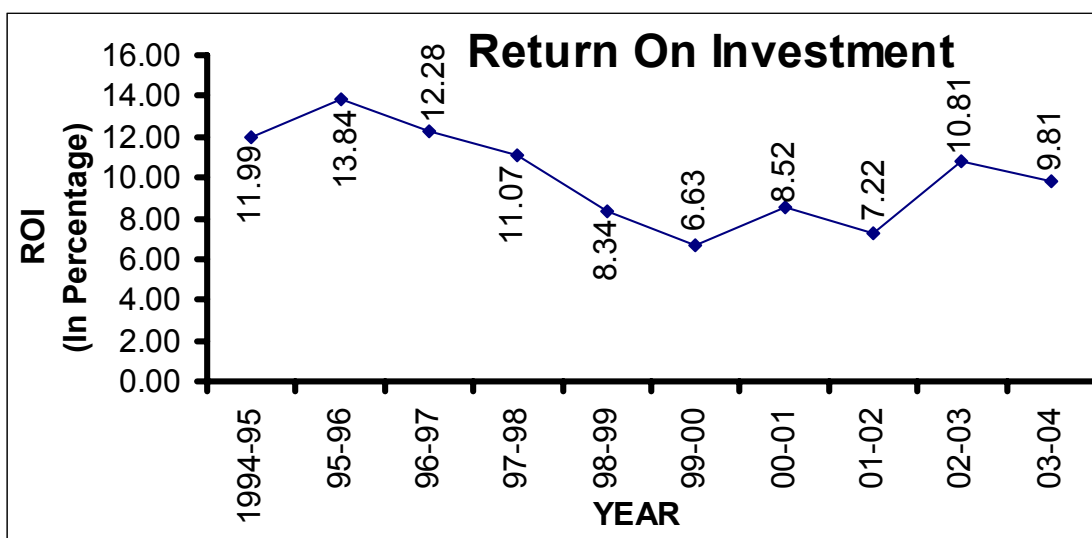
Return on investment measures over all profitability of the company, it also decreased from 11.99 % to 9.80 % for the period from 1994–95 to 2003–04. So overall profitability of company also remarks unsatisfied profit position.

→ FINANCIAL REVIEW

The financial review has been evaluated briefly by using data regarding long term Debt Equity Fund, Debt Equity Ratio, EPS and DPS. All the such data shown in following chart.

Chart No. 1.26
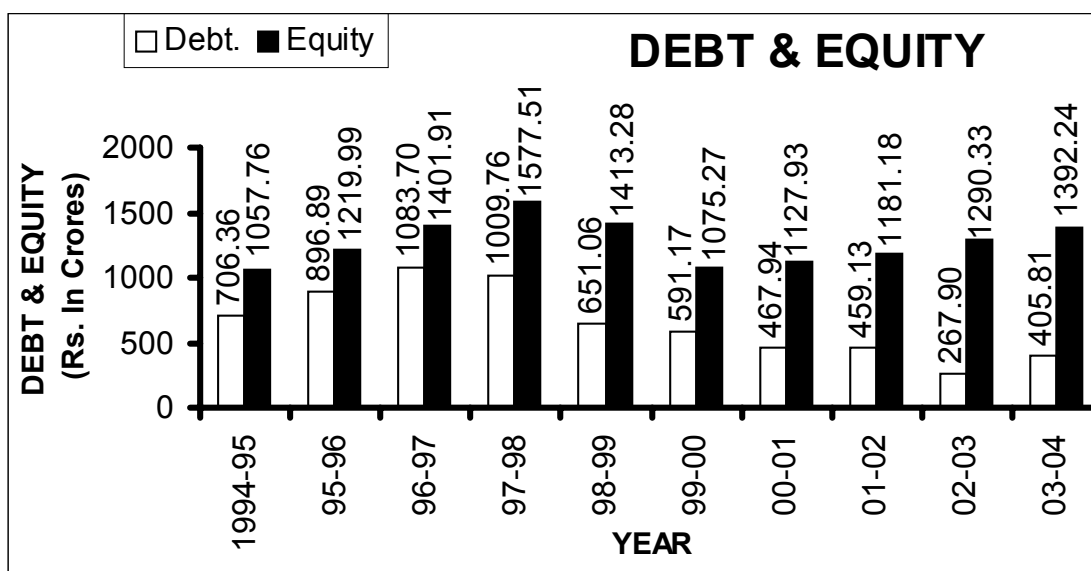
From the above **chart no 1.26** it clears that the trend of debt of the company was considerably decreased since 1994-95 to 2003-04. Therefore Debt Equity Ratio also decreased over the same period. Highest Debt Equity Ratio was 0.77 in the year 1996-97 and lowers 0.21 in the year 2002-03. It indicates that company use conservative financial approach to form capital structure company make the effort to save interest cost and prefer to finance addition requirement of fund through ploughing back the profit.

→ Contribution In Social Responsibility And Community Development

Indian Rayon is one of the units under the Aditya Birla Group. This company has been working to improve the quality of life of people in under privileged communities largely within the perishery of its plant at Indian Rayon the focus for our community investments is on health care, inclusive of mother and child care, education, self reliance through the engine of sub sustainable

livelihood, also encompassing agricultural and watershed development activities and women empowerment process infrastructure support and espousing social cause. Indian Rayon Company believe that in contributing significantly the quality of life of an under served people who are outside of our business there is much value.

→ STOCK EXCHANGES WITH WHICH COMPANY'S EQUITY SHARES AND OTHER SECURITIES

(A)   FOR EQUITY SHARES

(1) The Stock Exchange, Mumbai.

(2) National Stock Exchange of India Ltd.

(3) The Calcutta Stock Exchange Association Ltd, Kolkatta.

(B)   FOR NON – CONVERTIBLE DEBENTURES

(1) National Stock Exchange of India Ltd – Mumbai.

(C)   FOR GDPS

(1) Society De la Bourse De Luxembourg Society Anongme Luxembourg.

→ AWARD & RECOGNITION

For the development and achievement, company has received following awards from government ands other institution, in the field of production export, quality pollution etc.

(1) It has received "Gold Trophy" for highest export from synthetic & Rayon Textile Export promotion council in the year 2003-04.

(2) National Energy conservation award received from ministry of power New Delhi.

(3) Greentech Environment Excellence Silver Award 2002-03 received from Greentech Foundation, New Delhi in the year 2003.

(4) The Gujarat Safety Council has conferred upon the "Certificate of Honour –2002" upon the Division based on its safety record and performance.

→ **CONCLUSION**

Indian Rayon & industries Ltd is one of the leading company in textile industrial product company always use forward looking policy, more subjective rather than objectives. It is well developed and growing company, making profit, having outstanding performance, reach, healthy and efficient management team. Company's risk management is also more systematic and scientific. The company has a mixed basket of fixed and floating rate borrowings both in rupees and U.S. dollar. Company is continuously monitoring its interest rate exposure and whenever required uses derivative instruments to minimize interest rate risk and interest cost so that adverse impact of interest risk on profitability of the company can be avoided.

The company is exposed to the risk of price fluctuation of raw materials as well as finished goods in all its products.

A part from the risk on account of interest rate, foreign exchange and regulatory changes, various businesses of the company are exposed to certain operating business risk, which is mitigated by regular monitoring and corrective actions.

The company has appropriate internal control systems for business across various profit centers with regard to efficiency of operations, financial reporting compliance with applicable laws and regulations etc. The Management Information System (MIS) is the backbone of the company's control mechanism. The company use EVA concept EVA focuses on the optimization of capital at all levels in the company, to reflect the value creation.

The company's human resources assets are integrate to ongoing successes. They have played a significant role and enable the company to deliver superior performance year after year.

➜ **PETROLIUM INDUSTRY**

➜ **RELIANCE INDUSTRIES LTD. JAMNAGAR PLANT**

Jamnager is the world's largest grassroots petrochemical complex, which is seeing major capacity expansion in polypropylene and paraxylene as well as in other areas. The refining plant alone has a capacity of 27 million tones per year, which has increased to 108% of the operating rates since April 2000. The entire plant is spread over 31km². The main new plant is a polypropylene complex with a capacity of 525,000t/yr. It is located 480km north of Mumbai (formerly known as Bombay) in Gujarat, India and next to Reliance's recently completed refinery.

The total investment in the Jamnager complex includes the refinery, integrated petrochemical complex, port facilities, captive power facilities and related infrastructure. Reliance Industries, the plant's owner, states that this is in the region of Rupees 24 billion crores ($6 billion). Reliance's investments are 5% of gross assets if the Indian corporate sector.

→ **POLYPROPYLENE PLANT CONTRACTS**

In early 1997, the contract was awarded for a 350,000t/yr polypropylene plant (known as Lines A & B). In 1998, Kvaerner was awarded a second contract for a 175,000t/yr plant called Line C. Each of the lines has 200,000t/yr capacity. Lines A & B were successfully commissioned in the early part of 1999.The Line C part of the plant was successfully commissioned in December 1999. The total plant was completed in February 2000.

The engineering, procurement and construction (EPC) contract was won by Kvaerner ASA's Engineering and Construction division. Kvaerner's UK operation undertook all overseas procurement activities for this contract. The company is able to liaise effectively with the Indian operations through its global computer network. This allowed it to carry out design and engineering with its local sister company, Kvaerner Powergas (India) Ltd. Kvaerner views working across its different offices concurrently as a key part of its cost

cutting. Kvaerner is the only EPC contractor to have carried out work on all three of Reliance's petrochemical sites in India.

→ PARAXYLENE PLANT OPENED

During the course of 1999, Reliance opened two new paraxylene units in Jamnager. A third 400,000t/yr paraxylene plant was opened in Jamnager in January. The company now produces 1.2 million tones per year, making it the third biggest paraxylene supplier in India. The product goes to a mixture of internal customers, Asian customers and (mainly European) export markets.

Reliance Industries has suggested that it will be willing to spend $2.5 to $3 billion in order to expand its Jamnager petrochemical complex. The first stage would be a world-scale naphtha cracker with capacity for 1.3 million tonnes to 1.5 million tonnes per year of ethylene. The cracker would get feedstock from the Jamnager refinery. Downstream units will include two 450,000t/yr to 500,000t/yr polyethylene units, as well as ethylene glycol and a linear alpha-olefins plant that will produce butene and hexene comonomers for polyethylene. The new complex would provide 750,000t/yr of propylene.

→ PROFITIBILITY AND FINANCIAL REVIEW

Reliance Industries is one of the most leading company of Reliance Group, among other company like Reliance Capital Ltd, Reliance Industrial Infrastructure Ltd, Reliance Petroleum Ltd, Reliance Poly Propylene and Reliance Polyethylene, Reliance Stock Broking Ltd and Reliance Power Company Ltd. Reliance industries is top one company in India by increase in sales, increase in PAT, ROI and EPS.

The company's profitability review can be manifested from the following chart no 1.27.

Chart NO. 1.27

TCE & PBIT

Bar chart showing TCE and PBIT (Rs. In Crores) by year:

YEAR	TCE	PBIT
1994-95	10133	1344
95-96	13127	1415
96-97	16097	1538
97-98	20530	2220
98-99	24019	2463
99-00	25503	3468
00-01	24953	3997
01-02	50924	5842
02-03	52770	6529
03-04	58872	7736

Chart NO. 1.28

ROI (In Percentage) by year:

YEAR	ROI
1994-95	13.26
95-96	10.78
96-97	9.55
97-98	10.81
98-99	10.25
99-00	13.60
00-01	16.02
01-02	11.47
02-03	12.37
03-04	13.14

[SOURCES: - ANNUAL REPORT OF RIL - 1994-95 TO 2003-04]

From the above **chart no1.28** it is seen that the company has the increasing trend of its sales revenue since 1994-95 to 2003-2004. The sales revenue of the company was Rs 5260 crores in 1994-95, which has reached to Rs 56247 in 2003-04. It was more than 10 times of the sales in the year 1994-95.

Company's PAT was also in increasing trend since 1994-95 to 2003-04. PAT was Rs 1065 crores in the year 1994-95, which has reached to Rs 5160 crores in the year 2003-04 but Net Profit Ratio was in decreasing trend since 1994-95 to 2003-04. The Net Profit Ratio was 20.25 % in the year 1994-95, which has decreased up to 9.20% in the year 2003-04 so as compare to

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increase in sales there is considerable improvement in earning position of the company.

Chart No 1.29

Net Sale & PAT

Net Sale & PAT (Rs. In Crores)

Year	Net Sale	PAT
1994-95	5260	1065
95-96	5727	1305
96-97	6492	1323
97-98	9719	1653
98-99	10624	1704
99-00	15847	2403
00-01	23024	2646
01-02	45404	3243
02-03	50096	4104
03-04	56247	5160

YEAR

The company was increasing trend in its TCE since 1994-95 to 2003-04. TCE was Rs 9711 crores in the year 1994-95, which has reached up to Rs 58872 crores in the year 2003-04. It was more then 6 time of TCE in the year 1994-95 ROI was remained more or less same during period of 10 years from 1994-95 to 2003-04. ROI is an indicator of the efficiency of funds use. As compare to increase in TCE, there was no corresponding increase in ROI. It indicates to inefficiency of the company fund utilization.

The company's financial review can be reflexes from the following chart.

Chart No. 1.30

DEBT & EQUIT

Year	Debt	Equity
1994-95	2940	7193
95-96	4722	8405
96-97	7626	8471
97-98	8547	11983
98-99	11650	12369
99-00	11520	13983
00-01	10188	14765
01-02	18949	31975
02-03	19758	33012
03-04	20945	37927

Debt Equity Ratio signifies utilization of loan funds in the capital structure. Amount of loan fund of the company was increasing trend since 1994-95 to 2003-04 but Debt Equity Ratio was increasing trend up to 1998-99 then after it was declined. Highest Debt Equity Ratio was 0.86 on the year 1998-99 and lowest 0.35 in the year 1994-95. The reason of declining use of debt in capital structures is adequate amount of surplus with company and reinvestment of the substantial portion of the profit for financing the profitable project.

→ **MANAGEMENT AWARD**

Reliance's commitments to excellence own several national and international awards, ranking and recognition for the company and excellence for the management's outstanding performance.

Dhirubhai Ambani was conferred the "Man of the Country" award by chemtech foundation and chemical Engineering world in November 2000. Lifetime achievement award in August 2001, Reliance was awarded "the Third ICSI National Award" for Excellence in corporate Governance 2003 from the institute of company secretaries of India in December 2003.

Reliance's Features amongst Asia's top 5 companies in the Energy sector in a corporate governance poll by Asia money in September 2003.

→ **CONTRIBUTION TO SOCIAL RESPONSIBILITY AND COMMUNITY DEVELOPMENT**

As responsible corporate citizen, Reliance believes that its corporate responsibilities extend beyond the areas of its manufacturing facilities and offices. Reliance also believes that for ensuring sub stainable all round growth, organization growth objectives need to be line with over all development imperatives of society and the community at large. Reliance had constructed many temples, Dharma-Shala, clock towers and pilgrimage centers in different cities of India. Reliance also started so many schools and colleges. Dhirubhai Ambani institute of information and communication technology was started at Gandhinagar in Gujarat. Dhirubhai Ambani international school started at Bandra–Kurla complex, Mumbai. Dhirubhai Ambani hospital started at lodhivali rajgad etc.

Reliance has formed so many programs for communication development at all of Reliance's manufacturing location. Very high importance is given to improve the quality of life in surrounding communities. These community development program focuses on key areas of health care, education, child welfare, and infrastructure development.

Reliance Rural Development Trust (RRDT) in June with the government of Gujarat is creating village infrastructure under the Gokul Grame Yojana of the government of Gujarat viz community hall, Aanganwadis, Panchayat offices and roads in the villages.

→ **STOCK EXCHANGE WITH WHICH COMPANY LISTED**

The Reliance industry is listed at following stock exchanges.

(1) The Stock Exchange, Mumbai (BSE)

(2) The Culcutta Stock Exchange Association Limited, Kolkatta

(3) National Stock Exchange of India Limited (NSE)

(4) Luxebourg Stock Exchange and Troded on PORTAL for GDR

(5) The Wholesales Debt Market (WDM) segment of the National Stock Exchange of India Ltd for Debt Securities

(6) UTI Bank Ltd for Debenture Trustee.

→ CANCLUSION

Reliance industries is one of the top-level company, well developed and growing company. It is always growing with extraordinary and outstanding performance. It is having healthy reach and well efficient management team, manpower, technology and infrastructure facilities.

→ GUJARAT STATE FERTILIZER AND CHEMICAL LTD

India has an agro-based economy to meet basic need of foods of the Indian people. Agriculture is one of the paramount activities with increase in Indian population demand of food is going to increase. In order to meet such rising demand of food, it is very necessary to increase the productivity of agricultural product. In order to meet such rising demand of food, it is very necessary to increase the productivity of agricultural product. Fertilizer and irrigation are two main source of improving agricultural productivity. Fertilizer is very important to increase agriculture production.

In 1962-63 the state government established the main plant for fertilizer and chemical known as Gujarat State Fertilizer and Chemical Ltd in Vadodara district of Gujarat. The place where plant located is known as fertilizer nagar.

In 1986, the one unit of GSFC Ltd established at Jamnagar district in Moti Khavdi, Sikka. This unit was established for the purpose manufacturing DAP (Dai Ammonium Phosphate). GSFC Ltd Sikka unit is well known unit in the market of DAP with trademark, as Sardar Demand for product is good in our state market as well as outside the Gujarat state and also had modern technology of production.

With looking toward past ten year since 1994-95 to 2003-04, the year 2003-04 has placed Indian economy firmly amongst the fastest growing economies in the world. The GDP growth in the year 2003-04 of around 8.2% was the highest achieved in overall decade. This growth was spread across all sectors and is an indicator of the robustness of the Indian economy. The agriculture sector is estimated to have grown by 12.6% in the year 2003-

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04.This would be the highest growth in agriculture sectors since 1988-98 when it grew by 15.5%. This extraordinary growth reflects a good monsoon during 2003-04.

The Indian economy, after passing through a difficult phase is on the path of revival. Indicators for overall economic growth as well as industrial growth are showing positive signals. Good monsoon along with budget with thrust on agriculture may give boost a fertilizer demand.

→ **REVIEW OF PROFITABILITY AND FINANCIAL POSITION**

With a view to evaluate profitability and financial position since 1994-95 to 2003-04, Net Sales, PAT, Net Profit Ratio, Total capital Employed, Return on investment, Debt Equity Ratio, Earning Per Share and Dividend Per Share have been shown through **chart no 1.31** as follow.

Chart No. 1.31

Net Sale & PAT

| Legend: ☐ Net Sale ■ PAT |

Year	Net Sale	PAT
1994-95	1482.42	114.43
95-96	1685.17	205.88
96-97	1760.10	186.15
97-98	1879.64	169.95
98-99	1886.41	132.21
99-00	1961.27	20.26
00-01	2051.00	6.04
01-02	1954.88	-66.88
02-03	1836.53	-228.30
03-04	2106.24	174.27
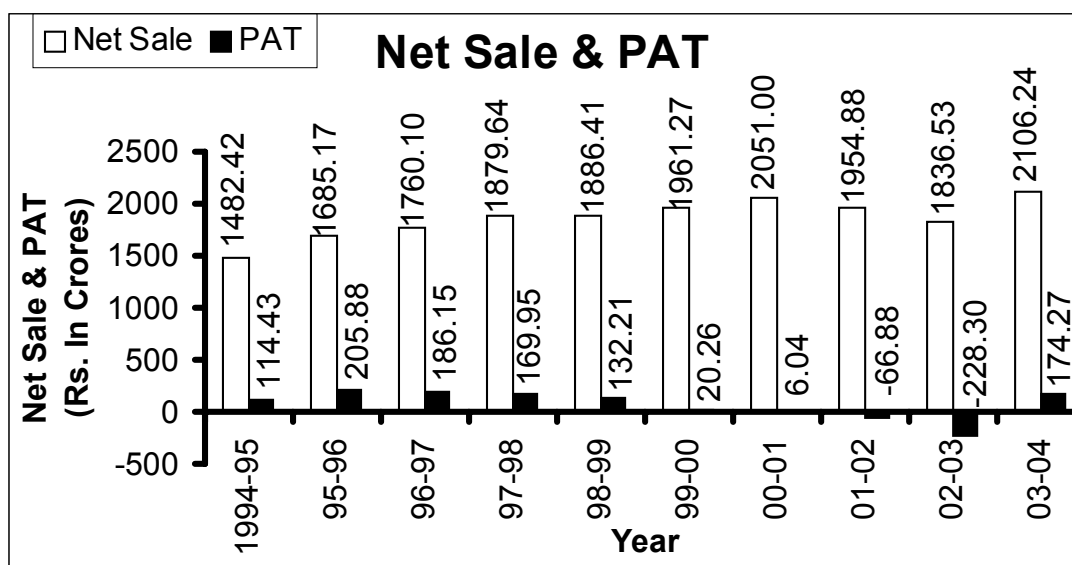
[SOURCES: - ANNUAL REPORT OF GSFC - 1994-95 TO 2003-04]

Net Sales of the company was fluctuated in up and down trend. Highest Net Sales is Rs 2106.24 crores in the year 2003-04 and lowest Net Sales Rs. 1482.42 crores in the year 1994-95.

Chart No. 1.32

NPR

NPR (in Percentage) vs YEAR

Year	NPR
1994-95	7.72
95-96	12.22
96-97	10.58
97-98	9.04
98-99	7.01
99-00	1.03
00-01	0.30
01-02	-3.42
02-03	-12.43
03-04	8.28

Net Profit after tax was also decreasing trend since 1994-94 to 2003-04. Against which the Net Profit Ratio in decreasing trend over the same period. Highest NPR 12.22% in the year 1995-96 and lowest NPR –12.43 % in the year 2002-03 but suddenly increase from –12.43% to 8.28% in the year 2003-04 company was suffering fluctuation period since 1999-00 to 2002-03 due to some specific reason like low demand, high cost of production, drought. So profitability was much low but in 2003-04 company has earned profit as the rate of 8.28%. It is result of effective and efficient management strategy, cost reduction, rising demand due to good monsoon and high GDP etc.

Chart No 1.33

TCE & PBIT

□ TCE   ■ PBIT

TCE & PBIT (Rs. In Crores) vs Year

Year	TCE	PBIT
1994-95	1830	248.30
95-96	2166	337.60
96-97	2636	353.86
97-98	2627	304.65
98-99	2870	264.70
99-00	3013	150.25
00-01	2799	186.80
01-02	2645	89.15
02-03	2251	-57.51
03-04	2275	181.06

Chart No. 1.34

ROI

Year	ROI
1994-95	13.57
95-96	15.59
96-97	13.42
97-98	11.60
98-99	9.22
99-00	4.99
00-01	6.67
01-02	3.37
02-03	-2.55
03-04	7.96

From the above **chart no 1.33** it is seen that there was fluctuation in total capital employed since 1994-95 to 2003-04. Highest TCE was Rs 3014.00 crores in the year 1999-00 and lowest Rs. 1830.00 crores in the year 1994-95. Return on investment was continuously decreased since 1994-95 to 2003-04. It said that there is inefficient use of fund in the business activities

→ **FINANCIAL REVIEW.**

Chart No. 1.35

DEBT & EQUITY

□ Debt. ■ Equity

Year	Debt	Equity
1994-95	1058	772
95-96	1241	925
96-97	1371	1265
97-98	1276	1351
98-99	1383	1487
99-00	1507	1506
00-01	1519	1280
01-02	1473	1172
02-03	1470	781
03-04	1391	884
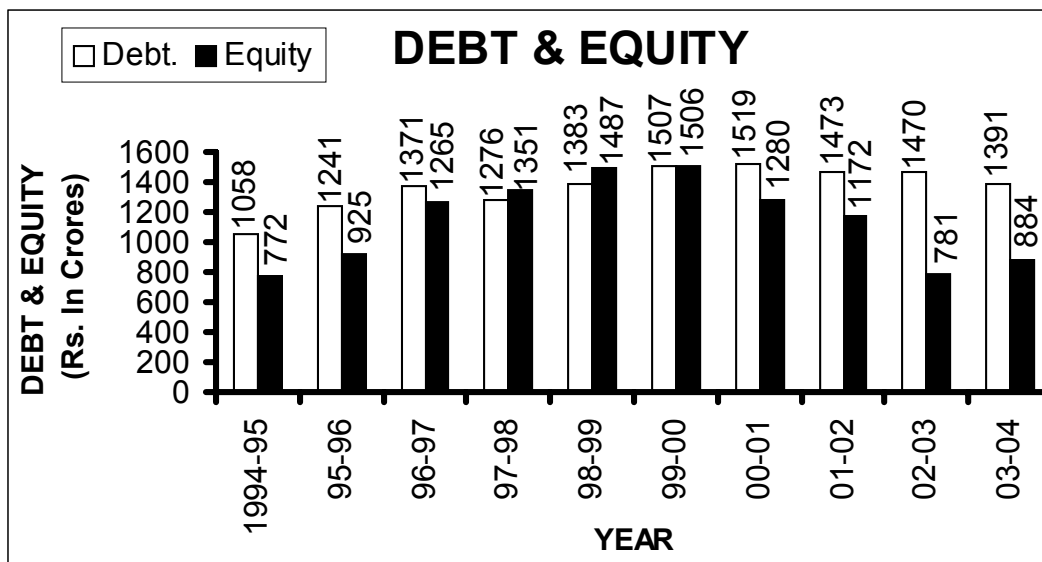
From the above **chart no 1.35** it is seen that company financed its capital structure with own as well as borrowed capital. Company's total long-term debt was more that equity fund since 1994-95 to 2003-04. It said that

company use non-conservative financial approach, it indicate high degree of risk. Debt Equity Ratio decreases from 1.27 times to 0.93 times since 1994-95 to 1998-99 but against increased up to 1.86 times in 2003-04. So we can say that from the viewpoint of long-term solvency, financial position was not found satisfactory.

EPS also in decreasing trend since 1994-95 to 2002-03. Highest EPS was Rs 36 since year 1997-98 to 1999-00 but lowest EPS Rs (-49.00) in the year 2002-03. There is wide fluctuation in EPS due to poor profitability of the company, Dividend Per Share was also considerably fluctuated over the same period, and it said that dividend policy of company is mostly effected by current year profit.

→ **MANAGEMENT AWARD**

From the viewpoint of achievement and Excellency, following recognition certificates & award received by the company.

(1) Company has received certificate of ISO 14001 for environment management system.

(2) National Safety Award 2003 from British Safety Council, UK for outstanding performance in the field of safety and health.

(3) Company has earned "5 STAR" rating with a grading above 92% in health and safety management system.

(4) Company has also been awarded a certificate of merit for working more than 2 million accident free man-hours without any lost time accident for the year 2002 from Gujarat Safety Council & Directorate of Industrial Safety & Health Gujarat State.

→ **STOCK EXCHANGE WITH WHICH COMPANY'S EQUITY SHARE LISTED.**

(1) Stock Exchange Mumbai.

(2) National Stock Exchange of India (NSE) Ltd.

(3) Vadodara Stock Exchange Ltd.

→ **CONCLUSION**

GSFC Ltd Sikka unit is one of the well established, developing and growing units. It is more popular with its product DAP in all over Gujarat state. It is suffering from more fluctuation period. Thus its profitability and financial position was not satisfactory but company is having more efficient and effective management team, modern technology, well-qualified and experienced human resources assets. As a result it succeed to develop effective management strategy, risk management and adopting effective internal control system. Company always undertakes research and development work in specific area of environment control and waste management, value added products, quality improvement and failure investigation of components of plant, equipment & machinery. Company considerably benefited with all such extraordinary action and performance. Company can recover from a huge loss of 13.43% in the year 2003-04 to profit 8.28% in the year 2003-04 rise the EPS from Rs –49.00 in the year 2002-03 to Rs 22.00 in the year 2003-04. It is sign of bright future for the company.

(3) IMPACT OF GLOBALISATION ON INDUSTRIAL SECTORS

The several countries with a view to the growth of economy adopt the concept of liberalization, globalization and privatization. The liberalization concept is promoted in India in 1991, which has made drastically change in the business environment. Lot many companies have made notable changes in their industrial policies. Many companies exited several of their business

and have been concentrating on their core business. E.g. The CEAT Company exited four non-tyre businesses such as glass fiber, electronics, photocopies and nylon code and decided to concentrate on its core business tyre.[1]

The liberalization has increase scope for private enterprise and removes the entry in growth restriction. There for strategic management is also become one of the important aspect. A number of companies have changed their business portfolio; many have entered in new business and exited some of their business, while many have done both.

Change in the business environment across the world may change the industrial scenario of nations. We can point out that such change effect on international product life cycle model. Therefore some of the countries like U.S.A. had exported product in the early stage, later had imported in the same product. The country with exported product has acquired the technology, which would be able to produce them cheaper because of low labour cost or would some time improve the technology.

After globalization, investment policies of India became more liberal toward private sectors. Global liberalization has created favourable business environment. The international private capital flows have been increasing rapidly. Foreign capital now contributes a significant share of domestic investment, employment generation, industrial production and export in a number of economies.

There are two types of foreign investment namely foreign direct investment where the investor has control over / participation in the management in the firm. Portfolio investment where the investor has only a sort of property interest in investing the capital in buying equities, bonds or other securities abroad with the object of return on it but no much control over the use of the capital.

The foreign investment in India evaluate as follows

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1 - Frances Cherunilam – Business Environment (14th Edition) – Himalaya Publishing House – 2003 – P - 24

Table No. 1.1

THE FOREIGN INVESTMENT IN INDIA

Particulars	YEAR (U.S. $ MILLIONS)			
TYPE OF INVESMENT	1991-92	92-93	97-98	2001-2002
Direct investment	150	315	3557	3904
Portfolio investment	8	244	1828	2021
TOTAL	**158**	**559**	**5385**	**5925**

(SOURCES: The economic times 11th June 2001)

From the above **Table No. 1.1** it has been cleared that FDI and portfolio investment increasing from 1991-92 to 2001-2002.

The main object behind inviting foreign investment in India are resources seeking, market seeking and efficiency seeking from the host country.

Although India has substantially liberalized its foreign investment policy, the FDI inflow has been much below the target. India has not been getting even one-tenth the size of FDI to china.

There is a positive effect of liberalization for industrial development in India because of the liberalization in industrial policy, investment policy, priority to private sectors de-investment policy etc. Such positive effects can be evaluate through overall improvement in productivity. The productivity indices of Indian manufacturing sectors have gone up speedily such increment in productivity can be envisage in following table.

PRODUCTIVITY INDICES OF INDIA

(BASE YEAR 1990-91)

YEAR	CAPITAL PRODUCTIVITY		LABOUR PRODUCTIVITY		TOTAL FACTOR PRODUCTIVITY	
	INDEX	CHANGE IN %	INDEX	CHANGE IN %	INDEX	CHANGE IN %
1990-91	100	-	100	-	100	-
91-92	97.38	-2.62	103.05	3.05	100.2	0.2
92-93	103.89	3.89	107.77	7.77	103.07	3.07
93-94	104.11	4.11	115.39	15.39	106.14	6.14
94-95	105.16	5.16	119.63	19.63	107.58	7.58
95-96	115.19	15.19	129.26	29.26	109.31	9.31
96-97	111.96	11.96	135.35	35.35	112.38	12.38
97-98	125.26	25.26	154.27	54.27	115.16	15.16
98-99	112.71	12.71	161.23	61.23	109.41	9.41
99-2000	122.42	22.42	189.02	89.02	110.00	10.00
Total	1098.08	98.08	1314.97	314.97	1073.25	73.25
Average	109.81	9.81	131.5	31.5	107.33	7.4

(SOURCES: STATISTICAL OUTLINE OF INDIA 2004-05. TATA SERVECE LTD – DEPARTMANT OF ECONOMIC AND STATISTIC)

From above **Table No. 1.2** we can conclude that during a decade after globalization total factors productivity increase on an average by 7.4 % and capital productivity increase on an average by 9.81% but labour productivity increase by 31.5%. There is drastically improvement in labour efficiency because of adopting effective an efficient technology. Such increment in labour productivity has considerably control on labour cost. Labour cost is one of the major parts of cost of production. Therefore due to significant saving in cost of production margin of profit improves and at the last it helps to improve economic position of organization and make considerable industrial development.

Such global scenario has also compelled the corporate sector to change their mission and management strategies. The mission of the corporate units located in Saurashtra Region is more or less same. They are

to achieve their dreams and continue their effort to achieve their predetermine objectives / mission. Mission of all the corporate sectors is dynamic and reoriented. It is change with change in business environment. To be survival of our business it is essential and most important to identify change the environment and impact on the mission and purpose of the business. So accordingly we can make the changes in the theory of our business its objectives, strategies and work assignment.

The corporate sectors of Saurashtra Region always make the effort to provide ultimate value satisfaction to its customers in term of quality commensurate with price through excellence in technology, breakthrough management enterprise, total quality management to make it preferred organization for its both present and future employees, suppliers, customers, share holders, related agencies and societies at large and continue its much towards progress and retain its front line position, therefore corporate goals of the industrial sectors are :

1. Excellence in quality

2. To maximize return to share holders

3. Ceaseless quest for higher productivity

4. Maximum customers satisfaction

5. Continuous development of employees

6. Vigilant search for opportunity for growth and fulfillment of social objective

7. To be no. 1 position in corporate sectors.

8. To use innovative and alternative methods of description to reduce costs

9. To develop system and process which will allow us to control any level of business and evolve with the company.

10. To procure materials at the best possible price and quality.

11. To utilize our financial and production resources in the most efficient manners.

(4) <u>INDUSTRIAL POLICIES AND GROWTH & DEVELOPMENT OF INDUSTRIAL SECTORS</u>

There is no other economic policy in India, which has so dominantly determined the pattern and direction of development of the economy as the Industrial Policy. To a large extent, the Industrial Policy reflected the socio-economic and political ideology of development. Indeed, some people as the Economic Constitution of India described the Industrial Policy Resolution of 1956, the fundamental principles of which reined until 1991.

The Industrial Policy indicated the respective roles of the public, private, joint and cooperative sectors; small, medium and large scale industries and underlined the national priorities and the economic development strategy. It also expressed government's policy towards foreign capital and technology, labour policy, tariff policy etc. in respect of the industrial sector.

Because of exploitation of 190 years (1757 to 1947) by British, our political leaders come on conclusion that capitalism is the policy of exploitation. They were impressed by USSR's socialism & ready to apply that thought to Indian economy, with that context our first Prime Minister Jawaharlal Nehru announce first industrial policy in 1948. In which we declare that we want socialistic pattern & our goal is to make economic & social equality under that thought all the big-giant private sectors units are to be nationalized within 10 years. So up to 1958 we make our path of development through socialism. In which all the major decisions are to be taken by central government. All the resources are under the government & the way of economy will be decided by central planning.

By this announcement the very deep impact that we found in our economy was decreasing the private sectors investment & its effects on overall growth rate. By looking to this fact just before 2 years in 1956 we admit that private sector is very important part of Indian economy and no one can neglect that, so we entered in to mixed economy & make both the sector important.

But again in 1969 we passed MRTP Act (Monopoly restricted Trade Practice) to control over private sector & again we emphasis on public

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sectors. After 1970 the growth of world economy & some Asian Economy were so fast and parallel to that our economy felt down to slower rate. By looking to that, again in 1991 we opened our economy & applied liberalized policy.

It means when we look to our industrial policy we found that we never follow one thought or philosophy, we used to change our way of development (one major reason behind this is our political system) as government change we change our strategy and that's why we never get the total benefit of public and private.

Since last decade we strongly applied the policy of LPG i.e. liberalization privatization and globalization in which we remove MRTP act & FERA, we remove license policy, cuts import duty & make our economy to the rest of world. It increases our international trade as well as our standard of living. It increases competition and production. By that now, we are able to achieve 12% growth rate in industrial sector and 8% GDP rate.

But still when we compare our economy with china, we find our development very low. (China is also large populated country and both independence in the same period, i.e. 1949, hence, the comparison is reveling).

GDP of India in 2003 was 599.0 billion $ while GDP of china in the same period was 1409.9 billion $, our annual average growth rate of GDP in 1970-80 was 3.6%, in 1980-90 5.8 % and from 1990 to 2003 5.8 %. But in china it was 5.8% in 1970-80, 10.2% in 1980-90 and 9.5% in 1990 to 2003.

Our industrial share in GDP was 25% & share of agricultural was 24 %, in 2002. While in china industrial share was 51%.

It means development of china is far ahead the India. There infrastructure facilities, foreign trade, investment rate is very high in comparison with Indian economy. But now since last decade we are also improving our industrial sector through privatization as well as over all growth. We improve our technology, way of production, way of thinking in making policy are totally changed. Now we are more open to new thought and ready to globalize our economy. It means now we are ready to compete with world

leaders. Our government is more liberal to our private sector and our industrial policies and thoughts are based on capitalistic philosophy. In which market will decided what to produce, how to produce, when to produced etc.

Decision are based on market or demand, ultimately it leads to competition & by that new technology comes & producers will try to cut their costs, make better production & boost over all economy.

So now the only thing survive is productivity and profit because other way of current industrial policy is not to protect unproductive units. So the only alternatives is to "Produce or Perish" and we get the benefit of this thoughts. By looking at current scenario at industrial sectors we found that producers are ready to do anything for the survival, they are ready to walk parallel to world economy & that is why they are ready to implements all the systematic & scientific tools in their decision. Our Macro Policies are certain such type of environment in economy that it is not possible to survive with old rigid thoughts or way of production, so implementation of tools is very necessary in current competitive world. By changing Macro factor we can change the style or way of production and we are getting benefit of this change. Our industrial sectors improve growing at 12 % and it leads our economy to the new decade of development.

Economic liberalization scenario brought drastic change in industrial policy. Until 1991 the industrial policy of India was supported to the public sectors. SSI sectors and co-operative sectors and imposed functional restriction as on the private sectors and a very restrictive attitude towards foreign capital and technology public sectors failed to contribute significance improvement on overall productivity of industrial sectors. The industrial policy announced in July 1991, which was in favour of private sectors. Government of India realized that to improve over all productivity growth rate of economic and standard of living private sectors are only the alternative. It has started to give more important to thought of privatization, liberalization and globalization remove MRTP act and licensing policy, encourage foreign investment, foreign technology etc.

Table NO. 1.3
TOTAL PRODUCTIVITY INDICES OF INDIA

(1981-82 = 100)			(1990-91 = 100)	
1981-82	100.00		1990-91	100.00
1982-83	95.00		1991-92	100.20
1983-84	99.00		1992-93	103.07
1984-85	99.10		1993-94	106.14
1985-86	100.70		1994-95	107.58
1986-87	101.60		1995-96	109.31
1987-88	102.00		1996-97	112.40
1988-89	105.30		1997-98	115.16
1989-90	105.6		1998-99	109.41
1990-91	104.20		1999-00	109.98
AVERAGE	**101.25**			**107.33**

(SOURCES: STATISTICAL OUTLINE OF INDIA 2004-05. TATA SERVECE LTD – DEPARTMANT OF ECONOMIC AND STATISTIC)

As a result of such measurement of economy development overall productivity of industrial sectors was improved average productivity of decade, before liberalization (1991). It was 101.25 where as after liberalization it was of one decade on an average 107.33 (see **Table No. 1.3**) such improvement brought considerable improvement in growth rate of industrial sectors and as a result in growth rate of economic development of the national. The impact of liberalization on industrial sectors can be seen in above **Table No. 1.3.** Therefore we can say that liberalization has created positive impact on industrial sectors.

(5) MANAGERIAL DECISION MAKING SYSTEM

→ Introduction

Decision-making is a managerial process of choosing a particular course of action out of several alternative courses for the purpose of achieving the given objective. It involves committing the organization and its resources to specific courses of actions. Managers at all levels in an organization make decisions and solve problems. Problems arise when the actual state of affairs differs from the desired state of affairs. Sometimes,

however, problems may give rise to opportunities. Thus, decision-making is the process of reducing the gap between the existing situation and the desired situation through solving problems and making use of opportunities.

A decision is a course of action consciously selected from available alternatives to achieve a desired goal. It is the outcome of judgment and represents a commitment. Managerial decision is relevant to the various business activities. Therefore, the business environment in particular molds managerial decision in general and strategies. Those external factors like the economic, political regulatory, social / demographic, technological and natural factors which make up the opportunities for and threats to business and internal factors like the resources capabilities and goodwill of the organization, internal power relationships etc. which decide the strengths and weaknesses of the firm. A thorough understanding of the business environment therefore, is prerequisite for making any strategic decision.

Indeed, formation of strategy is some times defined as establishing a proper firm environment fit.

Business environment consists of all those factors that have a bearing on the business and such factors is classified as internal and external factors.

The internal factors are generally regarded as controllable factors because the company has control over these factors. It can alter or modify such factors as the personnel, physical facilities organization and functional means, such as marketing mix to suit the environment.

The external factors on the other hand, are by and large beyond the control of a company. The external or environmental factors such as the economic factors, socio-cultural factors, government and legal factors, demographic factors, Geo-physical factors etc. are therefore generally regarded as uncontrollable factors.

Managerial decision system is also affected by the organizational structures. The organizational structures are the compositions of the board of directors, extent of profession of management, share holding pattern, internal power relationship etc., which are important factors influencing business

decisions. Some management structures and styles delay decision making while some others facilitate quick decision-making.

The board of directors being the highest decision making body which sets the direction for the development of the organization and which overseas the performance of the organization the quality of the board is a very critical factor for the development and performance of company. The private sector in India presents extreme cases in this respect. At one end there are companies with highly qualified and responsible Board and at the other end there are companies, which do not posses these qualities.

The share holding pattern could have important managerial implications. There are very large companies where majority of the share is held by the promoters share holding pattern strengthen the decision power of board of directors.

Shareholding pattern emerged voting right of shareholders. Quantum of share holding indicates power of control on management affairs. Those who are holding majority, get majority participation in management decision mechanism. We can observe that out of the 9 company 8 companies majority share hold by promoters and individual (Public). From this two group only promoters are having keen interest in management affair. Individual holders group are only ordinary investor. They are owner of the company only by name. In fact they do not participate in day-to-day managerial decision process. Majority member of Board of Directors generally comes from promoters holding group and BOD being the highest decision making body which set the direction for development of organization and which overseas the performance of the organization. The quality, skill, moral, attitude, commitment etc. of the board member could contribute to the strength and weakness of an organization. The private sectors in India present extreme cases in this respect. At once end there are companies with highly qualified and responsible board and at the other end there are companies, which do not poses these qualities. Such situation differentiates each organization with regard to performance, policy, profitability and financial strength and weakness. Therefore those organization which engaged in same kind of business environment having equal opportunities and scope for growth and

development can not get achievement and excellency equally to run the business successfully due to in equal quality of management team.

Let us evaluate the shareholders patterns of the selected companies of Saurashtra region.

Table No 1.4

→ **SHARE HOLDING PATTERN OF SELECTED INDUSTRIAL SECTORS AS ON 31-03-2004**

(Figures in %)

	GACL	GHCL	GSFC	OAL	TCL	Austin Eng. Ltd.	RIL	Indian Rayon	DCCL
(1) Promoters Holders/ Persons acting consert	24.87	44.25	38.47	50.36	25.52	32.52	46.67	26.92	60.77
(2) Bank / MPS/ FIS	28.79	17.58	38.39	2.13	38.61	0.33	8.77	29.53	5.18
(3) Foreign Investors / OCB /GDP	31.91	2.48	0	2.38	1.86	0.69	29.62	7.43	0.46
(4) Industrial, Corporate & Others	14.43	35.69	23.14	45.13	34.01	66.46	14.94	36.12	33.59
IX	100	100	100	100	100	100	100	100	100

(SOURCES: ANNUAL REPORT OF COMPANIES)

From the above **Table No. 1.4** we can say that highest promoters holding in DCCL 60.77 and Orient Abrasive Ltd. These both companies are passing from worst position. Company is suffering from poor performance, weak and worst profitability and inadequate efficiency. It may be due to inefficient and poor quality of management on the other side lowest promoters holding in GACL 24.87%. It is enjoying Excellency in performance, profitability and production. It is one of the well-developed and growing companies.

Internal power relationship factors like the amount of support, the tope management enjoys from different levels of employees, shareholders and Board of Directors has important influence on the decision and their implementation.

The relationship between the members of Board of Directors and between the chief executive and the Board are also critical factors.

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The characteristics of the human resources like skill, quality, morale, commitment, attitude etc. could contribute to the strength and weakness of an organization.

MANAGEMENT INFORMATION SYSTEM

Management decision system is also influenced by Management Information System (MIS). To take correct and effective decision, decision maker suppose to collect need full information at the right time from right and reliable source, in right form and in adequate quantity and quality. Flow of information continuously run from bottom to middle level and middle level to top level management and flow of instruction and direction run from top to middle level and middle to bottom level management, who is responsible for taking needful decision which is generally determined base of organization structure. Organization structure indicates the allocation of authority responsibility and accountability. It should be scientifically organized and commensurate to the organization culture with the passage of time. It is classified into two part (a) Traditional organization structure like line structure, functional structure and line and staff structure (b)   Modern organization of structure like project structure and matrix organization.

So far as Indian corporate sector is concern, most of corporate sectors have adopted line and staff type of organization, which is the combination of both line officers and a staff manager where the line officers make important decision and staff manager play advisory role.

Through my empirical study of corporate structure of Saurashtra Region, I came to know that most of corporate sectors has adopted line and staff type of organization, which is the combination of both line officers and a staff managers. Where the line officers make important decisions and staff managers plays advisory role. Staff means "a support to the line manager".

Staff authority consists of experts and specialists in various fields. They help line managers to take important decisions by providing necessary information. The main feature of line and staff organization is that it combines the benefits of line type and staff type of organization.

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Line officers issue the directives and make important policy directly and staff experts contribute indirectly towards the achievement of the goals. The subordinates can share their ideas and suggestions, which will be studied and ultimate decisions, will be taken. This helps in creating healthy environment in the organization and reduces the dispute among the workers.

6 SUMMARY

I have made the effort to know several kinds of policy and practice followed by small and large-scale industrial sectors of Saurashtra Region. I have considered my study period for ten years commencing from 1994-95 to 2003-2004. During my study period, I made attempt for making survey of financial, marketing, production, personnel aspect of selected industrial sectors of Saurashtra Region. I did the comparative study of about nine units located in Saurashtra Region. All such industrial units are found slightly different from the viewpoint of product policy, financial policy and system of several kind of managerial decision making, profitability. Some of the units are too much rich from the viewpoint of infrastructure facility, availability finance even though they are suffering from the problem of market, production, personnel etc. Some of them suffering loss, whereas some of the units are financially sound and earning adequate amount of profit. I tried to find out uniformity in various kinds of policy, practice and procedure prevailing in the organization of such units with regard to prominent business activities. I gave more emphasis on managerial decision policy used by all such selected units. I found during my study that most of the units used to take managerial decision at higher-level authority. Assignment of authority and responsibility for taking decision to the concern officer or manager depends upon significance of decision in business activities. Departmental heads makes some routine and less risky decisions. But top management generally makes those kinds of decision, which are more important and very risky. I had given more focus on some important aspects mainly investment, finance, production and marketing. I have gone through the prominent matter of selected units and diagnoses are made in depth and with detail description of various matters effecting to the policy procedure and practice of units.

I attempted to assess the financial structure of the selected industry units with a view to evaluating its capabilities to generate focus needed for undertaking the desire expansion during the next decade. The study extends that the poor profitability and consequent low rate of dividend declaration places a serious limitation on its capacity to raise funds.

It asserts that increased use of debt by firms for financing their investment is perhaps influenced by cheapness of this source as well as the relatively low profits in the industry. Low profits precluded the possibility of declaring dividends, which can attract sufficient share capital. It was also found that all the alternative measures of profitability had been significantly higher in the cement, soda ash and abrasives industry, than their corresponding counter parts of the total industrial sector excepting the last three years.

CHAPTER – II

CONCEPTUAL FRAMEWORK OF MANAGERIAL DECISION-MAKING

CONTENTS

1. INTRODUCTION
2. CONCEPTUAL MEANING OF MANAGERIAL DECISION-MAKING
3. TYPE OF MANAGERIAL DECISION-MAKING.
4. DECISION-MAKING ENVIRONMENT.
5. QUANTITATIVE DECISION-MAKING TOOLS
6. DECISION-MAKING PROCESS.
7. THE STEPS IN RATIONAL DECISION-MAKING: PROBLEM FINDING, IDENTIFYING THE APPROPRIATE ALTERNATIVE, EVALUATING EACH ALTERNATIVE, SELECT THE BEST ALTERNATIVE, IMPLEMENT THE SELECTED ALTERNATIVE, EVALUATE RESULT AND FOLLOW-UP.
8. PRINCIPLES OF EFFECTIVE DECISION-MAKING
9. CORPORATE STRATEGY & MANAGERIAL DECISION
10. ETHICS & INTUITION IN MANAGERIAL DECISION-MAKING
11. CONCLUSION

(1) <u>INTRODUCTION</u>

Management is one of the universal terms for any kind of activities, whether business, social, religious or any other kind of activities. The term management is one of the unavoidable requirements. Through the proper uses of management, we can make the proper planning, organizing and controlling the various activities. To reach up to specify predetermine objectives, management is having paramount important.

The term management is significantly used in business environment. At present time, environment of business is going to change at every next movement. Therefore to make the proper study of environment of business, scientific management system is must. Management is only one of the alternatives to be success in the business activities. Management gives proper direction and suggestion regarding business activities thus optimum utilization of all the resources of the production such as men, material, machine, method, money and market is possible and organisation can achieve its main objective.

To improve efficiency of the organisation, effective management must be there. To be effective management, the manager is playing an important role.

The modern manager faces many problems in today's dynamic and challenging competitive environment. Manager is responsible for performing functions such as planning, organizing, leading and controlling of an organization. All organizational resources, human, financial, physical and information resources must be managed efficiently and effectively. Lot many challenges is to be tackle by manager like management of work, management of people and management of operation.

Management of the work is concern with what need is to be served. What goal must be established, and what mean will be used for the conduct of work. Management of work cover the main functions of management like solving the problem, decision-making, establishing the plan, preparing budget, assigned the responsibility and delegation of authority.

Management of people is concern with Human resources. People must ultimately accomplish the work of the organization. Despite all the new labor

saving technology and robotic equipment betting work done through people is still a major task for the manager. Human resource should still be considered the single most important organizational assets. Management of people deals with needs and behaviours of people as an individual employee as well as a group employee.

Management of operations is one of the operating functional challenges of organization. Every organization has an operations process by which a product of services is produced and for provided for the customers.[2]

The management of this production operation deals with the flow of input materials and the technology of transforming those inputs in to the desired outputs for the consumption. The successful handling of the challenges for management of operation is depends upon effective and efficient handling work and management of people.

(2) CONCEPTUAL MEANING OF MANAGERIAL DECISION-MAKING

Management is one of the important branches of business enterprise. It is a controlling body of various business activities. From the viewpoint of controlling various aspects of business enterprise, various decisions need to be taken. Management consists to a great deal, the making of decision. Indeed, some would argue that decision-making is synonymous with management. At every turn in the management process, the manager must make decisions, many decisions diverse decisions. The manager's day is spent largely in facing one crisis after another by making one decision after another in continuous but fragmented manner that accounts for much of the stress experienced by managers making good decisions not only important but also essential to managerial success.

To understand this head we have to clarify difference between the term managerial and decision-making.

The word managerial refer to somewhat which is related to upper level management i.e. top and upper middle level management. Other managerial means to manage a group of people or unit/ organization. As we know that in every business organization managerial and operative functions are

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2 - Burton Gen & Manab Thakur – Management Today, Principle & Practice (2nd Edition) – TATA Mc Graw – Hill Publishing Co. Ltd. – New Delhi –1997 – P – 9.

performed. Managerial function are planning, organizing, staffing etc. where as operative function are related to each branch of management that is for marketing, research, sales promotion, advertising etc. for personnel recruitment selection, training, performance appraisal etc.

Managerial functions are applicable to every branch of business, which are decided by the top management. Thus, managerial means, which are applied by, top management.

Decision-making means to decide or jumping a conclusion from various available alternatives. As we know that there are so many alternative to do a certain things. After scrutiny of each alternative on the bases of cost and benefit, we select an option. This process is called decision-making. In business each project consist of cost and benefit out of this analysis, we select a project, which is most profitable to the organization. This is done at the top-level management.

To conclude the managerial decision-making we can say that what is being decided by the top-level management after scrutiny of various alternatives available with it. Thus it is an exercise carried on by the top-level management for more return to the organization in comparison with the cost of each alternative.

A decision may be defined as a choice made from available alternatives. The term decision includes at least four decision-making activities. The manager identifies the existence of a problem or an opportunity to improve a situation. Second, the manager generates a set of alternative courses of action. Third, the manager selects one of the alternatives. Finally the manager implements the selected course of action.

**1. Manager determine the
Existence of problems
and opportunities**

↓

**2. Manager generates
alternative course of action**

↓

**3. Managers choose a
course of action**

↓

**4. Managers implement the
course of action**
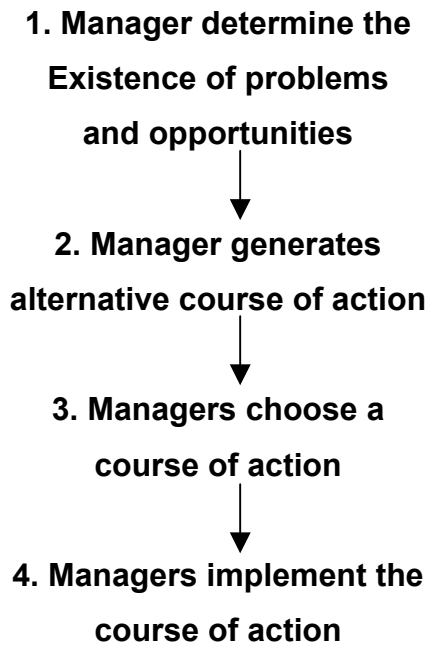
Hence, the decision-making process includes identifying and defining the nature of the situation. Identifying acceptable alternative course of action, choosing the best one and placing it in operation. The best one decision generally infers effectiveness. Thus an effective decision maker must fully understand the situation and result expected from it. In some cases, best decision would be one that maximizes such factors such as sales, profit of units produced. However in some situations, the effective decision may be one that minimizes such factors as customer's complaints, employee, turnover or operating costs.[3]

(3) <u>TYPE OF MANAGERIAL DECISION-MAKING</u>

Various authors have classified the types of decision-making through their own thoughts. However, as a researcher I must have to mention all type of decisions availed with me, such types are as follow:

(A)   <u>PROGRAMMED AND NON PROGRAMED DECISION</u>

Programmed decisions are made in accordance with some rule or policy, which are predicted in advance on tailor made. In every

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[3] - Burton Gen & Manab Thakur – Management Today, Principle & Practice (2nd Edition) – TATA Mc Graw – Hill Publishing Co. Ltd. – New Delhi –1997 – P – 93 – 94.

organization, some code of conduct is there and according to those code of conduct the decisions, which are made, are called programmed decisions.

None programmed decisions are not anticipated in advance i.e. which are not predicted in advance but in the happening of some uneven situation or unpredicted event. Such decisions are made. These decision are not regularly taken but with happening of some event/occurrence, there is a requirement of non programmed decision

(B) MAJOR AND MINOR DECISION

These decisions are made on the bases of important that they have. These decisions are based on the following issues

→ Degree of future important.

→Impact of decision on other functional areas.

→ Qualitative factors that affect the decision.

→ Frequency of decision-making

All these factors decide the major and minor decision. Major decision may b from the view point of its importance for future, which affect the other functional area, which may be including more qualitative factors or which are not frequently to be made.

Minor decisions do not posses any much important area for the above mention issue.

(C) ROUTINE AND STRATEGIC DECISION

Routine as the name implies are those decisions, which are to be made in routine

i.e. parking facilities, temporary lighting etc. these decisions are made to support the smooth functioning of the organization.

Strategic decision are long term decision which are made as a part of policy execution i.e. reduction in price at price of product, installation of new plant etc.

(D)   INDIVIDUAL AND GROUP DECISION

A single takes some decisions, which are not of much importance. These decisions are individual decisions. On the other hand the decisions, which are of major importance, are taken by a group of person.

Further in group decision the other method of decision-making are

(a) Delphi Technique:

The Delphi Technique is a method of surveying panel members regarding a well-defined problem. Delphi does not bring the participants together, so most of the inhibiting factors of group dynamics are eliminated and anonymous participation is facilitated. The Delphi process has found its greatest success in surveying experts with respect to forecasting and future predictions. The Delphi method is outlined as follow.

→ **Round 1** → | **Topic defined for participants** |

→ **Round 2** → | **Responses collected and compiled all returned to each participants** |

→ **Round 3** → | **Repeat collection & distribution** |

Repeat round

→ **Round 4** → | **Final compilation with consensus** |
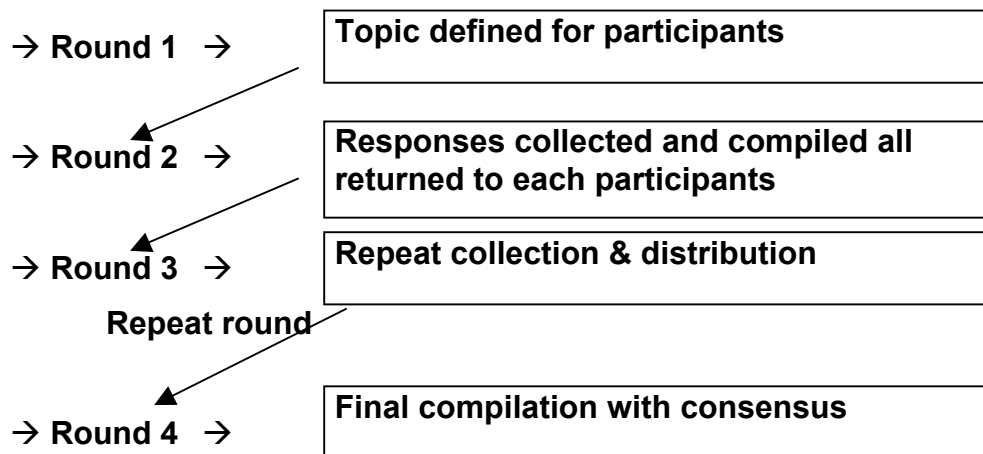
(b) Nominal Grouping Technique (NGT)

There are many popular variations of the nominal grouping technique. The NGT procedure shows as follow:

```
┌─────────────────────────────────┐
│     Individuals develop ideas.  │
└─────────────────────────────────┘
                 │
                 ▼
┌─────────────────────────────────┐
│    Ideas listed openly for review│
└─────────────────────────────────┘
                 │
                 ▼
┌─────────────────────────────────┐
│    Discussion, clarification,   │
│             evaluation          │
└─────────────────────────────────┘
                 │
                 ▼
┌─────────────────────────────────┐
│    Individual's vote or rank order│
│               ideas             │
└─────────────────────────────────┘
                 │
                 ▼
┌─────────────────────────────────┐
│    Poll voted results in preferences│
└─────────────────────────────────┘
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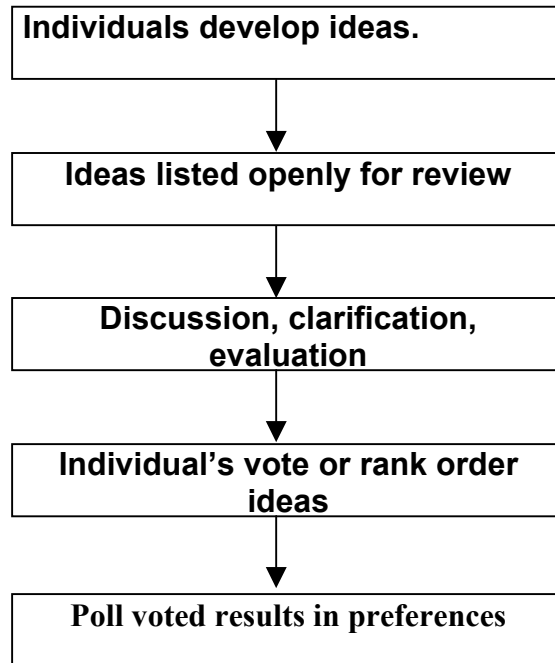
Step – 1 : Listing : Working quietly and alone, panel members respond to the group task, which is usually to list ideas regarding a particular issue or problem.

Step – 2 : Recording : Each panel member offers one idea at a time from his / her list in a round robin manner to the group facilitator, who records the ideas in full view of the group.

Step – 3 : Discussion : When all responses are recorded on the master list, panel member discuss clarify, and elaborate on the responses.

Step – 4 : Voting : Each member votes silently and alone on the best idea generated. Usually, the top five or ten are rank ordered. Votes are tabulated and talled besides the posted idea and decisions are based on pooled results.

In general NGT has been found to be superior to brainstorming at fact finding, idea generation, establishing objectives and priorities and reducing the inhibiting factors found in interacting groups.[4]

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[4] - Burton Gen & Manab Thakur – Management Today, Principle & Practice (2nd Edition) – TATA Mc Graw – Hill Publishing Co. Ltd. – New Delhi –1997 – P – 116.

(E) SIMPLE AND COMPLEX DECISION

The decisions, which do not use more variables for decision-making, are called simple decision where as the decision, which involves the number of variables including complex. Stastic techniques for decision-making are complex decisions.

Simple decisions do not have large effect on organizational activities because they are applicable for routine matters. E.g. sitting arrangement at a seminar hall, to which to call as a chief guest of seminar etc. are complex decisions.

Above all the methods of decision-making are used by organization on various situation/ circumstances. Which methods to use is not guided by any body but organization can use any method according to its suitability

(4) DECISION-MAKING ENVIRONMENT

It is very difficult to adjust a suitable decision-making. We cannot derive an environmental trait, which give a certainty in decision-making. Every decision has an element of risk and return. The more the risk, the more is the return. So if decision maker wants to take more risk, naturally he must expect more return. The following are the environmental factors that affect output of decisions.

(a) Certainty

When we make a decision, we are certain up to some extent relating to its success. The level of confidence may be reflected in certainty of decisions. It should go nearer to 100% but not less then that, neither it should go for beyond 100% when we have accurate and reliable information on hand for the decision-making, more certain we are about its output and success.

(b) Risk

Every decision involves risk. It is the decision maker who decides how much risk he wants to take. The more risk the more the return. So if we want to earn more return, obviously we have to take more risk. For proper application of risk in decision-making,

probability techniques of risk and return can be applied. The following illustration will make the idea more clear.

Organizational Problems
|
Possibility of failure

Low				**High**
Certainty	**Risk**	**Uncertainty**	**Ambiguity**	

|
Problem Solution
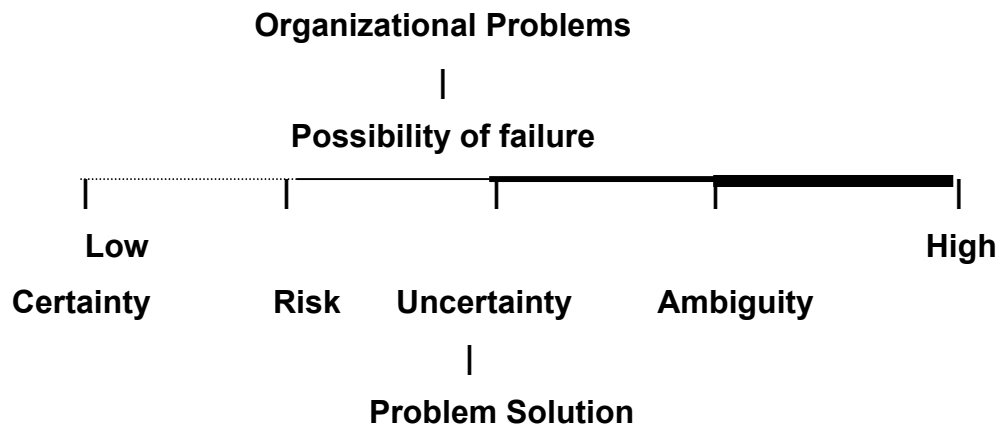
(c) <u>Uncertainty</u>

We make decision for future and future is uncertain. Every affirmative involves uncertainties, so the alternative which consists of less number of uncertainties must be preferred for a conservative decision maker, if he wants to an aggressive one, and risk taker, he may use uncertain variables in his decision-making. In every decision some uncertainties are there so what so ever may be conservative a decision maker is he has to suffer from some uncertainties which have not be predicted time of decision-making.

(d) <u>Ambiguity</u>

Some time it may happen that a decision maker may have ambiguous information for decision-making. Such information may be vague, false or misleading or it may happen that a decision maker have nothing on hand for decision-making. Under such circumstances, the environment is such that the decision maker has to fire at sky without any goal. There is highest risk in such situation, but even though some circumstances may happen in which decision under ambiguous environment are taken.

E.g. there is a cut thought competition prevailing in the market. There is no any information in clear sense regarding market situation. During such situation, manager wants to raise the price of the product to earn minimum margin of profit. Manager is in trouble that price of product is to be raised or

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not. If price is not increased, organization has to suffer the loss and if increased can maintain the margin of profit. During this kind of state of situation, manager has to take the proper decisions on the basis of assumption.

From discussion of above four situation for taking proper decision, we can conclude that at the time of taking decision in several situation, main object is to maximize the benefit of the organization. Therefore manager supposes to take the decision in each situation by keeping in mind the interest of the organization. Manager uses to evaluate each situation according to his ability, creativity, thinking power, knowledge and skill. He always makes the effort to be effective decision for the organization. For this purpose he apply various statistical techniques or model.

In decision-making under conditions of risk, the consequences of a particular decision cannot be specified with certainty but can be specified with known probability value. The value of the probability associated with the events is a measure of the likelihood of the occurrence of that event under such situation with the help of known probability and outcomes. Expected value is calculated, here decision maker apply the criteria of;

(1) Maximum

Under this criteria, first calculate expected value of each alternative by multiplying outcomes with associated probability and then after those criteria is selected which give maximum expected value of payoff or apply.

(2) Minimum

Under this criteria, first calculate expected loss of each alternative under different situation then after, those alternative will be selected which suffered minimum loss.

Decision-making under uncertainty is difficult as compared to decision under certainty. In this process, the decision maker has to first select criteria and then decide which decision alternative is best according to the chosen criterion. This may be further classified under two categories.

(1) Decision-making under certainty without use of the probability

There are three most popular criteria, which come under this category.

(i) Maximum

It is a conservative approach to arrive at a decision in which the decision maker attempts in maximizing the minimum possible profit.

(ii) Maximax

In this approach the decision maker find the maximum possible payoff to each act and then selects the decision that gives overall maximum.

(iii) Minimax regrets

Regret criterion focuses up the regret that one might have while arriving at a particular decision. The regret is measured by the difference between the payoff due to a certain decision and the best payoff that could have been realized had he known what state of nature was going to occur. This criterion suggests the selection of the alternatives, which minimize the maximum regret value. Under this criterion profit is transformed into opportunity losses (or regrets)

(2) Decision under uncertainty with use of probabilities

There are two types of criterion

(i) Expected monetary value criterion

The expected monetary value indicates the average profit that would be realized if a particular act was selected. Under this criterion the act due to which E.M.V. is maximum is selected.

(ii) Expected opportunity loss

Here expected opportunity loss from each alternative are calculated and than the alternative due to which E.O.L. is minimum is recommended. It is similar to E.M.V. criterion except that the opportunity losses are considered instead of profits.[5]

(5) QUANTITATIVE DECISION-MAKING TOOLS

Decision-making process is one of the complicated and difficult processes particularly in managerial decision-making. There are so many factor and barriers, which suppose to be considered. The success ness of the economics enterprise is mainly depending upon effective decision-making. Therefore, there is a need of certain quantitative decision-making tools. These

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[5] - Tripathi P. C. & Reddy P. N. – Principle of Management (2nd Edition) – TATA Mc Graw. – Hill Publishing Co. Ltd. – New Delhi – 2000 – P – 69,70.

tools are developed and used for making decision more rational and logical. They are helpful for the evaluation of decision alternatives. The most commonly used quantitative tools are discussed below.

(a) Payoff Matrix

A payoff matrix shows the probable value of each of the decision alternative by displaying the various outcomes and the probabilities of their occurrence. A probability is the degree of likelihood that a particular event will occur. Value of probabilities is measured in the range from '0' to '1'. It is it '0' there is no chance of occurring of particular event and 1, there is a certain chance of occurring of particular event.

Here the expected values of each alternative or decision are calculated by multiplying each value of outcomes of each event with its corresponding probabilities value. The sum of all this product value of outcome and its probabilities are known as total expected value of expected monetary value.
e.g. Payoff matrix.

Alternative for Investment in company	High sales (Prob. = 0.40)	Low Sales (Prob. = 0.60)
A	Rs. 1,00,000	-5,000
B	Rs. 1,50,000	-20,000
C	Rs. 70,000	-1,000

From the above payoff matrix, the expected value of investing in each company is calculated as follows.

EV = Probabilities x outcomes

Company   A = 0.40 x 100000 + 0.6 (-5000)

= 40000 – 3000 = 37000

Company   B = 0.40 x 150000 + 0.60 (-2000)

= 60000 – 12000 = 48000

Company   C = 0.40 x 70000 + 0.60 (-1000)

= 28000 – 600 = 27400

Payoff matrix shows the investor who is interested in company B has the greatest expected return of the three investment opportunities.

(b) Decision Tree

A decision tree is a graphic representation of the sequence of decisions required in determining the expected values of alternative course of action e.g. a manger needs to choose between product A or B.

Decision Tree

```
                                   |
        _____
        |                                                       |
   Product A                                              Product B
        |                                                       |
   _____                          _____
   |                   |                          |                         |
   E1                  E2                         E1                        E2
   |                   |                          |                         |
High sales         Low sales                 High sales                   Low
sales
(prob. 0.55)       (prob. 0.45)              (prob. 0.65)
(prob. 0.35)
10,00,000          1,00,000                  12,00,000
1,20,000
1000000x0.55       100000x0.45               1200000X0.65
120000X0.35
 =5,50,000          = 45,000                  = 7,80,000                = 42,000

         EV = 5,95,000                                 EV = 8,22,000
```
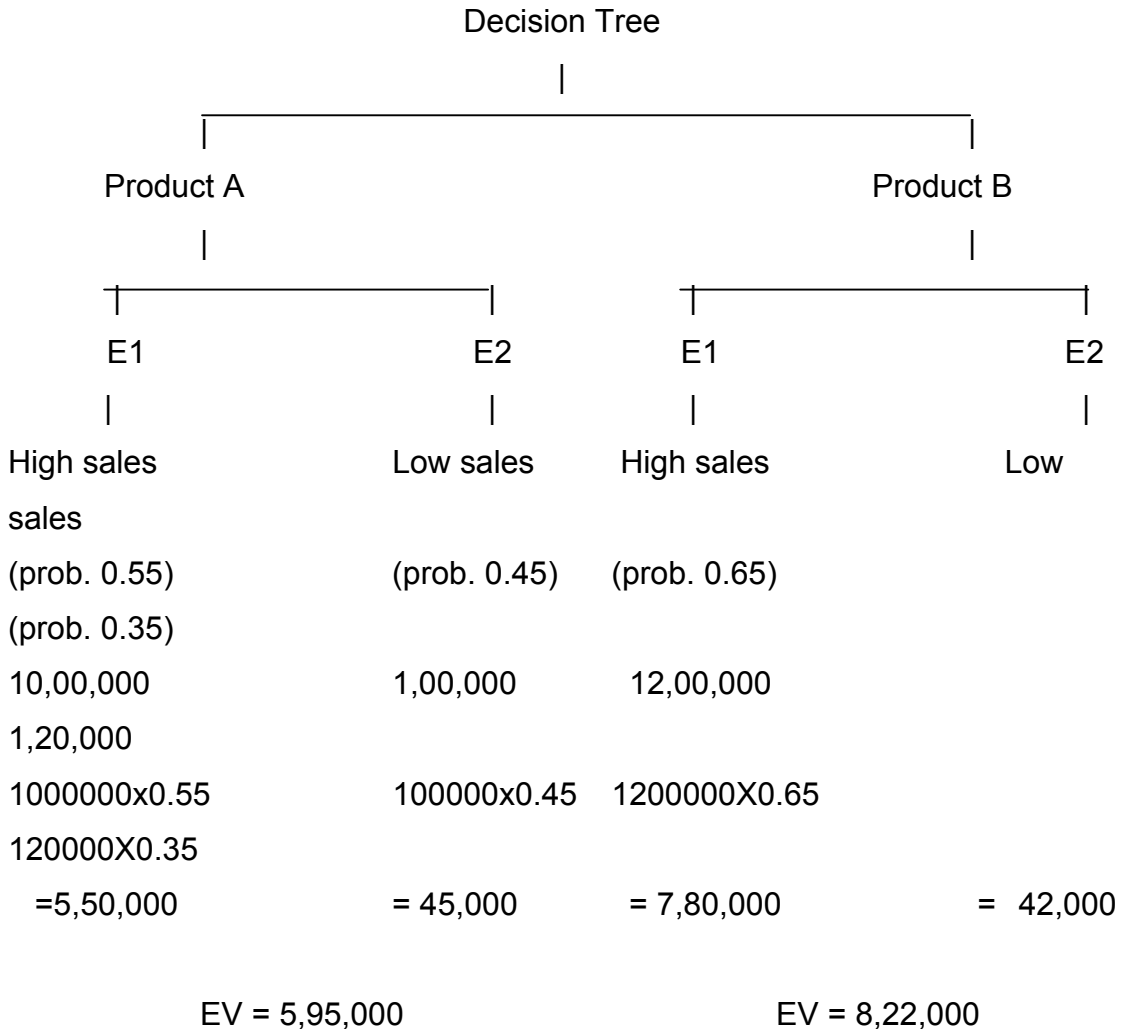
The manager believes that the critical factor in the decision is the level of sales for product A, the manager estimates a probability of 0.55 for high sales lending to a payoff of Rs. 10,00,000 and a 0.45 probabilities of low sales with a payoff of Rs. 1,00,000 for product B, the manager estimates a probability of 0.65 for high sales with a payoff of Rs. 12,00,000 and a probability of 0.35 of low sales with a payoff of Rs. 1,20,000 and expected value of product B as shown in above diagram is Rs. 5,95,999 and of Product B is Rs. 8,22,000. The use of this decision tree would suggest that product B is better investment than product A.

(c) Queuing Models

Managers have to control various sorts of waiting lines use queuing models.

e.g. consider a line of customers waiting to buy theatre tickets. Opening another ticket window can provide better service, but that will cost the theatre money. However if customers become tired of waiting, they may leave and that will cost money. A queuing model could be used to determine the optimal number of ticket windows to open at different times of the day in order to balance customer waiting time and personnel costs.

(d) Distribution Models

A distribution model helps the marketing manager deal with the problems of product distribution. The task for the manager is to determine where various quantities of products must go and the most cost effective way to get them there. A distribution model can be used to answer these complex questions.

(e) Inventory Models

An inventory model helps the manager to determine how much inventory to maintain. The inventory to be managed includes both inputs (raw materials and component parts) and outputs (finished goods). The model must consider the amount of capital tied-up in the inventory as well as ordering cost and the costs of such factors as storage, obsolescence and insurance. On the other hand, if inventory is depleted, the model must consider the cost of lost sales and / or production. Thus, the inventory model analyses the various consequences and selects the optimal size of the inventory.

(f) Game Theory

Game theory is a technique for the application of computers to the measurement of outcomes under a variety of contingencies.

e.g. if a manufacturer is considering an increase in the sales price of his product, data regarding the economic factors and different pricing

strategies can be entered into the computer and the game theory program would calculate the various outcomes and select the optimal pricing strategy.

From the discussion of various quantitative tools used in decision-making we can say that when a number of resources are required to be allocated and there are several activities to perform. The decision problem becomes complicated. Rule of thump even of an experienced manager, in all likelihood, may not provide the right answer in such cases. To make proper evaluation of each alternative, in scientific manner and at least to draw effective decision. Several quantitative / statistical tools are helpful to the manager.

(6) DECISION-MAKING PROCESS

The decision-making process has been explained by two basic theories. The first is the normative theory that specified how decision ought to be made to accomplish desires outcomes. The second is the descriptive theory that attempts to explain only how decisions are made, without attempts to formulate behavioural guidelines. In the field of management theory, the normative theory is manifested in the classical model of decision-making, while the descriptive theory is embodied in the administrative model of decision-making.

The main value of the classical model is that it does help the decision maker operate in a more rational manner. Today, rational models are supported by large computer system to allow the application of such quantitative techniques as forecasting, payoff matrices, decision trees, linear programming, breakeven analysis and econometric models. However, the classical model is based on a theoretical and perfect world, which is something less than reasonable. Seldom is the manager in a situation where all the above assumptions are both present and correct. Thus, the model becomes an ideal that is not always useful to real manager with real problems in real organizations. The model can probably be most helpful when used for programmed decision or for the decisions made in a state of risk, where the necessary information is available and outcome probabilities can be calculated with available computer program.

(7) THE STEPS IN RATIONAL DECISION-MAKING

The manager who seeks to take a logical and rational approach to a decision can follow the six steps in the process.

1. Recognize and define the decision situation.
2. Identify appropriate alternatives.
3. Evaluate each alternative.
4. Select the best alternative.
5. Implement the alternative.
6. Evaluate the results and follow-up.

E.g. in a particular organization sales of particular product is decreasing. Manager observed such situation from record of the organization and his personal experience. Here decreasing in sales is decision situation or problem.

A problem may be defined as the difference between the desired situation and the actual situation. That is the manager most recognize the 'gap' between what a situation should be and what it is.

One of the difficult parts of process of problem finding is to recognize the symptoms and causes of an underised situation. Because some problems are not readily apparent, the manager must learn to identify symptoms that warn the manager for actual or potential problem. Just as, a doctor must search for symptoms such as fever, headaches, and depression in diagnosing a patient's illness. So much manager, searches for symptoms in diagnosing an organizational illness.

→ Identifying Appropriate Alternative

Once the decision situation has been effectively defined, the second step in the decision-making process is the identification of alternative course of action that might be appropriate to the situation. The managers are advised to include both the traditional standard actions as well as creative new approaches to the problem. The task of identifying alternative actions can be a costly and time-consuming operation. Care must be taken not to invest more in the alternative search than the problem is worth. Typically the more

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important the problem situation, the more time the effort can be spent for the exploration of alternate solution.

→ <u>**Evaluate Each Alternative**</u>

After the identification of alternative the next step is evaluation of each alternative. The manager must evaluate the appropriate alternatives that have been selected. It is important to establish some common framework within which to evaluate each alternative to assure consistency and reliability. Such framework is formed in the three stages decision tree. First the manager must ascertain whether or not the alternative is feasible is the proposed course of action practical or within the realm of probability? Typical barriers to feasibility are costs, time, legal constraints and human factors. If an alternative course of action is not deemed to be feasible, it should be eliminated from further consideration.

If an alternative is found to be feasible, the next test is to determine its satisfactoriness or the extent to which it will satisfy the different conditions of the problem situation.

E.g. if the problem demands reducing sales costs by 25 % and the alternative under consideration will provide only a 15 % reduction, the alternative may be eliminated from consideration, unless a supporting alternative can generate the other 10 % in cost reduction.

→ <u>**Select the Best Alternative**</u>

The manager will usually find that a number of alternative courses of action will successfully pass the three tests of the above decision three and be considered as acceptable alternative. The task than becomes the section of the best alternative for implementation. The manager may choose to select the alternative that demonstrates the highest combined levels of feasibility, satisfaction and affordable consequences. This technique is delimited by the fact that many of these determinations cannot be made with precise numerical accuracy or mathematical certainty. In such cases, the manager needs to employ some scheme of subjective weights and measure in the section process. In any case, managers are advised to avoid the man causes of bias that might disturb the selection process.

→ **Implement the Selected Alternative**

The ultimate success of the new course of action depends on its ability to be translated in to action. The manager must bring to use all the administrative and persuasive channels that are appropriate for implementation. Sometimes implementation fails because people are simply not properly informed about the seriousness of the problem or the appropriateness of the corrective action.

Other times managers cannot muster enough support, either administrative or human, to drive the implementation to a successful completion.

→ **Evaluate the Results and Follow-up**

During the last stage of the rational decision-making process, certain controls need to be established for the careful monitoring and evaluation of results. Manager must determine the critical events to be measured, where and how they are be measured' and how the measurement are to be valuated. In other word a quality assurance program need to be established to measure the actual results of the implementation. These results must then be compared with performance standard, in order to ascertain if the new action is achieving the desired results. If not the manager must use this information in a completely new review of the decision-making proves.

From the above discussion we can say that the rational decision taken by manager after passing from above six stages becomes more effective and useful to an organization.

(8) PRINCIPLES OF EFFECTIVE DECISION-MAKING

Some guidelines for effective decision-making are given below:

1- Be Problem Oriented not Just Solution Oriented: Many managers become so attached to a particular decision aid or method that they either try to fit all problems to the model or they create problems in order to use the model. This is the case of the tail wagging

the dog. Make sure you have identified the problem clearly before a choice of decision aid is made.

2- Marshall the Facts : The decision-maker should keep his eyes and ears open in order to anticipate problems and to collect all relevant information. Wherever necessary new sources of information should be developed. The decision-maker should not accept other's opinions without checking their validity. The sources and accuracy of information should be verified.

3- Set Decision-making Goals : The decision-maker should define the goals he wants to attain by making a decision. Goal setting provides relevant criteria for the evaluation of alternatives and helps in identifying the sources of required information. Without setting goals, the search for information. will be inefficient and expensive.

4- If You Get Stuck Ask for Help : A useful technique to improve decision-making is to talk about the problem with someone else, especially where there is an impasse. Such an approach not only forces the manager to think more precisely about the problem, but the other person may provide valuable new insights into the potential decision.

5- Don't be Afraid to Develop Innovative Alternatives : Many managers fall into a rut because they develop alternatives on the basis of the likelihood of their acceptance by higher management rather than their ability to solve the problem. Managers should not be afraid of developing-innovative or novel alternatives. However, they should carefully think through the implications and consequences of each alternative. Sometimes supposedly minor consequences or side effects of a decision are not given sufficient attention, which may lead to a poor decision. Decisions need not always be a 'yes' and 'no' variety

6- Doesn't be Too Hasty in Making Decisions : The result oriented manager assumes that decisions must be made. Quickly in order to be effective, This- desire to make a quick decision pushes many managers into poor decisions that could be avoided if more time was spent identifying the problem and evaluating alternatives. However,

reasonably good decisions taken. in time may be better than finding the ideal solution after a great delay. A sense of timing is necessary to. make good decisions.

7-   Maintain Flexibility : Good decision makers do not persist in one approach but are ready to change their approach to get an acceptable solution. They are not creatures of habit and keep their mind open for new ways to see and solve the problem. It is necessary to keep the mind open for new relationships or new combinations. Management is more an art than a science and, therefore, there is nothing wrong in using commonsense.

8-   Gain Commitment for A Decision : Managers must not assume that others will accept a decision in the organization without some preliminary work. Unless the matter is confidential, it would be wise to discuss your views with others, seek out their views and to pinpoint sources of support and possible resistance. Mere communication and explanation of 'the decision is not -enough Implementation of the decision should be delegated wisely. Delegation. is one way to get people involved and committed, to a decision. When employees are made to feel a part of a decision, they may naturally want to put out extra effort to ensure the effectiveness of the decision.

9-   Evaluate and Follow-up the Decision : Many well-thought and implemented decisions fail due to lack of follow-up by the manager. The lack of evaluation may signal to employees that the manager has lost interest in the matter. The attention, effort and recognition, which are important by-products of follow-up, are essential elements of effective decision-making.

10-   Modify the Decision : Evaluation also implies a willingness to modify a decision if such changes become necessary. This open-mindedness is an important skill of an effective decision-maker. Such flexibility makes decision-puking easier because it removes some of the finality inherent in some decisions.[6]

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[6] - **Gupta C. B. – Business Communication and Organisation and Management – Sultan Chand & Sons, Educational Publishers, New Delhi – 2003 – P – 37.17, 37.18.**

(9) <u>CORPORATE STRATEGY AND MANAGERIAL DECISION</u>

Corporate strategy is an indicators of an organization's desired, destination, direction and image. Corporate strategies involve the determination of product lines expansion and growth, new investment, diversification, and so on. Strategies are formulated at the corporate divisional and functional levels. Strategies provide a sense of direction, focus and cohesiveness to the functioning of the organization. They serve an integral framework with which the enterprise can proceed towards its destination through a complex and turbulent environment. Strategies provide drive and direction and enable the organization to adapt to environmental forces. Strategies help to avoid impulsive decisions, misdirected initiatives and wasted resources.

The procedure for formulation of strategies involve, determining the corporate vision, mission and purpose. A mission statement specific in board terms the present and future business of the enterprise. Purpose of objective provides the guideline for strategy formulation. Business mission also defines the external environment and relevant range of variable of the firm. Internal environment of an enterprise consists of the various markets economic, social, technological, political and other forces, which significantly affects its functioning and future.

In competitive and complex business environment to be effective and efficient managerial decision-making, corporate strategy is one of the significant concepts. Corporate strategy is of the tools of diagnosis the enterprise internally as well as internally. The internal environment concerns with current position of enterprise, study of current position of enterprise is essential to identify its strengths and weakness.

The enterprise compares and analysis its present performance level and the desired future condition, such comparison and analysis will reveal extent of gap that exists between the prevailing situation and desired position, it is also necessary to estimate the likely future position if the present activities and performance trends continue unchanged.

The strategy is background and backbone of managerial decision-making. Effective and efficient decision-making mostly depends upon

accurate and correct information of the situation. The collection of accurate and correct information and its analysis can be made through corporate strategy. Corporate strategies clarify mission, vision and purpose of enterprise. Those organizations, which are successful in formulating, correct managerial decision. Therefore proper implementation of formulated strategy, the effective and scientific managerial decision-making system must be there. Through the proper decision-making enterprise can proceed toward predetermine, direction, destination and objectives. Corporate strategy and managerial decision-making both are the two side of a coin. Those enterprises, which are able to form effective strategy and to take the decision according to its strategy, definitely be successful in future.

(10) ETHICS AND INTUITION IN MANAGERIAL DECISION-MAKING

Managerial decision-making is one of the significant and executive functions of management. Executives use to take decision. Decision-making is continuous process. The managerial decision-making does not only depend upon collection tabulation and analysis the information. That is not only quantitative phenomena are help to take correct decision but up to some extent some qualitative phenomena also equally important to be more effective decision some ethical and intuitional quality must be in decision maker, managerial ethics refers to the moral standards used to govern manager's behaviour and to determine right or wrong, good or evil. Ethical behaviours are the act s consistent with the moral standard of codes of conducts established by society. The key terms of the ethical language are values rights, duties and rules.

Ethics is derived from the Greek word 'ethos' which means a person's fundamental orientation toward life. Managerial ethics refers to the moral standards used to govern manager's behaviour and to determine right or wrong, good or evil. Ethical behaviour is the acts consistent with the moral standards or codes of conduct established by society. Ethical standards may change over time and differ from culture to culture. For example, political

bribes or payoffs may be acceptable in one culture but not in another. Ethical issues are inevitable in business. These can be divided into four levels.

 1. Societal : At this level questions about the basic institutions in a society are asked. The problem of apartheid and debate over the merits of capitalism are examples of such questions.

2. Stakeholders : This level is concerned with relations between a business enterprise and its stakeholders such as employees, customers, shareholders, Government, suppliers, etc. Insider trading is one example of such relation&

3. Internal Policy : At this level relations between an organization and its employees are analyzed. Rights and obligations of the two towards each other are important.

4. Personal : Here questions about how people should treat one another within an organization are asked. These questions deal with the day-to-day issues of life.

Thus, managerial ethics concerns with the ground rules of individual, organizational and societal behaviour.

The key terms of the ethical language are values, rights, duties and rules. Values are relatively permanent drives that seem to be good in them. For example producing a quality product may be one of the values of a company. Rights are the claims that entitle a person to take a particular action. The rights of others limit rights of one person. Duties are obligations to take specific steps or obey the law. Moral rules define proper behaviour keeping promises, helping those in distress, respect for persons are examples of such rules.

Intuition can be defined as a quick perception of truth without conscious attention or reasoning managers actually use intuition as a guiding tool in making most important decision. It is only one tool among many in guiding their decisions. Intuitive decision is the combination of facts experience, with sensitivity and openness to other move unconscious processes.

Thus, qualitative phenomena like ethics intuition, behaviour etc. is also equally important in managerial decision-making.

(11) **CONCLUSION**

Managerial decision-making is concern with several business activities like, production, finance, marketing, and personnel so it includes production decision, marketing decision, financing decision and human resources decision etc. system of managerial decision-making differs from organization to organization as it is effected by factors. It is not fair to say that decision taken by using statistical tools is more effective than the decision taken without using statistical tools, decision is one of the manual process not purely mechanism process. Human being always takes it. It is also affected by skill, knowledge, experience, intuition, and ethical value of human being. But day by day with innovation of new technology and change in business environment, size of organization going to increase and business activities does not merely remain limited up to production market finance and human resource but it is beyond such limit so it become too much difficult for the management to take the decision. Thus decision-making process becomes too much complicated and difficult. Rules of the intuition and traditions are no longer sufficient for making decision. In general forces of competition are imposing a need for more effective decision-making at all levels in organization. Today's good decisions are driven by data in all aspects of our lives, and importantly in the business context. An amazing diversity of data is available for inspection and analytical insight. Business managers and professionals are increasing required to justify decisions on the basis of data. They need statistical model based decision support system, statistical skills enable them to collect, analyze and interpret data relevant to their decision-making intelligently. Statistical concepts and statistical thinking enable them to solve problems in diversity of contexts, odd substance to decision and reduce Guesswork.

But it does not mean that intuition is neglected as a managerial tool for decision-making when the business environment becomes unpredictable, uncertain and competitive, intuitive thinking. Combined with logical reasoning helps executives to make appropriate decisions.

Managerial ethics is also one of the important tools of decision-making ethical behaviour are the acts consistent with code of conduct established by

society. The code of conduct improves the confidence of customers and others in the quality of product and service. It will guide the managers in their daily job. In the long run it will reach the top-level code of ethics is necessary and useful. If stated in operational terms and supported by organizations it can be a guide to socially responsible behiviour. Some of the company appoints an officer to investigate decisions from the viewpoint of ethic. Ethical decision will improve the value of company, increase chance of making effective decision and at last it is extremely useful for growth and development of enterprise.

CHAPTER – III

RESEARCH METHODOLOGY

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12. LIMITATION OF THE STUDY.

RESEARCH METHODOLOGY

1- RATIONALE OF STUDY

All the corporate sectors listed in stock exchange play vital role in the growth and development of a country as it provides employment to several millions of people, contributes large amount in national income improve standard of living, provides mean of communication and required infrastructure for economic development of the country. To alive all such corporate sectors efficient and effective management must be there as management is one of the important branch of business enterprise. It is a controlling body of various business activities. From the viewpoint of controlling various aspects of business enterprises, various decisions need to be taken. Management consists of a great deal the making of decision. Only truthful, corrective and right time decision helps the business enterprise to improve its efficiency and profitability.

A decision may be defined as a choice made from available alternatives. The term decision includes at least four decision-making activities as follow,

(a) The manager identifies the existence of a problem or an opportunity to improve a situation.

(b) The manager generates a set of alternative courses of action.

(c) The manager selects one of the alternatives.

(d) The manager implements the selected course of action.

An effective decision maker must fully understand the situation and result expected form it. In some cases, best decision would be one that maximizes factors such as sales and profit of units produced. However in some situations the effective decision may be one that minimizes such factors as customer's campaigns, employee's turnover or operating costs.

The modern industrial or service firm must conduct its business in a rapidly changing and highly competitive environment. A premium is placed on the ability to reach quickly and correctly to constant changing market condition. Management must be concerned with all aspects of the firm's operation including production of goods and delivery of services, sales and marketing activities and supporting functions such as personnel training and data processing. To handle these responsibilities, management use to take several managerial decisions at different interval of time and situation.

For the purpose of taking several managerial decisions, firm makes extensive use of financial data, reports and other needful information. It is essential to evaluate all such information used in taking managerial decision. Most of the business enterprises use several statistical techniques to analysis and evaluate all collected information. How to take managerial decision is one of the burning problems of business enterprise. So many industrial units went into liquidation due to the failure in managing the business activities. Decision-making system is crucial aspect of scientific management. To survive business in cutthroat competitive environment, effective and efficient management must be there. The use of statistical technique is helpful to be effective and efficient management.

In business, statistics has already made radical changes in maintaining and improving output, quality, in selecting and promoting personnel, efficient use of materials, in projecting long term capital requirement and forecasting sales, in estimating consumer's preferences and in various other faces of business research and management. It is not an exaggeration to say that today nearly every decision in business is made with the aid of statistics data and statistical method.

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This study based on the secondary data derived from annual published reports of selected units of Saurashtra Region and primary data are collected by personally contact, through questionnaire, discussion etc. Various researches have been conducted under accounting, commerce, management and economics etc. faculties of Saurashtra University. However, no research has been conducted. "A comperative study of managerial decision of selected units of Saurashtra Region". Thus, this study would be an original contribution as the problem of the study is unique in every respect.

Managerial decision covers wide area. There is several kind of managerial decisions. It is very difficult for researcher to justify each and every kind of managerial decision. From the view point of the deep study of managerial decision of selected units research has selected one of the important managerial decision that is financial decision. The financial decision is classified mainly in following three decisions.

(1) Financing Decision.

(2) Investment Decision.

(3) Dividend Decision.

Researcher has made effort to make the deep study of above decision by keeping in mind their significances and usefulness in managing business activities.

2- IDENTIFICATION OF PROBLEM

Managerial Decision-making is one of the important functions of management and management is the heart of the business enterprise. Growth, development and prosperity of business enterprise are ultimately depending upon proper managerial decision-making system. In modern time, a number of problems are faced by the business enterprise and for effective and correct solution of all such problem; scientific management system must be there. To be more and more effective the management system, use various statistical tools in managerial decision which are essential and unavoidable.

For survival of any kind of business enterprise, optimum utilization of all the resources must be there, for optimum utilization of resources; proper

managerial decision mechanism must be there. To develop effective managerial decision machinery, a use of various statistical tools is one of the important alternatives. Hence the problems before the researcher is to understand the usefulness of various statistical tools in managerial decision making of the company and to evaluate effectiveness of financial decision making on solvency profitability, liquidity and prosperity of a company. Hence it is imperative for the researcher to assess the system of several managerial decision making of a company with a view to deciding healthy and effective system of managerial decision making and to assess separately effectiveness of financing, investment and dividend decision on profitability and prosperity of a company. The statement of problem is "Comperative study of managerial decision of selected units of Saurashtra Region".

3- <u>REVIEW OF LITERATURE</u>

It is proposed to survey the literature that exists in the field of managerial decision-making. Research studies on managerial decision pertaining to both large and small scale undertakings are found to be very limited in India, which have given due attention to this particular area of managerial decision. A good impact of analytical literature exists with present study work; have been classified into two parts as:

(a) Conceptual Studies   (b) Research Studies

(a) <u>Conceptual Studies:</u>

These study works deal with the concepts and problems of managerial decision-making. The several books are studied which have been written on various concepts and problems of managerial decision-making. The several books are studies, which have been written on various concepts and components of managerial decision-making.

Writers like, Pratt J. H., Lapin L. Corfield, D & J. Williamson, J. P. Stinson and E. S. Gardness, Richard I. Levin and David S. Rubin, Bierman Hardoland Seymorsheriff, Robertferber, G. V. Shenoy, Driver Brousseav and Hunsaker, Robert E Schellenberger, and S. P. Gupta & P. M. Gupta authorized the textbooks.

Above all books reflect the significances of statistical tools in managerial decision-making, concept of several quantities Technique, statistics in management analysis, statistics tools in managerial decision-making, essentiality of statistics in management analysis, statistics and research work etc. Much of these studies are of recent origin, reflecting the significance of this area of managerial decision-making.

Other books written by authors like; Praveen Kumar Jain, Baker H. K., Farelly G. E. & Eleman R.B., Alteker Rahul, Coyle Bardi & Langley, Edwin J. Elton & Martin J. Gruber, Dr S. N. Maheshwari, V. Pattabhi.Ram & S. D. Bala, Ravi M. Kishore, A. K. Mcadams, Hampton john & Cacilia Wagnor and I. M. Pandey. At the conceptual level these studies discussed the various aspects of managerial decision-making. These studies are to assist to develop thorough understanding of the concepts and theories underlying financial management, working capital management, process and principle of decision-making, investment decision, financing decision, dividend decision etc.

Writers like Gene Burton & Manab Thakur, P. C. Tripathi & P. N. Reddy, P. Mohaman Rao. & Bhibhuti B. Pradhan, Phillip Kotler, J. J. Hampton, William E. Sounder, Ingersoll and Jonahan have written textbook. These studies are relating to problems and a way of solution of problems of management. They give a basic knowledge about managerial functions, Different environment of business, analysis and evaluation of situation.

Writers like Dr. S. J. Parmar, Jolth Lehn & Makhija, N. K. Sharma, T. P. Gosh, Banerjee Ashok, Dr. C. B. Gupta, Gurin G. D have written textbooks. These studies give conceptual knowledge about various component of financial statement, managerial decision, various financial terms like profit. EVA, ROI, EPS etc. use as tools of analysis and evaluation of profitably and efficiency of organizations.

(b) <u>Research Studies</u>:

Dr. Prabhati Pati has written article on "Intuitive Decision Making" in January 1998. He has stated that the success of a decision often depends on factors other than pure logic or reason, the most effective decisions integrate thinking and feeling and take into account the thinking and feeling of others.

Herbert Simon has written article in 1977. In his article he says that management and decision-making are the same things. Harish S. Oza has Published his article in Indian Journal of Accounting in June 2004 on dividend decision analyzing data of 30 companies found out relevance of previous year's dividend policy and lintner's model. B. P. Sarawat and R.S. Agarawal have published their article in Indian Journal of Accounting in December 2004 on working capital trends of cement industry in Nepal and found that very important reason for the losses or low level of profit of Public Enterprises in Nepal was ineffective and inefficient utilization of working capital. Kaura and Subramaniam published an article on the financial performance of 10 units relating to a period from 1972-1979, which mainly observed overall performance. Amita S. Kantawala published an article on financial performance analysis. Through MVA, Analyzing data of 13 companies from Textiles, 11 Companies from Pharmaceuticals and 12 companies from electronics for the year ended 31-3-2000 and found that EVA has got positive and significant effect of MVA Dr. Sanjay J. Bhayani published an article on profitability and efficiency relationship. A study was made by analyzing data for six year from 1997-1998 to 2002-2003 of three Indian Companies, found that low profitability is a result of efficiency and poor profitability of cement. Indian Industries are due to their inefficiency. Ashwani Kumar Published his article in June 2006 on financial impact of supply chain decision and concluded that the financial goal of supply chain management is to increase the profitability of the company by examining and optimizing various alternative courses of action. Shapiro and Spancer have written an article on Intuitive decision making and published in Indian management in 1997 suggest that executives follow a preferred temporal sequence i.e. after problem formulation intuitive responsive should be provided and then analytical reasoning, then these two estimates should be combined. Parikh Etal has written his article on intuitive decision-making and published in Indian management 1994 and reported that 54 percent of the executives use intuition in Conjunction with analytical reasoning for making decision.

In 1985, I. M. Pandey conducted empirical study examining the industrial patterns, trend and volatilities of leverage and the impact of size,

profitability and growth on leverage. For this purpose data of 743 companies in 18 industrial groups for the period from 1973-74 to 1980-81 were analyzed. R-S Khandelwal has studied on analysis of capital structure in Paper Industries of India in 1987, found that capital structure is not uniform in each industry, it depends upon size of the plant, capitalization rate, policy of government and financial institution to provide funds to industries, efficiency of management etc. Laxminarayan, discussed the financial performance of central government and public enterprises during 1972-73 to 1975-76 and concluded that there was an all round fall in the profit of the running undertakings.

4- <u>OBJECTIVES OF THE STUDY</u>

The objectives of the present study are:

1- To find out managerial problem facing by the business enterprise in taking managerial decision-making.

2- To determine various area of decision of business enterprise, particularly financing investment and dividend decision of a company.

3- To study the factors of taking managerial decision-making.

4- To evaluate effect of statistical tools in managerial decisions.

5- To study relationship between the use of statistical tools for managerial decision and without use of statistical tools for managerial decision making in selected units.

6- To suggest appropriate and corrective steps to improve managerial decision making process.

5- <u>DATA COLLECTION AND PERIOD OF STUDY</u>

The study based mainly on secondary data and supported with primary data. The main sources of the collection of secondary data are the annual report of selected companies, various publication and journal. Annual reports are collected from the head office of the selected units for study and primary data are collected through personal visit, questionnaire and focus group discussion. The collected information are suitably classified and tabulated in the form of simple and bi-variant tables and with the help of statistical

techniques like average coefficient of correlation, standard deviation, 'F' test, chi-square test, simple, multiple liner regression analysis, the data were objectively analyzed and conclusion were drawn.

For the purpose of the study of 10 years data beginning with 1994-95 and ending with 2003-04 was adopted. The reason behind choosing the above period is that the Indian Economy is mainly affected by the globalization and liberalization policy. During such period a drastic changes take place in the system of communication, infrastructure facility, mergers and acquisition etc. Therefore we can study the effect of globalization and liberalization policy on system of managerial decision-making.

6- <u>UNIVERSE OF THE STUDY</u>

The universe of the study consists of small & large public limited company working in Saurashtra Region listed in the stock exchange of India and having uniform face value of equity share.

7- <u>SAMPLING DESIGN</u>

There are more than 30 limited companies listed with stock exchange of India working in Saurashtra region of Gujarat State. Researcher has selected nine companies as the sample of this study out of total number of public limited companies of Saurashtra region. The samples have been selected on following basis.

1) Availability of data for 10 years i.e. from 1994-95 to 2003-04 years.

2) Units must be located in Saurashtra region.

3) Units must be listed in any one stock exchange of India.

For the purpose of analysis, all the selected companies have been classified into following different three groups.

1) Those companies that are using statistical tools for taking more than 75% managerial decisions; these companies are:

- Reliance Industries Ltd. Jamnagar Unit.

- Indian Rayon and Industries Ltd. Veraval Unit.

- Tata Chemical Ltd. Mithapur Unit.

2) Those companies that are using statistical tools for taking more than 25% but up to 75% managerial decision; These companies are:

- Gujarat Heavy Chemicals Ltd. Sutrapada Unit.

- Gujarat Ambuja Cements Ltd. Kodinar Unit.

- Gujarat State fertilizer ltd. Sikka Unit.

3) Those companies that are using statistical tools for taking only up to 25% managerial decisions; these companies are:

- Orient Abrasive Ltd., Porbandar Unit.

- Austin Engineering Co. Ltd. Junagadh Unit.

- Digvijay Cement Co. Ltd. Sikka Unit

8- SCOPE OF THE STUDY

The scope of study is very wide, but for this study and meaningful research design, the researcher has selected decision like financing decision, investment decision, and dividend decision in relation to managerial decision-making. For the purpose of evaluating such decisions, eight parameters such as Net worth, Long-term debt, Interest and Financing charges (Cost of Debt), Earning per share, Dividend paid, Investment in Fixed capital and working capital, ROI and Fixed Assets to Gross Working Capital ratio (GWC) are used for the study. The overall system of managerial decision making have been also evaluate by the researcher.

The results of the study will highlight soundness and weakness of system of managerial decision and effectiveness of use of statistical tools in managerial decision of company.

9- HYPOTHESIS OF THE STUDY

(a)   **Hypothesis for financing Decision.**

1) There is no significant impact of debt equity Ratio and PBIT on EPS of the selected units of Saurashtra Region.

2) There is no significant difference in capital structure within the sampled units during the period of study.

3) There is no significant difference in average EPS within the sampled units during the period of study.

(b)   **Hypothesis for investment decision**

1)   There is no significant impact of total investment and net sales revenue on cash flow of the selected units of Saurashtra Region.

2)   There is no significant impact of investment in FA and GWC on net sales revenue of the selected units of Saurashtra Region.

3)   There is no significant difference in average cash flow within the sampled units during the period of study.

4)   There is no significant difference in Average Sales Trend within the sampled units of Saurashtra region during the period of study.

5)   There is no significant difference in Average Return on Investment within the sampled units of Saurashtra region during the period of study.

6)   There is no significant difference in investment trend within the sampled units during the period of study.

7)   There is no significant difference in investment pattern within the sampled units during the period of study.

(c)   **Hypothesis for Dividend decision.**

1)   There is no significant difference in dividend decision policy of selected units of Saurashtra region.

2)   There is no significant difference in dividend payout ratio within the sampled units during the period of study.

(d)   **Hypothesis for overall process of managerial decision-making.**

1)   There is no relationship between the use of statistical tools for managerial decision and without use of statistical tools for managerial decision in selected units of the study.

2)   There is no significant difference among managerial decision in selected units of Saurashtra region during the study.

10- <u>STATISTICAL TOOLS AND TECHNIQUES</u>

Following statistical techniques are used for this study.

A. - <u>Chi-square test</u>

According to Jerome D. Braverman: "The chi-square distribution is a continuous probability distribution which has the value zero at its limit lower and extends to infinity in the positive direction. Negative value of chi-square is impossible."[7]

$$\chi^2 = E\,(O - E)^2 / E$$

Where:

χ^2 = Computed value of chi-square distribution

O   = Observed value

E   = Expected value

Critical value of chi-square is obtained from statistical tables.

In order to test a hypothesis about the form of distribution of a population, a random sample is taken. The observed values are grouped into cells similar to the classes in frequency distribution and are compared with a set of expected values in the same cell. The expected values computed are under the assumption that the population is the type specified in the null hypothesis. The comparison made by computing a value of chi-square on the basis of above formula.

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[7] **Braverman Jerome D. – Fundamentals of Business Statistics – New York, Academic Press, 1979 – P 378**

If the computed chi-square is less than the critical value (table value) of chi-square at the significant level selected with the appropriate degree of freedom, the null hypothesis is accepted otherwise it is rejected.[8]

B. -   'F' Test One Way Variance Analysis (ANOVA)

R. A. Fisher and a test-developed analysis of variance, so developed by him are known as Fisher's test or more commonly F-test. Now a day, f-test is widely used in the analysis of variance. It is mainly used to test hypothesis of equality between two variances. This test is also used to test hypothesis of equality among several means. This test is particularly suitable for experimental work as no assumption of equality is required. The analysis of variance is mainly carried on under: (1) One – way classification and (2)-Two way classification. For this study one-way classification variance analysis is used.

The actual analysis is carried on the basis of a ratio between the variances. The variance ratio is obtained by dividing the variance between samples by the variance within samples.[9]

This ratio forms the F- statistics. F ratio is:

F = variance between samples / Variance within samples

Generally the variance between sampled is grater than variance within samples. Sometime, though in rare cases, the variance within samples may be greater than the variance between samples. In such a case the two variances should be interchanged so that the value of F is always greater than one. This can be achieved by taking the value of the numerator always greater than that of the denominator.

The calculated F- ratio should be compared with the critical value of F to draw inference. One should be very careful in consulting the table containing the critical value of F. these values are given for various levels of

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[8] **Braverman Jerome D. – Fundamentals of Business Statistics – New York, Academic Press, 1979 – P 378**

[9] **Sancheti D. C., Kapoor V. K. – Statistics Theory Method Application – Sultan Chand & Sons, Educational Publishers, New Delhi – P 20.9**

significance n the basis of degrees of freedom for greater and smaller variance.

C. - <u>'t'-Test for Regression Coefficient</u>

't'-test is based on t-distribution and considered as an appropriate test for judging a significance of difference between the mean of two sample in case of small samples when population variance is not known. In case two samples are related, we use paired 't' – test for judging the significance of the mean of difference between the two related samples. It can also be used for judging the significances of the co-efficient of simple and partial correlation. The 't' is calculated from the sampled data and than compared with its probable value on 't' distribution at specific level of significance for concerning degree of freedom for accepting or rejecting the null hypothesis. W. S. Gossel (1876-1937) has done theoretical work on 't' distribution in the early 1900.[10]

D. - <u>Kruskal-wallis test</u>

Kruskal-Wallis test is non–parametric test. The non-parametric tests are used when the knowledge of the population distribution is not known. Kruskal–Wallis test can handle more than two samples simultaneously and decide whether or not these samples belong to the same populations and effectiveness, quality, measurement, fit to goodness etc are the same or not. In the test all the elements of different samples are together and ranked with the lowest score receiving a rank value of 1. If there are ties in the rank, the average rank to such pairs is assigned by averaging their rank position.

$$H = \frac{12}{n\,(n+1)} \left[\frac{(\Sigma\,R\,i)^2}{n\,i} \right] - 3\,(n+1)$$

H   follows Chi–square distribution with (K–1) degree of freedom

N = Total number of elements in K sample

Σ R i = Sum of the ranks of all items in sample.

[10] **Gupta S. P. – Statistical Method – Sultan Chand & Sons, Educational Publishers – New Delhi – P 911**

E. -   Mean, Standard Deviation & Coefficient of Variation

→ Mean

"The most commonly used average are the arithmetic mean, briefly referred to the mean". Adding all the concern values and dividing by the total number of the years have found the mean. In order to find the arithmetic mean of a set of individual observations, the following formula has been used.[11]

$$\overline{X} = \Sigma \, X \div N$$

→ Standard Deviation

The standard deviation concept was by Karl Pearson in 1823. It is by far the most important and widely used measure of studying dispersion. Its significance lies in the fact that it is free from those defects from which the earlier methods suffered and satisfied most of the properties of a good measure of dispersion. Standard deviation is also known as a root mean square deviation for the reason that it is the square root of the mean of the squared deviation from the arithmetic mean. Standard deviation denoted by the small Greek letter σ (read as sigma).

The standard deviation measures the absolute dispersion or variability of distribution. The greater the standard deviation is, the greater will be the magnitude of the deviation of the value from their mean. A small standard deviation means a high degree of uniformity of the observation as well as homogeneity of a series; a large standard deviation means just the opposite. Thus if we have two or more comparable series with identical or nearly identical means it is the distribution with the smallest standard deviation that has the most representative mean. Hence standard deviation is extremely useful in judging the representation of the means.[12]

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[11] **Guzian R. C. – Statistics For Decision Making – Philadelphia W. B. Sounders Company, 1979 – P 20.30**

[12] **Gupta S. P. – Statistical Method – Sultan Chand & Sons , Educational Publishers – New Delhi – P 282, 283**

S. D. for individual observation

$$\sigma = \sqrt{\Sigma x^2 / n - (\Sigma x / n)^2}$$

S. D. for discrete or continuous series

$$\sigma = \sqrt{\Sigma fx^2 / n - (\Sigma fx / n)^2}$$

Co-efficient of Variation

Standard deviation is absolute measure of deviation. However when one is interested in comparison of two sets of data expressed in different until or the arithmetic average are different, in such a situation a comparison of absolute measure of variability such as standard deviation will have little significant owing to the absence of common ground of comparison.[13]

Co-efficient of variance has been defined as the percentage of the standard deviation to the mean. It should be noted that the higher the value of coefficient of variance, the greater would be the variability Therefore, it may be pointed out that for the stability in result coefficient of variation must be low coefficient of variation (CV) may be calculated with the help of standard deviation and mean.

$$\text{C. V.} = (\text{S. D.} / \bar{X}) \times 100$$

In order to make useful comparison, it is necessary to calculate some relative measure such as co-efficient variation.

F. - Simple, Multiple & Partial Correlation Analysis

Correlation Analysis

The degree of relationship between the variables under consideration is measured through the correlation analysis. The measure of correlation called the correlation coefficient. Correlation index summarizes in one figure the direction and degree of correlation. The correlation analysis refers to the technique used in measuring the closeness of the relationship between the variables.

Some important definitions of correlation are given below.

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[13] **Stevenson Willam J. – Op. Cit. – P. P. 30, 31**

1) "Correlation analysis deals with the association between two or more variable"

- Simpson & Kafka

2) "When the relationship is of a quantitative nature, the appropriate statistical tool for discovering and measuring the relationship and expressing it in brief formula is known as correlation.

- Croxton & Cowdn

3) "Correlation is an analysis of the co variation between tow or more variable".

- A. M. Tuttle

Thus correlation is a statistical device, which helps us in analyzing the co-variation of two or more variable.

In business, correlation analysis enables the executive to estimate costs, sales, price and other variables on the basis of some other series with which these costs, sales or price may be functionally related. Some of the guesswork can be removed from decision when the relationship between a variable to be estimated and the one or more other variable on which it depends are close and reasonable invariant.[14]

Simple Partial and Multiple Correlations

The distinction between simple, partial and multiple correlations is based upon the number of variables are studied. When two variables are studied, it is a problem of simple correlation. When three or more variables are studied it is a problem of either multiple or partial correlation. In multiple correlations three or more variables are studied simultaneously. For example, when we study the relationship between the yield of rice per acre and both the other amount of rainfall & amount of fertilizers used, it is the probability of multiple correlations. R 1.23 denotes it.

On the other hand in partial correlation we recognize more than two variables but consider only two variables to be influencing each other, the effect of other influencing variables being kept constant. For example in the rice problem taken above if we limit our correlation analysis of yield and rain fall to period when a certain average daily temperature existed, it

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[14] Gupta S. P. – Statistical Method – Sultan Chand & Sons, Educational Publishers – New Delhi – P 378

becomes a problem relating to partial correlation only it is denoted by $r_{12.3}$.[15]

G. -   <u>Coefficient of Determination</u>

One very convenient and useful way of interpreting the value of coefficient of correlation between two variables is to use square of coefficient of correlation, which is called coefficient of determination. The coefficient of determination thus equals to r^2. If the value of r=0.9, r^2 will be 0.81 and this would mean that 81% of the variation in the dependent variable has been explained by the independent variable.

The coefficient of determination (r^2) is defined as the ratio of the explained variance to the total variance.

Coefficient of determination = Explained variation / Total variance.[16]

H. -   <u>Simple & Multiple Regression Analysis</u>

→ <u>Regression Analysis</u>

1. "The term 'regression' analysis refers to the methods by which estimate are made of the values of a variable from the knowledge of the values of one or more other variables and to the measurement of the errors involved in this estimation process."

-   Morris Hamburg

2. "Regression analysis attempts to establish the nature of the relationship between variables. That is to study the functional relationship between the variables and hereby provide a mechanism for prediction or forecasting."

- Ya – lum Chou

It is clear from the above definitions that regression analysis is a statistical device with the help of which we are in a position to estimate

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15 Gupta S. P. – Statistical Method – Sultan Chand & Sons, Educational Publishers – New Delhi – P 381, 382

16 - Gupta S. P. – Statistical Method – Sultan Chand & Sons, Educational Publishers – New Delhi – P 401

the unknown value of one variable from known value of another variable. The variable, which is used to predict the variable of interest, is called the independent variable or explanatory variable and the variable we are trying to predict is called the dependent variable or explained variable.[17]

Multiple Regression Analysis

Multiple regression analysis represents a logical extension of two variables regression analyses. Instead of single independent variable, two ore more independent variables are used to estimate the values of a dependent variable. However, the fundamental concept in the analysis remains the same. The following are the three main objectives of multiple regression and correlation analysis.

1. To derive an equation which provides estimate of the dependent variable from value of the two ore more independent variables. This object is accomplished by deriving an appropriate regression equation by the method of least square.

2. To obtain a measure of the error involved in using this regression equation as a basis for estimation. This object is achieved through calculation of standard error of estimates.

3. To obtain a measure of the proportion of variance in the dependent variable accounted for or 'explained by' the independent variables. This purpose is accomplished by computing the multiple coefficient of determination.[18]

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[17] - Gupta S. P. – Statistical Method – Sultan Chand & Sons, Educational Publishers – New Delhi – P 436

[18] - Gupta S. P. – Statistical Method – Sultan Chand & Sons, Educational Publishers – New Delhi – P 1117, 1118

I. -   Economic Model

Various linear economic models through linear multiple   regression technique are developed which are as follows.

- Economic model for estimating EPS.

Expected EPS = a + b (D/E Ratio) + c (PBIT)

Where, a = constant of the regression equation,

b = the coefficient of the variable "Debt-Equity Ratio" in the equation.

c = the coefficient of the variable "PBIT" in the equation.

- Economic model for estimating cash flow

Expected cash flow = a + b(sales) + c (TCE)

Where, a = constant of the regression equation,

b = the coefficient of the variable "Sales" in the equation.

c = the coefficient of the variable "TCE" in the equation.

- Economic model for estimating sale.

Expected amount of sales = a + b (FA) + c (GWC)

Where, a = constant of the regression equation,

b = the coefficient of the variable "Fixed Assets" in the equation.

c =the coefficient of the variable "GWC" in the equation.

- Lintner's model for estimating DPS

$$DIV_T = a + bp (EPS_T) + (1-b) DIV_{T-1}$$

Where, DIV_T = expected dividend in current year.

a   = constant of the regression equation.

b   = speed of adjustment.

1-b   = safety factor.

DIV_{T-1} = past year dividend per share.

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$$p \quad = \text{target pay out ratio.}$$

Above models are developed on the basis of the following assumptions.

1) EPS is a linear function of D/E ratio and PBIT

2) Cash flow is a linear function of sales and total capital employed (TCE)

3) Sales is a linear function of investment in fixed assets (FA) and gross working capital (GWC)

4) Dividend per share of current year is a linear function of EPS of current year and dividend per share of last year (DIVT-1)

11- CHAPTER PLAN

The study is organized in to eight chapters:

Chapter I : Overview of Selected Industries of Saurashtra Region

This chapter deals with the history and development of selected corporate units, Impact of Globalization on industrial Sectors, Industrial Policy and Growth and Development and Managerial decision-making system.

Chapter II : Conceptual Framework of Managerial Decision-Making

This chapter deals with Conceptual Meaning of Managerial Decision Making, Type of Managerial Decision Making, Decision Making Environment, Quantitative decision-making tools, Decision Making Process, Principles of effective decision-making, Nature of Corporate Strategy and Business Ethics.

Chapter III : Research Methodology

The chapter deals with rationality of study, identification of problem, review of literature, data collection and the period of study, objectives of study, hypothesis, scope of study, statistical tools and techniques, chapter plan and limitation of study.

Chapter IV : Comparative Analysis of Financing Decision

This chapter deals with concept of financing decision, financial risk and business risk, capital structure, aim of financing decision, explanation of variables use for evaluation of financing decision, tools and techniques for analysis and evaluation of financing decision and the analysis of financing decision of selected companies.

Chapter V : Comparative Analysis of Investment Decision

This chapter deals with nature of capital budgeting / investment decision, cash flow, component of capital budgeting decision, explanation of variables used for evaluation of investment decision, tools and techniques for analysis and evaluation of investment decision and analysis of investment decision of selected companies.

Chapter VI : Comparative Analysis of Dividend Decision

This chapter deals with impact of dividends on the valuation of the firm, lintner's model view, dividend policy, explanation of variables used for evaluation of dividend decision, tools and techniques used for evaluation of dividend decision and the analysis of dividend decision of selected companies.

Chapter VII : Analysis & Evaluation of Overall System of Managerial Decision-making.

This chapter deals with evaluation of relationship between statistical tools and managerial decision, tools and techniques used in analysis and evaluation of relationship between statistical tools and managerial decision-making, analysis and evaluation of profitability, efficiency and solvency and the comparison of managerial decision system.

Chapter VIII : Summary, Findings, Conclusions and Suggestions.

12- LIMITATION OF THE STUDY

1)   The study is mostly based on the secondary data collected from the annual reports of the companies and from different websites

and magazines. The limitations of the secondary data, if any, will also influence the study

2)   The study excludes from its purview other managerial decision making area like, production decision, marketing decision, human resources decision and other non financial problems such as not profession of management, delay in commissioning of the projects and the organization of the boards.

3)   The study relates to only nine companies that are registered with registrar of companies, listed in different stock exchange and located in Saurashtra region of Gujarat State.

4)   The study based on financial information recorded in Books of account using historical accounting system.

5)   There are different methods for revaluation of the managerial decision making of a company. In this connection views of experts differ from one another.

6)   For the analysis of dividend decision only those companies that paid dividend in at least four years out of the ten years under the study period has been considered.

CHAPTER – IV

COMPARATIVE ANALYSIS OF FINANCING DECISION

CONTENTS

(1) INTRODUCTION

(2) FINANCING DECISION.

(3) FINANCIAL RISK AND BUSINESS RISK

(4) CAPITAL STRUCTURE

(5) AIM OF FINANCING DECISION

(6) EXPLANATION OF VARIABLES USE FOR EVALUATION OF FINANCING DECISION

(7) TOOLS AND TECHNIQUES FOR ANALYSIS AND EVALUATION OF FINANCING DECISION

(8) ANALYSIS OF FINANCING DECISION OF SELECTED COMPANIES

(1) <u>INTRODUCTION</u>

Goal of corporate finance is maximizing shareholder's wealth. Shareholders are the owners of a company. They provide risk capital in the form of equity share capital. Board of directors manages the company as a trustee of the shareholders. They should provide good governance in the interest of the shareholders. Finance is an important functional area that helps the management to invest in proper projects, raising money from proper sources, adopting proper financial mix, maintaining proper level of working capital, pursuing fair accounting policies for transparent corporate reporting and maintaining fairness in dissemination of financial information to the financial markets and institutions.

A company also raises money by way of issuing preference shares, debentures and by taking loans. But these sources carry fixed interest / dividend and thereby obligation of the company is limited to the extent of regular payment of interest and repayment of principal as when fall due.

The equity shareholders on the other hand bear the risk of investment in the business. In case the company suffers loss and becomes bankrupt, they remain at the bottom of the list of recipient of funds that is available with the company. In other words, they will get back their share capital after all other creditors of the company are being paid. Shareholders bear the residual risk so they demand higher return as compared to preference shareholders, debenture holders and other lenders who get fixed rate of dividend or interest.

Therefore, financial decision is one of the important decisions, which is greatly concern with achievement ultimate goal of corporate finance that is to maximize shareholders value. Fund raised by the company has its average cost. Its various businesses should on an average generate at least that much return. If average rate of return on its investments is exceeding weighted average cost of capital (WACC) it will maximize shareholders wealth.

The financial decision is one of the functions of financial management. It is mainly concern with raising funds investing them in assets and distributing returns earned from assets to shareholders. So financial decision further

classified in tree decisions, (a) Financing Decision, (b) Investment Decision, (c) Dividend Decision[19]

In this chapter researcher has tried to evaluate financing decision.

(2) FINANCING DECISION

Financing decision is the one of the important function to be performed by the financial manager. Broadly he must decide when, where and how to acquire funds to meet the firm's investment needs. The main issue before him is to determine the proportion of equity is known as the firm's capital structure. The financial manager must strive to obtain the best financing mix of the optimum capital structure for his firm. The firm's capital structure is considered to be optimum when the market value of shares is maximized. The use of debt affects the return and risk of shareholders. It may increase the return on equity fund but it always increases risk. A proper balance will have to be struck between return and risk. When shareholders return is maximized with minimum risk, the market value per share will be maximized and the firm's capital structure would be considered optimum. Once the financial manager is able to determine the best combination of debt and equity, he must raise the appropriate amount through best available sources. In practice, a firm considers many other factors such as control, flexibility, loan covenants, legal aspects etc. in deciding its capital structure.[20]

The modern financial manager is involved in the broad range of decision making within corporation. As a foundation, knowledge of financial market and financial statement is required. These are used in a framework of the theory of risk and return and the time value of money as analytical tools for measuring and forecasting the firm's activities. Decisions may be viewed as either short term or long term in nature. The management of near term assets considers the sources of short-term funds and brings the financial management decision on cash levels, receivables and inventory. It also requires planning that covers this year's operating revenues and expenses and deals with leverage concept in the firm's operations and financing. The management of long term assets build upon sources of long term funds and

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[19] - Pandey I. M. – Financial Management – Vikash Publishing House Pvt. Ltd. – 1998 – P - 6
[20] - Pandey I. M. – Financial Management – Vikash Publishing House Pvt. Ltd. – 1998 – P - 7

covers issues related to dividend policy, investment policy, cost of capital and the firm's capital structure.

Corporate sectors collect the corporate finance from the public through share instrument. So the goal of corporate finance is the maximizing shareholders wealth keeping in view these objective four important aspects of financial decisions namely financing decision capital structure decision. Investment decision and dividend decision are adopted.

Financing decisions revolve around analyzing cost of various types of financial instruments in different capital and money markets. Innovations in financial instruments of course, causes complexity in computing cost of capital.

Having analyzed cost of various types of financial instruments, the next step is to strike a suitable balance among various instruments to give shape of proper capital structure that minimize overall cost of capital at an acceptable level of financial risk and business risk.

(3) FINANCIAL RISK & BUSINESS RISK

In financial decision making two types of risk are generally talked about business risk and financial risk. Business risk can be determined on the basis of nature of the investment e.g. a corporate unit which kind of project going to start and financial risk is determined on the basis of how corporate units finance the project.

Business risk mainly effected by (1) position of units in between its competitors (2) nature of trade or business (3) contribution in total market of particular business (4) total market growth (5) stage or product life cycle.

Financial risk mainly effected by (1) capital structure and capital gearing (2) Interest coverage ratio (3) operating leverage (4) cash flow (5) credit policy (6) debtors transaction and behavior.

Minimizing cost of capital is possible by adding more and more low cost interest bearing capital like debenture and bonds in the capital structure. By this there arises interest payment obligation. In time of good business cash flow is sufficient to meet such interest obligation. But in times of recession, a company's cash flow may be inadequate and it may fail to meet its debts

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obligation. Therefore balancing risk and cost of capital remains the objective of planning capital structure.

(4) <u>CAPITAL STRUCTURE</u>

Capital structure refers to the mix of long-term sources of funds such as debentures. Long-term debt, preference share capital and equity share capital including reserve and surplus. Some companies do not plan their capital structure and it develops as a result of the financial decisions taken by the financial manager without any formal planning. These companies may proper in the short run, but ultimately they may face considerable difficulties in raising fund to finance their activities with the unplanned capital structure, these companies may also fail to earn wise the use of their funds. Consequently it is being increasingly realized that a company should plan its capital structure to maximize the use of the funds and to be able to adapt more easily to the changing conditions.

→ <u>Features of an appropriate capital structure</u>

The board of directors or the chief financial officer of a company should develop an appropriate capital structure, which is most advantageous to the company.

A sound or appropriate capital structure should have the following features;

(1) **<u>Profitability</u>**: The capital structure of the company should be most advantageous within the constraints; maximum use of leverage at minimum cost should be made.

(2) **<u>Solvency</u>**: The use of excessive debt threatens the solvency of the company. To the point debt does not add significant risk it should be used, otherwise, its use should be avoided.

(3) **<u>Flexibility</u>**: The capital structure should not be inflexible to meet the changing conditions. It should be possible for a company to adopt its capital structure with a minimum cost and delay if warranted by a changed situation. It should also be possible for the company to provide funds whenever needed to finance its profitable activities.

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(4) **Capacity**: The capital structure should be determined within the debt capacity of the company and this capacity should not be exceeded. The debt capacity of a company depends on its ability to generate future cash flow. It should have enough cash to pay creditors fixed charges and principal sum.

(5) **Control**: The capital structure should involve minimum risk or loss of control of the company. The owners of closely held companies are particularly concerned about dilution of control.[21]

The above mentioned are the general features of an appropriate capital structure. The particular characteristics of a company may reflect some additional specific features. Further, the emphasis given to each of these features will differ from company to company e. g. a company may give more importance to flexibility than control while another company may be more concerned about solvency than any other requirement, further more, the relative importance of these requirement may change with shifting conditions. The company capital structure should therefore be easily adaptable.

(5) AIM OF FINANCING DECISION

Finance is lifeblood of business enterprise, without adequate finance, existence of business is not possible. All the aspect of the firm's operations such as production, marketing personnel etc. can be properly manage only with adequate finance. Therefore to manage the available fund at the optimum level is one of the vital roles of financial management. Thus financing decision is one of the important tools to measure the efficiency of an organization from the viewpoint of profitability, solvency and liquidity.

The aims of financing decision are as follows.

(1) To maximize the profit through cost control, profit planning and proper risk return decision.

(2) To minimize the risk through determining optimum debt equity ratio.

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[21] - Pandey I. M. – Financial Management – Vikash Publishing House Pvt. Ltd. – 1998 – P – 649

(3)   To maintain the control over invested fund that means funds flowing in and out of the firms must be constantly monitored to assure that they are safeguarded and properly utilized.

(4)   To maintain the proper flexibility in capital structure. Careful management of fund and activities gains flexibility.

(5)   To facilitate the comparison of the performance of the firm with that of its related firms.

(6)   To enable the management to control the performance of the firm.

(7)   To maintain the liquidity of firm through proper cash budgeting, raising the fund in times, in managing the flow of internal funds.

(8)   To evaluate the growth and development of firm.

(9)   To facilitate additional fund to finance the new one project.

(10)   To determine the optimum dividend pay out ratio.

(6) EXPLANATION OF VARIABLES USED FOR EVALUATION OF FINANCING DECISION

For taking financial decision under different situations, measurement of several tools and technique are essential. According to John J. Hampton, the most important measurement tools for evaluation of financial decision are ratio which are indicating proportion of debt & equity, earning power of the company, amount of debt issued for acquiring total assets, capitalization rate, earning per share and interest coverage ratio.

All such ratios are calculated to evaluate financial decision of the company as follow.

(A) Earning Per Share

Stock holders are concerned about the earnings they will eventually be available to pay them dividends or that are used to expand their interest in the firm because the firms retains the earnings. These earnings may be expressed on a per share basis. Earning per share is calculated by dividing net income by number of shares outstanding. Share authorized but not

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issued, or authorized, issued and repurchased are omitted from the calculation.[22]

EPS = Net Income (PAT) ÷ Number of Equity Shares

EPS is mostly effected by two variable namely debt equity ratio and profit before interest and tax. For magnifying the effect of such two variable on EPS, researcher has develop the economic model and used for determining trend value of EPS generated through debt equity ratio (use of debt in capital structure) and PBIT.

Trend value of EPS = a + b (D/E Ratio) + c (PBIT)

Where:

a = constant of the regressed equation.

b = the co-efficient of the variable "debt equity ratio" in the equation

c = the co-efficient of the variable "PBIT" in the equation

(B) Capital Structure Ratios

Two ratios are important in analyzing the relationship between the debt and equity components of the firm's capital structure.

(a) Debt-Equity Ratio

This is calculated by dividing the total debt by the total equity.

D/E Ratio = Total Long term debt ÷ Total equity

b) Debt Assets Ratio

This is calculated by dividing the total debt by the total assets.

Debt Assets Ratio = Total Long term debt / Total assets

These ratios show how much of the firm's assets are financed by debt and equity and give important information about prospects for future financing. If a firm has excessive debt, it will experience difficulty in locating additional debt financing. The firm will be able to borrow only at high interest rates, if at all. On the other hand, if the ratio is low, (virtually on debt), it may indicate a failure to use relatively lower cost borrowed funds to raise the return on the common stock.

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[22] **Hampton J. J. – Financing Decision Making – Prentice-Hall of India Pvt. Ltd, New Delhi – 1996 – P-116.**

Analysts differ on whether short-term debt should be included in the capital structure rations. One group reasons that accounts payable and similar short-term items allow a temporary use of assets but are not really a form of borrowing to finance the firm's resources. In other words current liabilities are not a permanent part of the capital employed by the firm. Therefore for our purposes current liabilities are not included in the debt equity and debt assets ratios.

There are three major uses of capital structure ratios.

(a) To identify sources of funds

The firm finances all its resources from debt or equity sources. The amount of resources from each source is shown by this ratio.

(b) To measure financing risk

One measure of the degree of risk resulting from debt financing is provided by these ratios. If the firm has been increasing the percentage of debt in its capital structure over a period of time, this may indicate and increase in risk for its shareholders.

(c) To forecast Borrowing prospects

If the firm is considering expansion and needs to raise additional money, the capital structure ratio offer an indication of whether debt funds will be available. If the ratio is too high, the firm may not be able to borrow.

As a general guideline, the debt should not exceed 50% of the total sources of funds. Thus, a debt equity ratio of 1:1 and debt asset ratio of 0.5:1 should be the maximum for industrial firm.[23]

(C) <u>Price Earning Ratio and Capitalization rate</u>

The price earnings ratio (P/E) is calculated by dividing earnings per share into the market price of the stock.

P/E Ratio = Market Price of Share / EPS

It is the most important measure of value used by investors consider to other factor prior to making purchases. The P/E ratio considers after tax profit and market price, and links earnings per share to activity in the market. As per

[23] **Hampton J. J. – Financing Decision Making – Prentice-Hall of India Pvt. Ltd, New Delhi – 1996 – P-118,119.**

general financial norms P/E Ratio should be range from 5:1 to 10:1. If P/E ratio is below 5:1, it may be viewed as an under valued stock and exceed 10:1 it may be considered overvalued. The P/E Ratio may be used to determine trend market value of a stock, future market value of a stock and capitalization ratio of a stock.

→ Capitalization Rate of a Stock

The P/E Ratio may be used to measure the rate of return investors demand before they purchase a stock. The reciprocal of the P/E ratio is EPS / Mkt. Price and give this return. This return is the stock's capitalization rate.

Capitalization rate = (EPS / Mkt. Price per share) x 100

The capitalization rate should be range from 20% to 10%. It is helpful to the potential investor to decide the shares of particular company are purchased or not, financial manager also predict the interest of potential investor in purchasing shares of its company.

If capitalization rate is lower, potential investors may be buying an undervalued stock and if it is higher, they may be avoiding an over valued stock or existing share holders may sold out the share of that company to earn advantage of high value.[24]

→ Interest Coverage Ratio

The interest coverage ratio shows the number of times the interest charges are covered by funds that are ordinary available for their payment. Adequate interest coverage ratio indicates sound capacity of company of paying interest on debt it is calculated in case under the study using following formula.

INTEREST COVERAGE RATIO = (PAT + INTEREST) / INTEREST COST

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[24] Hampton J. J. – Financing Decision Making – Prentice-Hall of India Pvt. Ltd, New Delhi – 1996 – P-117.

(7) TOOLS & CHINQUES USE FOR ANALYSIS & EVALUATION OF FINANCING DECISIONS.

For the purpose of analysis and evaluation of financing decision, various ratios liked debt equity ratio, debt to total asset ratio, price-earning ratio, capitalization rate, earning per share, and interest coverage ratio are calculated. Moreover, statistical technique such as standard deviation, co-efficient of variation, average, multiple co-relation, determination of multiple co-relation, multiple regression equation, 't' test, χ^2 test and ANOVA are also applied to analysis the consistency, the stability and overall trends in the difference financial aspect of the companies. Data has been converted in to relative measure such as ratios, percentages, indices rather than the absolute data.

Following four hypothesis have been tested with four corresponding alternative hypothesis for the purpose of analyzing financing decision of selected companies

FIRST:

Hypothesis based on t test for regression coefficient.

- ⇨ Null Hypothesis: There is no significant difference between partial regression coefficient of sample and population data of sampled units during the study period.
- ⇨ Alternative Hypothesis: There is a significant difference between partial regression coefficient of sample and population data of sampled unit during the study period.

SECOND:

Hypothesis based on 'f' test (one way ANOVA) for multiple regressions.

- ⇨ Null hypothesis: There is no significant difference of the regression, as a whole that means whole independent variables were not related with dependent variable.
- ⇨ Alternative hypothesis: There is a significant difference of the regression as a whole that means at least one of the independent variable was related with dependent variable.

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THIRD:

Hypothesis based on chi-square test

- ⇨ <u>Null hypothesis</u>: There is no significant impact of Debt Equity Ratio and PBIT on EPS of the selected unit of saurashtra region.
- ⇨ <u>Alternative hypothesis</u>: There is a significant impact of Debt Equity Ratio and PBIT on EPS of the selected unit of saurashtra region.

FOURTH:

Hypothesis based on ANOVA 'F' test – One-Way analysis of variance.

Forth one hypothesis has been developed to see whether there is any significant difference in financing decision of the selected units of the saurashtra region. For evaluating financing decision mainly two variables namely Debt Equity Ratio and EPS of all nine units are summarized. To evaluate this two variable with a view to analysis overall financing decision of all nine selected units. Following hypothesis based on ANOVA ('F' test) is developed. The acceptance of following null hypothesis would reveal that there is no significant difference in financing decision within the sample units. However, rejection of the null hypothesis is also suggested, there is a significant difference in financing decision within sampled units.

- i. There is no significant difference in capital structure within the sampled units during the period of study.
- ii. There is no significant difference in average EPS within the sampled units during the period of study.

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(8) ANALYSIS OF FINANCING DECISION OF SELECTED COMPANIES LOCATED IN SAURASHTRA REGION AND LISTED WITH STOCK EXCHANGE.

INDIAN RAYON AND INDUSTRIES LTD, VERAVAL

For the purpose of analysis and evaluation of financing decision of IRIL, following null hypothesis is tested

Null Hypothesis

There is no significant impact of debt-equity ratio and PBIT on EPS of IRIL

The following evaluations emerge from multiple correlations, multiple regressions, t test, 'F' test, chi-square test and its results in respect of I.R.I.L. VERAVAL.

Multiple correlations, multiple regression equation, 'F' test and 't' test approach.

TABLE 4.1
KEY INDICATORS OF FINANCING DECISION OF IRIL

YEAR	EPS Index (X1)(in Rs)	D/E RATIO (X2)	PBIT (X3) (Rs. In Crores)	Trend Value of EPS	χ^2	P/E RATIO	CAPTI. RATE	DEBT TO T.A.	I C R
94-95	100.00	0.67	211.50	89.87	1.14	15.16	6.6	40.04	3.88
95-96	138.43	0.74	293.06	137.49	0.01	11.31	8.64	42.37	3.45
96-97	160.83	0.77	305.28	145.43	1.63	6.14	16.29	43.36	4.80
97-98	106.06	0.64	286.48	131.05	4.76	5.69	17.58	39.03	4.87
98-99	52.91	0.46	172.26	61.89	1.30	5.19	17.27	31.54	2.86
99-00	30.99	0.56	110.48	30.02	0.03	5.72	17.48	35.28	2.09
00-01	38.53	0.42	135.96	40.22	0.07	7.02	14.25	29.06	2.11
01-02	23.71	0.39	118.47	29.68	1.20	10.2	9.8	29.62	1.92
02-03	63.29	0.21	168.45	52.47	2.23	4.01	24.94	18.62	6.18
03-04	62.61	0.29	176.30	59.25	0.19	10.16	9.84	24.25	8.51
TOTAL	777.37	5.14	1978.24	777.37	12.56	80.60	142.69	333.17	40.67
AVG.	77.74	0.51	197.82	77.74	1.26	8.06	14.27	33.32	4.07
SD	46.64	0.19	73.33	45.18	1.45	3.50	5.56	8.15	2.10
R	0.75	0.71	0.96						
CV	60.00	37.11	37.07	58.11	115.66	43.47	38.97	24.46	51.58
	R1.23 = 0.97		(R1.23) ^{2} =0.9409			R2.13 = 0.75		R3.12 = 0.97	

(Source: annual report of IRIL from 1994-95 to 2003-04)

Multiple regression equation for the line x_1 on x_2 and x_3

$$X_1 = -47.96 + 29.02 (X_2) + 0.56 (X_3)$$

Where, X_1 = Trend value of EPS, X_2 = D/E Ratio, X_3 = Profit (PBIT)

Table No 4.1 provides data regarding Debt Equity Ratio, PBIT, EPS, Price Earning Ratio, Capitalization Rate, Debt To Total Asset, Interest Coverage Ratio, Value of Chi- Square and other related information of Indian Rayon & Industries Ltd. Veraval

As per general guideline D/E Ratio is 1:1 and Debt Asset Ratio is 0.5:1. In case of IRL maximum D/E Ratio was 0.733 and Debt Asset Ration was 43.36% in the year 1996-97. Therefore these both ratios were not exceed with general guideline during the study period. The company has been decreasing the percentage of debt in its capital structure during study period especially from the year 1997-98 to 2002-2003; (see **chart no 4.1**) this may indicate a decrease in risk for its shareholders and action for saving the cost of interest. It is reflected in the chart given below.

Chart No. 4.1
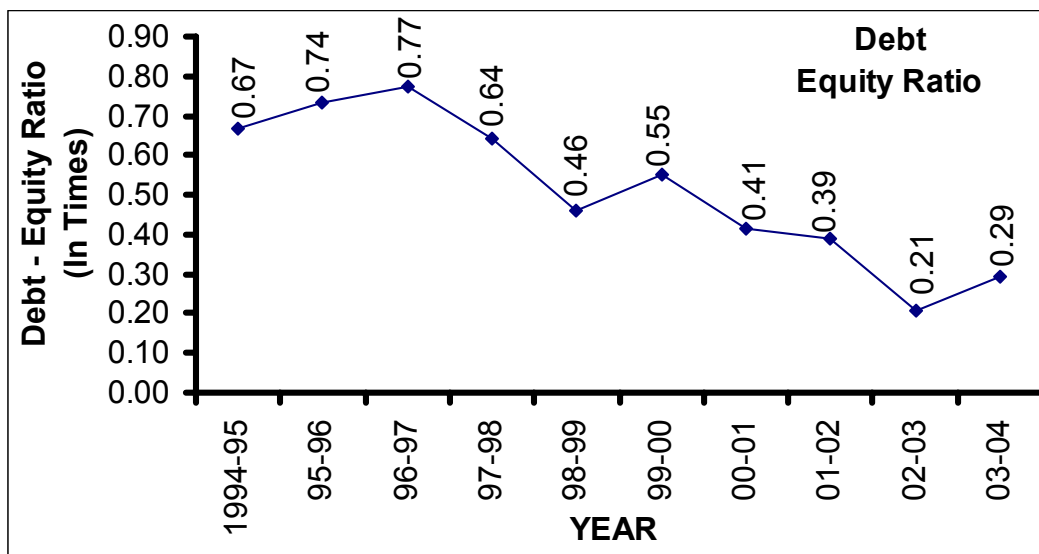
As per general guideline P/E Ratio should be in normal range of $^5/_1$ to $^{10}/_1$ and capitalization rate is also in normal range of 20% to 10 %. In case of IRL these both ratios were on an average 8.06% and 14.5 % respectively which were within the normal range. They indicate that profit earned by the company as compare to the price of the stock was reasonable during the study period.

There was fluctuation in interest coverage ratio it was lowest 1.92 and highest 8.51 (see **chart no 4.2**) during the study period. It indicates capacity of company to pay the interest was sound during the study period.

Chart No. 4.2
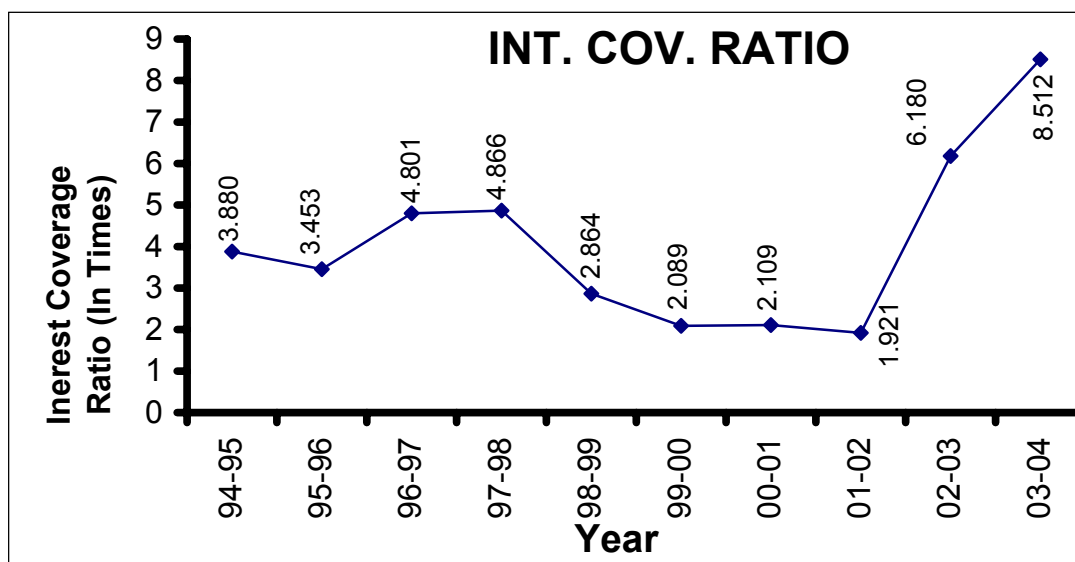
The coefficients of multiple correlation (R1.23) of IRL was 0.97 indicating very high correlation among the variables. Therefore EPS (dependent var.) is highly affected with independent variables Debt Equity Ratio and PBIT. Where as the coefficient of multiple determinations $(R1.23)^2$ of IRL was 0.9409. This implies that 94.09% variation in EPS was due to the variation of D/E Ratio and variation of PBIT and rest 5.91% was due to other reason, on the assumption that there is a linear co-relation among the variables

ANOVA TABLE NO. 4.2						
Sources of vari.	Degree of freedom	Sum of square	Mean Of Square	'F' Ratio	Critical Value @ 5 %	Result
Regression (SSR)	2	18368.03	9184.02	53.00	4.74	Significant
Error (SSE)	7	1212.95	173.28			
Total (SST)	9	19590.99				

Above **table no 4.2** shows regression analysis. The calculated value of 'F' was 53.00, which is greater than the table value 'F' (v1=2, v2=7) at 5%

level of significance. This result implies that at least one of the independent variable was related with the dependent variable EPS (x_1).

TABLE NO. 4.3

	VARIABLE IN EQUATION					CHI SQUARE	
Variable	Partial Reg. Coeffi. (B)	S.E. (B)	| t | value	Critical value @ 5%	Result	χ^2 Value	Critical Value @ 5%
Constant	-47.96	-	-	-	-	12.56	16.92
X₂	29.02	32.81	0.88	2.37	Non-Sign.	Non-Significant	
X₃	0.56	0.09	6.56	2.37	Significant		

The partial regression coefficient for independent variable D/E Ratio indicates positive relationship with dependent variable (EPS) during the period of study. It implies that the additional one time increase in D/E Ratio and PBIT was held constant than there would be an increase annual EPS by 29.02% as it was in the past. Where as the partial regression coefficient for independent variable PBIT also indicates positive relationship with dependent variable EPS. It implies that with the raising of PBIT by Rs. 1 crore and D/E Ratio was held constant, then there would be increase in EPS by 0.56% as it was in the past.

The calculated value of 't' for partial regression coefficient (b12.3) of EPS and D/E Ratio when PBIT held constant was 0.88 which was less than the table value of 't' with d. f. 7 at 5% level of significance. This result implies that partial regression coefficient of EPS and D/E Ratio was not significant during the study period. Where as calculated value of 't' for partial regression coefficient (b13.2) EPS and PBIT when D/E Ratio held constant was 6.56 which was greater than the table value 't' with d. f. 7 at 5% level of significance. This result implies that partial regression coefficient of EPS and PBIT was significant during the study period.

The coefficient values arrived above shown in **table no 4.3** were used to estimate the trend value of EPS as per the model in order to test whether the model is a good fit for the data. The Chi-square test is conducted between the actual indices value of EPS and trend value of EPS and the result are tabulated in above **table no 4.1**. The result of chi-square could accept the null hypothesis. Hence, it is concluded that there is no significant impact of Debt–Equity ratio and PBIT on EPS.

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The above analysis indicates that the company has taken financial decision in such a way that offers higher return to shareholders, tax saving through cost of interest, solvency and flexibility. Company has raised the addition fund for expansion and other business purpose from various sources of fund, which have low cost of capital. Therefore we can say that financing decision of company regarding formation of capital structure, selecting various sources of funds and utilization of fund is rational and long-term perspective. EPS is positively correlated with Debt equity ratio and PBIT. So, variation in EPS is due to variation in Debt equity ratio and PBIT (see **chart no 4.3**).

Chart No 4.3

Earning Per Share

EPS (In Rs.) vs Year

29.69, 41.10, 47.75, 31.49, 15.71, 9.62, 11.44, 7.26, 18.79, 18.59

(1994-95, 95-96, 96-97, 97-98, 98-99, 99-00, 00-01, 01-02, 02-03, 03-04)
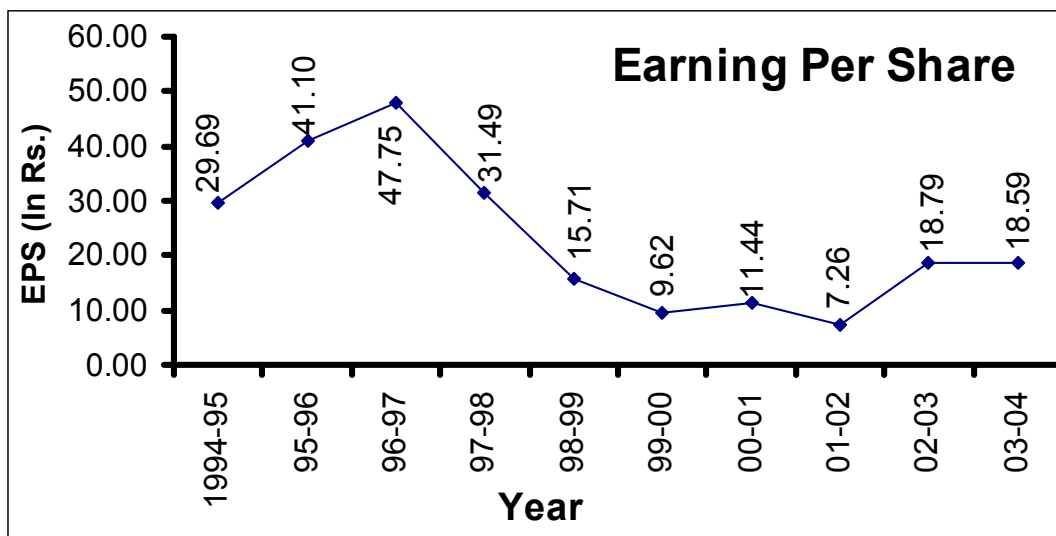
TATA CHEMICAL LTD. MITHAPUR

For the purpose of analysis and evaluation of financing decision of TCL, following null hypothesis is tested

Null Hypothesis

There is no significant impact of debt-equity ratio and PBIT on EPS of TCL

The following evaluations emerge from multiple correlations, multiple regressions, t test, 'F' test, chi-square test and its results in respect of TCL. MITHAPUR.

Multiple correlations, multiple regression equation, 'F' test and 't' test approach.

TABLE 4.4
KEY INDICATORS OF FINANCING DECISION OF TCL

YEAR	EPS Index (X1) (in Rs)	D/E RATIO (X2)	PBIT (X3) (Rs. In Crores)	Trend Value of EPS	χ^2	P/E RATIO	CAPTI. RATE	DEBT TO T.A.	I C R
94-95	100.00	1.47	383.85	75.76	7.76	8.63	11.6	59.55	3.962
95-96	86.01	1.18	652.50	79.37	0.56	9.67	10.35	54.12	2.672
96-97	55.00	1.13	535.50	70.42	3.38	11.3	8.85	53.03	2.029
97-98	62.92	0.96	547.32	64.00	0.02	9.36	10.68	49.02	2.340
98-99	39.64	0.94	404.50	54.80	4.19	7.14	14.01	48.4	1.934
99-00	25.61	0.84	327.80	46.12	9.12	8.08	14.11	45.53	1.632
00-01	35.97	0.60	348.13	37.28	0.05	4.16	24.04	37.59	1.940
01-02	27.66	0.53	310.72	32.16	0.63	6.62	15.11	34.79	2.065
02-03	42.87	0.40	352.93	29.19	6.41	6.06	16.5	28.35	3.001
03-04	40.39	0.31	379.42	26.98	6.66	10.41	9.61	25.44	4.778
TOTAL	516.08	8.36	4242.67	516.08	38.77	81.43	134.86	435.82	26.35
AVG.	51.61	0.84	424.27	51.61	3.88	8.14	13.49	43.58	2.64
SD	24.73	0.37	113.88	19.98	3.47	2.18	4.49	11.48	1.01
CV	47.92	44.56	26.84	38.70	103.99	26.75	33.30	26.34	38.47
R	0.77	0.54	0.61						
	R1.23 = 0.81	(R1.23)^2=0.6561		R2.13 = 0.78	R3.12 = 0.62			

(Source: annual report of TCL from 1994-95 to 2003-04)

Multiple regression equation for the line x_1 on x_2 and x_3

$$X_1 = -8.22 + 41.82 (X_2) + 0.06 (X_3)$$

Where, X_1 = Trend value of EPS, X_2 = D/E Ratio, X_3 = Profit (PBIT)

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Table No 4.4 provides data regarding Debt Equity Ratio, PBIT, EPS, Price Earning Ratio, Capitalization Rate, Debt To Total Asset, Value of Chi-Square and other related information of Tata Chemical Ltd. Mithapur.

As per general guideline D/E Ratio is 1:1 and Debt Asset Ratio is 0.5:1. In case of TCL maximum D/E Ratio was 1.47 and Debt Asset Ration was 59.55% in the year 1994-95. Therefore these both ratios were exceed the general guideline during the study period. The company has been decreasing the percentage of debt in its capital structure during the period from 1994-95 to 1996-97. But the company has been decreasing the percentage of Debt in its capital structure during the study period. As a result, D/E Ratio decreases from 1.47 to 0.31 and Debt to Total Asset from 59.55% to 25.44%. These may indicate decrease in risk for its shareholder. It is reflected in the chart given below.

Chart NO. 4.4
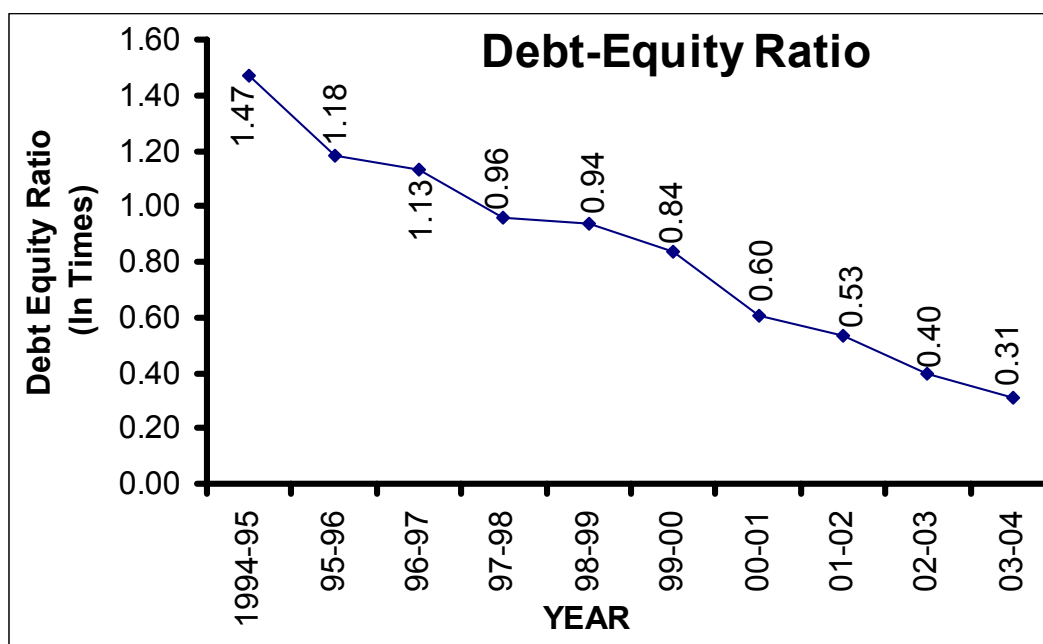
As per general guideline P/E Ratio should be in normal range of $^5/_1$ to $^{10}/_1$ and capitalization rate is also in normal range of 20% to 10 %. In case of TCL these both ratios were on an average 8.14 and 13.49% respectively which were within the normal range. They indicate that profit earned by the company as compare to the price of the stock was reasonable during the study period

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Interest coverage ratio was lowest 1.63 and highest 4.78 (see **chart no 4.5**) during the study period. It indicates that capacity of company to pay the interest was sound during the study period.

Chart No. 4.5
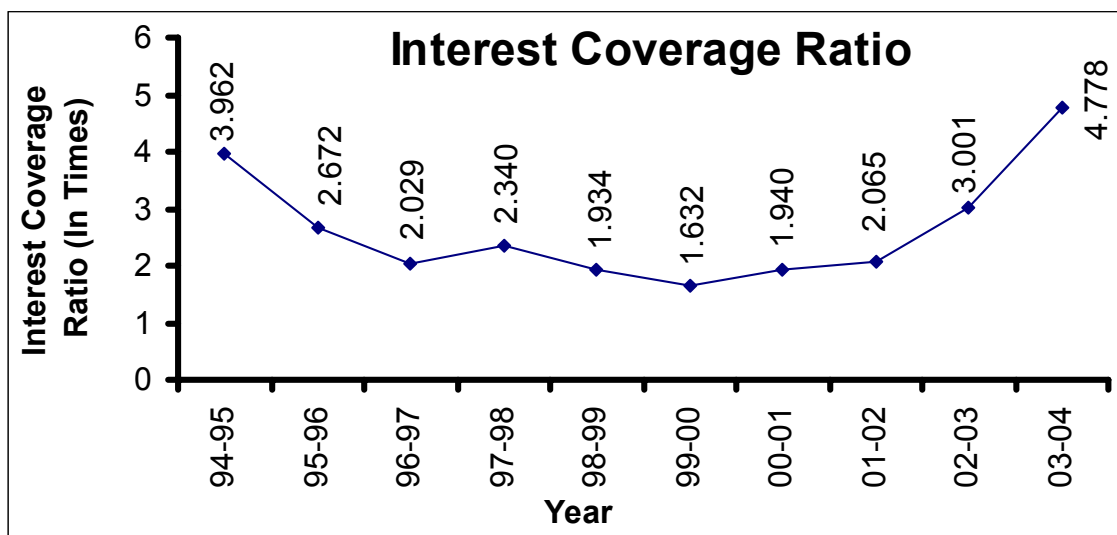
The coefficients of multiple correlation (R1.23) of TCL was 0.81 indicating very high correlation among the variables. Therefore EPS (dependent var.) is highly affected with independent variables Debt Equity Ratio and PBIT. Where as the coefficient of multiple determination $(R1.23)^2$ of TCL was 0.6561. This implies that 65.61% variation in EPS was due to the variation of D/E Ratio and variation of PBIT and rest 34.39% was due to other reason, on the assumption that there is a linear co-relation among the variables

ANOVA TABLE NO. 4.5						
Sources of vari.	Degree of freedom	Sum of square	Mean of square	'F' ratio	Critical value @ 5%	Result
Regression (SSR)	2	3594.41	1797.20	6.57	4.74	Significant
Error (SSE)	7	1910.07	272.87			
Total (SST)	9	5504.47				

Above **table no 4.5** shows regression analysis. The calculated value of 'F' was 6.57, which is greater than the table value 'F' (v1=2, v2=7) at 5% level

of significance. This result implies that at least one of the independent variable was related with the dependent variable EPS (x_1).

<div align="center">TABLE NO. 4.6</div>

VARIABLE IN EQUATION						Chi-Square	
Variable	Partial Reg. Coeffi. (B)	SE (B)	| t | value	Critical Value @ 5%	Result	χ^2 Value	Critical Value @ 5%
Constant	-8.22	-	-	-	-	38.77	16.92
X_2	41.82	23.62	1.77	2.37	Non-Sign.	Significant.	
X_3	0.06	0.06	0.96	2.37	Non-Sign.		

The partial regression coefficient for independent variable D/E Ratio indicates positive relationship with dependent variable (EPS) during the period of study. It implies that the additional one time increase in D/E Ratio and PBIT was held constant than there would be an increase annual EPS by 41.82% as it was in the past.   The partial regression coefficient for independent variable PBIT also indicates positive relationship with dependent variable EPS. It implies that with the raising of PBIT by Rs. 1 crore and D/E Ratio was held constant, then there would be increase in EPS by 0.06% as it was in the past.

The calculated value of 't' for partial regression coefficient (b12.3) of EPS and D/E Ratio when PBIT held constant was 1.77 which was less than the table value of 't' with d. f. 7 at 5% level of significance. This result implies that partial regression coefficient of EPS and D/E Ratio was not significant during the study period. Where as calculated value of 't' for partial regression coefficient (b13.2) EPS and PBIT when D/E Ratio held constant was 0.96 which was less than the table value of 't' with d. f. 7 at 5% level of significance. This result implies that partial regression coefficient of EPS and PBIT was not significant during the study period.

The coefficient values arrived above shown in table no 4.6 were used to estimate the trend value of EPS as per the model in order to test whether the model is a good fit for the data. The Chi-square test is conducted between the actual indices value of EPS and trend value of EPS and the result are tabulated in above **table no 4.4**. The result of chi-square could not accept the

null hypothesis. Hence, it is concluded that there is a significant impact of Debt- Equity Ratio and PBIT On EPS.

The above analysis indicate that company form its capital structure using borrowed fund and own fund, but company has continue to retired its Debt from its capital structure since 1994-95 to 2003-04. The main object of reducing debt was to reduce interest cost and risk of shareholders. On other side EPS was decreasing from the year 1994-95 to 2001-02. So it is essential to maintain balancing D/E Ratio to improve EPS. Debt of TCL was less than its equity from the year 1997-98 to 2003-04 indicates conservative approach of financial management. After analyzing multiple effect of D/E Ratio and PBIT and studying price earning ratio, capitalization rate and debt to Assets, we can conclude that the financing decision of company regarding formation of capital structure, selecting various sources of funds and utilization of fund was rational and long-term perspective. EPS has been increased from 2002-03 and onward due to improvement of profitability and decreasing in interest cost. (see **Chart No 4.6**)

Chart No. 4.6
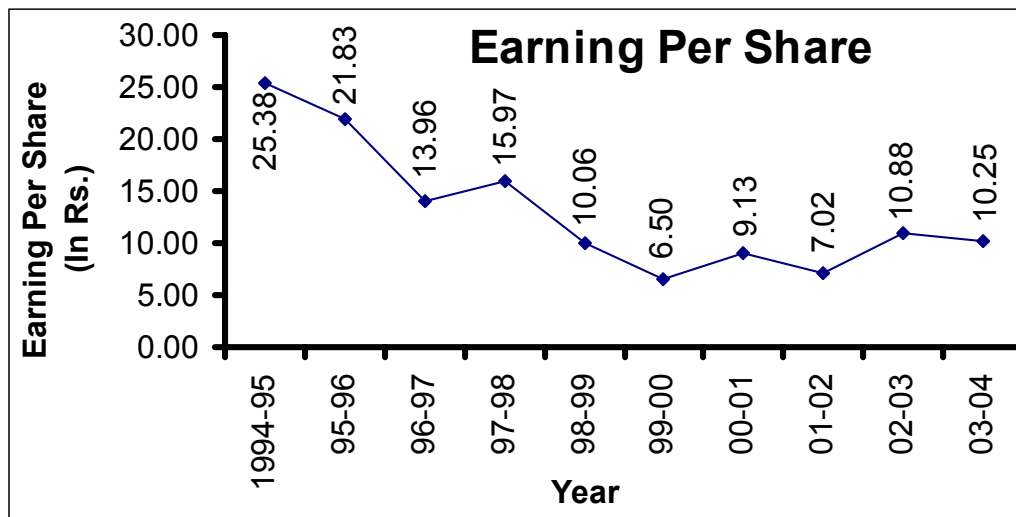
RELIANCE INDUSTRIES LTD. (JAMNAGAR PLANT)

For the purpose of analysis and evaluation of financing decision of RIL, following null hypothesis is tested

Null Hypothesis

There is no significant impact of debt-equity ratio and PBIT on EPS of RIL

The following evaluations emerge from multiple correlations, multiple regressions, t test, 'F' test, chi-square test and its results in respect of RIL. JAMNAGAR PLANT.

Multiple correlations, multiple regression equation, 'F' test and 't' test approach.

TABLE NO. 4.7
KEY INDICATORS OF FINANCING DECISION OF RIL

YEAR	EPS Index (X1)(in Rs)	D/E RATIO (X2)	PBIT (X3) (Rs. In Crores)	Trend Value of EPS	χ^2	P/E RATIO	CAPT I. RATE	DEBT TO T.A.	I C R
94-95	100.00	0.41	1344	104.72	0.21	22.35	4.48	29.01	4.81
95-96	119.66	0.56	1415	113.36	0.35	15.2	6.58	35.97	12.85
96-97	123.08	0.90	1538	131.88	0.59	21.73	4.6	47.38	8.78
97-98	150.43	0.71	2220	142.71	0.42	10.07	9.93	41.63	4.28
98-99	153.85	0.94	2463	159.75	0.22	7.25	13.8	48.5	3.34
99-00	191.45	0.83	3468	183.24	0.37	14.14	7.07	45.17	3.38
00-01	214.53	0.69	3997	191.97	2.65	15.59	6.42	40.83	3.04
01-02	200.00	0.59	5842	239.60	6.55	17.03	5.87	37.21	2.77
02-03	250.43	0.60	6529	259.43	0.31	9.445	10.59	37.44	3.64
03-04	314.53	0.55	7736	291.28	1.86	14.63	6.84	35.58	4.60
TOTAL	1817.95	6.78	36552.00	1817.95	13.52	147.44	76.18	398.72	51.50
AVG.	181.79	0.68	3655.20	181.79	1.35	14.74	7.62	39.87	5.15
SD	66.32	0.17	2313.47	63.76	2.00	4.94	2.94	6.03	3.21
CV	36.48	24.98	63.29	35.07	113.33	33.48	38.60	15.13	62.24
R	-0.14	-0.26	0.96						
	R1.23 = 0.96	(R1.23)^2=0.9216			R2.13 = 0.44	R3.12 = 0.96			

(Source: annual report of RIL from 1994-95 to 2003-04)

Multiple regression equation for the line x_1 on x_2 and x_3

$$X_1 = 48.66 + 44.25(X_2) + 0.03(X_3)$$

Where, X_1 = Trend value of EPS, X_2 = D/E Ratio, X_3 = Profit (PBIT)

Table No 4.7 provides data regarding Debt Equity Ratio, PBIT, EPS, Price Earning Ratio, Capitalization Rate, Debt To Total Asset, Value of Chi-

Square and other related information of RELIANCE INDUSTRIES LTD. – JAMNAGAR PLANT

As per general guideline D/E Ratio is 1:1 and Debt Asset Ratio is 0.5:1. In case of RIL maximum D/E Ratio was 0.94 and Debt Asset Ration was 48.50% in the year 1998-99. Therefore these both ratios were not exceed general guideline during the study period. This result indicates conservative approach of financial management, but D/E Ratio and capitalization rate were nearest to ideal ratio. It was sign of proper control of company on solvency and utilization of fund. It is reflected in the chart given below.

Chart No. 4.7
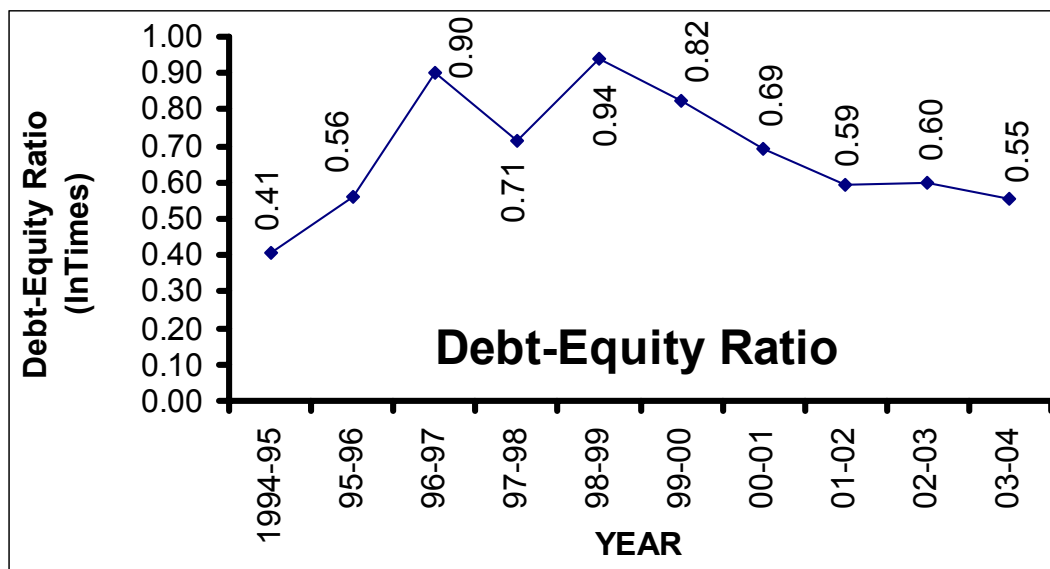
As per general guideline P/E Ratio should be in normal range of $^5/_1$ to $^{10}/_1$ and capitalization rate is also in normal range of 20% to 10 %. In case of RIL P/E Ratio was on an average 14.74 which was beyond the normal range and capitalization rate was 7.62% which was within the range. This result indicates that profit earned by the company as compare to price of stock was too much more than required during the study period.

Interest coverage ratio was lowest 2.77 and highest 12.85 (see **chart no 4.8**) during the study period. It indicates that capacity of company to pay the interest has not been sound during the study period.

Chart No. 4.8
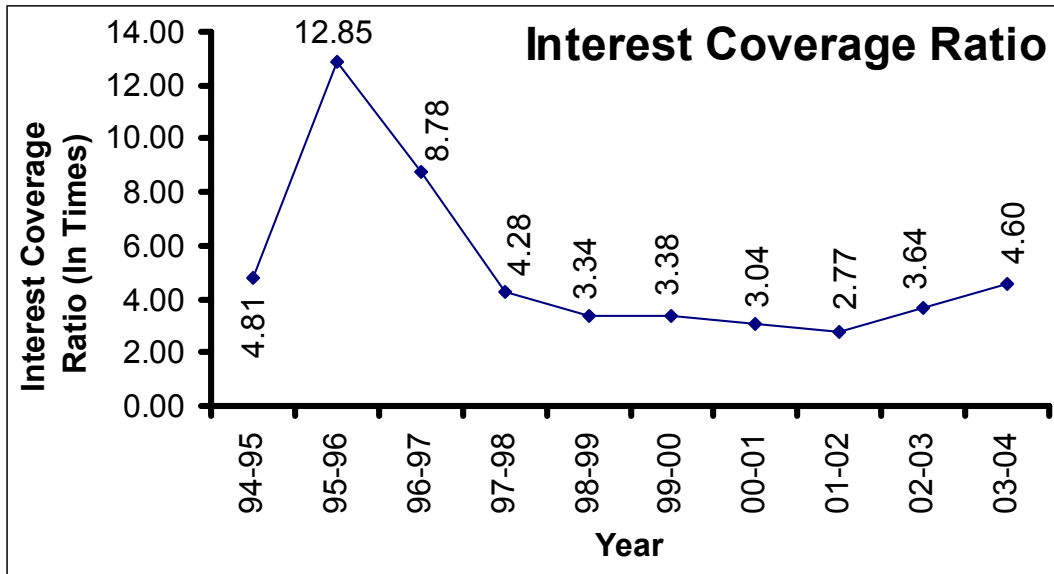
The coefficients of multiple correlation (R1.23) of RIL was 0.96 indicating very high correlation among the variables. Therefore EPS (dependent var.) is highly affected with independent variables Debt Equity Ratio and PBIT. Where as the coefficient of multiple determination $(R1.23)^2$ of RIL was 0.9216. This implies that 92.16% variation in EPS was due to the variation of D/E Ratio and variation of PBIT and rest 7.84% was due to other reason on the assumption that there is a linear co-relation among the variables

ANOVA TABLE NO. 4.8						
Sources of Vari.	Degree of freedom	Sum of square	Mean of square	'F' ratio	Critical Value @ 5 %	Result
Regression (SSR)	2	36589.07	18294.53	42.68	4.74	Significant
Error (SSE)	7	3000.46	428.64			
Total (SST)	9	39589.52				

Above **table No. 4.8** shows regression analysis. The calculated value of 'F" was 42.68 which is grater than the table value 'F' (v1=2, v2=7) at 5% level of significance. This result implies that at least one of the independent variable was related with the dependent variable EPS (x^1).

VARIABLE IN EQUATION						CHI SQUARE	
Variable	Partial Regr. Coeffi. (B)	S.E. (B)	| t | Value	Critical Value @ 5%	Result	χ^2 Value	Critical Value @ 5%
Constant	48.66	-	-	-	-	13.52	16.919
X_2	44.25	45.36	0.98	2.37	Non-Sign.	Non-Significant	
X_3	0.03	0.01	2.54	2.37	Significant		

The partial regression coefficient (b12.3) for independent variable D/E Ratio indicates positive relationship with dependent variable (EPS) during the period of study. It implies that the additional one time increase in D/E Ratio and PBIT held constant than there would be an increase annual EPS by 44.25% as it was in the past. The partial regression coefficient for independent variable PBIT also indicates positive relationship with dependent variable EPS. It implies that with the raising of PBIT by Rs. 1 crore and D/E Ratio held constant, then there would be increase in EPS by 0.03% as it was in the past. It implied negligible impact of PBIT on EPS.

The calculated value of 't' for partial regression coefficient (b12.3) of EPS and D/E Ratio when PBIT held constant was 0.98, which was less than the table value of 't' with d. f. 7 at 5% level of significance. This result implies that partial regression coefficient of EPS and D/E Ratio was not significant during the study period. Where as calculated value of 't' for partial regression coefficient (b13.2) EPS and PBIT when D/E Ratio held constant was 2.54, which was grater than the table value 't' with d. f. 7 at 5% level of significance. This result implies that partial regression coefficient of EPS and PBIT was significant during the study period.

The coefficient values arrived above shown in table no 4.9 were used to estimate the trend value of EPS as per the model in order to test whether the model is a good fit for the data. The Chi-square test is conducted between the actual indices value of EPS and trend value of EPS and the result are tabulated in above table no 4.7. The result of chi-square could accept the null hypothesis. Hence, it is concluded that there is no significant impact of Debt-Equity Ratio and PBIT on EPS.

The above analysis indicates that the company has taken financing decision in such a way that offers higher return to shareholders, tax saving through cost of interest, solvency and flexibility. Company has raises the addition fund for expansion and other business purpose from various sources of fund which having low cost of capital. Therefore we can say that financing decision of company regarding formation of capital structure, selecting various sources of funds and utilization of fund was rational and long-term perspective.

Chart No. 4.9
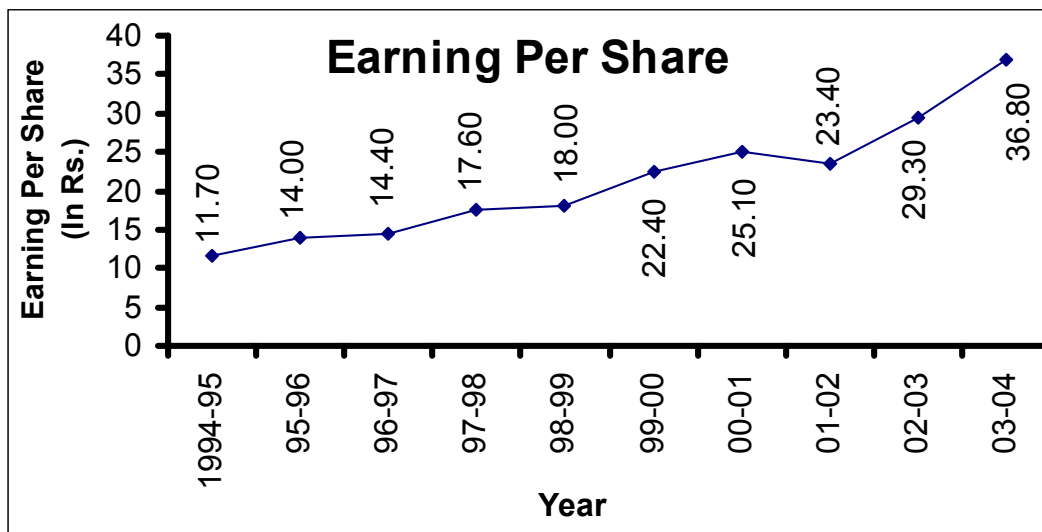
GUJARAT STATE FERTIRLIZER CORPORATION LTD. (JAMNAGAR, SIKKA PLANT)

For the purpose of analysis and evaluation of financing decision of GSFC, following null hypothesis is tested

Null Hypothesis

There is no significant impact of debt-equity ratio and PBIT on EPS of GSFC.

The following evaluations emerge from multiple correlations, multiple regressions, t test, 'F' test, chi-square test and its results in respect of GSFC JAMNAGAR, SIKKA PLANT.

Multiple correlations, multiple regression equation, 'F' test and 't' test approach.

TABLE 4.10
KEY INDICATORS OF FINANCING DECISION OF GSFC

YEAR	EPS Index (X1) (in Rs)	D/E RATIO (X2)	PBIT (X3) (Rs. In Crores)	Trend Value of EPS	χ^2	P/E RATIO	CAPTI. RATE	DEBT TO T.A.	I C R
94-95	100.00	1.37	248.30	95.88	0.18	12.62	7.92	57.81	1.855
95-96	182.35	1.34	337.60	190.03	0.31	4.6	21.74	57.3	2.563
96-97	158.82	1.08	353.86	202.49	9.42	4.44	22.52	52.01	2.360
97-98	123.53	0.95	304.65	147.92	4.02	4.98	20.08	48.57	2.466
98-99	100.00	0.93	264.70	105.18	0.26	4.71	21.23	48.19	2.128
99-00	11.76	1.00	150.25	-14.91	-47.72	24.5	4.08	50.02	1.159
00-01	5.88	1.19	186.80	27.35	16.85	30	3.33	54.27	1.033
01-02	-35.29	1.26	89.15	-74.92	-20.96	-2.92	-34.25	55.69	0.621
02-03	-288.24	1.88	-57.51	-219.05	-21.85	-0.55	-181.82	63.3	-0.337
03-04	129.41	1.57	181.06	28.25	362.19	2	20	61.8	2.257
TOTAL	488.24	12.57	2058.86	488.24	302.69	84.38	-95.17	548.96	16.11
AVG.	48.82	1.26	205.89	48.82	30.27	8.44	-9.52	54.90	1.61
SD	137.90	0.30	125.32	129.43	118.13	10.79	62.94	5.28	0.96
CV	282.44	23.85	60.87	265.11	379.92	127.90	-661.32	9.61	59.46
R	-0.58	-0.64	0.94						
	R1.23 = 0.94		$(R1.23)^2$ =0.8836		R2.13 = 0.64		R3.12 = 0.95		

(Source: annual report of GSFCL from 1994-95 to 2003-04)

Multiple regression equation for the line x_1 on x_2 and x_3

$$X_1 = -192.64 + 18.40 (X_2) + 1.06 (X_3)$$

Where, X_1 = Trend value of EPS, X_2 = D/E Ratio, X_3 = Profit (PBIT)

Table No 4.10 provides data regarding Debt Equity Ratio, PBIT, EPS, Price Earning Ratio, Capitalization Rate, Debt To Total Asset, Value of Chi-

Square and other related information of GUJARAT STATE FERTIRLIZER CORPORATION LTD. (JAMNAGAR, SIKKA PLANT).

As per general guideline D/E Ratio is 1:1 and Debt Asset Ratio is 0.5:1. In case of GSFC maximum D/E Ratio was 1.88 and Debt Asset Ration was 63.10% in the year 2002-03. The average D/E Ratio 1.26 and D/A Ratio 54.87 during the study period. Therefore these both ratios were exceed the general guideline during the study period, which indicated non-conservative approach of financial management. That means company mostly prefer borrowed fund to raise the additional fund for expansion and other business purpose. It implied high risk for shareholders. It is reflected in the chart given below. **(See Chart No 4.10)**

Chart No. 4.10
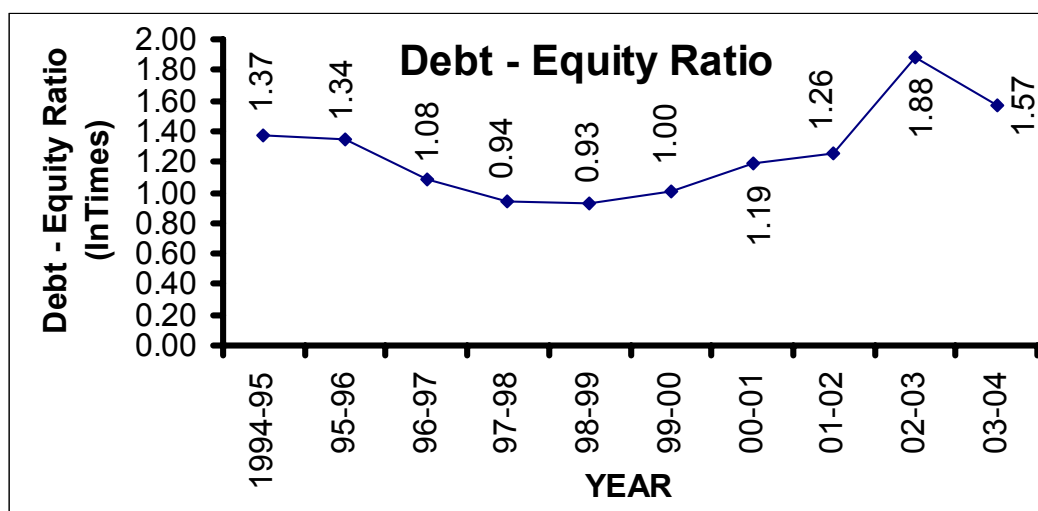
As per general guideline P/E Ratio should be in normal range of $^5/_1$ to $^{10}/_1$ and capitalization rate is also in normal range of 20% to 10 %. In case of GSFC these both ratios were on an average 8.44 and 11.48% respectively which were within the normal range. They indicate that profit earned by the company as compare to the price of the stock was reasonable during the study period.

There was more fluctuation in interest coverage ratio. It was lowest – 0.34 and highest 2.56 (**see chart no 4.11**) during the study period. It indicates capacity of company to pay the interest was not sound during the study period.

Chart No. 4.11
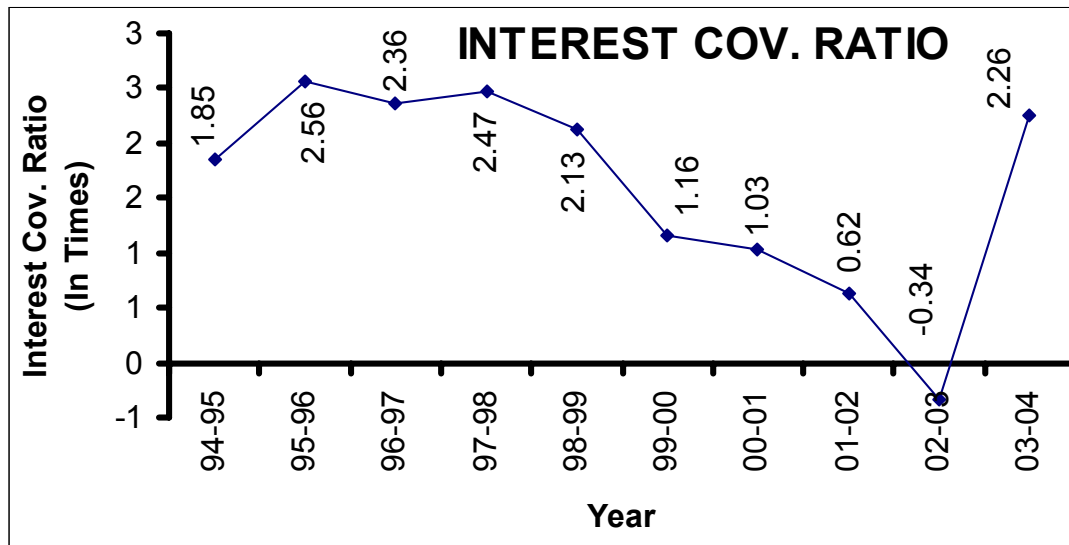
The coefficients of multiple correlation (R1.23) of GSFC was 0.94 indicating very high correlation among the variables. Therefore EPS (dependent var.) is highly affected with independent variables Debt Equity Ratio and PBIT. Where as the coefficient of multiple determinations $(R1.23)^2$ of GSFC was 0.8836. This implies that 88.36% variation in EPS was due to the variation of D/E Ratio and variation of PBIT and rest 11.64% was due to other reason on the assumption that there is a linear co-relation among the variables.

ANOVA TABLE No. 4.11						
Sources of vari.	Degree of freedom	Sum of square	Mean of square	'F' ratio	Critical Value @ 5%	Result
Regression (SSR)	2	150778.40	75380.20	25.91	4.74	Significant
Error (SSE)	7	20366.93	2909.56			
Total (SST)	9	171145.33				

Above **table no. 4.11** shows regression analysis. The calculated value of 'F' was 25.91, which is greater than the table value 'F' (v1=2,v2=7) at 5% level of significance. This result implies that at least one of the independent variable was related with the dependent variable EPS (x_1).

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VARIABLE IN EQUATION						CHI- SQUARE	
Variable	Partial Regr. Coeffi. (B)	S.E. (B)	| t | Value	Critical Value @ 5%	Result	χ^2 Value	Critical Value @ 5%
Constant	-192.64	-	-	-	-	302.69	16.919
X_2	18.40	78.43	0.24	2.37	Non-Sign.	Significant	
X_3	1.06	0.44	2.40	2.37	Significant		

The partial regression coefficient (b12.3) for independent variable D/E Ratio indicates positive relationship with dependent variable (EPS) during the period of study. It implies that the additional one time increase in D/E Ratio and PBIT was held constant than there would be an increase annual EPS by 18.46% as it was in the past.   The partial regression coefficient (b13.2) for independent variable PBIT also indicates positive relationship with dependent variable EPS. It implies that with the raising of PBIT by Rs. 1 crore and D/E Ratio was held constant, then there would be increase in EPS by 1.06% as it was in the past.

The calculated value of 't' for partial regression coefficient (b12.3) of EPS and D/E Ratio when PBIT held constant was 0.23 which was less than the table value of 't' with d. f. 7 at 5% level of significance. This result implies that partial regression coefficient of EPS and D/E Ratio was not significant during the study period. Where as calculated value of 't' for partial regression coefficient (b13.2) EPS and PBIT when D/E Ratio held constant was 2.40 which was grater than the table value 't' with d. f. 7 at 5% level of significance. This result implies that partial regression coefficient of EPS and PBIT was significant during the study period.

The coefficient values arrived above shown in table no 4.12 were used to estimate the trend value of EPS as per the model in order to test whether the model is a good fit for the data. The Chi-square test has been conducted between the actual indices value of EPS and trend value of EPS and the result are tabulated in above **table no 4.10**. The result of chi-square could not accept the null hypothesis. Hence, it is concluded that there is a significant impact of the Debt-Equity Ratio and PBIT on EPS.

The above analysis indicates that company form its capital structure using borrowed fund and own fund; D/E Ratio was mostly more that 1:1 during the study period. EPS and PBIT fluctuated at the higher rate EPS is not reasonably increased with increase in D/E Ratio. It implied that company was not getting benefit of trading on equity and on other side it creates the more risk for shareholders so financing decision should be taken in such a way so that create proper balancing between solvency and profitability.

Chart No. 4.12

Earning Per Share
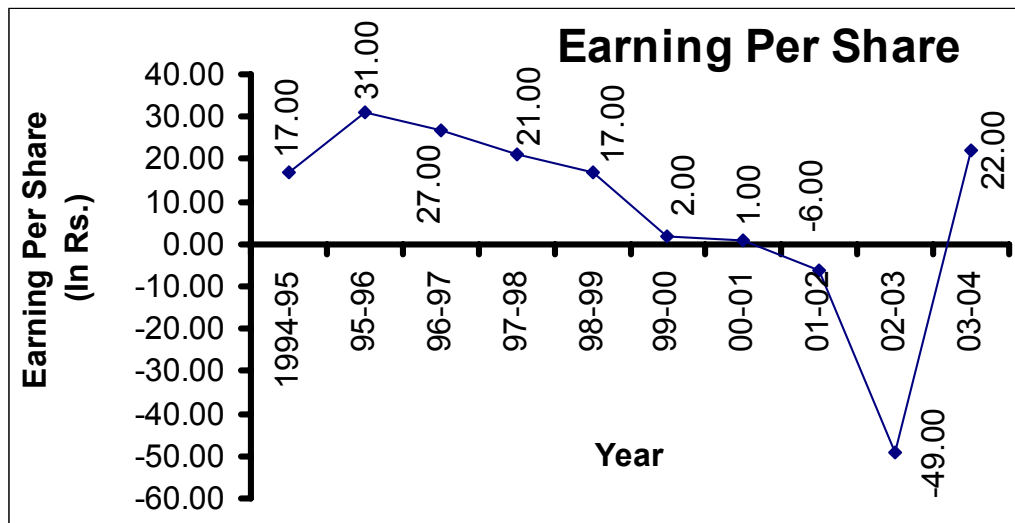
GUJARAT AMBUJA CEMENT LTD. KODINAR

The following evaluations emerge from multiple correlations, multiple regressions, t test, 'F' test, chi-square test and its results in respect of GACL, KODINAR.

For the purpose of analysis and evaluation of financing decision of GACL, following null hypothesis is tested

Null Hypothesis

There is no significant impact of debt-equity ratio and PBIT on EPS of GACL

Multiple correlations, multiple regression equation, 'F' test and 't' test approach.

TABLE NO 4.13
KEY INDICATORS OF FINANCING DECISION OF GACL

YEAR	EPS Index (X1)(in Rs)	D/E RATIO (X2)	PBIT (X3) (Rs. In Crores)	Trend Value of EPS	χ^2	P/E RATIO	CAPIT. RATE	DEBT TO T A	ICR
94-95	100.00	1.51	129	90.30	1.04	13.14	7.61	60.65	3.901
95-96	125.00	0.79	203	127.77	0.06	11.28	8.87	44.08	3.252
96-97	112.50	1.00	204	112.61	0.00	9.57	10.45	50.06	2.556
97-98	112.50	1.10	244	97.99	2.15	9.86	10.14	52.3	2.048
98-99	131.25	0.76	260	119.23	1.21	8.74	11.44	43.11	2.157
99-00	75.00	0.84	301	105.84	8.99	15.63	6.4	45.73	2.409
00-01	81.25	1.08	334	82.55	0.02	14.04	7.12	51.99	2.353
01-02	75.00	0.97	328	91.51	2.98	15.83	6.32	49.2	2.741
02-03	87.50	0.91	341	93.36	0.37	13.89	7.2	47.74	2.974
03-04	118.75	0.53	463	97.59	4.59	14.65	6.83	34.76	4.430
TOTAL	1018.75	9.49	2807.00	1018.75	21.41	126.63	82.38	479.62	28.82
AVG.	101.88	0.95	280.70	101.88	2.14	12.66	8.24	47.96	2.88
SD	21.05	0.26	93.73	14.23	2.83	2.61	1.85	6.83	0.78
CV	20.66	27.38	33.39	13.97	158.14	20.58	22.50	14.24	26.95
R	-0.30	-0.69	-0.23						
	R1.23 = 0.68	(R1.23)^2=0.4624		R2.13 = 0.84		R3.12 = 0.83			

(Source: annual report of GACL from 1994-95 to 2003-04)

Multiple regression equation for the line x_1 on x_2 and x_3

$$X_1 = 222.13 - 71.30\ (X_2) - 0.19\ (X_3)$$

Where, X_1 = Trend value of EPS, X_2 = D/E Ratio, X_3 = Profit (PBIT)

Table No 4.13 provides data regarding Debt Equity Ratio, PBIT, EPS, Price Earning Ratio, Capitalization Rate, Debt To Total Asset, Value of Chi-

Square and other related information of GUJARAT AMBUJA CEMENT LTD., KODINAR.

As per general guideline D/E Ratio is 1:1 and Debt Asset Ratio is 0.5:1. In case of GACL maximum D/E Ratio was 1.51 and Debt Asset Ration was 60.65% in the year 1994-95. But on an average D/E Ratio was 0.949 and D/A Ratio was 47.96 during the study period. Thus these both the ratio was not exceed the general guideline during the study period. This result indicates conservative approach of financial management. It is reflected in the chart given below. (See **Chart No. 4.13**)

Chart No. 4.13
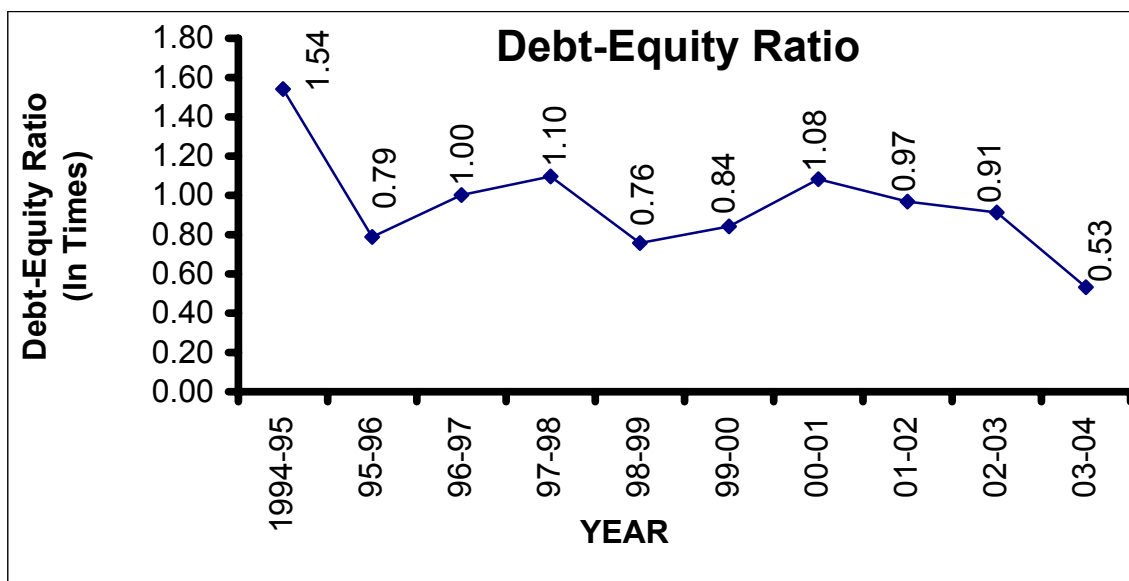
As per general guideline P/E Ratio should be in normal range of $^5/_1$ to $^{10}/_1$ and capitalization rate is also in normal range of 20% to 10 %. In case of GACL P/E Ratio was on an average 12.66 which was beyond the normal range and capitalization rate was 8.24% which was within the range. This result indicates that profit earned by the company as compare to price of stock was too much more than required during the study period.

Interest coverage ratio was lowest 2.05 and highest 4.43 (see **chart no 4.14**) during the study period. It indicates capacity of company to pay the interest was sound during the study period.

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Chart No. 4.14
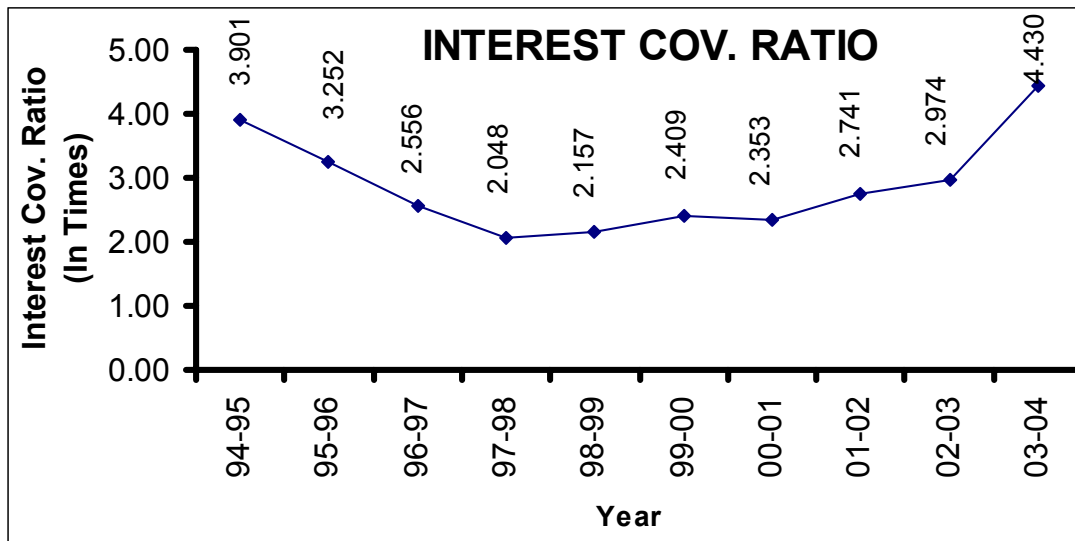
The coefficients of multiple correlation (R1.23) of GACL was 0.68 indicating significant correlation among the variables. Therefore EPS (dependent var.) is affected with independent variables Debt Equity Ratio and PBIT. Where as The coefficient of multiple determination $(R1.23)^2$ of GACL was 0.4624. This implies that 46.24% variation in EPS was due to the variation of D/E Ratio and variation of PBIT and rest 53.75% was due to other reason on the assumption that there is a linear co-relation among the variables. This result indicated that PBIT and D/E Ratio are not significantly effect on EPS.

ANOVA TABLE No. 4.14						
Sources of vari.	Degree of Freedom	Sum of Square	Mean of Square	'F' Ratio	Critical Value @ 5 %	Result
Regression (SSR)	2	1823.63	911.81	2.95	4.74	Non - Significant
Error (SSE)	7	2164.65	309.24			
Total (SST)	9	3988.28				

Above **table no 4.14** shows regression analysis. The calculated value of 'F' was 2.95, which is less than the table value 'F' (v1=2, v2=7) at 5% level of significance. This result implies that both the independent variable D/E ratio and PBIT were not related with the dependent variable EPS (x_1).

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VARIABLE IN EQUATION						CHI- SQUARE	
Variable	Partial Regre. Coeffi. (B)	S. E. (B)	| t | Value	Critical Value @ 5%	Result	χ^2	Result @ 5%
Constant	222.13	-	-	-	-	21.41	16.919
X_2	-71.30	41.20	1.73	2.37	Non-Sign.	Significant	
X_3	-0.19	0.11	1.68	2.37	Non-Sign.		

The partial regression coefficient (b12.3) for independent variable D/E Ratio indicates negative relationship with dependent variable (EPS) during the period of study. It implies that the additional one time increase in D/E Ratio and PBIT was held constant than there would be a decrease annual EPS by. 71.30% as it was in the past. This relationship follows rules of high liquidity low profit so management must use long term debt in such a way that can be maintain profitability and liquidity. The partial regression coefficient (b13.2) for independent variable PBIT also indicates negative relationship with dependent variable EPS. It implies that with the raising of PBIT by Rs. 1 crore and D/E Ratio was held constant, then there would be decrease in EPS by 0.19% as it was in the past. This result does not follow the general rules of business that more PBIT more EPS and less PBIT less EPS.

The calculated value of 't' for partial regression coefficient (b12.3) of EPS and D/E Ratio when PBIT held constant was 1.73 which was less than the table value of 't' with d. f. 7 at 5% level of significance. This result implies that partial regression coefficient of EPS and D/E Ratio was not significant during the study period. Where as calculated value of 't' for partial regression coefficient (b13.2) EPS and PBIT when D/E Ratio held constant was 1.68, which was less than the table value 't' with d. f. 7 at 5% level of significance. This result implies that partial regression coefficient of EPS and PBIT was not significant during the study period.

The coefficient values arrived above shown in **table no 4.15** were used to estimate the trend value of EPS as per the model in order to test whether the model is a good fit for the data. The Chi-square test has been conducted between the actual indices value of EPS and trend value of EPS and the result are tabulated in above table no 4.13. The result of chi-square could not

accept the null hypothesis. Hence, it is concluded that there is a significant impact of Debt-Equity Ratio and PBIT on EPS.

The above analysis indicated that company has taken financing decision by giving needful weighted to solvency and profitability. Company could success to control on financial risk and to maintain the profitability due to proper trade off between profitability and solvency, EPS maintain at the reasonable value. Financing decision of the company regarding formation of capital structure, selecting various sources of fund and utilization of fund was quite rational and long-term perspective.

Chart No. 4.15

Earning Per Share
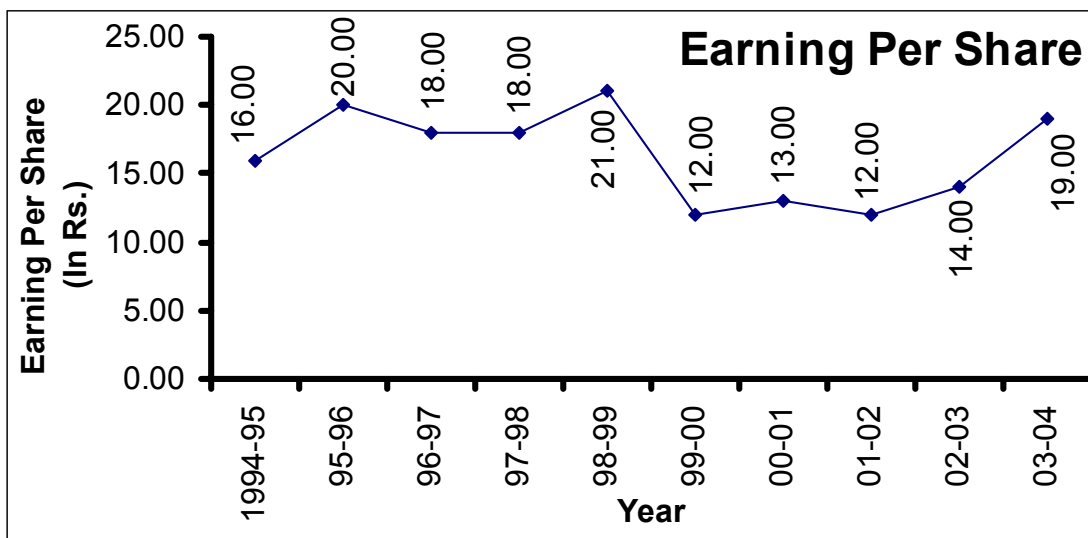
GUJARAT HEAVY CHEMICAL LTD. SUTRAPADA-VERAVAL

For the purpose of analysis and evaluation of financing decision of GHCL, following null hypothesis is tested

Null Hypothesis

There is no significant impact of debt-equity ratio and PBIT on EPS of GHCL.

The following evaluations emerge from multiple correlations, multiple regressions, t test, 'F' test, chi-square test and its results in respect of GHCL, VERAVAL.

Multiple correlations, multiple regression equation, 'F' test and 't' test approach.

TABLE No. 4.16
KEY INDICATORS OF FINANCING DECISION OF GHCL

YEAR	EPS Index (X1)(in Rs)	D/E RATIO (X2)	PBIT (X3) (Rs. In Crores)	Trend Value of EPS	χ^2	P/E RATIO	CAPTI. RATE	DEBT TO T.A.	I C R
94-95	100.00	1.36	69.05	100.40	0.00	1.33	75.2	57.68	2.287
95-96	127.32	0.93	78.02	124.95	0.04	1.33	75.2	48.2	2.624
96-97	143.41	0.68	75.21	118.45	5.26	1.29	77.88	40.49	3.010
97-98	124.63	0.66	76.34	121.43	0.08	1.66	60.12	39.87	3.228
98-99	109.51	0.65	75.70	119.81	0.88	1.98	50.51	39.3	2.689
99-00	63.90	0.81	54.26	63.79	0.00	3.51	28.48	44.76	1.791
00-01	67.80	0.62	66.93	97.19	8.88	3.6	27.8	38.26	1.777
01-02	117.32	0.50	78.74	128.14	0.91	2.59	38.64	33.48	2.986
02-03	118.78	0.43	70.20	106.24	1.48	3.83	26.09	29.81	3.579
03-04	77.07	0.53	56.08	69.36	0.86	7.21	13.87	34.69	3.098
TOTAL	1049.76	7.17	700.53	1049.76	18.41	28.33	473.79	406.54	27.07
AVG.	104.98	0.72	70.05	104.98	1.84	2.83	47.38	40.65	2.71
SD	27.08	0.27	8.77	22.74	2.93	1.83	23.67	8.00	0.60
CV	25.79	37.49	12.52	21.67	157.08	64.72	49.96	19.69	22.17
R	-0.04	-0.02	0.84						
	R1.23 =0.84		(R1.23)^2 =0.7056		R2.13 = 0.06		R3.12 = 0.84		

(Source: annual report of GHCL from 1994-95 to 2003-04)

Multiple regression equation for the line x_1 on x_2 and x_3

$$X_1 = -74.24 - 3.08 (X_2) + 2.59 (X_3)$$

Where, X_1 = Trend value of EPS, X_2 = D/E Ratio, X_3 = Profit (PBIT)

Table No 4.16 provides data regarding Debt Equity Ratio, PBIT, EPS, Price Earning Ratio, Capitalization Rate, Debt To Total Asset, Value of Chi-

Square and other related information of GUJARAT HEAVY CHEMICAL LTD., SUTRAPADA – VERAVAL.

As per general guideline D/E Ratio is 1:1 and Debt Asset Ratio is 0.5:1. In case of GHCL maximum D/E Ratio was 1.36 and Debt Asset Ration was 57.68% in the year 1994-95. But than after from 1995-96 to 2003-04 these both ratios remain within range of ideal ratio. So this result indicates that company's capital structure offer less risk and high solvency for the shareholders. It is reflected in the chart given below. (See **chart NO. 4.16**)

Chart No. 4.16
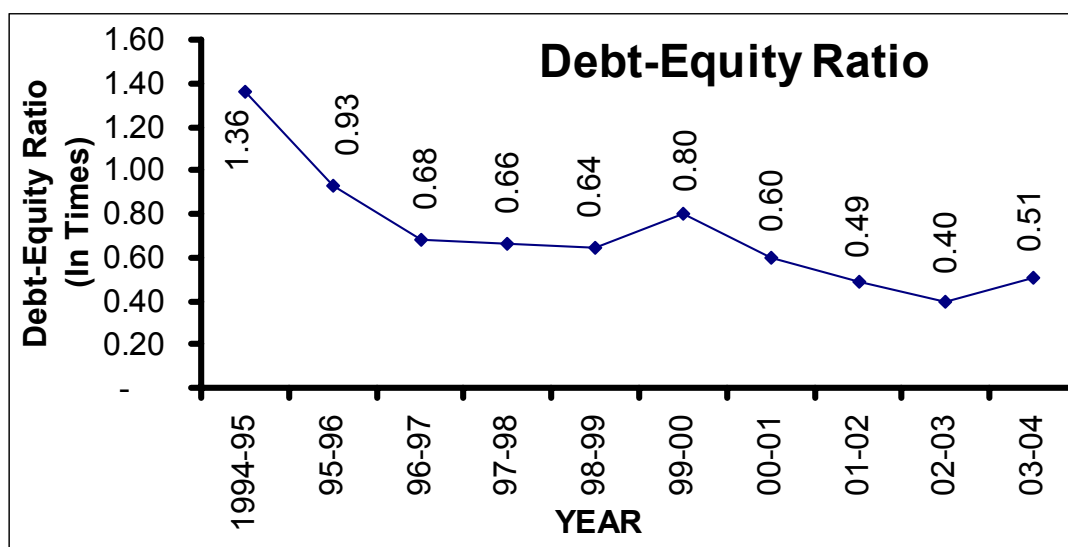
As per general guideline P/E Ratio should be in normal range of $5/1$ to $10/1$ and capitalization rate is also in normal range of 20% to 10 %. In case of GHCL these both the ratios were on an average 2.83 and 47.38% respectively, which were not within the normal range. The result indicates that the profit earning by the company to the price of stock was not reasonable during the study period. P/E Ratio was too much less than it would be. It is a sign of low profitability of company.

Interest coverage ratio was lowest 1.78 and highest 3.58 (see **chart no 4.17**) during the study period. It indicates that capacity of company to pay the interest was sound during the study period.

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Chart No 4.17
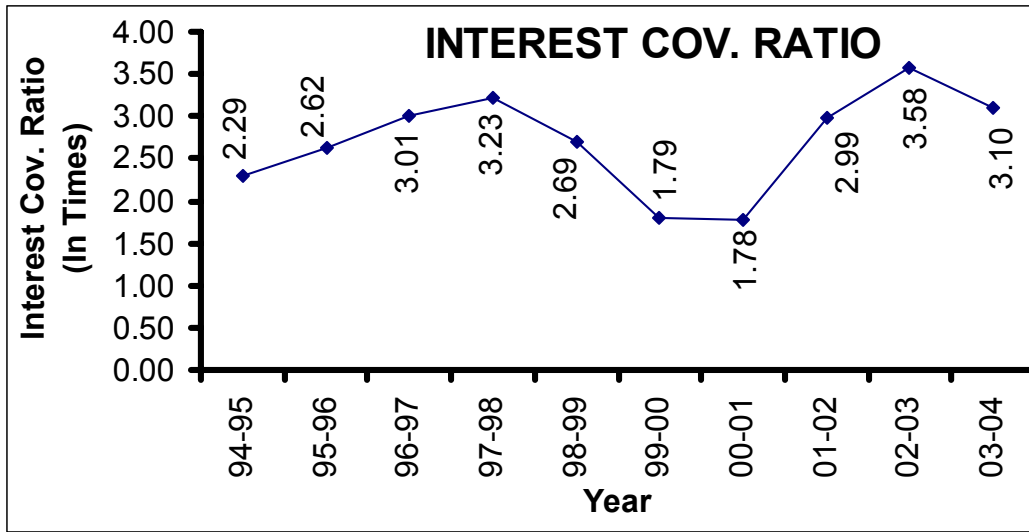
The coefficients of multiple correlation (R1.23) of GHCL was 0.84 indicating very high correlation among the variables. Therefore EPS (dependent var.) is highly affected with independent variables Debt Equity Ratio and PBIT. Where as the coefficient of multiple determination $(R1.23)^2$ of GHCL was 0.7056. This implies that 70.56% variation in EPS was due to the variation of D/E Ratio and variation of PBIT and rest 29.44% was due to other reason on the assumption that there is a linear co-relation among the variables.

ANOVA TABLE 4.17						
Sources of vari.	Degree of freedom	Sum of square	Mean of square	'F' ratio	Critical Value @ 5 %	Result
Regression (SSR)	2	4656.01	2328.01	8.39	4.74	Significant
Error (SSE)	7	1942.59	277.51			
Total (SST)	9	6598.60				

Above **table no 4.16** shows regression analysis. The calculated value of 'F' was 8.39, which is grater than the table value 'F' (v1=2, v2=7) at 5% level of significance. This result implies that at least one of the independent variable was related with the dependent variable EPS (x_1).

TABLE 4.18

| VARIABLE IN EQUATION | | | | | | CHI SQUARE | |
Variable	Partial Regre. Coeffi. (B)	S.E. (B)	| t | Value	Critical Value @ 5%	Result	χ^2	Critical Value @ 5%
Constant	-74.24	-	-	-	-	18.41	16.919
X₂	-3.08	20.69	0.15	2.37	Non-Sign.	Significant	
X₃	2.59	1.17	2.22	2.37	Non-Sign.		

The partial regression coefficient for independent variable D/E Ratio indicates negative relationship with dependent variable (EPS) during the period of study. It implies that the additional one time increase in D/E Ratio and PBIT was held constant than there would be an decrease annual EPS by 3.08% as it was in the past. It was sign of negative benefit of trading on equity. The partial regression coefficient for independent variable PBIT indicates positive relationship with dependent variable EPS. It implies that with the raising of PBIT by Rs. 1 crore and D/E Ratio was held constant, then there would be increase in EPS by 2.59% as it was in the past.

The calculated value of 't' for partial regression coefficient (b12.3) of EPS and D/E Ratio when PBIT held constant was 0.15 which was less than the table value of 't' with d. f. 7 at 5% level of significance. This result implies that partial regression coefficient of EPS and D/E Ratio was not significant during the study period. Where as calculated value of 't' for partial regression coefficient (b13.2) EPS and PBIT when D/E Ratio held constant was 2.22, which was less than the table value 't' with d. f. 7 at 5% level of significance. This result implies that partial regression coefficient of EPS and PBIT was not significant during the study period.

The coefficient values arrived above shown in table no 4.18 were used to estimate the trend value of EPS as per the model in order to test whether the model is a good fit for the data. The Chi-square test was conducted between the actual indices value of EPS and trend value of EPS and the result are tabulated in above table no 4.16. The result of chi-square could not accept the null hypothesis. Hence, it is concluded that there is a significant impact of Debt-Equity Ratio and PBIT on EPS.

The above analysis indicates that financing decision of company offer sound solvency and flexibility in capital structure but low profitability. EPS of company was not effective due to poor profitability. Management should take proper care to improve overall efficiency and profitability. There is no proper trade off between solvency and profitability.

Chart No. 4.18
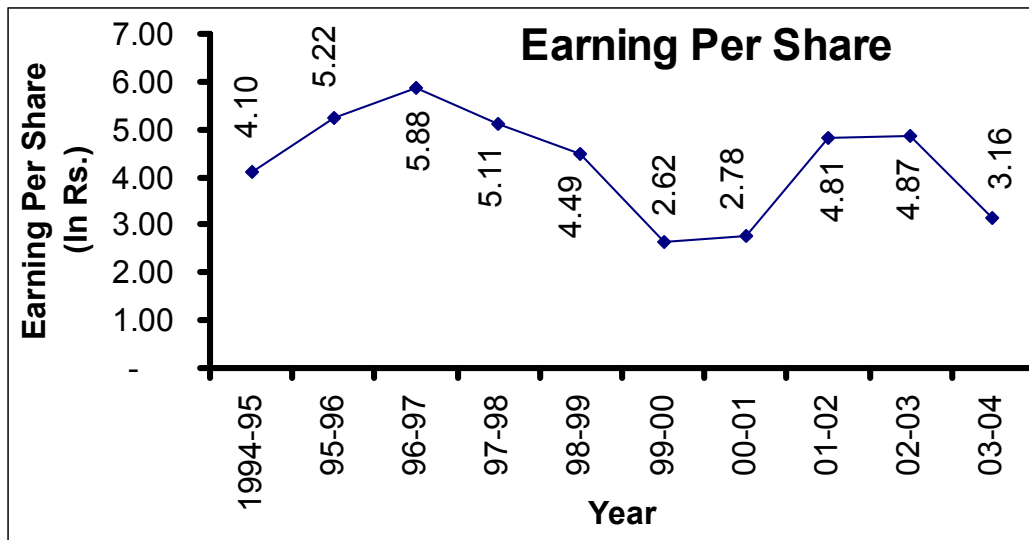
Earning Per Share

DIGVIJAY CEMENT COMPANY LTD. JAMNAGAR

For the purpose of analysis and evaluation of financing decision of DCCL, following null hypothesis is tested

Null Hypothesis

There is no significant impact of debt-equity ratio and PBIT on EPS of DCCL.

The following evaluations emerge from multiple correlations, multiple regressions, t test, 'F' test, chi-square test and its results in respect of DCCL, JAMNAGAR.

Multiple correlations, multiple regression equation, 'F' test and 't' test approach.

TABLE No. 4.19
KEY INDICATORS OF FINANCING DECISION OF DCCL

YEAR	EPS Index (X1)(in Rs)	D/E RATIO (X2)	PBIT (X3) (Rs. In Crores)	Trend Value of EPS	χ^2	P/E RATIO	CAPTI. RATE	DEBT TO T.A.	I C R
94-95	100.00	1.04	14.3	74.68	8.58	-0.95	-105.26	50.93	0.741
95-96	-49.23	1.09	19.23	-12.08	-114.14	3.82	26.18	52.21	1.185
96-97	224.27	0.97	5.22	234.82	0.47	-0.35	-285.71	49.24	0.350
97-98	383.82	2.99	-4.26	432.81	5.55	-0.11	-909.1	74.91	-0.345
98-99	1475.90	21.08	-35.99	1262.25	36.17	-0.03	-333.33	95.47	-1.288
99-00	523.41	25.69	2.76	642.31	22.01	-0.2	-500	96.25	0.086
00-01	745.27	26.21	-2.14	736.93	0.09	-0.12	833.33	96.33	0.161
01-02	494.15	26.50	-2.42	746.17	85.12	-0.42	-238.1	96.37	0.423
02-03	787.44	26.86	-0.74	721.65	6.00	-0.35	-285.71	96.43	-0.010
03-04	-88.47	22.10	49.66	-242.98	-98.25	12.74	7.85	96.67	0.742
TOTAL	4596.56	154.53	45.62	4596.56	-48.41	14.03	-1789.85	804.81	2.05
AVG.	459.66	15.45	4.56	459.66	-4.84	1.40	-178.99	80.48	0.20
SD	468.68	12.15	21.58	449.79	59.28	4.20	446.40	21.53	0.68
CV	-101.96	78.60	473.05	-97.85	314.53	299.21	-249.40	26.76	333.95
R	-0.52	-0.17	0.88						
	R1.23 = 0.96		(R1.23)²=0.9216		R2.13 = 0.81		R3.12 = 0.95		

(Source: annual report of DCCL from 1994-95 to 2003-04)

Multiple regression equation for the line x_1 on x_2 and x_3

$$X_1 = 313.19 + 14.72 (X_2) - 17.75 (X_3)$$

Where, X_1 = Trend value of EPS, X_2 = D/E Ratio, X_3 = Profit (PBIT)

Table No 1.19 provides data regarding Debt Equity Ratio, PBIT, EPS, Price Earning Ratio, Capitalization Rate, Debt To Total Asset, Value of Chi-

Square and other related information of DIGVIJAY CEMENT COMPANY LTD., JAMNAGAR.

As per general guideline D/E Ratio is 1:1 and Debt Asset Ratio is 0.5:1. In case of DCCL maximum D/E Ratio was 26.86 and Debt Asset Ration was 96.43% in the year 2002-03. The average D/E Ratio 15.45 and D/A Ratio 80.48 during the study period. Therefore these both ratios were highly exceed the general guideline during the study period, which indicates non-conservative approach of financial management. That means financial potion of the company was too much unsatisfactory. Management should take major action to come out from bad situation otherwise it will lead toward liquidation in very near future. It is reflected in the chart given below. **(See chart No. 4.19)**

Chart No. 4.19
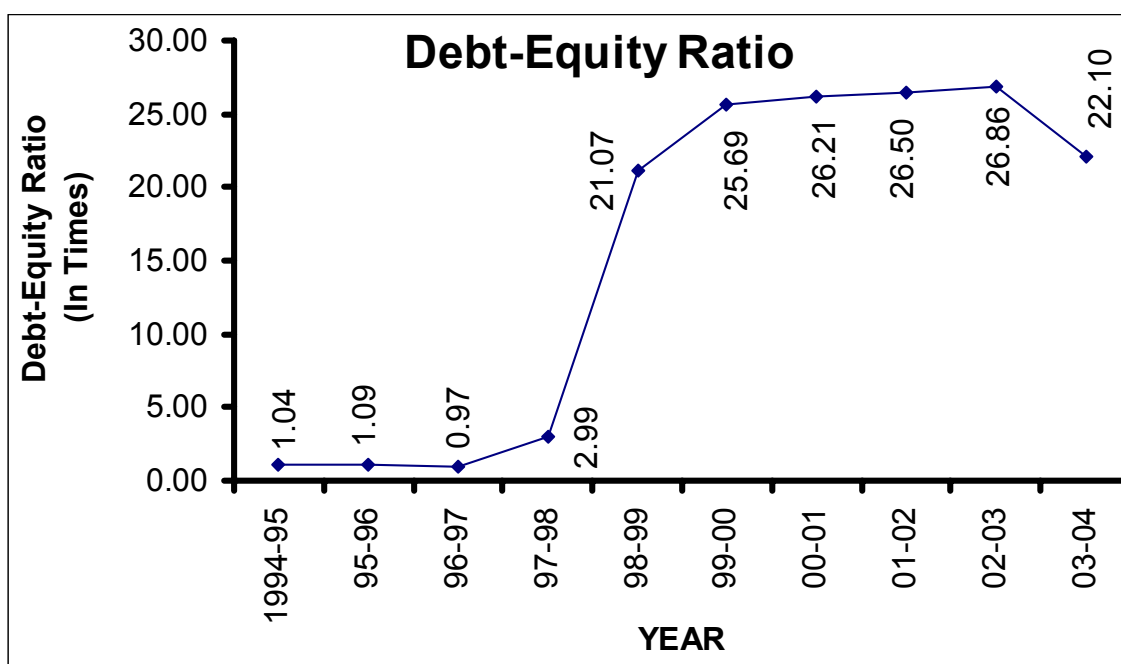
As per general guideline P/E Ratio should be in normal range of $^5/_1$ to $^{10}/_1$ and capitalization rate is also in normal range of 20% to 10 %. In case of DCCL these both ratios were on an average 1.40 and −178.99% respectively which were not within the normal range. It implies that price-earning ratio could not be helped to determine trend market value of stock. Capitalization rate also could not encourage the potential investor to purchase equity share.

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Interest coverage ratio was lowest –1.29 and highest 1.19 (see **chart no 4.20**) during the study period. It indicates capacity of company to pay the interest was not sound during the study period.

Chart No. 4.20
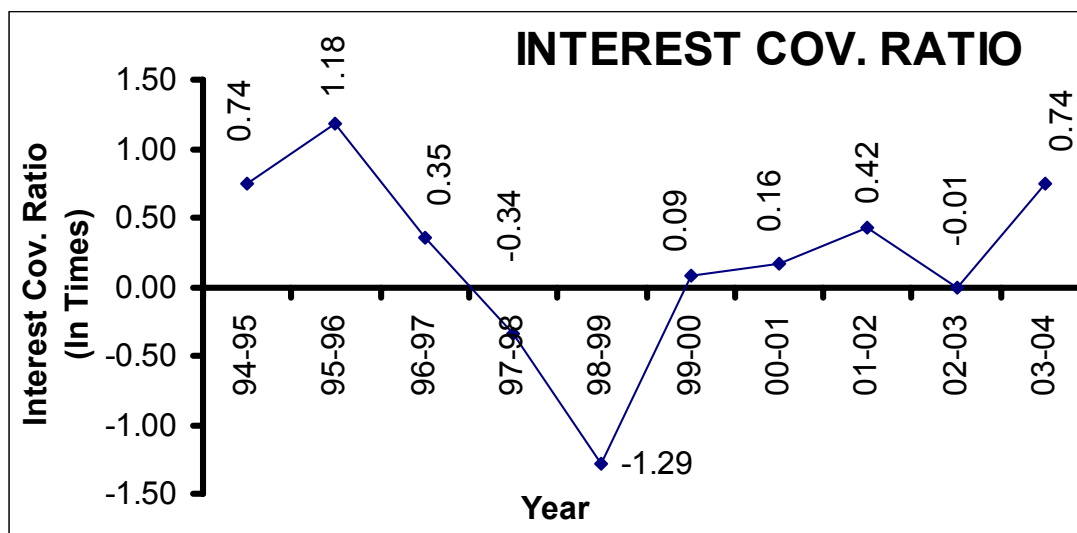
The coefficients of multiple correlation (R1.23) of DCCL was 0.96 indicating very high correlation among the variables. Therefore EPS (dependent var.) is highly affected with independent variables Debt Equity Ratio and PBIT. Where as The coefficient of multiple determination $(R1.23)^2$ of DCCL was 0.9216. This implies that 92.16% variation in EPS was due to the variation of D/E Ratio and variation of PBIT and rest 7.84% was due to other reason on the assumption that there is a linear co-relation among the variables

Sources of vari.	Degree of freedom	Sum of square	Mean of square	'F' ratio	Critical Value @ 5 %	Result
ANOVA TABLE NO. 4.20						
Regression (SSR)	2	1820833.81	910416.91	40.82	4.74	Significant
Error (SSE)	7	156103.41	22300.49			
Total (SST)	9	1976937.22				

Above **table no 4.20** shows regression analysis. The calculated value of 'F' was 40.82, which is greater than the table value 'F' (v1=2, v2=7) at 5%

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level of significance. This result implies that at least one of the independent variable was related with the dependent variable EPS (x_1).

TABLE 4.21

VARIABLE IN EQUATION						CHI-SQUARE	
Variable	Partial Regre. Coeffi.(B)	S.E. (B)	| t | Value	Critical Value @ 5%	Result	χ^2 Value	Critical Value @ 5%
Constant	313.19	-	-	-	-	-48.41	16.919
X₂	14.72	6.95	2.12	2.37	Non-Sign.	Non–Significant	
X₃	-17.75	7.11	2.50	2.37	Significant		

The partial regression coefficient for independent variable D/E Ratio indicates positive relationship with dependent variable (EPS) during the period of study. It implies that the additional one time increase in D/E Ratio and PBIT was held constant than there would be an increase annual EPS by 14.72% as it was in the past. It was sign of positive benefit of trading on equity. The partial regression coefficient for independent variable PBIT indicates negative relationship with dependent variable EPS. It implies that with the raising of PBIT by Rs. 1 crore and D/E Ratio was held constant, then there would be decrease in EPS by –17.75% as it was in the past.

The calculated value of 't' for partial regression coefficient (b12.3) of EPS and D/E Ratio when PBIT held constant was 2.12, which was less than the table value of 't' with d. f. 7 at 5% level of significance. This result implies that partial regression coefficient of EPS and D/E Ratio was not significant during the study period. Where as calculated value of 't' for partial regression coefficient (b13.2) EPS and PBIT when D/E Ratio held constant was 2.5, which was grater than the table value 't' with d. f. 7 at 5% level of significance. This result implies that partial regression coefficient of EPS and PBIT was significant during the study period.

The coefficient values arrived above shown in **table no 4.21** were used to estimate the trend value of EPS as per the model in order to test whether the model is a good fit for the data. The Chi-square test has been conducted between the actual indices value of EPS and trend value of EPS and the result are tabulated in above **table no 4.19**. The result of chi-square could accept the null hypothesis. Hence, it is concluded that there is no significant impact of Debt-Equity Ratio and PBIT on EPS.

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The above analysis indicated that financial position of DCCL was not satisfactory. The capital structure of the company was not rational from the viewpoint of maintaining solvency and profitability. Financial health of the company going to more and more inferior so management need to take major action to improve financial position.

Chart No. 4.21
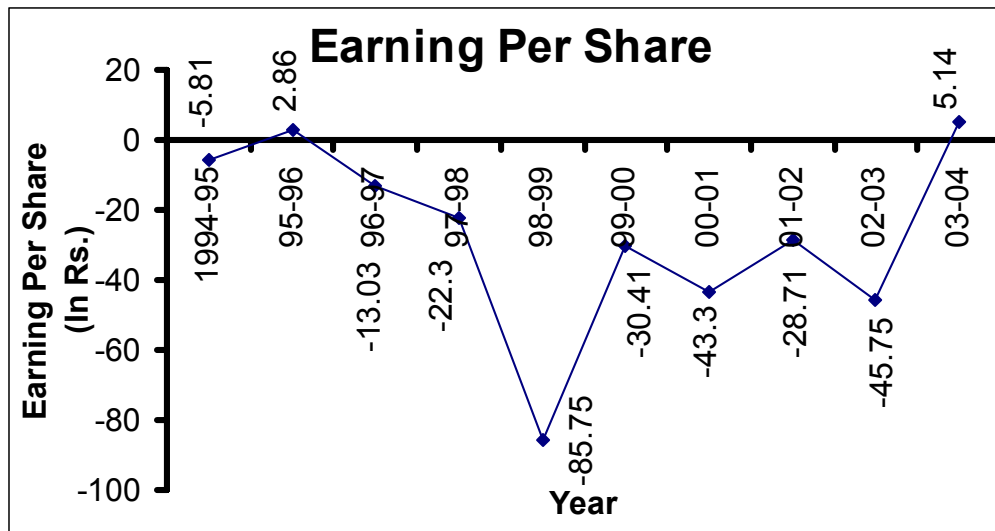
Earning Per Share

AUSTIN ENGINEERING COMPANY LTD. JUNAGADH

For the purpose of analysis and evaluation of financing decision of Aust. Eng. Following null hypothesis is tested

Null Hypothesis

There is no significant impact of debt-equity ratio and PBIT on EPS of Aust Eng.

The following evaluations emerge from multiple correlations, multiple regressions, t test, 'F' test, chi-square test and its results in respect of AUSTIN ENG., JUNAGADH.

Multiple correlations, multiple regression equation, 'F' test and 't' test approach.

TABLE No. 4.22
KEY INDICATORS OF FINANCING DECISION OF AUSTIN ENG

YEAR	EPS Index (X1)(in Rs)	D/E RATIO (X2)	PBIT (X3) (Rs. In Crores)	Trend Value of EPS	χ^2	P/E RATIO	CAPTI. RATE	DEBT TO T.A.	I C R
94-95	100.00	0.30	2.51	82.18	3.87	2.97	33.67	22.99	2.582
95-96	137.40	0.42	3.49	125.28	1.17	2.1	47.62	29.67	2.724
96-97	131.56	0.56	4.12	143.95	1.07	1.69	59.17	35.99	1.880
97-98	116.45	0.53	4.13	148.88	7.07	1.25	80	34.81	1.682
98-99	13.79	0.52	1.93	14.82	0.07	11.44	8.74	37.35	1.100
99-00	-180.11	0.55	-0.69	-150.86	-5.67	-0.62	-161.29	35.61	-0.451
00-01	-113.53	0.68	0.39	-103.03	-1.07	-0.96	-107.53	40.51	0.222
01-02	-61.54	0.68	0.72	-82.71	-5.42	-1.91	-52.36	40.46	0.596
02-03	-18.04	0.71	1.57	-34.67	-7.98	-6.25	-16	41.37	0.876
03-04	44.56	0.63	2.38	26.72	11.92	2.5	40	38.64	1.426
TOTAL	170.56	5.58	20.55	170.56	5.02	12.21	-67.98	357.40	12.64
AVG.	17.06	0.56	2.06	17.06	0.50	1.22	-6.80	35.74	1.26
SD	109.77	0.13	1.61	107.90	6.08	4.52	78.24	5.66	1.01
CV	643.62	22.82	78.27	632.61	1025.72	370.20	-1150.91	15.83	79.57
R	-0.54	-0.41	0.97						
	R1.23 = 0.98		(R1.23)²=0.9604		R2.13 = 0.71		R3.12 = 0.98		

(Source: annual report of Aust. Eng. Co. Ltd. from 1994-95 to 2003-04)

Multiple regression equation for the line x_1 on x_2 and x_3

$$X_1 = -29.28 - 143.79 (X_2) + 61.59 (X_3)$$

Where, X_1 = Trend value of EPS, X_2 = D/E Ratio, X_3 = Profit (PBIT)

Table No 4.22 provides data regarding Debt Equity Ratio, PBIT, EPS, Price Earning Ratio, Capitalization Rate, Debt To Total Asset, Value of Chi-

Square and other related information of AUSTIN ENGINEERING COMPANY LTD., JUNAGADH.

As per general guideline D/E Ratio is 1:1 and Debt Asset Ratio is 0.5:1. In case of IRL maximum D/E Ratio was 0.71 and Debt Asset Ration was 41.37% in the year 2002-03. Therefore these both ratios were not exceed general guideline during the study period. This result indicates conservative approach of financial management. Company has financed its capital structure using more amount of own fund and less amount of borrowed fund. Company emphases on solvency rather than profitability. One of the reasons for less use of debt in formation of capital structure is negative correlation between D/E Ratio and PBIT. It is reflected in the chart given below. **(See Chart No. 4.22)**

Chart No. 4.22
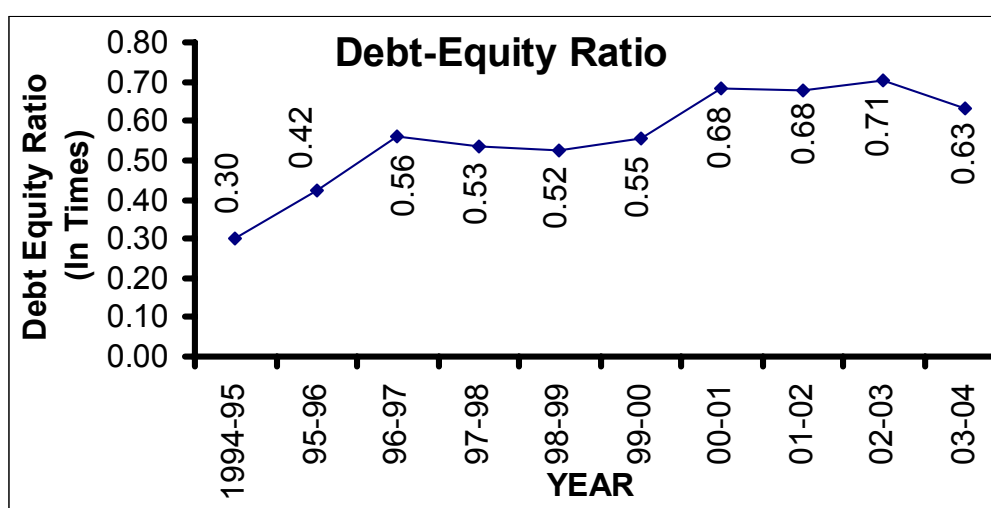
As per general guideline P/E Ratio should be in normal range of $^5/_1$ to $^{10}/_1$ and capitalization rate is also in normal range of 20% to 10 %. In case of AUST. ENG. these both ratios were on an average 1.22 and –6.8 % respectively which were not within the normal range. This result indicates that profit earned by the company as compared to the price of the stock was not reasonable during the study period. Change in stock price was only due to trading in stock but not due to profitability of the company.

Interest coverage ratio was lowest –0.45 and highest 2.72 (see c**hart no 4.23**) during the study period. It indicates capacity of company to pay the interest was not sound during the study period.

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Chart No. 4.23
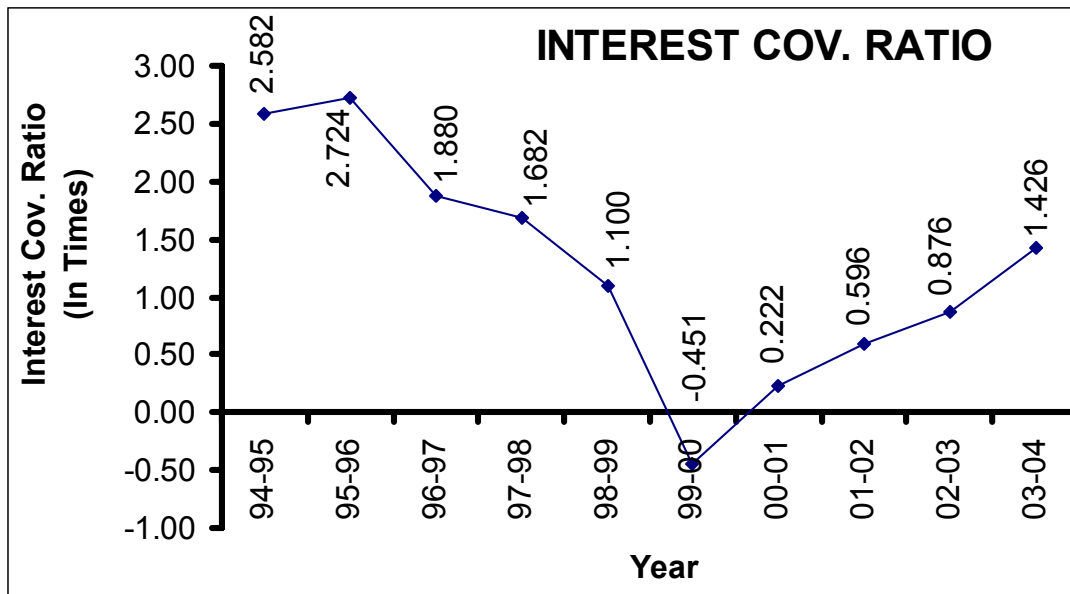
The coefficients of multiple correlation (R1.23) of AUSTIN ENG. was 0.98 indicating very high correlation among the variables. Therefore EPS (dependent var.) is highly correlated with independent variables Debt Equity Ratio and PBIT. Where as the coefficient of multiple determination $(R1.23)^2$ of AUST. ENG. was 0.9604. This implies that 96.04% variation in EPS was due to the variation of D/E Ratio and variation of PBIT and rest 3.96% was due to other reason on the assumption that there is a linear co-relation among the variables.

ANOVA TABLE NO. 4.23						
Sources of vari.	Degree of freedom	Sum of square	Mean of square	'F' ratio	Critical Value @ 5 %	Result
Regression (SSR)	2	104774.11	52387.05	99.65	4.74	Significant
Error (SSE)	7	3679.91	525.70			
Total (SST)	9	108454.02				

Above **table no 4.23** shows regression analysis. The calculated value of 'F' was 99.65, which is greater than the table value 'F' (v1=2, v2=7) at 5% level of significance. This result implies that at least one of the independent variable was related with the dependent variable EPS (x_1).

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TABLE 4.24

VARIABLE IN EQUATION						CHI SQUARE	
Variable	Partial Regre. Coeffi. (B)	S.E. (B)	| t | Value	Critical Value @ 5%	Result	χ^2 Value	Critical Value @ 5%
Constant	-29.28	-	-	-	-	5.02	16.919
X_2	-143.79	85.38	1.68	2.37	Non-Sign.	Non –Significant	
X_3	61.59	23.86	2.58	2.37	Significant		

The partial regression coefficient for independent variable D/E Ratio indicates negative relationship with dependent variable (EPS) during the period of study. It implies that the additional one time increase in D/E Ratio and PBIT held constant than there would be a decrease in annual EPS by 143.79% as it was in the past. The partial regression coefficient for independent variable PBIT indicates positive relationship with dependent variable EPS. It implies that with the raising of PBIT by Rs. 1 crore and D/E Ratio held constant, then there would be increase in EPS by 61.59% as it was in the past.

The calculated value of 't' for partial regression coefficient (b12.3) of EPS and D/E Ratio when PBIT held constant was 1.68, which was less than the table value of 't' with d. f. 7 at 5% level of significance. This result implies that partial regression coefficient of EPS and D/E Ratio was not significant during the study period. Where as calculated value of 't' for partial regression coefficient (b13.2) EPS and PBIT when D/E Ratio held constant was 2.58, which was grater than the table value 't' with d. f. 7 at 5% level of significance. This result implies that partial regression coefficient of EPS and PBIT was significant during the study period.

The coefficient values arrived above shown in table no 4.24 were used to estimate the trend value of EPS as per the model in order to test whether the model is a good fit for the data. The Chi-square test has been conducted between the actual indices value of EPS and trend value of EPS and the result are tabulated in above **table no 4.22**. The result of chi-square could accept the null hypothesis. Hence, it is concluded that there is no significant impact of Debt-Equity Ratio and PBIT on EPS.

The above analysis indicates that EPS earned by the company was not adequate to improve wealth of shareholders. Profitability of the company was

not sound even though long-term liquidity of company satisfactory. So financing decision of company was quite rational from the viewpoint of solvency but quite bad from the viewpoint of profitability. Management should be careful about proper utilization of fund, improve efficiency and profitability of the organization.

Chart No. 4.24
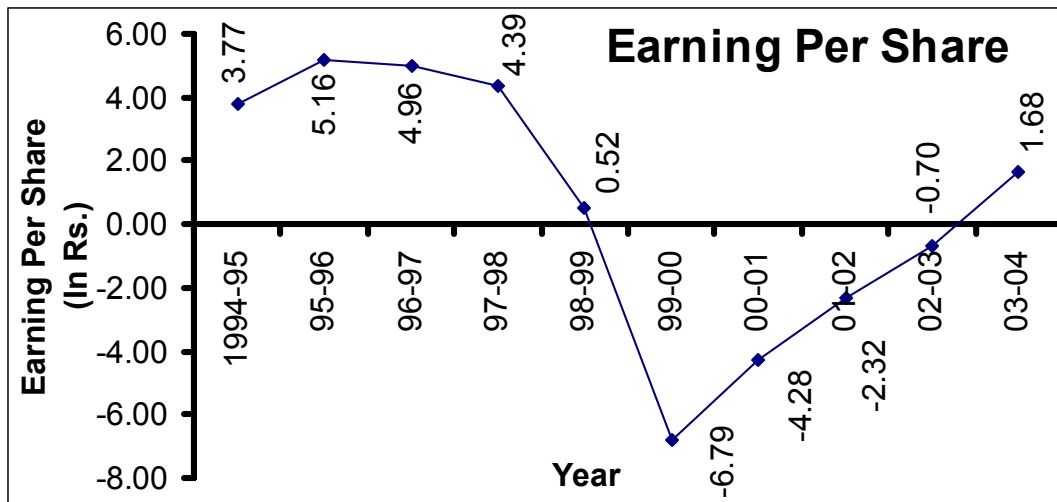
Earning Per Share

ORIENT ABRASIVES LTD., PORBANDAR

For the purpose of analysis and evaluation of financing decision of OAL, following null hypothesis is tested

Null Hypothesis

There is no significant impact of debt-equity ratio and PBIT on EPS of OAL.

The following evaluations emerge from multiple correlations, multiple regressions, t test, 'F' test, chi-square test and its results in respect of OAL, PORBANDAR.

Multiple correlations, multiple regression equation, 'F' test and 't' test approach.

TABLE No. 4.25
KEY INDICATORS OF FINANCING DECISION OF OAL

YEAR	EPS Index (X1)(in Rs)	D/E RATIO (X2)	PBIT (X3) (Rs. In Crores)	Trend Value of EPS	χ^2	P/E RATIO	CAPTI. RATE	DEBT TO T.A.	I C R
94-95	100.00	1.11	8.10	299.71	133.07	13.47	7.43	52.62	1.369
95-96	96.51	1.18	8.69	300.58	138.55	17.52	5.71	54.03	1.388
96-97	104.57	1.20	7.89	253.31	87.34	14.94	6.69	54.52	1.344
97-98	-11.29	1.97	4.83	-205.58	-183.62	-114.52	-0.87	66.34	1.028
98-99	-451.61	2.74	10.55	-233.80	-202.93	-4.22	-23.7	73.28	0.273
99-00	468.82	1.70	8.31	73.40	2130.16	4.9	20.41	63.02	1.196
00-01	-18.82	1.67	7.09	25.59	77.06	-129.29	-0.77	62.59	1.062
01-02	223.92	1.60	8.78	136.56	55.90	1327	7.54	61.59	1.618
02-03	859.68	0.89	15.17	734.68	21.27	3.92	25.51	47.08	3.260
03-04	1293.55	0.47	22.87	1280.87	0.13	4.21	23.75	31.75	6.211
TOTAL	2665.32	14.53	102.28	2665.32	2256.92	1137.93	71.70	566.82	18.75
AVG.	266.53	1.45	10.23	266.53	225.69	113.79	7.17	56.68	1.87
SD	495.15	0.63	5.18	451.66	679.64	429.74	14.41	11.59	1.70
CV	185.77	43.48	50.64	169.46	257.63	377.65	201.03	20.46	90.59
R	-0.81	-0.58	0.81						
	R1.23 = 0.91	(R1.23)^2=0.8281		R2.13 = 0.82		R3.12 = 0.82			

(Source: annual report of OAL from 1994-95 to 2003-04)

Multiple regression equation for the line x_1 on x_2 and x_3

$$X_1 = 347.53 - 401.03 (X_2) + 49.05 (X_3)$$

Where, X_1= Trend value of EPS, X_2 = D/E Ratio, X_3 = Profit (PBIT)

Table No 4.25 provides data regarding Debt Equity Ratio, PBIT, EPS, Price Earning Ratio, Capitalization Rate, Debt To Total Asset, Value of Chi-

Square and other related information of ORIENT ABRASIVES LTD. PORBANDAR.

As per general guideline D/E Ratio is 1:1 and Debt Asset Ratio is 0.5:1. In case of AOL maximum D/E Ratio was 2.74 and Debt Asset Ration was 73.28% in the year 1998-99. The average D/E Ratio 1.45 and D/A Ratio 56.68 during the study period. Therefore these both ratios were exceed the general guideline during the study period, which indicates non-conservative approach of financial management. That means company mostly prefer borrowed fund to raise the additional fund for expansion and other business purpose. It implies high risk for shareholders. But the D/E Ratio and D/A Ratio were decrease form 2.74 to 0.47 and from 73.28 to 31.75%. It indicates that company has retired debt from its capital structure to save the cost of interest and improve the EPS. It is reflected in the chart given below. **(See Chart No. 4.25)**

Chart No. 4.25
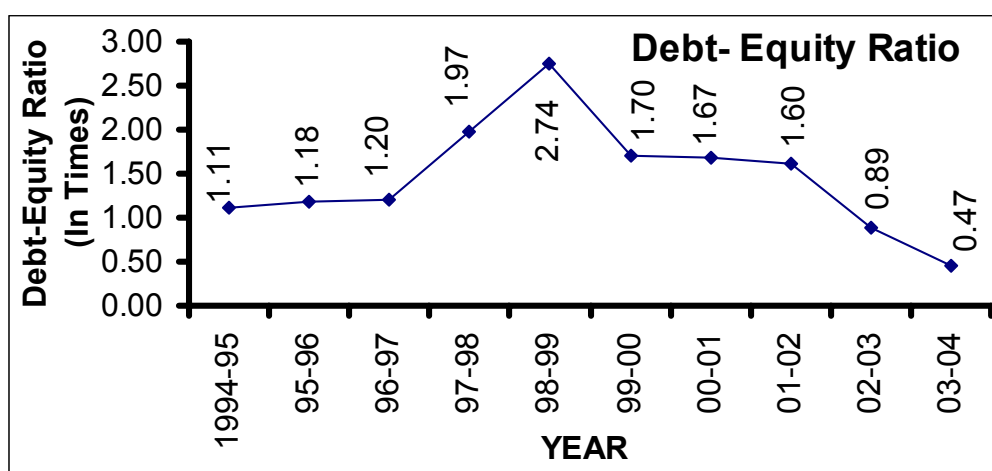
As per general guideline P/E Ratio should be in normal range of $^5/_1$ to $^{10}/_1$ and capitalization rate is also in normal range of 20% to 10 %. In case of AOL these both ratios were on an average –17.58 and 7.17% respectively. Price earning ratio was negative during the study period and capitalization rate also below normal guideline rate. It implies that price earning could not be helped to determine trend market value of stock. Capitalization rate was not reasonable. Change in stock price was only due to trading in stock but not due to profitability of the company.

Interest coverage ratio was lowest 0.27 and highest 6.21 (see **chart no 4.26**) during the study period. It indicates capacity of company to pay the interest was sound during the study period.

Chart No. 4.26
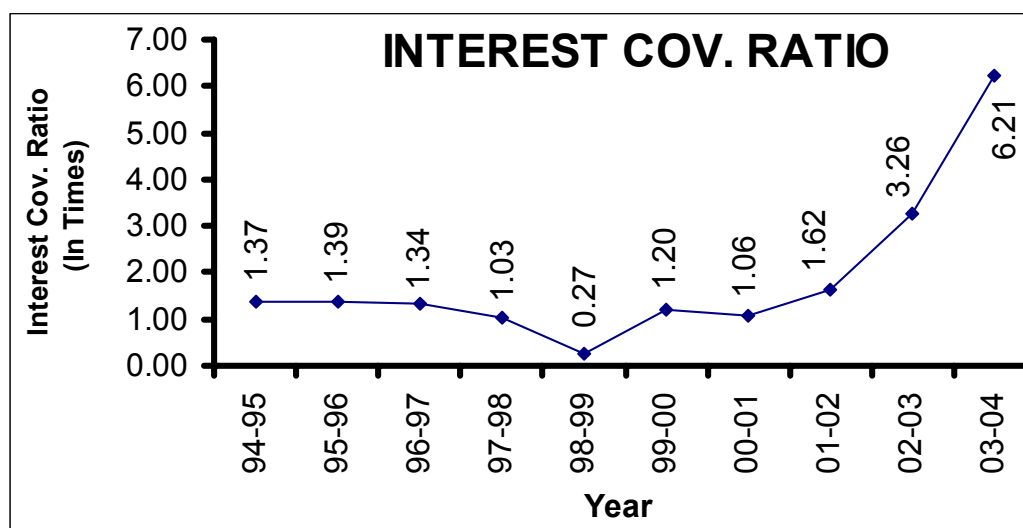
The coefficients of multiple correlation (R1.23) of OAL was 0.91 indicating very high correlation among the variables. Therefore EPS (dependent var.) is highly affected with independent variables Debt Equity Ratio and PBIT. Where as the coefficient of multiple determination $(R1.23)^2$ of AOL was 0.8281. This implies that 82.81% variation in EPS was due to the variation of D/E Ratio and variation of PBIT and rest 17.19% was due to other reason on the assumption that there is a linear co-relation among the variables.

ANOVA TABLE 4.26						
Sources of vari.	Degree of freedom	Sum of square	Mean of square	'F' ratio	Critical Value @ 5 %	Result
Regression(SSR)	2	1835944.90	917972.45	17.34	4.74	Significant
Error (SSE)	7	370589.13	52941.30			
Total (SST)	9	2206534.03				

Above table shows regression analysis. The calculated value of 'F' was 17.34, which is greater than the table value F (v1=2, v2=7) at 5% level of significance. This result implies that at least one of the independent variable was related with the dependent variable EPS (x_1).

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TABLE NO. 4.27

	VARIABLE IN EQUATION					CHI-SQUARE	
Variable	Partial Regre. Coeffi. (B)	S.E. (B)	|t| Value	Critical Value @ 5%	Result	χ^2	Critical Value @ 5%
Constant	347.53	-	-	-	-	2256.92	16.919
X_2	-401.03	212.96	1.88	2.37	Non-Sign.	Significant	
X_3	49.05	26.01	1.89	2.37	Non-Sign.		

The partial regression coefficient (b12.3) for independent variable D/E Ratio indicates negative relationship with dependent variable (EPS) during the period of study. It implies that the additional one time increase in D/E Ratio and PBIT was held constant than there would be a decrease annual EPS by 401.03% as it was in the past. It is sign of high liquidity, low profit. The partial regression coefficient (b13.2) for independent variable PBIT also indicates positive relationship with dependent variable EPS. It implies that with the raising of PBIT by Rs. 1 crore and D/E Ratio was held constant, then there would be increase in EPS by 49.05% as it was in the past. It is sign of high profit and high EPS.

The calculated value of 't' for partial regression coefficient (b12.3) of EPS and D/E Ratio when PBIT held constant was –1.88, which was less than the table value of 't' with d. f. 7 at 5% level of significance. This result implies that partial regression coefficient of EPS and D/E Ratio was not significant during the study period. Where as calculated value of 't' for partial regression coefficient (b13.2) EPS and PBIT when D/E Ratio held constant was 1.89, which was less than the table value 't' with d. f. 7 at 5% level of significance. This result implies that partial regression coefficient of EPS and PBIT was not significant during the study period.

The coefficient values arrived above shown in **table no 4.27** were used to estimate the trend value of EPS as per the model in order to test whether the model is a good fit for the data. The Chi-square test was conducted between the actual indices value of EPS and trend value of EPS and the result are tabulated in above **table no 4.25**. The result of chi-square could not

accept the null hypothesis. Hence, it is concluded that there is a significant impact of Debt-Equity Ratio and PBIT on EPS.

The above analysis indicated that company form its capital structure using borrowed fund and own fund; D/E Ratio was mostly more that 1:1 during the study period. EPS fluctuated at the higher rate. EPS is not increased with increase in D/E Ratio. It implied that company was not getting benefit of trading on equity and on other side create the more risk for shareholders so financing decision should be taken in such a way so that proper balancing between solvency and profitability can be maintained.

Chart No. 4.27
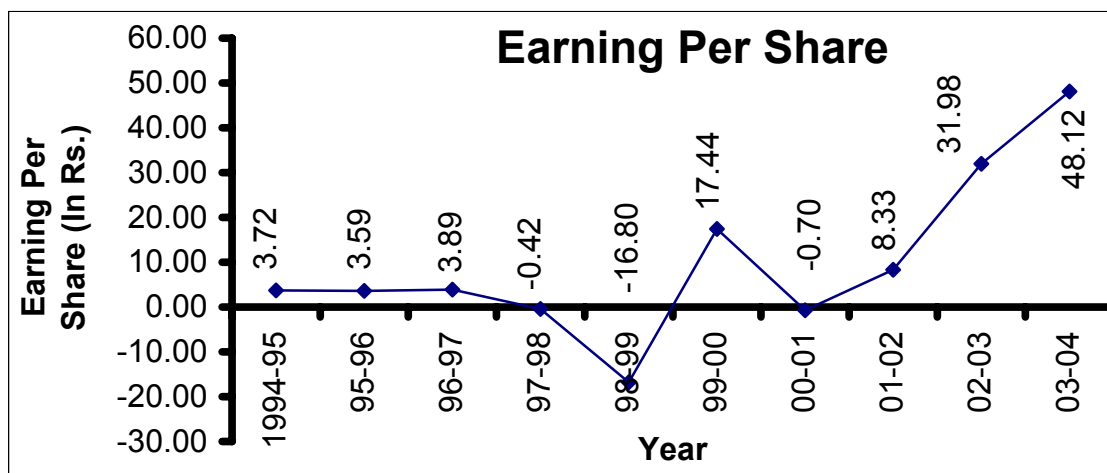
Earning Per Share

A line chart titled "Earning Per Share" with Y-axis labeled "Earning Per Share (In Rs.)" ranging from -30.00 to 60.00, and X-axis labeled "Year". Data points: 1994-95: 3.72, 95-96: 3.59, 96-97: 3.89, 97-98: -0.42, 98-99: -16.80, 99-00: 17.44, 00-01: -0.70, 01-02: 8.33, 02-03: 31.98, 03-04: 48.12.

➔ DEBT EQUITY RATIO OF SELECTED COMPANIES AND 'F' TEST ONE WAY ANALYSIS OF VARIANCE

For the purpose of analysis and evaluation of capital structure of sampled units, following null hypothesis is tested.

Null Hypothesis

There is no significant difference in capital structure within the sampled units during the period of study.

To see whether there is any significant difference in capital structure of sampled units during the study period, 'F' test one way analysis of variance has been conducted and result are tabulated in following tables.

TABLE 4.28

DEBT EQUITY RATIO OF SELECTED COMPANIES

YEAR	IRI	RIL	GSFC	AUS. ENG	OAL	DCCL	GACL	GHCL	TCL
94-95	0.67	0.41	1.37	0.30	1.11	1.04	1.51	1.36	1.47
95-96	0.74	0.56	1.34	0.42	1.18	1.09	0.79	0.93	1.18
96-97	0.77	0.90	1.08	0.56	1.20	0.97	1.00	0.68	1.13
97-98	0.64	0.71	0.95	0.53	1.97	2.99	1.10	0.66	0.96
98-99	0.46	0.94	0.93	0.52	2.74	21.08	0.76	0.65	0.94
99-00	0.56	0.83	1.00	0.55	1.70	25.69	0.84	0.81	0.84
00-01	0.42	0.69	1.19	0.68	1.67	26.21	1.08	0.62	0.60
01-02	0.39	0.59	1.26	0.68	1.60	26.50	0.97	0.50	0.54
02-03	0.21	0.60	1.88	0.71	0.89	26.86	0.91	0.43	0.40
03-04	0.29	0.55	1.57	0.63	0.47	22.10	0.53	0.53	0.31
TOTAL	5.14	6.78	12.57	5.58	14.53	154.53	9.49	7.17	8.37
AVG.	0.51	0.68	1.26	0.56	1.45	15.45	0.95	0.72	0.84
SD	0.19	0.17	0.30	0.13	0.63	12.15	0.26	0.27	0.37
CV	37.11	24.98	23.85	22.82	43.48	78.60	27.38	37.49	44.40

Above **table no 4.28** indicates that there is a significance deviation in Debt-Equity Ratio of all selected nine companies. It is evidence of inequality in policy and practice of financing decision.

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TABLE NO 4.29
ANOVA FOR D/E RATIO

SOURCE OF VARIATION	D. F.	SUM OF SQUARE	MEAN OF SUM OF SQR.	"F" RATIO	Critical Value @ 5%	RESULT
BETWEEN COMPANIES (SSC)	8.00	1898.06	237.26	14.39	2.02	Significant
WITHIN THE COMPANIES (SSE)	81.00	1335.26	16.49			
TOTAL (SST)	89.00	3233.32				

The above **table no 4.29** reveals the data of debt equity ratio of all sampled units for the ten years of the study period the calculated 'F' value is 14.39 and table value at 5% level of significant with d. f. (8,81) is 2.02. Null hypothesis was rejected it means there is a significant difference in capital structure within the sampled units. The capital structure of the selected sampled units is not uniformed.

➔ **EARNING PER SAHRE OF SELECTED COMPANIES AND 'F' TEST ONE WAY ANALYSIS OF VARIANCE**

For the purpose of analysis and evaluation of Earning Per Share of sampled units of Saurashtra region, following null hypothesis is tested.

Null Hypothesis

There is no significant difference in Average EPS within the sampled units during the period of study.

To see whether there is any significant difference in earning per share of sampled unit during the study period, 'f' test in one way analysis of variance was conducted and result are tabulated in following tables

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TABLE 4.30
EARNING PER SHARE OF SELECTED COMPANIES

YEAR	IRI	RIL	GSFC	AUS. ENG	OAL	DCCL	GACL	GHCL	TCL
94-95	29.69	11.70	17.00	3.77	3.72	-5.81	16.00	4.10	25.38
95-96	41.10	14.00	31.00	5.18	3.59	2.86	20.00	5.22	21.83
96-97	47.75	14.40	27.00	4.96	3.89	-13.03	18.00	5.88	13.96
97-98	31.49	17.60	21.00	4.39	-0.42	-22.30	18.00	5.11	15.97
98-99	15.71	18.00	17.00	0.52	-16.80	-85.75	21.00	4.49	10.06
99-00	9.20	22.40	2.00	-6.79	17.44	-30.41	12.00	2.62	6.50
00-01	11.44	25.10	1.00	-4.28	-0.70	-43.30	13.00	2.78	9.13
01-02	7.04	23.40	-6.00	-2.32	8.33	-28.71	12.00	4.81	7.02
02-03	18.79	29.30	-49.00	-0.68	31.98	-45.75	14.00	4.87	10.88
03-04	18.59	36.80	22.00	1.68	48.12	5.14	19.00	3.16	10.25
TOTAL	230.80	212.70	83.00	6.43	99.15	-267.06	163.00	43.04	130.98
AVG.	23.08	21.27	8.30	0.64	9.92	-26.71	16.30	4.30	13.10
SD	13.85	7.76	23.44	4.14	18.42	27.23	3.37	1.11	6.28
CV	60.00	36.48	282.44	643.62	185.77	-101.96	20.66	25.79	47.92

Above table no 4.30 indicates that there is a significant deviation in EPS of all nine companies. It is shows that all nine-selected companies have not performed equally from the viewpoint of profitability. It is evident that management efficiency of all nine companies is not identical.

Table No. 4.31
ANOVA FOR EARNING PER SHARE

SOURCE OF VARIATION	D. F.	SUM OF SQUARE	MEAN OF SUM OF SQR.	"F" RATIO	Critical Value @ 5%	RESULT
BETWEEN COMPANIES (SSC)	8.00	17740.67	2217.58	10.23	2.02	Significant
WITHIN COMPANIES (SSE)	81.00	17562.86	216.83			
TOTAL (SST)	89.00	35303.53				

The above **tables no 4.31** reveal that the calculated 'F' value is 10.23 and table value at 5% level of significance with d. f. (8,81) is 2.02. Null hypothesis is rejected; it means there is a significance difference in earning per share within the sampled units. It signifies that there is no uniform EPS of selected sampled units.

→ COMPARATIVE ANALYSIS OF FINANCING DECISION OF SELECTED UNITS OF SAURASHTRA REGION

The comparison of financing decision of selected units of Saurashtra region for the period from 1994-95 to 2003-04 is given in table no 4.32.

Table No. 4.32

COMPARATIVE ANALYSIS OF FINANCING DECISION OF SELECTED UNITS OF SAURASHTRA REGION FROM 1994-95 TO 2003-04

UNIT	IRIL	TCL	RIL	GSFC	GACL	GHCL	DCCL	Aust. Eng.	OAL
ICR	4.07	2.64	5.15	1.61	2.88	2.71	0.20	1.26	1.87
EPS/ D-E r12	0.74	0.77	-0.14	-0.58	-0.30	-0.04	-0.52	-0.54	-0.81
D-E/ PBIT r23	0.71	0.54	-0.26	-0.64	-0.69	-0.02	-0.17	-0.41	-0.58
EPS/ PBIT r13	0.96	0.61	0.96	0.94	-0.23	0.84	0.88	0.97	0.81
R1.23	0.97	0.81	0.96	0.94	0.68	0.84	0.96	0.98	0.91
B12.3	29.02	41.82	44.25	18.40	-71.30	-3.08	14.72	143.79	11.02
B13.2	0.56	0.06	0.03	1.06	-0.19	2.59	17.75	61.59	49.05
χ^2	12.56	38.77	13.52	302.69	21.41	18.41	48.41	5.02	56.92
Avg. EPS	23.08	13.10	21.27	8.30	16.30	4.30	26.71	0.64	9.92
Avg. D-E	0.52	0.84	0.68	1.26	0.95	0.72	15.45	0.56	1.45
Avg.PBIT	197.82	424.27	3655.20	205.89	280.70	70.05	4.56	2.06	10.23

From above **table no 4.32** it clears that in case of all selected company, multiple correlation, co-efficient (R1.23) is more than 0.5. It indicates that EPS of all selected company is significantly correlated to other two independent variables D/E ratio and PBIT, but those companies of which EPS is highly correlated to PBIT and high interest coverage ratio with low D.E ratio can offer more EPS. Therefore, IRIL & RIL offers Rs 23.08 and Rs21.27 EPS respectively and those companies of which EPS is highly positively correlate to PBIT and low interest coverage ratio with high D/E ratio can offer less EPS. Therefore GSFC (8.30), DCCL (-26.71), OAL (9.92) are evidence of this Statement. In case of TCL, EPS is not highly correlated with PBIT, but there is a significant positive collection between EPS & D/E ratio (r12 = 0.77) and between D/E ratio and PBIT (r23 = 0.54) with low D/E ratio and high

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interest coverage ratio, thus it can also offer reasonable EPS. Where as in case of GACL, EPS D/E ratio and PBIT are negatively correlated but its EPS is more due to high interest coverage ratio and low D/E ratio, Aust. Eng. offer less EPS even though low D/E ratio and significant correlation between EPS and PBIT (r13 = 0.97). It is sign of low profitability.

The chi-square value of IRIL (12.56) and RIL (13.10) so null hypothesis is accepted, it indicates that, EPS of these companies is not significantly effected by D/E ratio and PBIT, but in case of other company, chi- square value is greater than table value so null hypothesis is rejected. It indicates that there is a significant impact of D/E ratio and PBIT on EPS.

The above study brought to light that those companies of which EPS is highly correlated to PBIT but negatively correlated to D/E ratio with low interest coverage ratio and high debt- equity ratio are show significant impact of D.E ratio and PBIT on EPS therefore in case of GSFC, GACL, GHC. DCCL, Aust,. Eng and OAL, PBIT shows significant EPS. Through this empirical study it clears that there is no uniform finance decision of the companies.

CHAPTER -V

COMPARATIV ANALYSIS OF INVESTMENT DECISISON

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DECISION

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(1) INTRODUCTION

Investment decision is one of the managerial decisions. It is the primary function of the finance manager and when idea regarding starting new business or major alteration in existing business is developed; problem of new investment of fund is arising. Investment decision is one of the crucial decisions of the corporate sector. At the time of taking investment decision, several factors such as market situation, cost of capital availability of financial resources, profitability, risk associated with business, Government policy, pattern of controlling management affairs etc. are considered.

The investment decision is classified mainly in two part short term and long term. Short-term investment decision is concern with working capital management and long-term investment is concern with capital expenditure.

Investment decision of capital budgeting involves the decision of allocation of capital or commitment of funds to long-term assets, which would yield, benefits in future. Its one very significant aspect is the task of measuring the prospective profitability of new investments, future benefits are difficult to measure and cannot be predicted with certainty. Because of uncertain future, capital budgeting decision involves risk. Investment, proposals should therefore be evaluated in terms of both expected return and risk.

Other major aspects of investment decision are the measurement of a standard or hurdle rate against which the expected return of new investment can be compared. There is broad agreement that the correct standard to use for this purpose is the required rate of return of the opportunity cost of capital. However, there are problems in computing the cost of capital in practice from the available data. A decision maker should be aware of these problems.

(2) NATURE OF CAPITAL BUDGETING / INVESTMENT DECISION

The capital budgeting decision is pertain to fixed assets / long term assets which by definition refer to assets which are in operation and yield a return over a period of time. Usually, exceeding one year. The capital

budgeting decision therefore, involves a current outlay or series of outlays of cash resources in return for an anticipated flow of future benefits.[25]

So capital budgeting decision relates to huge amount of expenditure, long-term investment, high degree of risk and future benefits. The benefits may be either in the form of increased revenue or reduced in costs.

(3) CASH FLOW

Cash flow is an essential concept in capital budgeting. The accounting approach to calculating return is not appropriate in the making the decision to invest funds in new investments. Accounting techniques should be limited to two areas.

(A) Calculating Tax Effects

The firm pays its taxes on the basis of accounting date and reported profits. Depreciation and non-cash expenses are tax shield. These tax effects are included in capital budgeting because they affect the cash flow.

(B) Calculating future earning per share

This is in addition to the capital budgeting process, it is not part of it. Along with the return on a cash flow basis, the firm may want to check the effect of an investment on future earning per share. As a general rule, a high return on a cash flow basis also yield a high future EPS. Still the firm may want to ensure that this is the case, and it should use accounting data to determine future EPS.

Calculating budgets should carefully forecast the timing and amounts of cash flowing to and from the firm as a result of capital expenditure. While determining cash flow following points are suppose to be considered.

(I) Differential after tax cash flow

In considering an expenditure of cash for an investment project, only differential after tax cash flows are included in the analysis. The term differential refers to a comparison of what would be received and spends on a proposal compared with what would be received and

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[25] - **Quirin G. D. - The Capital Expenditure Decision (Home Wood III) - Richard D. Irwin, 1967, P-2**

spends in the absence of the proposal. The term after tax refers to the fact that all calculations are evaluated after considering the effect of corporate incomes tax.

(II) Two sides to a cash inflow

To be worthwhile investment, a firm must receive differential after tax cash inflows from a proposal project this inflow can occur by two means;

(a) <u>Additional Revenue</u>

If a firm is entering a market that will increase sales the excess of cash revenues over cash expenses provides net cash inflows.

(b)<u> Cash saving on operation</u>

Sometimes proposal intendeds to reduce operating costs e.g. a firm may be expenditure Rs. 50000 for the operation of an operating costs. A new machine would cost of Rs. 80000 but would reduce the need for one operator, thus reducing costs to Rs. 40000. This is a net cash inflow of Rs. 50000-40000=10000.[26]

In an investment proposal initial cash outflows occurred for acquisition, construction or development of various fixed assets like land, building, plant and machinery, furniture and fixtures etc. and for working capital. Initial cash outflows for acquisition, construction or development of fixed assets are incurred over a period, which is termed as "construction period". Once the fixed assets are ready for use, working capital is also employed and the project is put to use. While in operation, the project generates the cash inflows / profit and there will also be cash outflows for maintenance of the fixed assets. Such subsequent cash outflows incurred for maintenance of fixed assets are parts of operating expenses/outflows. In accounting measures depreciation on fixed assets is treated as an item of expense while in cash flow measure depreciation is a non-cash item reflecting only notional recovery of historical cost of depreciable fixed assets.

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[26] - Hamption John J. - Financial Decision Making - Prentice - Hall of India Pvt. Ltd., New Delhi - 1996 - P-303-304

Researcher has linked cash flow with other two variables, total capital employed and net sales revenue. To major impact of total investment and sales revenue on cash flow, one economic model based on Linear multiple regression technique is developed, which is as follows:

Optimum cash flow = a + b (Sales) + c (TCE)

Where, a = constant, that means optimum amount of cash flow when amount of sales and TCE are zero.

b = coefficient of variable sales.

c = coefficient of variable TCE.

TCE = Total Capital Employed

Actual amount of cash flow is computed as

Actual cash flow = PAT + Depreciation + Provision for Deferred Tax

Optimum amount of cash flow is compared with actual amount of cash flow and justify the effectiveness of utilization of total investment in business

(4) COMPONENT OF CAPITAL BUDGETING DECISION

There are various aspects need to be considered while taking capital budgeting decision which are as follows;

→ Cost-Benefit Analysis

Capital is more scare resources in a developing economy like India. It must be invested with utmost care. Private individual investor is always thinking about commercial return on his investment. Cost-benefit analysis technique is one of the powerful tools to evaluate investment proposal. The use of cost-benefit analysis in India started in the 1960 on a very limited scale. In 1960, for appraisal of "Bhakra Nangal Project" in north India, for the first time systematic attempts were made to use concept of cost-benefit analysis

→ Cut-off Decision

How do you determine whether resulting benefits are worth the investment cost? What is a financial viability test? A cut-off rate decision (sometimes called a go-no-go criterion, hurdle rate or required rate of return)

is very important. Should we take the cost of capital as the cut-off point? If so, then how can capital cost to be calculated? Can a cut-off be different for two different projects, which are considered at the same point of time? The answer is quite simple. An ideal cut-off rate can be calculated by adding the risk premium to the risk free rate of return. The amount of risk premium is decided on the basis of change in the risk profile of business as a result of accepting the new project. A required rate of return can be also calculated by applying the capital asset pricing model. A more pragmatic solution, however, lies in taking the risk-adjusted cost of capital. The risk-adjusted cost of capital is calculated by adding/subtracting the differential risk from the weighted average cost of capital.

→ Choice of Evaluation Technique

There are many techniques for evaluating investment proposals. Some are concerned with capital recovery; some focus on profitability and some take the time value of cash flow into account. A company must select one or more appropriate evaluation techniques. An appropriate evaluation technique is one which may be justifiably applied to a given investment proposal.

→ Risk Analysis

The study of project risk and its management are two very important aspects of the capital budgeting exercise. Identification of sources of risk, measuring the risk, and including it in the decision making process are the three issues in project risk analysis. Project risk management looks into the verification and redesigning of projects so that the risk return profile can improve. The project risk must be further analyzed in the context of the effect of accepting a new project on the risk profile of the whole business. That means project portfolio risk analysis. A project individually may be risky, but it may reduce the overall risk of business if accepted. Portfolio risk analysis is very vital.

→ Capital Rationing Decision

Can a company undertake all project proposals, which are found acceptable? Should it reject investment opportunities, which are not found

acceptable? If a company cannot accept al profitable projects, then how is selection to be made? Financial priorities, strategic considerations, human considerations and statutory compulsions come in conflict with one another when a firm has limited funds.

→ Project Planning, Execution and Monitoring

This stage in corporate investment decision – making deals more with operational matters, and less with financial matters. Preparation of the DPR, its implementation and monitoring are the three major phases. DPR is the blueprint of any resource acquisition plan and is designed after considering the dual issues of resource allocation, and resource smoothing. It also gives a detailed project construction plan with time, cost and quality dimensions. A proper DPR can drastically reduce the cost of project, by preventing cost and time escalation.

→ Post Completion Audit

Project execution is completed with the preparation of the project completion report (PCR). The PCR is a report on qualitative and quantitative aspects of project planning and construction. This does not, however, complete the capital investment exercise. Has the project brought in the desired benefits, and if not, why? These questions are asked and answers sought in post completion audit (PCA). PCA is an exercise of systematic learning from mistakes. It is conducted with the objective of avoiding similar mistakes in future. It is generally conducted at the time when the project has begun setting a useful track record.[27]

→ Growth Rate Decision

The growth of a company is occasionally understood with reference to change in quantity sales, rupee value sales, gross or net investment in assets, profit or profitability. This term is also used to indicate a change in the market share or the earning per share or the market price of the share. Stanford Research Institute, an applied research center in Menlo Park, California conducted a fundamental study and developed a formula for the growth

27 - **Patel Bhavesh M. - Strategic Financial Planning Evaluation & Control - Vikas Publishing House Pvt. Ltd. - P-13-14**

ranking of firms. They included three growth measures; the percentage increase in sales (growth in size), in net profits and in the price of the company's common stock.[28]

(5) EXPLANATION OF VARIABLES USED FOR EVALUATION OF INVESTMENT DECISION

→ Sales

An actual sale is considered sales of product. Amount of sales is determined by deducting excise duty. Sales revenue is not included other non-operating income but included only sale revenue received from sales goods.

Sales are the result of business efficiency. Business efficiency can be majored with the help of efficiency of sales and efficiency of assets in operating activities. Sound sales and assets efficiency give high rate of return on investment. Rate of return on investment is one of the powerful tools for measuring overall efficiency of organization. Sales efficiency is affected by assets efficiency. Asset efficiency is measure of optimum utilization of fund employed in total assets. Total assets further classified in two parts such as fixed assets and working capital. Here researcher has developed one more economic model to evaluate effect of fixed assets and working capital efficiency on sales efficiency. Optimum amount of sales is estimated using linear model through linear multiple regression technique, which is as, follows.

Expected amount of sales = a + b (FA) + c (GWC)

Where,   a = constant of the regression equation

         b = co efficient of the independent variable fixed assets in the equation.

         c = coefficient of the independent variable gross working capital.

     FA = Fixed Assets

   GWC = Gross Working Capital

The above model is based on the assumption that a sales is a linear function of investment in FA and GWC.

[28] - Patel Bhavesh M. - Strategic Financial Planning Evaluation & Control - Vikas Publishing House Pvt. Ltd. - P-125

→ Fixed Assets

Fixed assets defined here permanent assets of the company it is included net block after deducting accumulated depreciation, capital work in progress and project under execution.

→ Working Capital

There are two concepts of working capital, the gross capital and net concept while the former refers to as total of current assets; the later represents the excess of current assets over current liabilities. For the purpose of present study, Gross working capital concept has been adopted.

→ Total Capital Employed

Total capital employed includes investment in fixed assets, investment in securities and investment in net current assets but excluded misc. expenditure not written off.

→ R O I (Return On Investment)

This is the percentage return that a company made during a given period of time on the given capital base. In computing the ROI the term investment includes both the debt fund and the equity fund and will be computed on pretax profit basis. Mathematically it can be expressed as follows.

ROI = (Net profit + Tax + Interest / Total Capital Employed) x 100

Total Capital Employed = Shareholders fund + Long term debt – Misc. Exp.

Net Profit = PAT but excluded exceptional items.

→ Net Profit Ratio

Net profit ratio is tool of measuring sales efficiency. This ratio explains per rupee profit generating capacity of the sales. If the cost of goods sold is lower, than the profit will be higher. This ratio comes high, which indicates the high sales efficiency. If this ratio is lower the sales efficiency also is lower. This ratio is calculated here as

Net Profit Ratio = PAT ÷ SALES x 100

→ Asset Turn Over Ratio

This ratio measures the efficiency of the assets use. Efficient use of assets will generate greater sales per rupees invested in all the assets of the company. If this ratio is high, it indicates optimum utilization of resources invested in the total assets and if this ratio is low, it indicates higher overhead charges and under utilization of available capacity. It is calculated as

Total Assets Turn Over Ratio = Net Sales / Total Assets

Here total assets includes fixed asset and current assets but excludes investment in securities and shares of other companies.

(6) TOOLS & TECHINQUES FOR ANALYSIS & EVALUATION OF INVESTMENT DECISION

For the purpose of analysis and evaluation of investment decision, various ratio liked Total Asset turn over ratio, Net Profit Ratio, Return on Investment Ratio, Fixed Assets Turnover Ratio and GWC turnover Ratio are calculated. Moreover, statistical techniques such as standard deviation, co-efficient of variation, average, multiple co-relation, determination of multiple co-relation, multiple regression equation, 't' test, χ^2 test and ANOVA test are also applied to analysis the consistency, the stability and overall trends in the difference financial aspect of the companies. Data has been converted in to relative measure such as ratios, percentages, indices rather than the absolute data.

Following four hypothesis have been tested with four corresponding alternative hypothesis for the purpose of analyzing investment decision of selected companies

FIRST:

Hypothesis based on t test for regression coefficient.

- ⇨ **Null Hypothesis**: There is no significant difference between partial regression coefficient of sample and population data of sampled units during the study period.

- ⇨ **Alternative Hypothesis**: There is a significant difference between partial regression coefficient of sample and population data of sampled unit during the study period.

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SECOND:

Hypothesis based on 'F' test (one way ANOVA) for multiple regressions.

⇨ **Null hypothesis:** There is no significant difference of the regression, as a whole that means whole independent variable were not related with dependent variable.

⇨ **Alternative hypothesis:** There is a significant difference of the regression as a whole that means at least one of the independent variable was related with dependent variable.

THIRD:

Hypothesis based on chi-square test

⇨ **Null hypothesis:**

(I.) There is no significant impact of total investment and net sales revenue on cash flow of selected units of Saurashtra region.

For the purpose of estimating the expected cash flow, linear model through linear mul

Expected Cash Flow = a + b (Sales) + c (TCE)

(II.) There is no significant impact of total investment in FA and GWC on sales of selected units of Saurashtra region.

Following linear model is developed for estimating the excepted sales.

Expected Sales = a + b (F.A) + c (G.W.C)

FOURTH:

Hypothesis based on ANOVA 'F' test – One-Way analysis of variance.

Forth one hypothesis has been developed to see whether there is any significant difference in investment decision of the selected units of the saurashtra region. For evaluating investment decisions there are mainly five variables namely Cash flow, Sales Revenue, Return On Investment, Total Investment (TCE) and Fixed Assets (FA) to GWC Ratio are summarized. To evaluate these five variables with a view to analyzing overall investment decision of all nine selected units, the following null hypothesis based on ANOVA, 'F' test are developed. The acceptance of following null hypothesis would reveal that there is no significant difference in investment decision within the sample units. However, rejection of the null hypothesis would also

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suggest that there is a significant difference in investment decision within sampled units of Saurashtra region.

1) There is no significant difference in Average Cash Flow within the sampled units of Saurashtra region during the period of study.

2) There is no significant difference in Average Sales Trend within the sampled units of Saurashtra region during the period of study.

3) There is no significant difference in Average ROI within the sampled units of Saurashtra region during the period of study.

4) There is no significant difference in investment trend within the sampled units during the period of study.

5) There is no significant difference in investment pattern within the sampled units during the period of study.

→ **ANALYSIS OF INVESTMENT DECISION OF SELECTED COMPANIES LOCATED IN SAURASHTRA REGION AND LISTED WITH STOCK EXCHANGE**

a)   **Evaluation Of Impact Of Total Investment On Profitability**

INDIAN RAYON & INDUSTRIES LTD. – VERAVAL

Null Hypothesis

There is no significant impact of Total Investment and Net Sales Revenue on Cash Flow of IRIL.

The following evaluation emerges from multiple correlations, multiple regressions, t test, 'F' test, chi-square test and its results in respect of I.R.I.L. VERAVAL.

Multiple Correlation, Multiple Regression equation, 'F' test and 't' test approach

TABLE NO 5.1
KEY INDICATORS OF INVESTMENT DECISION OF IRIL

YEAR	CASH FLOW (Rs. In Crore)	SALES (Rs. In Crore)	TCE (Rs. In Crore)	EST. CASH (Rs. In Crore)	χ^2	T. A. TURN OVER RATIO	NPR (In %)	ROI (In %)
94-95	170.47	928.36	1764.12	157.04	1.15	0.56	14.29	11.99
95-96	241.49	1207.88	2116.88	219.62	2.18	0.57	15.30	13.84
96-97	284.58	1412.56	2485.61	280.18	0.07	0.53	15.20	12.28
97-98	299.73	1582.25	2587.27	303.16	0.04	0.59	13.43	11.07
98-99	196.74	1299.03	2064.34	217.67	2.01	0.68	8.16	8.34
99-00	130.09	1072.09	1666.44	151.99	3.16	0.73	5.37	6.63
00-01	141.60	1416.19	1595.87	161.69	2.50	1.00	4.84	8.52
01-02	141.28	1410.63	1640.31	167.31	4.05	1.01	2.99	7.22
02-03	209.47	1442.42	1558.23	158.12	16.67	1.14	7.80	10.81
03-04	198.75	1573.84	1798.05	197.41	0.01	1.20	7.07	9.81
TOTAL	2014.20	13345.25	19277.12	2014.20	31.83	8.00	94.45	100.52
AVG	201.42	1334.53	1927.71	201.42	3.18	0.80	9.45	10.05
SD	59.18	210.81	371.45	53.95	4.94	0.26	4.67	2.35
R	0.43	0.27	0.89					
CV	29.38	15.80	19.27	26.78	155.11	32.54	49.44	23.39
R1.23 = 0.91			(R1.23)^2 = 0.83		R2.13 = 0.49			R3.12=0.90

(Source: annual report of IRIL from 1994-95 to 2003-04)

Multiple regression equation for the line x_1 on x_2 and x_3

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$$X_1 = -129.84 + 0.06\ (X_2) + 0.13\ (X_3)$$

Where

X_1 = Estimated Cash flow, X_2 = Sales, X_3 = Total Capital Employed (TCE)

Table No 5.1 provides data regarding Cash flow, Net Sale, Total Capital Employed, Est. cash flow, total Asset turnover ratio, net profit ratio, ROI, value of chi-square and other information of Indian Rayon & Industries Ltd. Veraval

The highest Asset Turnover Ratio was 1.20 in the year 2003-04 an lowest Asset Turnover ratio was 0.53 in the year 1996-97, where as average Asset Turnover ratio was 0.80, which indicates that asset efficiency was satisfactory.

It is evident from **table no 5.1** that highest ROI of IRIL was 13.85% in the year 1995-96, where as lowest ROI was 6.54% in the year 2000-01. The average ROI was 10.03% during the study period. The result implies sound profitability.

It is evident from **table no 5.1** that highest NPR of IRIL was 15.30% in the year 1995-96, where as lowest NPR was 2.99% in the year 1995-96. The average NPR was 9.45% during the study period. CV rate of IRIL was 49.44%, which indicates more variation in Net Profit.

The coefficients of multiple correlation (R1.23) of IRIL was 0.9116 indicating very high correlation among the variables. Multiple correlation co-efficient of IRIL was very near to 1, which indicates there was nearly perfect correlation among the variables where as the coefficient of multiple determination $(R1.23)^2$ of IRIL was 0.831. This implies that 83.10% variation in cash flow was due to the variation of Sales and variation of TCE and rest 16.90% was due to other reason on the assumption that there is a linear correlation among the variables.

ANOVA TABLE NO 5.2						
Sources of vari.	Degree Of Freedom	Sum Of square	Mean Of Square	'F' ratio	Critical Value @ 5%	Result
Regression (SSR)	2.00	26194.08	13097.04	17.21	F (2, 7) = 4.74	Significant
Error (SSE)	7.00	5326.92	760.99			
Total (SST)	9.00	31521.00				

Above **table no. 5.2** shows that the calculated value of 'F' was 17.21, which was greater than the table value F (v1=2, v2=7) at 5% level of significance. This result implies that at least one of the independent variable was related with the dependent variable cash flow (X_1).

<div align="center">

TABLE NO 5.3

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VARIABLE IN EQUATION						Chi-Square	
Variable	Partial Regre. Coeffi. (B)	S.E. (B)	| t | Value	Critical Value @ 5%	Result	χ^2 Value	Critical Value @ 5%
Constant	129.84	-	-	-	-	31.83	D. F (9)
X_2	0.06	0.05	1.22	2.37	Non-Sign.		16.92
X_3	0.13	0.03	5.18	2.37	Significant	Significant	

The partial regression coefficient for independent variable Sales indicates positive relationship with dependent variable (cash flow) during the period of study. It implies that the additional one crore increase in Sales and TCE was held constant than there is an increase annual cash flow by Rs. 0.058 crore as it was in the past. The partial regression coefficient for independent variable TCE indicates positive relationship with dependent variable (cash flow) during the period of study. It implies that the additional one crore increase in TCE and Sales was held constant than there is an increase annual cash flow by Rs. 0.133 crore as it was in the past. It implies that 13.3% contributed by additional investment.

The calculated value of 't' for partial regression coefficient (b12.3) of cash flow and Sales when TCE held constant was 1.224, which was less than the table value of 't' with d. f. 7 at 5% level of significance. This result implies that partial regression coefficient of Cash flow and Sales was not significant during the study period. Where as calculated value of 't' for partial regression coefficient (b13.2) Cash flow and TCE when Sales held constant was 5.18 which was greater than the table value 't' with d. f. 7 at 5% level of significance. This result implies that partial regression coefficient of Cash flow and TCE was significant during the study period.

The coefficient values arrived above shown in **table no 5.3** were used to estimate the expected value of cash flow as per the model in order to test whether the model is a good fit for the data. The Chi-square test was conducted between the actual value of cash flow and expected value of cash flow and the result are tabulated in above **table no 5.1**. The result of chi-square could reject the null hypothesis. Hence, it indicates that there is a significant impact of total investment and net sales revenue on cash flow.

The above analysis indicates that the average ROI and NPR both were nearest to it during the study period indicating sign of sound profitability. The sound profitability was result of significant effect of net sale and TCE on Cash flow. Moreover we can say in respect of impact of sales and total capital employed on cash flow of IRIL that total capital employed was major contributing factor than the sales for the variation in cash flow. It means asset efficiency was more effective than the sales efficiency.

TATA CHEMICALS LTD. – MITHAPUR

For the purpose of analysis and evaluation of investment decision of TCL, following null hypothesis is tested.

Null Hypothesis

There is no significant impact of Total Investment and Net Sales Revenue on Cash Flow of TCL.

The following evaluation emerges from multiple correlations, multiple regressions, 't' test, F test, chi-square test and its results in respect of T.C.L. MITHAPUR.

Multiple Correlation, Multiple Regression equation, 'F' test and 't' test approach

TABLE NO 5.4
KEY INDICATORS OF INVESTMENT DECISION OF TCL

YEAR	CASH FLOW (Rs. In Crore)	SALES (Rs. In Crore)	TCE (Rs. In Crore)	EST. CASH (Rs. In Crore)	χ^2	T. A. TURN OVER RATIO	NPR (In %)	ROI (In %)
94-95	329.79	677.25	2563.87	358.53	2.30	0.27	42.25	14.97
95-96	499.45	1402.56	2862.10	354.84	58.93	0.50	28.13	22.80
96-97	366.41	1477.76	3047.52	332.54	3.45	0.48	17.08	17.57
97-98	403.76	1515.65	3116.45	324.78	19.21	0.48	19.04	17.56
98-99	297.82	1347.81	3244.09	297.73	0.00	0.42	13.48	12.47
99-00	240.76	1417.06	3009.56	334.70	26.36	0.44	8.25	10.89
00-01	297.79	1405.25	3049.61	328.38	2.85	0.46	11.74	11.42
01-02	293.77	1357.68	3048.67	325.98	3.18	0.47	9.34	10.19
02-03	309.96	1535.27	2879.36	359.46	6.82	0.59	12.81	12.26
03-04	339.51	2544.15	3239.77	362.06	1.41	0.82	8.67	11.71
TOTAL	3379.02	14680.44	30061.00	3379.02	124.51	4.91	170.79	141.84
AVG	337.90	1468.04	3006.10	337.90	12.45	0.49	17.08	14.18
SD	72.03	450.64	200.34	20.60	18.47	0.14	10.69	4.01
R	0.06	0.70	-0.16					
CV	21.32	30.70	6.66	6.10	148.34	28.47	62.57	28.29
R1.23 = 0.29		$(R1.23)^2 = 0.082$			R2.13 = 0.72		R3.12=0.73	

(Source: annual report of TCL from 1994-95 to 2003-04)

Multiple regression equation for the line X_1 on X_2 and X_3

$$X_1 = 686.21 + 0.05 (X_2) - 0.14 (X_3)$$

Where

X_1 = Estimated Cash flow, X_2 = Sales, X_3 = Total Capital Employed (TCE)

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Table No 5.4 provides data regarding Cash flow, Net Sale, Total Capital Employed, Est. cash flow, total Asset Turnover ratio, net profit ratio, ROI, value of chi-square and other information of TATA Chemicals Ltd. – Mithapur

The highest Asset Turnover Ratio was 0.82 in the year 2003-04 and lowest Asset Turnover ratio was 0.27 in the year 1994-95, where as average Asset Turnover ratio was 0.49, which indicates that asset efficiency was not satisfactory.

It is evident form **table no 5.4** that highest ROI of TCL was 22.8% in the year 1995-96, where as lowest ROI was 10.19% in the year 2001-02. The average ROI was 14.18% during the study period. The result implied sound over all profitability.

It is evident from **table no 5.4** that highest NPR of TCL was 42.25% in the year 1994-95, where as lowest NPR was 8.687% in the year 2003-04. The average NPR was 17.08% during the study period. CV rate of TCL was 62.57%, which indicates more variation in Net Profit. It was the sign of decrease in profitability.

The coefficients of multiple correlation (R1.23) of TCL was 0.29 indicating very low correlation among the variables. Multiple correlations co-efficient of TCL were not significant. Where as the coefficient of multiple determination capital $(R1.23)^2$ of TCL was 0.0818. This implies that 8.18% variation in cash flow was due to the variation of Sales and variation of TCE and rest 91.82% was due to other reason on the assumption that linear co-relation among the variables. This result indicates that there was no significant impact of Sales and TCE on Cash flow.

ANOVA TABLE NO 5.5						
Sources of vari.	Degree Of Freedom	Sum Of square	Mean Of Square	'F' ratio	Critical Value @ 5%	Result
Regression (SSR)	2.00	3818.52	1909.26	0.31	F (2, 7) = 4.74	Non-Significant
Error (SSE)	7.00	42878.10	6125.44			
Total (SST)	9.00	46696.62				

Above **table no 5.5** shows that the calculated value of 'F' was 0.31, which was less than the table value F (v1=2, v2=7) at 5% level of significance. This result implies that there is no significant different of the regression of the whole that means whole independent variable was not related with dependent variable.

TABLE NO 5.6

VARIABLE IN EQUATION						Chi-Square	
Variable	Partial Regre. Coeffi. (B)	S.E. (B)	| t | Value	Critical Value @ 5%	Result	χ^2 Value	Critical Value @ 5%
Constant	686.21	-	-	-	-	124.51	D. F (9)
X_2	0.05	0.08	0.66	2.37	Non-Sign.		16.92
X_3	-0.14	0.18	0.78	2.37	Non-Sign.	Significant	

The partial regression coefficient for independent variable Sales indicates positive relationship with dependent variable (cash flow) during the period of study. It implies that the additional one crore increase in Sales and TCE was held constant than there is an increase annual cash flow by Rs. 0.05 crores as it was in the past. The partial regression coefficient for independent variable TCE indicates negative relationship with dependent variable (cash flow) during the period of study. It implies that the additional one crore increase in TCE and Sales was held constant than there is decrease annual cash flow by Rs. 0.14 crores as it was in the past.

The calculated value of 't' for partial regression coefficient (b12.3) of cash flow and Sales when TCE held constant was 0.66 and where as calculated value of 't' for partial regression coefficient (b13.2) Cash flow and TCE when Sales held constant was 0.78. These both the value were less than the table value 't' with d. f. 7 at 5% level of significance. This result implies that partial regression coefficient of Cash flow and Sales as well as Cash flow and TCE were not significant during the study period.

The coefficient values arrived above shown in **table no 5.6** were used to estimate the expected value of cash flow as per the model in order to test

whether the model is a good fit for the data. The Chi-square test was conducted between the actual value of cash flow and expected value of cash flow and the result are tabulated in above **table no 5.4**. The result of chi-square could reject the null hypothesis. Hence, it is concluded that the model is not a good fit.

The above analysis indicates that there was no considerable improvement in actual cash flow through Sales and TCE. The lowest Sales was Rs. 677.25 crores in the years 1994-95 and highest Sales was Rs. 2544.15 crores in the years 2003-04 that means increase in sales by approx. 276% during the study period where as lowest TCE was Rs. 2563.87 crores in the year 1994-95 and highest TCE was Rs. 3239.77 crores in the year 1997-98, average TCE was Rs. 3006.10 crores during the study period. The CV rate is only 6.67% in case of TCE and 30.76% in case of Sales indicating more consistency in TCE and more variation in Sales. There was no considerable improvement in profitability it was sign of low Sales and Asset efficiency so management has to pursue the policy of maximizing the Sales and Assets efficiency. Effective and efficient investment decision is one of the solutions for improvement in overall profitability.

RELIANCE INUSTRIES LTD. JAMNAGAR

For the purpose of analysis and evaluation of investment decision of RIL, following null hypothesis is tested.

Null Hypothesis

There is no significant impact of Total Investment and Net Sales Revenue on Cash Flow of RIL.

The following evaluation emerges from multiple correlations, multiple regressions, 't' test, 'F' test, chi-square test and its results in respect of RIL. JAMNAGAR.

Multiple Correlation, Multiple Regression equation, 'F' test and 't' test approach

TABLE NO 5.7

KEY INDICATORS OF INVESTMENT DECISION OF RIL

YEAR	CASH FLOW (Rs. In Crore)	SALES (Rs. In Crore)	TCE (Rs. In Crore)	EST. CASH (Rs. In Crore)	χ^2	T. A. TURN OVER RATIO	NPR (In %)	ROI (In %)
94-95	1343.09	5260.00	10133.00	1603.85	42.40	0.55	20.25	13.26
95-96	1977.78	5727.00	13127.00	1744.25	31.27	0.44	22.80	10.78
96-97	1732.84	6492.00	16097.00	1917.72	17.82	0.43	20.50	9.55
97-98	2319.99	9719.00	20530.00	2412.92	3.58	0.48	17.40	10.81
98-99	2558.73	10624.00	24019.00	2617.42	1.32	0.45	16.00	10.25
99-00	3681.61	15847.00	25503.00	3252.65	56.57	0.68	15.50	13.60
00-01	4211.00	23024.00	24953.00	4049.88	6.41	0.98	12.80	16.02
01-02	7092.04	45404.00	50924.00	7344.79	8.70	0.91	7.10	11.47
02-03	7565.40	50096.00	52770.00	7930.43	16.80	0.89	8.20	12.37
03-04	9197.16	56247.00	58872.00	8805.75	17.40	0.98	9.20	13.14
TOTAL	41679.64	228440.00	296928.00	41679.64	202.26	6.79	149.75	121.27
AVG	4167.96	22844.00	29692.80	4167.96	20.23	0.68	14.98	12.13
SD	2795.54	20020.95	17741.27	2781.01	18.01	0.24	5.51	1.94
R	0.99	0.99	0.99					
CV	67.07	87.64	59.75	66.72	89.03	35.01	36.76	15.98
R1.23 = 0.99			$(R1.23)^2$ = 0.99		R2.13 = 0.99		R3.12=0.99	

(Source: annual report of RIL from 1994-95 to 2003-04)

Multiple regression equation for the line x_1 on x_2 and x_3

$$X_1 = 711.73 + 0.11 (X_2) + 0.03 (X_3)$$

Where

X_1 = Estimated Cash flow, X_2 = Sales, X_3 = Total Capital Employed (TCE)

TABLE NO 5.7 provides data regarding Cash flow, Net Sale, Total Capital Employed, Est. cash flow, total Asset turnover ratio, net profit ratio, ROI, value of chi-square and other information of Reliance Industries Ltd.-Jamnagar.

The highest Asset Turnover Ratio was 0.98 in the year 2000-01 and 2003-04 and lowest Asset Turnover ratio was 0.43 in the year 1996-97, where as average Asset Turnover ratio was 0.68, which indicates that asset efficiency was satisfactory.

It is evident from **TABLE NO 5.7** that highest ROI of RIL was 16.02% in the year 2000-01, where as lowest ROI was 9.55% in the year 1996-97. The average ROI was 12.13% during the study period. CV Rate was 15.98% indicating consistency in ROI during study period.

It is evident from **TABLE NO 5.7** that highest NPR of RIL was 22.80% in the year 1995-96, where as lowest NPR was 7.10% in the year 2001-02. The average NPR was 14.98% during the study period. The result implies that average profitability was sound it was sign of good sales efficiency.

The coefficients of multiple correlation (R1.23) of RIL was 0.995 indicating very high correlation among the variables. Multiple correlations co-efficient of RIL were very near to 1, which indicates there was nearly perfect correlation among the variables. Where as The coefficient of multiple determination capital $(R1.23)^2$ of RIL was 0.9896. This implies that 98.96% variation in cash flow was due to the variation of Sales and variation of TCE and rest 1.04% was due to other reason on the assumption that linear co-relation among the variables

ANOVA TABLE NO 5.8						
Sources of vari.	Degree Of Freedom	Sum Of square	Mean Of Square	'F' ratio	Critical Value @ 5%	Result
Regression (SSR)	2.00	69606189.78	34803094.89	334.14	F (2, 7) = 4.74	Significant
Error (SSE)	7.00	729096.70	104156.67			
Total (SST)	9.00	70335286.48				

Above **TABLE NO 5.8** shows the calculated value of 'F' was 334.14, which was greater than the table value F (v1=2, v2=7) at 5% level of significance. This result implies that at least one of the independent variable was related with the dependent variable cash flow (X_1).

<p align="center">TABLE NO 5.9</p>

VARIABLE IN EQUATION						Chi-Square	
Variable	Partial Regre. Coeffi. (B)	S.E. (B)	| t | Value	Critical Value @ 5%	Result	χ^2 Value	Critical Value @ 5%
Constant	711.73	-	-	-	-	202.26	D. F (9)
X_2	0.11	0.03	3.58	2.37	Significant		16.92
X_3	0.03	0.04	0.82	2.37	Non-Sign.	Significant	

The partial regression coefficient for independent variable Sales indicates positive relationship with dependent variable (cash flow) during the period of study. It implies that the additional one crore increase in Sales and TCE was held constant than there is an increase cash flow by Rs. 0.11 crores as it was in the past. The partial regression coefficient for independent variable TCE indicates positive relationship with dependent variable (cash flow) during the period of study. It implies that the additional one crore increase in TCE and Sales was held constant than there is an increase annual cash flow by Rs. 0.03 crores as it was in the past. It implies that 3% contributed by additional investment.

The calculated value of 't' for partial regression coefficient (b12.3) of cash flow and Sales when TCE held constant was 3.58, which was greater than the table value of 't' with d. f. 7 at 5% level of significance. This result implies that partial regression coefficient of Cash flow and Sales was significant during the study period. Where as calculated value of 't' for partial regression coefficient (b13.2) Cash flow and TCE when Sales held constant was 0.82 which was less than the table value 't' with d. f. 7 at 5% level of significance. This result implies that partial regression coefficient of Cash flow and TCE was not significant during the study period.

The coefficient values arrived above shown in **TABLE NO 5.9** were used to estimate the expected value of cash flow as per the model in order to

test whether the model is a good fit for the data. The Chi-square test was conducted between the actual value of cash flow and expected value of cash flow and the result are tabulated in above **TABLE NO 5.7**. The result of chi-square could reject the null hypothesis. Hence, it indicates that there is a significant impact of Total Investment and Net Sales Revenue on Cash Flow.

The above analysis indicates that assets and sales efficiency were satisfactory. The average net sales was Rs. 22844 crores, average TCE was Rs. 29692.80 crores and average Cash flow was Rs. 4167.95 crores which show average Cash flow return on Sales 18.25% and on TCE was 14.04% during the study period. So investment decision from the viewpoint of improving earning capacity and sales generating capacity of fund invested was quite rational.

GUJARAT AMBUJA CEMENT LTD. – KODINAR

For the purpose of analysis and evaluation of investment decision of GACL, following null hypothesis is tested.

Null Hypothesis

There is no significant impact of Total Investment and Net Sales Revenue on Cash Flow of GACL.

The following evaluation emerges from multiple correlations, multiple regressions, t test, 'F' test, chi-square test and its results in respect of G.A.C.L. KODINAR.

Multiple Correlation, Multiple Regression equation, 'F' test and 't' test approach

TABLE NO 5.10

KEY INDICATORS OF INVESTMENT DECISION OF GACL

YEAR	CASH FLOW (Rs. In Crore)	SALES (Rs. In Crore)	TCE (Rs. In Crore)	EST. CASH (Rs. In Crore)	χ^2	T. A. TURN OVER RATIO	NPR (In %)	ROI (In %)
94-95	130.87	370.00	1197.00	119.56	1.07	0.33	27.03	10.78
95-96	207.56	633.00	1402.00	185.41	2.65	0.44	23.38	14.48
96-97	213.55	795.00	1772.00	221.48	0.28	0.46	16.60	11.51
97-98	240.16	973.00	2042.00	263.62	2.09	0.50	13.46	11.95
98-99	273.43	1058.00	1842.00	289.82	0.93	0.58	14.27	14.12
99-00	298.06	1117.00	2585.00	291.74	0.14	0.58	15.58	11.64
00-01	315.65	1269.00	3168.00	321.23	0.10	0.54	14.66	10.54
01-02	352.66	1384.00	3624.00	343.27	0.26	0.51	13.51	9.05
02-03	405.09	1735.00	3668.00	435.39	2.11	0.61	12.80	9.30
03-04	531.81	1968.00	3654.00	497.33	2.39	0.66	17.12	12.67
TOTAL	2968.84	11302.00	24954.00	2968.84	12.01	5.21	168.41	116.04
AVG	296.88	1130.20	2495.40	296.88	1.20	0.52	16.84	11.60
SD	113.83	485.22	971.18	111.98	1.02	0.09	4.70	1.81
R	0.98	0.93	0.89					
CV	38.34	42.93	38.92	37.72	84.63	18.09	27.89	15.60
R1.23 = 0.98			(R1.23)^2 = 0.97	R2.13 =0.99			R3.12=0.94	

(Source: annual report of GACL from 1994-95 to 2003-04)

Multiple regression equation for the line x_1 on x_2 and x_3

$$X_1 = 43.67 + 0.26 (X_2) - 0.02 (X_3)$$

Where

X_1 = Estimated Cash flow, X_2 = Sales, X_3 = Total Capital Employed (TCE)

Table No 5.10 provides data regarding Cash flow, Net Sale, Total Capital Employed, Est. cash flow, total Asset Turnover ratio, net profit ratio, ROI, value of chi-square and other information of Gujarat Ambuja Cement Ltd. – Kodinar.

The highest Asset Turnover Ratio was 0.66 in the year 2003-04 and lowest Asset Turnover ratio was 0.33 in the year 1994-95, where as average Asset Turnover ratio was 0.52, which indicates that asset efficiency was not satisfactory.

It is evident from table no 5.10 that highest ROI of GACL was 14.48% in the year 1995-96, where as lowest ROI was 9.05% in the year 2001-02. The average ROI was 11.60% during the study period. The result implies sound over all profitability.

It is evident from table no 5.10 that highest NPR of GACL was 27.03% in the year 1994-95, where as lowest NPR was 12.8% in the year 2002-03. The average NPR was 16.84% during the study period. CV rate of GACL was 27.89%, which indicates more variation in Net Profit.

The coefficients of multiple correlation (R1.23) of GACL was 0.9837 indicating very high correlation among the variables. Multiple correlations co-efficient of GACL were nearest to 1indicating perfect correlation among the variable. Where as The coefficient of multiple determination capital $(R1.23)^2$ of GACL was 0.9677. This implies that 96.77% variation in cash flow was due to the variation of Sales and variation of TCE and rest 3.23% was due to other reason on the assumption that linear co-relation among the variables.

ANOVA TABLE NO 5.11						
Sources of vari.	Degree Of Freedom	Sum Of square	Mean Of Square	'F' ratio	Critical Value @ 5%	Result
Regression (SSR)	2.00	112848.49	56424.25	104.86	F (2, 7) = 4.74	Significant
Error (SSE)	7.00	3766.46	538.07			
Total (SST)	9.00	116614.95				

Above table no 5.11 shows the calculated value of 'F' was 104.86, which was greater than the table value F (v1=2, v2=7) at 5% level of

significance. This result implies that at least one of the independent variable was related with the dependent variable cash flow (X_1).

<p align="center">**TABLE NO 5.12**</p>

VARIABLE IN EQUATION						Chi-Square	
Variable	Partial Regre. Coeffi. (B)	S.E. (B)	| t | Value	Critical Value @ 5%	Result	χ^2 Value	Critical Value @ 5%
Constant	43.67	-	-	-	-	12.01	D. F (9)
X_2	0.26	0.04	6.05	2.37	Significant		16.92
X_3	-0.02	0.02	0.84	2.37	Non-Sign.	Non-Significant	

The partial regression coefficient for independent variable Sales indicates positive relationship with dependent variable (cash flow), during the period of study. It implies that the additional one crore increase in Sales and TCE was held constant than there is an increase annual cash flow by Rs. 0.26 crore as it was in the past. The partial regression coefficient for independent variable TCE indicates negative relationship with dependent variable (cash flow) during the period of study. It implies that the additional one crore increase in TCE and Sales was held constant than there is decrease cash flow by Rs. –0.02 crore as it was in the past. The result clear that, more investment with the same business was not beneficial to improve profitability.

The calculated value of 't' for partial regression coefficient (b12.3) of cash flow and Sales when TCE held constant was 6.05, which was greater than the table value of 't' with d. f. 7 at 5% level of significance. This result implies that partial regression coefficient of Cash flow and Sales was significant during the study period. Where as calculated value of 't' for partial regression coefficient (b13.2) Cash flow and TCE when Sales held constant was 0.84 which was less than the table value 't' with d. f. 7 at 5% level of significance. This result implies that partial regression coefficient of Cash flow and TCE was not significant during the study period. It was the sign of more impact of sales on cash flow rather than TCE.

The coefficient values arrived above shown in **table no 5.12** were used to estimate the expected value of cash flow as per the model in order to test

whether the model is a good fit for the data. The Chi-square test was conducted between the actual value of cash flow and expected value of cash flow and the result are tabulated in above **table no 5.10.** The result of chi-square could accept the null hypothesis. Hence, it indicates that there is no significant impact of Total Investment and Net Sales Revenue on Cash Flow.

The above result indicates that lowest Cash flow was Rs.130.87 crores in the year 1994-95 and highest Cash flow was Rs. 531.81 crores in the year 2003-04, average Cash flow was Rs. 296.85 crores against average Sales Rs 1130.20 crores and average TCE Rs 2495.40 crores showing 26.27% average cash flow return on Sales and 11.90% average cash flow return on TCE. Moreover we can say in respect of impact of sales and total capital employed on cash flow of GACL that Sales was major contributing factor than the TCE for the variation in Cash flow. It means Sales efficiency was more effective than asset efficiency.

GUJARAT HEAVY CHEMICALS LTD. – SUTRAPADA

For the purpose of analysis and evaluation of investment decision of GHCL, following null hypothesis is tested.

Null Hypothesis

There is no significant impact of Total Investment and Net Sales Revenue on Cash Flow of GHCL.

The following evaluation emerges from multiple correlations, multiple regressions, 't' test, F test, chi-square test and its results in respect of GHCL. SUTRAPADA.

Multiple Correlation, Multiple Regression equation, 'F' test and 't' test approach

TABLE NO 5.13

KEY INDICATORS OF INVESTMENT DECISION OF GHCL

YEAR	CASH FLOW (Rs. In Crore)	SALES (Rs. In Crore)	TCE (Rs. In Crore)	EST. CASH (Rs. In Crore)	χ^2	T. A. TURN OVER RATIO	NPR (In %)	ROI (In %)
94-95	54.58	230.84	325.05	64.70	1.58	0.64	16.51	21.24
95-96	69.92	270.77	332.95	68.05	0.05	0.70	17.98	23.43
96-97	71.46	299.94	342.78	69.64	0.05	0.78	16.74	21.94
97-98	71.93	299.63	371.71	63.50	1.12	0.69	15.91	20.54
98-99	64.16	343.82	401.04	62.87	0.03	0.75	12.17	18.88
99-00	48.06	332.83	473.64	46.18	0.08	0.60	6.70	11.46
00-01	54.04	363.18	427.41	59.74	0.54	0.71	7.46	15.66
01-02	75.74	404.26	417.15	67.06	1.12	0.75	11.31	18.88
02-03	76.15	428.99	398.04	74.19	0.05	0.82	10.80	17.64
03-04	58.06	454.06	441.48	68.18	1.50	0.80	6.63	12.70
TOTAL	644.10	3428.32	3931.25	644.10	6.13	7.24	122.21	182.36
AVG	64.41	342.83	393.13	64.41	0.61	0.72	12.22	18.24
SD	10.08	71.12	49.34	7.57	0.65	0.07	4.38	3.94
R	0.16	0.70	-0.41					
CV	15.65	20.75	12.55	11.75	106.58	9.55	35.86	21.59
R1.23 = 0.75			(R1.23)^2 = 0.56	R2.13 = 0.86			R3.12=0.88	

(Source: annual report of GHCL from 1994-95 to 2003-04)

Multiple regression equation for the line x_1 on x_2 and x_3

$$X_1 = 104.26 + 0.13 (X_2) - 0.21 (X_3)$$

Where

X_1 = Estimated Cash flow, X_2 = Sales, X_3 = Total Capital Employed (TCE)

Table No 5.13 provides data regarding Cash flow, Net Sale, Total Capital Employed, Est. cash flow, total Asset Turnover ratio, net profit ratio, ROI, value of chi-square and other information of Gujarat Heavy Chemicals Ltd. – Sutrapada.

The highest Asset Turnover Ratio was 0.82 times in the year 2002-03 and lowest Asset Turnover ratio was 0.60 times in the year 1999-00, where as average Asset Turnover ratio was 0.72 times, which indicates that asset efficiency was comparatively satisfactory.

It is evident from **table no 5.13** that highest ROI of TCL was 23.43% in the year 1995-96, where as lowest ROI was 11.46% in the year 1999-00. The average ROI was 18.24% during the study period. Which was indicating quite good result of Sales efficiency but poor assets efficiency.

It is evident from **table no 5.13** that highest NPR of GHCL was 17.98% in the year 1995-96 and lowest NPR was found only in 1999-00 (6.7%), 2000-01 (7.46) and 2003-04 (6.63%) indicating considerable decrease in profitability during these three years, otherwise, average NPR was 12.22% showing satisfactory profitability and Sales efficiency.

The coefficients of multiple correlation (R1.23) of GHCL was 0.75 indicating very high correlation among the variables. Indicating Cash flow was affected positively with change in Sales and Change in TCE during the study period. Where as the coefficient of multiple determination capital (R1.23)^2 of TCL was 0.5631. This implies that 56.31% variation in cash flow was due to the variation of Sales and variation of TCE and rest 43.69% was due to other reason on the assumption that linear co-relation among the variables.

ANOVA TABLE NO 5.14						
Sources of vari.	Degree Of Freedom	Sum Of square	Mean Of Square	'F' ratio	Critical Value @ 5%	Result
Regression (SSR)	2.00	515.06	257.53	4.51	F (2, 7) = 4.74	Non-Significant
Error (SSE)	7.00	399.62	57.09			
Total (SST)	9.00	914.68				

Above **table no 5.14** shows the calculated value of 'F' was 4.51, which was less than the table value F (v1=2, v2=7) at 5% level of significance. This

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result implies that there is no significant different of the regression of the whole that means whole independent variable was not related with dependent variable.

TABLE NO 5.15

VARIABLE IN EQUATION						Chi-Square	
Variable	Partial Regre. Coeffi. (B)	S.E. (B)	| t | Value	Critical Value @ 5%	Result	χ^2 Value	Critical Value @ 5%
Constant	104.26	-	-	-	-	6.13	D. F (9)
X_2	0.13	0.05	2.52	2.37	Significant		16.92
X_3	-0.21	0.07	2.94	2.37	Significant	Non-Significant	

The partial regression coefficient for independent variable Sales indicates positive relationship with dependent variable (cash flow) during the period of study. It implies that the additional one crore increase in Sales and TCE was held constant than there is an increase cash flow by Rs. 0.13 crore as it was in the past. The partial regression coefficient for independent variable TCE indicates negative relationship with dependent variable (cash flow) during the period of study. It implies that the additional one crore increase in TCE and Sales was held constant than there is decrease cash flow by Rs. 0.21 crore as it was in the past.

The calculated value of 't' for partial regression coefficient (b12.3) of cash flow and Sales when TCE held constant was 2.52 and where as calculated value of 't' for partial regression coefficient (b13.2) Cash flow and TCE when Sales held constant was 2.94. These both the value were greater than the table value 't' with d. f. 7 at 5% level of significance. This result implies that partial regression coefficient of Cash flow and Sales as well as Cash flow and TCE were significant during the study period.

The coefficient values arrived above shown in **table no 5.15** were used to estimate the expected value of cash flow as per the model in order to test whether the model is a good fit for the data. The Chi-square test was conducted between the actual value of cash flow and expected value of cash flow and the result are tabulated in above **table no 5.13**. The

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result of chi-square could accept the null hypothesis. Hence, it indicates that there is no significant impact of Total Investment and Net Sales Revenue on Cash Flow.

The above analysis indicates that lowest Cash flow was Rs. 48.06 crores in the years 1999-00 and highest Cash flow was Rs. 76.15 crores in the years 2002-03, average Cash flow was Rs. 64.41 crores against which average sales Rs 342.83 crores and average TCE Rs 393.13 crores showing average Cash flow return 18.78% on sales and 16.38% on TCE. Moreover we can say in respect of impact of sales and total capital employed on cash flow of GHCL that Sales was major contributing factor than the TCE for the variation in Cash flow. It means Sales efficiency was more effective than asset efficiency.

GUJARAT STATE FERTILIZERS CORPORATION LTD.
(SIKKA PLANT)- JAMNAGAR

For the purpose of analysis and evaluation of investment decision of GSFC, following null hypothesis is tested.

Null Hypothesis

There is no significant impact of Total Investment and Net Sales Revenue on Cash Flow of GSFC.

The following evaluation emerges from multiple correlations, multiple regressions, 't' test, 'F' test, chi-square test and its results in respect of GSFC. (SIKKA PLANT) JAMNAGAR.

Multiple Correlation, Multiple Regression equation, 'F' test and 't' test approach

TABLE NO 5.16
KEY INDICATORS OF INVESTMENT DECISION OF GSFC

YEAR	CASH FLOW (Rs. In Crore)	SALES (Rs. In Crore)	TCE (Rs. In Crore)	EST. CASH (Rs. In Crore)	χ^2	T. A. TURN OVER RATIO	NPR (In %)	ROI (In %)
94-95	172.00	1482.42	1830.00	187.53	1.29	0.65	7.72	13.57
95-96	271.00	1685.17	2166.00	167.87	63.36	0.61	12.22	15.59
96-97	251.00	1760.10	2636.00	185.97	22.74	0.58	10.58	13.42
97-98	243.00	1879.64	2627.00	159.18	44.13	0.60	9.04	11.60
98-99	217.00	1886.41	2870.00	175.54	9.79	0.55	7.01	9.22
99-00	108.00	1961.27	3013.00	169.66	22.41	0.54	1.03	4.99
00-01	138.00	2051.00	2799.00	134.35	0.10	0.59	0.30	6.67
01-02	49.00	1954.88	2645.00	144.06	62.73	0.58	-3.42	3.37
02-03	-86.00	1836.53	2251.00	141.02	365.46	0.63	-12.43	-2.55
03-04	186.00	2106.24	2S275.00	83.82	124.55	0.72	8.28	7.96
TOTAL	1549.00	18603.66	25112.00	1549.00	716.57	6.06	40.33	83.83
AVG	154.90	1860.37	2511.20	154.90	71.66	0.61	4.03	8.38
SD	109.20	182.91	367.72	30.99	109.92	0.05	7.64	5.52
R	-0.21	0.63	0.02					
CV	70.50	9.83	14.64	20.01	153.40	8.82	189.38	65.89
R1.23 = 0.28		(R1.23)^2 = 0.081		R2.13 = 0.67		R3.12=0.65		

(Source: annual report of GSFC from 1994-95 to 2003-04)

Multiple regression equation for the line x_1 on x_2 and x_3

$$X_1 = 377.29 - 0.22 (X_2) + 0.07 (X_3)$$

Where

X_1 = Estimated Cash flow, X_2 = Sales, X_3 = Total Capital Employed (TCE)

Table No 5.16 provides data regarding Cash flow, Net Sale, Total Capital Employed, Est. cash flow, total Asset Turnover ratio, net profit ratio, ROI, value of chi-square and other information of Gujarat State Fertilizers corporation Ltd., (Sikka Plant)- Jamnagar.

The highest Asset Turnover Ratio was 0.72 in the year 2003-04 and lowest Asset Turnover ratio was 0.54 in the year 1999-00, where as average Asset Turnover ratio was 0.61 and CV rate was 8.82% indicating more consistency in Asset Turnover Ratio during the study period. It is sign of no improvement in asset efficiency of the organization.

It is evident from **table no 5.16** that highest ROI of GSFC was 15.59% in the year 1995-96, where as lowest ROI was –2.55% in the year 2003-03. The average ROI was 8.38% and CV rate 65.89% during the study period. The result implied that more earning uncertainty and poor over all efficiency.

It is evident from **table no 5.16** that highest NPR of GSFC was 12.22% in the year 1995-96 where as lowest NPR was –12.43 in the year 2002-03. The average NPR was 4.03% during the study period. CV rate of GSFC was 189.38%, which indicates high variation in Net Profit. It was the sign of decrease in profitability.

The coefficients of multiple correlation (R1.23) of GSFC was 0.284 indicating very low correlation among the variables. Multiple correlations co-efficient of GSFC were not significant. Where as The coefficient of multiple determination capital $(R1.23)^2$ of GSFC was 0.081. This implies that 8.10% variation in cash flow was due to the variation of Sales and variation of TCE and rest 91.90% was due to other reason on the assumption that linear co-relation among the variables. This result cleared that Cash flow is not linear function of investment in TCE and Sales operations.

ANOVA TABLE NO 5.17						
Sources of vari.	Degree Of Freedom	Sum Of square	Mean Of Square	'F' ratio	Critical Value @ 5%	Result
Regression (SSR)	2.00	8645.34	4322.67	0.31	F (2, 7) = 4.74	Non-Significant
Error (SSE)	7.00	98679.56	14097.08			
Total (SST)	9.00	107324.90				

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Above **table no 5.17** shows the calculated value of 'F' was 0.31, which was less than the table value F (v1=2, v2=7) at 5% level of significance. This result implies that there is no significant different of the regression of the whole that means whole independent variable was not related with dependent variable.

Table No. 5.18

VARIABLE IN EQUATION						Chi-Square	
Variable	Partial Regre. Coeffi. (B)	S.E. (B)	| t | Value	Critical Value @ 5%	Result	χ^2 Value	Critical Value @ 5%
Constant	377.29	-	-	-	-	716.57	D. F (9)
X_2	-0.22	0.28	0.78	2.37	Non-Sign.		16.92
X_3	0.07	0.14	0.53	2.37	Non-Sign.	Significant	

The partial regression coefficient for independent variable Sales indicates negative relationship with dependent variable (cash flow) during the period of study. It implies that the additional one crore increase in Sales and TCE was held constant than there is a decrease in cash flow by Rs. 0.221 crores as it was in the past. The partial regression coefficient for independent variable TCE indicates positive relationship with dependent variable (cash flow) during the period of study. It implies that the additional one crore increase in TCE and Sales was held constant than there is increase in cash flow by Rs. 0.07 crores as it was in the past.

The calculated value of 't' for partial regression coefficient (b12.3) of cash flow and Sales when TCE held constant was 0.78 and where as calculated value of 't' for partial regression coefficient (b13.2) Cash flow and TCE when Sales held constant was 0.53. These both the value was less than the table value 't' with d. f. 7 at 5% level of significance. This result implies that partial regression coefficient of Cash flow and Sales as well as Cash flow and TCE were not significant during the study period.

The coefficient values arrived above shown in **table no 5.18** were used to estimate the expected value of cash flow as per the model in order to test whether the model is a good fit for the data. The Chi-square test was

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conducted between the actual value of cash flow and expected value of cash flow and the result are tabulated in above **table no 5.16**. The result of chi-square could reject the null hypothesis. Hence, it indicates that there is a significant impact of Total Investment and Net Sales Revenue on Cash Flow.

The above analysis indicates that there was not considerable improvement in actual cash flow through Sales and TCE, the lowest Cash flow was Rs. –86 crores in the year 2002-03, highest Rs. 271 crores in the year 1995-96 and average Cash flow was Rs. 154.90 crores against which average Sales was Rs 1860.37 crores, average TCE was Rs 2511.2 crores showing average cash flow return 8.33% in cash and 6.17% on TCE during the study period. The result cleared that Sales efficiency and asset efficiency were not sound.

DIGVIJAY CEMENT COMPANY LTD. – JAMNAGAR

For the purpose of analysis and evaluation of investment decision of DCCL, following null hypothesis is tested.

Null Hypothesis

There is no significant impact of Total Investment and Net Sales Revenue on Cash Flow of DCCL.

The following evaluation emerges from multiple correlations, multiple regressions, 't' test, 'F' test, chi-square test and its results in respect of DCCL. JAMNAGAR.

Multiple Correlation, Multiple Regression equation, 'F' test and 't' test approach

TABLE NO 5.19

KEY INDICATORS OF INVESTMENT DECISION OF DCCL

YEAR	CASH FLOW (Rs. In Crores)	SALES (Rs. In Crore)	TCE (Rs. In Crore)	EST. CASH (Rs. In Crore)	χ^2	T. A. TURN OVER RATIO	NPR (In %)	ROI (In %)
94-95	1.80	219.86	130.55	-8.82	-12.79	1.19	-1.62	10.95
95-96	6.54	194.50	137.30	-8.39	-26.57	0.99	1.28	14.01
96-97	-4.97	188.01	94.42	-3.56	-0.56	1.26	-5.17	5.53
97-98	-11.83	157.26	74.48	-0.06	-2220.38	1.19	-10.56	-5.72
98-99	-56.28	171.19	186.09	-12.51	-153.21	0.99	-37.35	-19.34
99-00	-21.62	229.24	225.00	-19.24	-0.29	1.18	-9.89	1.23
00-01	-24.71	175.40	229.13	-17.25	-3.22	0.95	-18.41	-0.93
01-02	-23.94	190.11	237.61	-18.81	-1.40	1.12	-11.26	-1.02
02-03	-25.44	141.01	247.40	-17.64	-3.45	0.93	-24.18	-0.30
03-04	40.45	153.20	205.14	-13.71	-213.94	1.02	2.50	24.21
TOTAL	-120.00	1819.78	1767.12	-120.00	-2635.82	10.84	-114.66	28.61
AVG	-12.00	181.98	176.71	-12.00	-263.58	1.08	-11.47	2.86
SD	25.54	28.29	62.88	6.65		0.12	12.37	11.84
R	-0.02	-0.10	-0.26					
CV	-212.87	15.55	35.59	-55.44		10.99	-107.89	413.74
R1.23 = 0.26		(R1.23)^2 =0.068		R2.13 = 0.11		R3.12=0.28		

(Source: annual report of DCCL from 1994-95 to 2003-04)

Multiple regression equation for the line x_1 on x_2 and x_3

$$X_1 = 14.91 - 0.05 (X_2) - 0.11 (X_3)$$

Where

X_1 = Estimated Cash flow, X_2 = Sales, X_3 = Total Capital Employed (TCE)

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Table No 5.20 provides data regarding Cash flow, Net Sale, Total Capital Employed, Est. cash flow, total Asset Turnover ratio, net profit ratio, ROI, value of chi-square and other information of Digvijay Cement Company Ltd. - Jamnagar

The highest Asset Turnover Ratio was 1.26 in the year 1996-97 and lowest Asset Turnover ratio was 0.93 in the year 2002-03, where as average Asset Turnover ratio was 1.08 and CV rate was 10.99%, indicating more consistency in Asset Turnover Ratio during the study period. It is sign of no improvement in asset efficiency of the organization.

It is evident from **table no 5.16** that highest ROI of DCCL was 24.21% in the year 2003-04, where as lowest ROI was –19.34% in the year 1998-99. The average ROI was 2.86% and CV rate 413.75% during the study period. The result implied that too much deterioration in over all efficiency of the company.

It is evident from **table no 5.19** that highest NPR of DCCL was 2.50% in the year 2003-04 where as lowest NPR was –37.35 in the year 1998-99. The average NPR was –11.47% during the study period. CV rate of DCCL was –107.89%, which indicates high variation in Net Profit and sign of worse profit position.

The coefficients of multiple correlation (R1.23) of GSFC was 0.26 indicating very low correlation among the variables. Multiple correlations co-efficient of DCCL were not significant. Where as The coefficient of multiple determination capital $(R1.23)^2$ of DCCL was 0.068. This implies that 6.8% variation in cash flow was due to the variation of Sales and variation of TCE and rest 93.20% was due to other reason on the assumption that linear co-relation among the variables. This result cleared that Cash flow is not linear function of investment in TCE and Sales operations.

ANOVA TABLE NO 5.20						
Sources of vari.	Degree Of Freedom	Sum Of square	Mean Of Square	'F' ratio	Critical Value @ 5%	Result
Regression (SSR)	2.00	398.30	199.15	0.25	F (2, 7) = 4.74	Non – Significant
Error (SSE)	7.00	5474.33	782.05			
Total (SST)	9.00	5872.63				

Above **table no.5.20** shows the calculated value of 'F' was 0.25, which was less than the table value F (v1=2, v2=7) at 5% level of significance. This result implies that there is no significant different of the regression of the whole that means whole independent variable was not related with dependent variable.

TABLE NO 5.21

VARIABLE IN EQUATION						Chi-Square	
Variable	Partial Regre. Coeffi. (B)	S.E. (B)	| t | Value	Critical Value @ 5%	Result	χ^2 Value	Critical Value @ 5%
Constant	14.91	-	-	-	-	-2635.82	D. F (9)
X_2	-0.05	0.33	0.14	2.37	Non-Sign.		16.92
X_3	-0.11	0.15	0.71	2.37	Non-Sign.	Non - Significant	

The partial regression coefficient for independent variable Sales indicates negative relationship with dependent variable (cash flow) during the period of study. It implies that the additional one crore increase in Sales and TCE was held constant than there is a decrease in cash flow by Rs. 0.05 crore as it was in the past. The partial regression coefficient for independent variable TCE indicates negative relationship with dependent variable (cash flow) during the period of study. It implies that the additional one crore increase in TCE and Sales was held constant than there is a decrease in cash flow by Rs. 0.22 crore as it was in the past.

The calculated value of 't' for partial regression coefficient (b12.3) of cash flow and Sales when TCE held constant was 0.14 and where as calculated value of 't' for partial regression coefficient (b13.2) Cash flow and TCE when Sales held constant was 0.71. These both the value were less than the table value 't' with d. f. 7 at 5% level of significance. This result implies that partial regression coefficient of Cash flow and Sales as well as Cash flow and TCE were not significant during the study period.

The coefficient values arrived above shown in **table no 5.21** were used to estimate the expected value of cash flow as per the model in order to test whether the model is a good fit for the data. The Chi-square test was conducted between the actual value of cash flow and expected value of cash flow and the result are tabulated in above **table no 5.19**. The result of chi-square could accept the null hypothesis. Hence, it indicates that there is no significant impact of Total Investment and Net Sales Revenue on Cash Flow.

The above analysis indicates that the cash flow was decreasing during the study period and sales also decrease. Company has occurred loss from 1995-96 to 2002-03. Only in the year 2003-04 earn profit. Management has to promote needful action to improve sales efficiency and asset efficiency by making optimum utilization of fund invested in operating activities and assets.

ORIENT ABRASIVES LTD. PORBANDAR

For the purpose of analysis and evaluation of investment decision of OAL, following null hypothesis is tested.

Null Hypothesis

There is no significant impact of Total Investment and Net Sales Revenue on Cash Flow of OAL.

The following evaluation emerges from multiple correlations, multiple regressions, 't' test, 'F' test, chi-square test and its results in respect of OAL. PORBANDAR.

Multiple Correlation, Multiple Regression equation, 'F' test and 't' test approach

TABLE NO 5.22

KEY INDICATORS OF INVESTMENT DECISION OF OAL

YEAR	CASH FLOW (Rs. In Crore)	SALES (Rs. In Crore)	TCE (Rs. In Crore)	EST. CASH (Rs. In Crore)	χ^2	T. A. TURN OVER RATIO	NPR (In %)	ROI (In %)
94-95	3.36	73.85	32.08	3.09	0.02	1.75	2.50	25.25
95-96	3.53	78.02	34.76	4.18	0.10	1.75	2.54	25.00
96-97	3.28	71.16	35.31	2.51	0.23	1.43	2.47	22.34
97-98	1.87	63.12	49.52	0.88	1.10	0.98	0.21	9.75
98-99	1.81	63.09	45.95	0.79	1.31	1.10	-7.04	22.96
99-00	3.97	77.68	47.43	4.39	0.04	1.27	6.71	17.52
00-01	3.30	84.47	48.27	6.07	1.27	1.38	0.49	14.69
01-02	5.89	89.60	46.71	7.29	0.27	1.49	3.68	18.80
02-03	13.27	106.11	49.34	11.39	0.31	1.57	9.52	30.74
03-04	17.95	131.10	54.61	17.62	0.01	1.72	11.29	41.88
TOTAL	58.23	838.20	443.98	58.23	4.66	14.43	32.37	228.94
AVG	5.82	83.82	44.40	5.82	0.47	1.44	3.24	22.89
SD	5.39	20.96	7.56	5.22	0.54	0.27	5.17	8.93
R	0.97	0.52	0.53					
CV	92.63	25.01	17.02	89.65	115.17	18.54	159.71	39.01
R1.23 = 0.97		(R1.23)^2 = 0.94			R2.13 = 0.97		R3.12=0.53	

(Source: annual report of OAL from 1994-95 to 2003-04)

Multiple regression equation for the line x_1 on x_2 and x_3

$$X_1 = -15.72 + 0.24 (X_2) + 0.02 (X_3)$$

Where

X_1 = Estimated Cash flow, X_2 = Sales, X_3 = Total Capital Employed (TCE)

Table No 5.22 provides data regarding Cash flow, Net Sale, Total Capital Employed, Est. cash flow, total Asset turnover ratio, net profit ratio, ROI, value of chi-square and other information of Orient Abrasives Ltd.-Porbandar

The highest Asset Turnover Ratio was 1.75 in the year 1994-95 and 1995-96 and lowest Asset Turnover ratio was 0.98 in the year 1997-98, where as average Asset Turnover ratio was 1.44, which indicates that asset efficiency was satisfactory.

It is evident from **table no 5.22** that highest ROI of OAL was 41.88% in the year 2003-04, where as lowest ROI was 9.75% in the year 1997-98. The average ROI was 22.89% during the study period. CV Rate was 39.01% indicating sound over all profitability.

It is evident from **table no 5.22** that highest NPR of OAL was 11.29% in the year 2003-04, where as lowest NPR was -7.04% in the year 1998-99. The average NPR was 3.24% during the study period. The result implies that profitability was not satisfactory. It was sign of bad sales efficiency.

The coefficients of multiple correlation (R1.23) of OAL was 0.97 indicating very high correlation among the variables. Multiple correlations co-efficient of OAL were very near to 1, which indicates there was nearly perfect correlation among the variables. Where as the coefficient of multiple determination capital $(R1.23)^2$ of OAL was 0.9409. This implies that 94.09% variation in cash flow was due to the variation of Sales and variation of TCE and rest 5.91% was due to other reason on the assumption that linear co-relation among the variables

ANOVA TABLE NO 5.23						
Sources of vari.	Degree Of Freedom	Sum Of square	Mean Of Square	'F' ratio	Critical Value @ 5%	Result
Regression (SSR)	2.00	245.28	122.64	51.82	F (2, 7) = 4.74	Significant
Error (SSE)	7.00	16.57	2.37			
Total (SST)	9.00	261.85				

Above **table No 5.23** shows the calculated value of 'F' was 51.82, which was greater than the table value F (v1=2, v2=7) at 5% level of significance. This result implies that at least one of the independent variable was related with the dependent variable cash flow (X_1).

<div align="center">

TABLE NO 5.24

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VARIABLE IN EQUATION						Chi-Square	
Variable	Partial Regre. Coeffi. (B)	S.E. (B)	| t | Value	Critical Value @ 5%	Result	χ^2 Value	Critical Value @ 5%
Constant	-15.72	-	-	-	-	4.66	D. F (9)
X_2	0.24	0.03	8.52	2.37	Non-Sign.		16.92
X_3	0.02	0.08	0.30	2.37	Significant	Non-Significant	

The partial regression coefficient for independent variable Sales indicates positive relationship with dependent variable (cash flow) during the period of study. It implies that the additional one crore increase in Sales and TCE was held constant than there is an increase cash flow by Rs. 0.245 crore as it was in the past. The partial regression coefficient for independent variable TCE indicates positive relationship with dependent variable (cash flow) during the period of study. It implies that the additional one crore increase in TCE and Sales was held constant than there is an increase annual cash flow by Rs. 0.063 crore as it was in the past. It implies that 6.3% contributed by additional investment.

The calculated value of 't' for partial regression coefficient (b12.3) of cash flow and Sales when TCE held constant was 8.92, which was greater than the table value of 't' with d. f. 7 at 5% level of significance. This result implies that partial regression coefficient of Cash flow and Sales was significant during the study period. Where as calculated value of 't' for partial regression coefficient (b13.2) Cash flow and TCE when Sales held constant was 0.30 which was less than the table value 't' with d. f. 7 at 5% level of significance. This result implies that partial regression coefficient of Cash flow and TCE was not significant during the study period.

The coefficient values arrived above shown in **table no 5.24** were used to estimate the expected value of cash flow as per the model in order to test whether the model is a good fit for the data. The Chi-square test was conducted between the actual value of cash flow and expected value of cash flow and the result are tabulated in above **table no 5.22**. The result of chi-square could accept the null hypothesis. Hence, it indicates that there is no significant impact of Total Investment and Net Sales Revenue on Cash Flow.

The above analysis indicates that sales efficiency was not satisfactory. The lowest Cash flow was Rs. 1.81 crores in the year 1998-99, highest was Rs. 17.95 crores in the year 2003-04 and average Rs. 5.823 crore against which average sales Rs. 83.82 crores and average TCE Rs. 44.4 crores during the study period showing average cash flow return on sales 6.95% and TCE 13.12% which were comparatively low but from 2001-02 and onward Cash flow and sales both were increasing it is the sign of improvement in profitability and utilization of fund in various assets.

AUSTIN ENGINEERING LTD. JUNAGADH

For the purpose of analysis and evaluation of investment decision of Aust. Eng., following null hypothesis is tested.

Null Hypothesis

There is no significant impact of Total Investment and Net Sales Revenue on Cash Flow of Aust. Eng.

The following evaluation emerges from multiple correlations, multiple regressions, 't' test, 'F' test, chi-square test and its results in respect of Aust. Eng. JUNAGADH.

Multiple Correlation, Multiple Regression equation, 'F' test and 't' test approach

TABLE NO 5.25

KEY INDICATORS OF INVESTMENT DECISION OF AUST ENG

YEAR	CASH FLOW (Rs. In Crore)	SALES (Rs. In Crore)	TCE (Rs. In Crore)	EST. CASH (Rs. In Crore)	χ^2	T. A. TURN OVER RATIO	NPR (In %)	ROI (In %)
94-95	1.97	24.05	21.62	1.48	0.17	0.87	5.16	11.61
95-96	2.51	33.75	25.28	2.77	0.02	0.94	5.01	13.81
96-97	2.61	37.08	29.70	2.20	0.08	0.93	4.37	13.87
97-98	2.52	37.79	29.88	2.33	0.02	0.98	3.81	13.82
98-99	0.48	30.38	29.90	0.44	0.00	0.80	0.56	6.45
99-00	-1.13	26.07	26.82	0.33	6.47	0.74	-8.52	-2.57
00-01	-0.29	22.84	26.71	-0.46	-0.06	0.62	-6.13	1.46
01-02	-0.10	23.12	26.10	-0.19	-0.04	0.65	-3.29	2.76
02-03	0.68	23.96	26.13	0.01	31.87	0.65	-0.96	6.01
03-04	2.07	31.20	24.38	2.41	0.05	0.86	1.76	9.76
TOTAL	**11.32**	**290.24**	**266.52**	**11.32**	**38.57**	**8.05**	**1.77**	**76.98**
AVG	**1.13**	**29.02**	**26.65**	**1.13**	**3.86**	**0.81**	**0.18**	**7.70**
SD	**1.37**	**5.80**	**2.65**	**1.23**	**10.05**	**0.13**	**4.83**	**5.83**
R	**0.74**	**0.55**	**-0.03**					
CV	**120.97**	**19.99**	**9.95**	**108.75**		**16.68**	**2731.34**	**75.71**
R1.23 = 0.90	$(R1.23)^2$ = 0.81		R2.13 = 0.93		R3.12=0.84			

(Source: annual report of AUST. ENG. Ltd. from 1994-95 to 2003-04)

Multiple regression equation for the line x_1 on x_2 and x_3

$$X_1 = 2.27 + 0.25 (X_2) - 0.32 (X_3)$$

Where

X_1 = Estimated Cash flow, X_2 = Sales, X_3 = Total Capital Employed (TCE)

Table No 5.25 provides data regarding Cash flow, Net Sale, Total Capital Employed, Est. cash flow, total Asset Turnover ratio, net profit ratio, ROI, value of chi-square and other information of Austin Engineering Ltd. – Junagadh.

The highest Asset Turnover Ratio was 0.98 in the year 1997-98 and lowest Asset Turnover ratio was 0.62 in the year 2000-01, where as average Asset Turnover ratio was 0.81, which indicates that asset efficiency was not satisfactory.

It is evident from **table no 5.25** that highest ROI of Aust. Eng. was 13.87% in the year 1996-97, where as lowest ROI was –2.57% in the year 1999-00. The average ROI was 7.70% and CV rate 75.71% during the study period. The result implies more fluctuation in ROI and poor over all profitability.

It is evident from **table no 5.25** that highest NPR of Aust. Eng. was 5.16% in the year 1994-95, where as lowest NPR was –8.52% in the year 1999-00. The average NPR was 0.18% during the study period. CV rate of Aust. Eng. was 2731.31%, which indicates worse Profitability of the company during the study period.

The coefficients of multiple correlation (R1.23) of Aust. Eng. was 0.899 indicating very high correlation among the variables. It indicates that Cash flow was highly affected with change in Sales and TCE. Where as the coefficient of multiple determination $(R1.23)^2$ of Aust. Eng. was 0.808. This implies that 80.8% variation in cash flow was due to the variation of Sales and variation of TCE and rest 19.2% was due to other reason on the assumption that linear co-relation among the variables so we can say Cash flow was linear function of investment in Total Assets and Sales operations.

ANOVA TABLE NO 5.26						
Sources of vari.	Degree Of Freedom	Sum Of square	Mean Of Square	'F' ratio	Critical Value @ 5%	Result
Regression (SSR)	2.00	13.64	6.82	14.74	F (2, 7) = 4.74	Significant
Error (SSE)	7.00	3.24	0.46			
Total (SST)	9.00	16.88				

Above **table No 5.26** shows the calculated value of 'F' was 14.74, which was greater than the table value F (v1=2, v2=7) at 5% level of significance. This result implies that at least one of the independent variable was related with the dependent variable cash flow (X_1).

<div align="center">TABLE NO 5.27</div>

VARIABLE IN EQUATION						Chi-Square	
Variable	Partial Regre. Coeffi. (B)	S.E. (B)	| t | Value	Critical Value @ 5%	Result	χ^2 Value	Critical Value @ 5%
Constant	2.27	-	-	-	-	38.57	D. F (9)
X_2	0.25	0.05	5.43	2.37	Significant		16.92
X_3	-0.32	0.10	3.12	2.37	Significant	Significant	

The partial regression coefficient for independent variable Sales indicates positive relationship with dependent variable (cash flow) during the period of study. It implies that the additional one crore increase in Sales and TCE was held constant than there is an increase annual cash flow by Rs. 0.254 crores as it was in the past. The partial regression coefficient for independent variable TCE indicates negative relationship with dependent variable (cash flow) during the period of study. It implies that the additional one crore increase in TCE and Sales was held constant than there is decrease cash flow by Rs. 0.324 crores as it was in the past. The result clear that, more investment with the same business was not beneficial to improve profitability.

The calculated value of 't' for partial regression coefficient (b12.3) of cash flow and Sales when TCE held constant was 5.43 and calculated value of 't' for partial regression coefficient (b13.2) Cash flow and TCE when Sales held constant was 3.12, which were greater than the table value of 't' with d. f. 7 at 5% level of significance. This result implies that partial regression coefficient of Cash flow and Sales as well as Cash flow and TCE were significant during the study period.

The coefficient values arrived above shown in **table no 5.27** were used to estimate the expected value of cash flow as per the model in order to test whether the model is a good fit for the data. The Chi-square test was conducted between the actual value of cash flow and expected value of cash

flow and the result are tabulated in above **table no 5.25**. The result of chi-square could reject the null hypothesis. Hence, it indicates that there is a significant impact of Total Investment and Net Sales Revenue on Cash Flow.

The above result indicates that the company too much poor from the viewpoint of earning capacity and generating sales. Poor profitability was symptom of low sales and assets efficiency and lack of effective investment decision so management has to pursue policy of maximizing assets and sales efficiency.

b) <u>EVALUATION OF EFFICIENCY OF UTILIZATION OF TOTAL INVESTMENT</u>

The main sources for generating cash flow (PAT + Dep.) is sales and total capital employed. The organization can maximize the cash flows through optimum sales efficiency and optimum utilization of fund further we can evaluate that sales is prime revenue sources of any organization. Maximization of sales is primarily depending upon production of goods. Production activities basically depend upon total asset employed. If asset efficiency is sound, it will help to improve the production efficiency. The effective production efficiency improves the sales efficiency. There are two types of assets such as fix assets and current assets (Gross Working Capital). The main object of investment decision is the optimum utilization of fund invested in various assets. The optimum utilization of fund invested in assets can be measured with the help of evaluation of fixed asset efficiency and working capital efficiency. The researcher has setup one more hypothesis that there is no significant impact of total investment in fixed assets (FA) and gross working capital (GWC) on sales. To test this hypothesis one more linear economic model is developed for estimating sales generated through fixed assets and gross working capital, which is as follows.

$$Sales = a + b \, (F.A.) + c \, (Sales)$$

Above model was developed on the assumption that a sales is a liner function of investment in fixed asset and gross working capital.

INDIAN RAYON INDUSTRIES LTD. –VERAVAL

For the purpose of analysis and evaluation of investment decision of IRIL, following null hypothesis is tested.

Null Hypothesis

There is no significant impact of Total Investment in FA and GWC on Sales of IRIL.

The following evaluation emerges from multiple correlations, multiple regressions, 't' test, 'F' test, chi-square test and its results in respect of IRIL. - VERAVAL.

Multiple Correlation, Multiple Regression equation, 'F' test and 't' test approach

TABLE NO 5.28

KEY INDICATORS OF INVESTMENT DECISION OF IRIL

YEAR	SALES (X_1) (Rs. In Crores)	F. A. (X_2) (Rs. In Crores)	GWC (X_3) (Rs. In Crores)	EST. SALES (Rs. In Crores)	χ^2	F.A. Turn Over Ratio	G.W.C Turn Over Ratio
94-95	928.36	883.48	776.65	1251.66	83.51	1.05	1.20
95-96	1207.88	1257.23	865.50	1406.82	28.13	0.96	1.40
96-97	1412.56	1490.62	1198.82	1259.71	18.55	0.95	1.18
97-98	1582.25	1644.03	1019.43	1512.97	3.17	0.96	1.55
98-99	1299.03	1057.63	855.71	1290.89	0.05	1.23	1.52
99-00	1072.09	842.80	633.33	1352.15	58.01	1.27	1.69
00-01	1416.19	794.38	616.90	1336.37	4.77	1.78	2.30
01-02	1410.63	761.76	640.01	1295.72	10.19	1.85	2.20
02-03	1442.42	684.08	583.36	1297.01	16.30	2.11	2.47
03-04	1573.84	737.47	570.10	1341.96	40.07	2.13	2.76
TOTAL	13345.25	10153.48	7759.81	13345.25	262.75	14.30	18.27
AVG	1334.53	1015.35	775.98	1334.53	26.27	1.43	1.83
SD	210.81	338.08	209.78	77.97	27.04	0.49	0.56
R	0.19	0.93	0.06				
CV	15.80	33.30	27.03	5.84	102.89	34.10	30.78
R1.23 = 0.37			$(R1.23)^2$ = 0.14		R2.13 = 0.94		R3.12 = 0.94
CGR = 6%							

Multiple Regression Equation for line X_1 on X_2 and X_3.

$$X_1 = 1382.51 + 0.62 (X_2) - 0.88 (X_3)$$

Where

X_1 = Sales, X_2 = Fixed Assets, X_3 = Gross Working Capital (GWC)

Table No 5.28 provides data regarding Net Sales, Fixed Assets, Gross Working Capital, Estimated Sales, value of Chi-Square, Fixed Asset Turnover Ratio and Gross Working Capital Turnover Ratio of Indian Rayon Industries Ltd. – Veraval.

The FA Turn over ratio was lowest in the year 1995-96 (0.96), 1996-97 (0.95) and 1997-98 (0.96) otherwise more than 1 times. It indicates improvement in FA efficiency but FA is non-significant variable for increasing Sales. There was no significant correlation (0.19) between FA and Sales during the study period.

GWC turnover ratio also every year increases but no significant correlation (0.06) between Sales and GWC. There was inadequate gross working capital to increase the Sales

The coefficients of multiple correlation (R1.23) of IRIL was 0.37 indicating non-significant correlation among the variables. It means sales was not significantly affected with F.A. and GWC. The coefficient of multiple determination $(R1.23)^2$ of IRIL was 0.1369. This implied that 13.69% variation in Sales was due to the variation of FA and variation of GWC and rest 86.31% was due to other reason on the assumption that linear co-relation among the variables.

ANOVA TABLE NO 5.29						
Sources of vari.	Degree of Freedom	Sum of square	Mean Of Square	'F' ratio	Critical Value @ 5%	Result
Regression (SSR)	2.00	54718.07	27359.04	0.55	F (2, 7) = 4.74	Non – Sign.
Error (SSE)	7.00	345254.20	49322.03			
Total (SST)	9.00	399972.27				

Above **table no 5.29** shows regression analysis. The calculated value of 'F' was 0.56, which was less than the table value 'F' (v1=2, v2=7) at 5%

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level of significance. This result implies those whole independent variables are not related with dependent variable.

TABLE NO 5.30

	VARIABLE IN EQUATION					Chi-Square	
Variable	Partial Regre. Coeffi. (B)	S.E. (B)	| t | Value	Critical Value @ 5%	Result	χ^2 Value	Critical Value @ 5%
Constant	1382.51	-	-	-	-	262.75	D. F (9)
X₂	0.62	0.60	1.04	2.37	Non-Sign.		16.92
X₃	-0.88	0.97	0.91	2.37	Non-Sign.	Significant	

The partial regression coefficient for independent variable FA indicates positive relationship with dependent variable (Sales) during the period of study. It implies that the additional one crore increase in FA and GWC was held constant than there is an increase in Sales by Rs. 0.62 crore as it was in the past. Where as the partial regression coefficient for independent variable GWC indicates negative relationship with dependent variable (Sales) during the period of study. It implies that the additional one crore increase in GWC and FA was held constant than there is decrease in Sales by Rs. 0.88 crore as it was in the past. The result indicates that FA was more significant variable than GWC for increasing Sales.

The calculated value of 't' for partial regression coefficient (b12.3) of Sales and FA when GWC held constant was 1.04, where as calculated value of 't' for partial regression coefficient (b13.2) of Sales and GWC when FA held constant was 0.91. It means GWC and FA both are non-significant variables. It indicates that there was no effective and efficient utilization of GWC and FA.

The coefficient values arrived above shown in **table no 5.30** were used to esitmate the expected value of sales as per the model in order to test whether the model is a good fit for the data. The Chi-square test was conducted between the actual value of sales and expected value of sales and the result are tabulated in above **table no 5.28**. The result of chi-square could reject the null hypothesis. Hence, it is concluded that there is a significant impact of total investment in FA and GWC on sales.

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The above analysis indicates that GWC and FA both are non-significant variable to increase sales. Annual compound growth rate in Sales was 6% only during the study period. So one of the important reasons for low level of Sales volume of IRIL was ineffective and inefficient utilization of working capital and non-significant improvement in FA efficiency. The FA is more contributing factor to increase Sales than GWC but there was no significant effect of FA and GWC on Sales.

TATA CHEMICALS LTD. – MITHAPUR

For the purpose of analysis and evaluation of investment decision of TCL, following null hypothesis is tested.

Null Hypothesis

There is no significant impact of Total Investment in FA and GWC on Sales of TCL.

The following evaluation emerges from multiple correlations, multiple regressions, 't' test, 'F' test, chi-square test and its results in respect of TCL. - MITHAPUR.

Multiple Correlation, Multiple Regression equation, 'F' test and 't' test approach

TABLE NO 5.31

KEY INDICATORS OF INVESTMENT DECISION OF TCL

YEAR	SALES (X_1) (Rs. In Crores)	F. A. (X_2) (Rs. In Crores)	GWC (X_3) (Rs. In Crores)	EST. SALES (Rs. In Crores)	χ^2	F.A. Turn Over Ratio	G.W.C Turn Over Ratio
94-95	677.25	1830.30	706.19	726.15	3.29	0.37	0.96
95-96	1402.56	1876.03	940.67	1154.65	53.23	0.75	1.49
96-97	1477.76	1939.62	1161.16	1514.86	0.91	0.76	1.27
97-98	1515.65	2018.43	1171.24	1373.83	14.64	0.75	1.29
98-99	1347.81	2034.79	1206.84	1419.35	3.61	0.66	1.12
99-00	1417.06	2022.44	1172.93	1369.28	1.67	0.70	1.21
00-01	1405.25	1884.36	1155.82	1617.60	27.88	0.75	1.22
01-02	1357.68	1814.67	1094.63	1625.62	44.16	0.75	1.24
02-03	1535.27	1684.41	906.18	1475.26	2.44	0.91	1.69
03-04	2544.15	1741.45	1375.22	2403.85	8.19	1.46	1.85
TOTAL	14680.44	18846.50	10890.88	14680.44	160.01	7.86	13.34
AVG	1468.04	1884.65	1089.09	1468.04	16.00	0.79	1.33
SD	450.64	120.63	188.94	420.95	19.19	0.27	0.27
R	-0.27	0.30	0.77				
CV	30.70	6.40	17.35	28.67	119.94	34.80	20.18
R1.23 = 0.93		$(R1.23)^2 = 0.87$		R2.13 = 0.85		R3.12 = 0.94
CGR = 15.90%						

Multiple Regression Equation for line X_1 on X_2 and X_3.

$$X_1 = 2947.60 - 2.07 (X_2) + 2.23 (X_3)$$

Where

X_1 = Sales, X_2 = Fixed Assets, X_3 = Gross Working Capital (GWC)

Table No 5.31 provides data regarding Net Sales, Fixed Assets, Gross Working Capital, Estimated Sales, value of Chi-Square, Fixed Asset Turnover Ratio and Gross Working Capital Turnover Ratio of Tata Chemicals Ltd. – Mithapur.

The FA Turn over ratio was gradually improved. It was 0.37 in the year 1994-95 and highest 1.46 in the year 2003-04 but FA is non- significant variable for increasing Sales. There was a negative correlation (-0.27) between Sales and FA. It signifies ineffective and inefficient utilization of FA.

GWC turnover ratio also improve during the study period it was lowest 0.96 in 1994-95 and increase up to 1.85 in the year 2003-04, GWC is significant variable for increasing Sales, it indicates effective and efficient utilization of GWC.

The coefficients of multiple correlation (R1.23) of TCL was 0.93 indicating significant correlation among the variables. It means sales was significantly affected with F.A. and GWC. The coefficient of multiple determination $(R1.23)^2$ of TCL was 0.8649. This implied that 86.49% variation in Sales was due to the variation of FA and variation of GWC and rest 13.51% was due to other reason on the assumption that linear co-relation among the variables.

ANOVA TABLE NO 5.32						
Sources of vari.	**Degree of Freedom**	**Sum of square**	**Mean Of Square**	**'F' Ratio**	**Critical Value @ 5%**	**Result**
Regression (SSR)	2.00	1594796.69	797398.34	23.47	F (2, 7) = 4.74	Significant
Error (SSE)	7.00	232909.69	33272.81			
Total (SST)	9.00	1827706.38				

Above **table no 5.32** shows regression analysis. The calculated value of 'F' was 23.97, which was greater than the table value 'F' (v1=2, v2=7) at

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5% level of significance. This result implies that at least one independent variable is related with dependent variable.

TABLE NO 5.33

VARIABLE IN EQUATION						Chi-Square	
Variable	Partial Regre. Coeffi. (B)	S.E. (B)	| t | Value	Critical Value @ 5%	Result	χ^2 Value	Critical Value @ 5%
Constant	2947.60	-	-	-	-	160.01	D. F (9)
X₂	-2.07	0.53	3.93	2.37	Significant		16.92
X₃	2.23	0.34	6.62	2.37	Significant	Significant	

The partial regression coefficient for independent variable FA indicates negative relationship with dependent variable (Sales) during the period of study. It implies that the additional one crore increase in FA and GWC was held constant than, there is a decrease in Sales by Rs. 2.07 crores as it was in the past. Where as the partial regression coefficient for independent variable GWC indicates positive relationship with dependent variable (Sales) during the period of study. It implies that the additional one crore increase in GWC and FA was held constant than, there is increase in cash flow by Rs. 2.23 crores as it was in the past. The result indicates that GWC was more significant variable than FA for increasing Sales.

The calculated value of 't' for partial regression coefficient (b12.3) of Sales and FA when GWC held constant was 3.93, where as calculated value of 't' for partial regression coefficient (b13.2) of Sales and GWC when FA held constant was 6.62. It means GWC and FA both were significant variable. It indicates that there was effective and efficient utilization of GWC.

The coefficient values arrived above shown in **table no 5.33** were used to esitmate the expected value of sales as per the model in order to test whether the model is a good fit for the data. The Chi-square test was conducted between the actual value of sales and expected value of sales and the result are tabulated in above **table no 5.31**. The result of chi-square could reject the null hypothesis. Hence, it is concluded that there is a significant impact of total investment in FA and GWC on sales.

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The above analysis indicates that annual compound growth rate of company was 15.90% during the study period it is result of efficient and effective utilization of GWC so GWC was more contributing factors than FA.

RELIANCE INDUSTRIES LTD. – JAMNAGAR

For the purpose of analysis and evaluation of investment decision of RIL, following null hypothesis is tested.

Null Hypothesis

There is no significant impact of Total Investment in FA and GWC on Sales of RIL.

The following evaluation emerges from multiple correlations, multiple regressions, 't' test, 'F' test, chi-square test and its results in respect of RIL. - JAMNAGAR.

Multiple Correlation, Multiple Regression equation, 'F' test and 't' test approach

TABLE NO 5.42

KEY INDICATORS OF INVESTMENT DECISION OF RIL

YEAR	SALES (X_1) (Rs. In Crores)	F. A. (X_2) (Rs. In Crores)	GWC (X_3) (Rs. In Crores)	EST. SALES (Rs. In Crores)	χ^2	F.A. Turn Over Ratio	G.W.C Turn Over Ratio
94-95	5260.00	6584.71	2950.92	2289.02	3856.11	0.80	1.78
95-96	5727.00	9232.87	3852.60	5497.06	9.62	0.62	1.49
96-97	6492.00	11173.35	3907.11	6754.40	10.19	0.58	1.00
97-98	9719.00	14973.29	5132.31	11233.90	204.28	0.65	1.89
98-99	10624.00	15396.23	8465.18	17497.87	2700.33	0.69	1.26
99-00	15847.00	15448.31	7853.95	16426.53	20.45	1.03	2.02
00-01	23024.00	14027.00	9581.25	18693.05	1003.43	1.64	2.40
01-02	45404.00	33188.84	16463.90	42552.12	191.13	1.37	2.76
02-03	50096.00	34086.27	22357.12	53717.49	244.15	1.47	2.24
03-04	56247.00	35145.98	22040.05	53778.56	113.30	1.60	2.55
TOTAL	228440.00	189256.85	102604.39	228440.00	8353.00	10.44	19.39
AVG	22844.00	18925.69	10260.44	22844.00	835.30	1.04	1.94
SD	20020.95	10887.79	7410.20	19727.64	1347.52	0.43	0.57
R	0.97	0.97	0.98				
CV	87.64	57.53	72.22	86.36	161.32	41.47	29.48
R1.23 = 0.99		(R1.23)^2 = 0.97		R2.13 = 0.97			R3.12 = 0.98
CGR = 30.10%							

(Source : Annual report of RIL from 1994-95 to 2003-04)

Multiple Regression Equation for line X_1 on X_2 and X_3.

$$X_1 = -6966.39 + 0.60\ (X_2) + 1.80\ (X_3)$$

Where

X_1 = Sales, X_2 = Fixed Assets, X_3 = Gross Working Capital (GWC)

Table No 5.34 provides data regarding Net Sales, Fixed Assets, Gross Working Capital, Estimated Sales, value of Chi-Square, Fixed Asset Turnover Ratio and Gross Working Capital Turnover Ratio of Reliance Industries Ltd. – Jamnagar.

The FA Turn over ratio was decrease from 0.8 to 0.58 during the period from 1994-95 to 1996-97 but than after every year increase and reached up to 1.6 times in the year 2003-04 due to considerable improvement in sales. It was the sign of improvement in FA efficiency.

There was a continuously increase in GWC turnover ratio and reached from 1.78 times to 2.55 times in the year 2003-04 indicating improvement in utilization of GWC.

The coefficients of multiple correlation (R1.23) of RIL was 0.985 indicating significant correlation among the variables. It means sales was significantly affected with F.A. and GWC. The coefficient of multiple determination $(R1.23)^2$ of RIL was 0.9702. This implied that 97.02% variation in Sales was due to the variation of FA and variation of GWC and rest 2.98% was due to other reason on the assumption that linear co-relation among the variables.

ANOVA TABLE NO 5.35						
Sources of vari.	Degree of Freedom	Sum of square	Mean Of Square	'F' ratio	Critical Value @ 5%	Result
Regression (SSR)	2.00	3502618597.90	1751309298.95	116.83	F (2, 7) = 4.74	Non – Sign.
Error (SSE)	7.00	104927998.10	14989714.01			
Total (SST)	9.00	3607546596.00				

Above **table no 5.35** shows regression analysis. The calculated value of 'F' was 116.83, which was greater than the table value 'F' (v1=2, v2=7) at

5% level of significance. This result implies that at least one independent variable is related with dependent variable.

TABLE NO 5.36

VARIABLE IN EQUATION						Chi-Square	
Variable	Partial Regre. Coeffi. (B)	S.E. (B)	|t| Value	Critical Value @ 5%	Result	χ^2 Value	Critical Value @ 5%
Constant	-6966.39	-	-	-	-	8353.00	D. F (9)
X_2	0.60	0.47	1.27	2.37	Non-Sign.		16.92
X_3	1.80	0.69	2.60	2.37	Significant	Significant	

The partial regression coefficient for independent variable FA indicates positive relationship with dependent variable (Sales) during the period of study. It implies that the additional one crore increase in FA and GWC was held constant than there is an increase in Sales by Rs. 0.6 crores as it was in the past. Where as the partial regression coefficient for independent variable GWC indicates positive relationship with dependent variable (Sales) during the period of study. It implies that the additional one crore increase in GWC and FA was held constant than there is increase in cash flow by Rs. 0.122 crores as it was in the past. The result indicates that FA was more significant variable than GWC for increasing Sales.

The calculated value of 't' for partial regression coefficient (b12.3) of Sales and FA when GWC held constant was 1.27, where as calculated value of 't' for partial regression coefficient (b13.2) of Sales and GWC when FA held constant was 2.60. It means GWC was significant variable and FA was non-significant variable. It indicates that there was effective and efficient utilization of GWC and ineffective and inefficient utilization of FA.

The coefficient values arrived above shown in **table no 5.36** were used to esitmate the expected value of sales as per the model in order to test whether the model is a good fit for the data. The Chi-square test was conducted between the actual value of sales and expected value of sales and the result are tabulated in above **table no 5.34**. The result of chi-square could reject the null hypothesis. Hence, it is concluded that there is a significant impact of total investment in FA and GWC on sales.

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The above analysis indicates that three variable Sales, FA and GWC were highly correlated to each other but independent variable FA is not significant to increase the sales but GWC is significant to increase the sales. As a result, annual compound growth rate in sales was 30.10% over a period of 10 years. It can be conclude that the company has substantially improved its working capital utilization.

GUJARAT STATE FERETILIZERS CORPORATION LTD., (SIKKA PLANT) JAMNAGAR.

For the purpose of analysis and evaluation of investment decision of GSFC, following null hypothesis is tested.

Null Hypothesis

There is no significant impact of Total Investment in FA and GWC on Sales of GSFC.

The following evaluations emerge from multiple correlations, multiple regressions, t test, 'F' test, chi-square test and its results in respect of GSFC. (SIKKA PLANT) JAMNAGAR.

Multiple Correlation, Multiple Regression equation, 'F' test and 't' test approach

TABLE NO. 5.37
KEY INDICATORS OF INVESTMENT DECISION OF GSFC

YEAR	SALES (X_1) (Rs. In Crores)	F. A. (X_2) (Rs. In Crores)	GWC (X_3) (Rs. In Crores)	EST. SALES (Rs. In Crores)	χ^2	F.A. Turnover Ratio	G.W.C Turnover Ratio
94-95	1482.42	1287.60	979.22	1578.78	5.88	1.15	1.5139
95-96	1685.17	1534.86	1211.84	1731.07	1.22	1.10	1.3906
96-97	1760.10	1865.68	1180.85	1847.46	4.13	0.94	1.4905
97-98	1879.64	2031.28	1116.63	1893.30	0.10	0.93	1.6833
98-99	1886.41	2152.77	1281.75	1981.09	4.53	0.88	1.4717
99-00	1961.27	2121.25	1513.58	2028.43	2.22	0.92	1.2958
00-01	2051.00	2112.44	1349.63	1983.27	2.31	0.97	1.5197
01-02	1954.88	2005.59	1364.51	1946.92	0.03	0.97	1.4327
02-03	1836.53	1898.26	1005.33	1814.90	0.26	0.97	1.8268
03-04	2106.24	1726.58	1193.57	1798.44	52.68	1.22	1.7647
TOTAL	18603.66	18736.31	12196.91	18603.66	73.36	10.05	15.39
AVG	1860.37	1873.63	1219.69	1860.37	7.34	1.01	1.54
SD	182.91	282.65	164.90	136.86	16.06	0.11	0.17
R	0.73	0.64	0.60				
CV	9.83	15.09	13.52	7.36	218.90	11.14	10.94
R1.23 = 0.75		(R1.23)^2 = 0.56		R2.13 = 0.77		R3.12 = 0.67	
CGR=4%							

(Source: Annual report of GSFC from 1994-95 to 2003-04)

Multiple Regression Equation for line X_1, on X_2 and X_3.

$$X_1 = 845.01 + 0.38 (X_2) + 0.26 (X_3)$$

Where

X_1 = Sales, X_2 = Fixed Assets, X_3 = Gross Working Capital (GWC)

Table No 5.37 provides data regarding Net Sales, Fixed Assets, Gross Working Capital, Estimated Sales, value of Chi-Square, Fixed Asset Turnover Ratio and Gross Working Capital Turnover Ratio of Gujarat State Fertilizers corporation Ltd.- (Sikka Plant)- Jamnagar.

FA turn over ratio was decreasing from 1.15 times to 0.88 times during the year 1994-95 to 1998-99, but than after it improve and increased up to 1.22 times in the year 2003-04 indicating that utilization of FA has been improved.

Working capital turnover ratio was up and down during the study period, it was lowest 1.30 in the year 1999-00 and highest 1.83 in the year 2002-03 indicating that utilization of working capital has been remained reasonable during the study period.

The coefficients of multiple correlation (R1.23) of GSFC was 0.75 indicating significant correlation among the variables. It means sales was significantly affected with F.A. and GWC. The coefficient of multiple determination $(R1.23)^2$ of GSFC was 0.5625. This implies that 56.25% variation in Sales was due to the variation of FA and variation of GWC and rest 43.75% was due to other reason on the assumption that linear co-relation among the variables.

ANOVA TABLE NO 5.38						
Sources of vari.	Degree of Freedom	Sum of square	Mean Of Square	'F' ratio	Critical Value @ 5%	Result
Regression (SSR)	2.00	168574.16	84287.08	4.45	F (2, 7) = 4.74	Non – Sign.
Error (SSE)	7.00	132543.72	18934.82			
Total (SST)	9.00	301117.88				

Above **table no 5.38** shows regression analysis. The calculated value of 'F' was 4.45, which was less than the table value 'F' (v1=2, v2=7) at 5%

level of significance. This result implies that there is no significant different of the regression of the whole that means the whole independent variable was not related to dependent variable.

TABLE NO 5.39

VARIABLE IN EQUATION						Chi-Square	
Variable	Partial Regre. Coeffi. (B)	S.E. (B)	| t | Value	Critical Value @ 5%	Result	χ^2 Value	Critical Value @ 5%
Constant	845.01	-	-	-	-	15.39	D. F (9)
X_2	0.38	0.25	1.48	2.37	Non-Sign.		16.92
X_3	0.26	0.37	0.69	2.37	Non-Sign.	Non-Sign.	

The partial regression coefficient for independent variable FA indicates positive relationship with dependent variable (Sales) during the period of study. It implies that the additional one crore increase in FA and GWC was held constant than there is a decrease in Sales by Rs. 0.38 crore as it was in the past. Where as the partial regression coefficient for independent variable GWC indicates positive relationship with dependent variable (Sales) during the period of study. It implies that the additional one crore increase in GWC and FA was held constant than there is increase in cash flow by Rs. 0.26 crore as it was in the past. The result implied that FA is more significant variable than GWC for increasing Sales.

The calculated value of 't' for partial regression coefficient (b12.3) of cash flow and Sales, when TCE held constant was 1.79 and where as calculated value of 't' for partial regression coefficient (b13.2) Cash flow and TCE was 0.71 when Sales held constant. These both the value were less than the table value 't' with d. f. 7 at 5% level of significance. It means FA and GWC both were not significant variable for increasing Sales.

The coefficient values arrived in the above shown **table no 5.39** were used to esitmate the expected value of sales as per the model in order to test whether the model is a good fit for the data. The Chi-square test was conducted between the actual value of sales and expected of sales and the result are tabulated in the above **table no 5.37**. The result of chi-square could

accept the null hypothesis. Hence, it is concluded that there is no significant impact of total investment in FA and GWC on Sales.

The above analysis indicates that there was improvement in FA efficiency and no considerable improvement in working capital efficiency. Thus, compound growth rate of sales was only 4% during the study period. Therefore, we can conclude that there was no considerable improvement in sales efficiency and it clears that sales is not liner function of investment in FA and GWC.

GUJARAT AMBUJA CEMENT LTD. – KODINAR

For the purpose of analysis and evaluation of investment decision of GACL, following null hypothesis is tested.

Null Hypothesis

There is no significant impact of Total Investment in FA and GWC on Sales of GACL.

The following evaluation emerges from multiple correlations, multiple regressions, 't' test, 'F' test, chi-square test and its results in respect of GACL. - KODINAR.

Multiple Correlation, Multiple Regression equation, 'F' test and 't' test approach

TABLE NO 5.40

KEY INDICATORS OF INVESTMENT DECISION OF GACL

YEAR	SALES (X_1) (Rs. In Crores)	F. A. (X_2) (Rs. In Crores)	GWC (X_3) (Rs. In Crores)	EST. SALES (Rs. In Crores)	χ^2	F.A. Turnover Ratio	G.W.C Turnover Ratio
94-95	370.00	895.55	210.18	373.83	0.04	0.41	1.76
95-96	633.00	1199.25	234.02	640.89	0.10	0.53	2.70
96-97	795.00	1404.25	342.17	871.31	6.68	0.57	2.32
97-98	973.00	1516.21	430.43	1013.05	1.58	0.64	2.26
98-99	1058.00	1459.66	377.55	936.94	15.64	0.72	2.80
99-00	1117.00	1519.44	410.38	1004.83	12.52	0.74	2.72
00-01	1269.00	1962.76	390.47	1364.87	6.73	0.65	3.25
01-02	1384.00	2052.26	662.50	1587.93	26.19	0.67	2.09
02-03	1735.00	2011.95	820.92	1640.50	5.44	0.86	2.11
03-04	1968.00	2498.22	491.48	1867.86	5.37	0.79	4.00
TOTAL	11302.00	16519.55	4370.10	11302.00	80.30	6.58	26.03
AVG	1130.20	1651.96	437.01	1130.20	8.03	0.66	2.60
SD	485.22	473.05	185.38	473.11	8.12	0.13	0.65
R	0.96	0.71	0.79				
CV	42.93	28.64	42.42	41.86	101.12	19.95	25.14
R1.23 = 0.98		(R1.23) ^{2} = 0.95		R2.13 = 0.97		R3.12 = 0.81
CGR=20.40%						

(Source : Annual report of GACL from 1994-95 to 2003-04)

Multiple Regression Equation for line X_1 on X_2 and X_3.

$$X_1 = -189.88 + 0.84 (X_2) + 0.54 (X_3)$$

Where

X_1 = Sales, X_2 = Fixed Assets, X_3 = Gross Working Capital (GWC)

Table No 5.40 provides data regarding Net Sales, Fixed Assets, Gross Working Capital, Estimated Sales, value of Chi-Square, Fixed Asset Turnover Ratio and Gross Working Capital Turnover Ratio of Gujarat Ambuja Cement Ltd. – Kodinar.

The FA Turn over ratio was increasing from 0.41 to 0.86 times during the study period. FA is one of the significant variables for increasing sales. There was a high positive correlation (0.96) between sales and FA it signifies efficient and effective utilization of FA.

GWC turnover ratio was also considerably improved. It was lowest 1.76 times in the year 1994-95 and highest 4.00 times in the year 2003-04 but GWC was non-significant variable for increasing sales, it means not effective and efficient utilization of GWC.

The coefficients of multiple correlation (R1.23) of GACL was 0.975 indicating significant correlation among the variables. It means sales was significantly affected with F.A. and GWC. The coefficient of multiple determination $(R1.23)^2$ of GACL was 0.95. This implied that 95.06% variation in Sales was due to the variation of FA and variation of GWC and the rest 4.94% was due to other reason on the assumption that linear correlation among the variables.

ANOVA TABLE NO 5.41						
Sources of vari.	**Degree of Freedom**	**Sum Of square**	**Mean Of Square**	**'F' Ratio**	**Critical Value @ 5%**	**Result**
Regression (SSR)	2.00	2014463.87	1007231.94	67.48	F (2, 7) = 4.74	Significant
Error (SSE)	7.00	104477.73	14925.39			
Total (SST)	9.00	2118941.60				

Above **table no 5.41** shows regression analysis. The calculated value of 'F' was 67.48, which was greater than the table value 'F' (v1=2, v2=7) at

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5% level of significance. This result implies that at least one independent variable is related to dependent variable.

TABLE NO 5.42

VARIABLE IN EQUATION						Chi-Square	
Variable	Partial Regre. Coeffi. (B)	S.E. (B)	| t | Value	Critical Value @ 5%	Result	χ^2 Value	Critical Value @ 5%
Constant	-489.88	-	-	-	-	80.30	D. F (9)
X_2	0.84	0.12	6.81	2.37	Significant		16.92
X_3	0.54	0.31	1.74	2.37	Non-Sign.	Significant	

The partial regression coefficient for independent variable FA indicates positive relationship with dependent variable (Sales) during the period of study. It implies that the additional one crore increase in FA and GWC was held constant than there is an increase in Sales by Rs. 0.84 crore as it was in the past. Where as the partial regression coefficient for independent variable GWC indicates positive relationship with dependent variable (Sales) during the period of study. It implies that the additional one crore increase in GWC and FA was held constant than there is increase in cash flow by Rs. 0.54 crore as it was in the past. The result indicates that FA was more significant variable than GWC for increasing Sales.

The calculated value of 't' for partial regression coefficient (b12.3) of Sales and FA was 6.81 when GWC held constant. Where as calculated value of 't' for partial regression coefficient (b13.2) of Sales and GWC was 1.74 when FA held constant. It means FA was significant variable and GWC was non-significant variable. It indicates that there was effective and efficient utilization of FA and ineffective and inefficient utilization of GWC.

The coefficient values arrived in the above shown **table no 5.42** were used to estimate the expected value of sales as per the model in order to test whether the model is a good fit for the data. The Chi-square test was conducted between the actual value of sales and expected value of sales and the result are tabulated in above **table no 5.40**. The result of chi-square could reject the null hypothesis. Hence, it is concluded that there is a significant impact of total investment in FA and GWC on sales.

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The above analysis indicates that FA and GWC efficiency were gradually improved; as a result, annual compound growth rate in Sales of the company was 20.40% during the study period. The FA was more contributing factors than GWC.

GUJARAT HEAVY CHEMICALS LTD. – SUTRAPADA

For the purpose of analysis and evaluation of investment decision of GHCL, following null hypothesis is tested.

Null Hypothesis

There is no significant impact of Total Investment in FA and GWC on Sales of GHCL.

The following evaluation emerges from multiple correlations, multiple regressions, 't' test, 'F' test, chi-square test and its results in respect of GHCL. - SUTRAPADA.

Multiple Correlation, Multiple Regression equation, 'F' test and 't' test approach

TABLE NO 5.43

KEY INDICATORS OF INVESTMENT DECISION OF GHCL

YEAR	SALES (X_1) (Rs. In Crores)	F. A. (X_2) (Rs. In Crores)	GWC (X_3) (Rs. In Crores)	EST. SALES (Rs. In Crores)	χ^2	F.A. Turn Over Ratio	G.W.C Turn Over Ratio
94-95	230.84	263.24	99.96	265.81	4.60	0.88	2.31
95-96	270.77	254.87	130.15	262.38	0.27	1.06	2.08
96-97	299.94	260.08	125.05	268.26	3.74	1.15	2.40
97-98	299.63	276.29	156.06	299.36	0.00	1.08	1.92
98-99	343.82	308.77	150.72	343.23	0.00	1.11	2.28
99-00	332.83	319.23	232.35	380.14	5.89	1.04	1.43
00-01	363.18	301.44	209.80	349.15	0.56	1.20	1.73
01-02	404.26	357.40	181.78	419.59	0.56	1.13	2.22
02-03	428.99	365.00	156.11	423.18	0.08	1.18	2.75
03-04	454.06	347.50	223.64	417.21	3.25	1.31	2.03
TOTAL	3428.32	3053.82	1665.62	3428.32	18.96	11.15	21.16
AVG	342.83	305.38	166.56	342.83	1.90	1.12	2.12
SD	71.12	41.47	44.28	65.97	2.24	0.11	0.37
R	0.92	0.61	0.67				
CV	20.75	13.58	26.58	19.24	118.21	10.17	17.39
R1.23 = 0.93			(R1.23)^2 = 0.86		R2.13 = 0.92		R3.12 = 0.67
CGR = 7.8%							

(Source : Annual report of GHCL from 1994-95 to 2003-04)

Multiple Regression Equation for line X_1 on X_2 and X_3.

$$X_1 = -128.89 + 1.40\ (X_2) + 0.27\ (X_3)$$

Where

X_1 = Sales, X_2 = Fixed Assets, X_3 = Gross Working Capital (GWC)

Table No 5.43 provides data regarding Net Sales, Fixed Assets, Gross Working Capital, Estimated Sales, value of Chi-Square, Fixed Asset Turnover Ratio and Gross Working Capital Turnover Ratio of Gujarat Heavy Chemicals Ltd. – Sutrapada.

The lowest FA Turn over ratio was 0.88 times in the year 1994-95 and the highest 1.31 times in the year 2003-04. It implies that utilization of FA remains reasonable during the study period.

Working capital turnover ratio was also mostly more than two times during the study period. It was below two times only in the year 1997-98 (1.92), 1999-00 (1.43) and 2000-01 (1.73) because of increased investment in GWC but poor sales operation.

The coefficients of multiple correlation (R1.23) of GHCL was 0.93 indicating significant correlation among the variables. It means sales was significantly affected with F.A. and GWC. The coefficient of multiple determination $(R1.23)^2$ of GHCL was 0.8649. This implied that 86.49% variation in Sales was due to the variation of FA and variation of GWC and the rest 13.51% was due to other reason on the assumption that linear co-relation among the variables.

ANOVA TABLE NO 5.44						
Sources of vari.	Degree of Freedom	Sum of square	Mean Of Square	'F' ratio	Critical Value @ 5%	Result
Regression (SSR)	2.00	Sum of square	Mean of square	21.56	F (2, 7) = 4.74	Significant
Error (SSE)	7.00	39165.64	19582.82			
Total (SST)	9.00	6358.97	908.42			

Above **table no 5.44** shows regression analysis. The calculated value of 'F' was 21.56, which was greater than the table value 'F' (v1=2, v2=7) at

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5% level of significance. This result implies that at least one independent variable is related to dependent variable.

TABLE NO 5.45

VARIABLE IN EQUATION						Chi-Square	
Variable	Partial Regre. Coeffi. (B)	S.E. (B)	| t | Value	Critical Value @ 5%	Result	χ^2 Value	Critical Value @ 5%
Constant	-128.89	-	-	-	-	18.96	D. F (9)
X₂	1.40	0.31	4.56	2.37	Significant		16.92
X₃	0.27	0.29	0.95	2.37	Non-Sign.	Significant	

The partial regression coefficient for independent variable FA indicates positive relationship with dependent variable (Sales) during the period of study. It implies that the additional one crore increase in FA and GWC was held constant than, there is an increase in Sales by Rs. 1.4 crores as it was in the past. Where as the partial regression coefficient for independent variable GWC indicates positive relationship with dependent variable (Sales) during the period of study. It implies that the additional one crore increase in GWC and FA was held constant than there is increase in cash flow by Rs. 0.27 crores as it was in the past. The result indicates that FA was more significant variable than GWC for increasing Sales.

The calculated value of 't' for partial regression coefficient (b12.3) of Sales and FA was 4.56 when GWC held constant. Where as calculated value of 't' for partial regression coefficient (b13.2) of Sales and GWC was 0.95 when FA held constant. It means FA was significant variable and GWC was non-significant variable. It indicates that there was effective and efficient utilization of FA and ineffective and inefficient utilization of GWC.

The coefficient values arrived above in the shown **table no 5.45** were used to esitmate the expected value of sales as per the model in order to test whether the model is a good fit for the data. The Chi-square test was conducted between the actual value of sales and expected of sales and the result are tabulated in the above **table no 5.43**. The result of chi-square could reject the null hypothesis. Hence, it is concluded that there is a significant impact of total investment in FA and GWC on sales.

The above analysis indicates that FA and GWC efficiency were comparatively sound. No considerable slowed down in utilization in FA and GWC. FA was more contributing factor for increasing sales, so company could earn annual compound growth rate in sales @ 7.8%.

ORIENT ABRASIVES LTD. PORBANDAR

For the purpose of analysis and evaluation of investment decision of OAL, following null hypothesis is tested.

Null Hypothesis

There is no significant impact of Total Investment in FA and GWC on Sales of OAL.

The following evaluation emerges from multiple correlations, multiple regressions, 't' test, 'F' test, chi-square test and its results in respect of OAL. PORBANDAR.

Multiple Correlation, Multiple Regression equation, 'F' test and 't' test approach

TABLE NO 5.46

KEY INDICATORS OF INVESTMENT DECISION OAL

YEAR	SALES (X_1) (Rs. In Crores)	F. A. (X_2) (Rs. In Crores)	GWC (X_3) (Rs. In Crores)	EST. SALES (Rs. In Crores)	χ^2	F.A. Turn Over Ratio	G.W.C Turn Over Ratio
94-95	73.85	13.69	28.52	69.25	0.31	5.39	2.59
95-96	78.02	14.31	30.40	73.29	0.31	5.45	2.57
96-97	71.16	15.38	34.50	82.60	1.58	4.63	2.06
97-98	63.12	24.19	40.07	82.20	4.43	2.61	1.58
98-99	63.09	25.66	31.73	56.80	0.70	2.46	1.99
99-00	77.68	23.95	37.41	75.35	0.07	3.24	2.08
00-01	84.47	22.55	38.49	80.79	0.17	3.75	2.19
01-02	89.60	20.68	39.40	86.59	0.10	4.33	2.27
02-03	106.11	20.10	47.55	109.90	0.13	5.28	2.23
03-04	131.10	22.82	53.54	121.44	0.77	5.74	2.45
TOTAL	838.20	203.33	381.61	838.20	8.56	42.89	22.01
AVG	83.82	20.33	38.16	83.82	0.86	4.29	2.20
SD	20.96	4.38	7.73	18.98	1.34	1.22	0.30
R	0.08	0.45	0.84				
CV	25.01	21.53	20.27	22.64	156.25	28.40	13.75
R1.23 = 0.91			$(R1.23)^2 = 0.82$		R2.13 = 0.71		R3.12 =0.92
CGR = 6.4%							

(Source : Annual report of OAL from 1994-95 to 2003-04)

Multiple Regression Equation for line X_1 on X_2 and X_3.

$$X_1 = 15.57 - 1.77 (X_2) + 2.73 (X_3)$$

Where

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X_1 = Sales, X_2 = Fixed Assets, X_3 = Gross Working Capital (GWC)

Table No 5.46 provides data regarding Net Sales, Fixed Assets, Gross Working Capital, Estimated Sales, value of Chi-Square, Fixed Asset Turnover Ratio and Gross Working Capital Turnover Ratio of Orient Abrasives Ltd.-Porbandar.

F0A Turn over ratio was decreasing from 5.4 to 2.46 times during year 1994-95 to 1998-99, than after it was improved and increased up to 5.75 times in the year 2003-04 indicating that utilization of FA has been improved.

Working capital turnover ratio was also decreasing from 2.59 to 1.99 times during year 1994-95 to 1998-99 than after it showed slight improvement but more consistencies.

The coefficients of multiple correlation (R1.23) of OAL was 0.91 indicating significant correlation among the variables. It means sales was significantly affected with F.A. and GWC. The coefficient of multiple determination $(R1.23)^2$ of GSFC was 0.8196. This implies that 81.96% variation in Sales was due to the variation of FA and variation of GWC and rest 18.04% was due to other reason on the assumption that linear co-relation among the variables.

ANOVA TABLE NO 5.47						
Sources of vari.	Degree of Freedom	Sum of square	Mean Of Square	'F' ratio	Critical Value @ 5%	Result
Regression (SSR)	2.00	3241.77	1620.89	15.90	F (2, 7) = 4.74	Significant
Error (SSE)	7.00	713.54	101.93			
Total (SST)	9.00	3955.31				

Above **table no 5.47** shows regression analysis. The calculated value of 'F' was 15.9, which was greater than the table value F (v1=2, v2=7) at 5% level of significance. This result implies that at least one independent variable was related to the dependent variable.

TABLE NO 5.48

VARIABLE IN EQUATION						Chi-Square	
Variable	Partial Regre. Coeffi. (B)	S.E. (B)	|t| Value	Critical Value @ 5%	Result	χ^2 Value	Critical Value @ 5%
Constant	15.57	-	-	-	-	8.56	D. F (9)
X_2	-1.77	0.86	2.06	2.37	Non-Sign.		16.92
X_3	2.73	0.49	5.62	2.37	Significant	Non-Sign.	

The partial regression coefficient for independent variable FA indicates, negative relationship with dependent variable (Sales) during the period of study. It implies that the additional one crore increase in FA and Rs. 1.77 crores held GWC constant as it was in the past. Where as the partial regression coefficient for independent variable GWC indicates positive relationship with dependent variable (Sales) during the period of study. It implies that the additional one crore increase in GWC and FA was held constant than, there is increase in cash flow by Rs. 2.73 crores as it was in the past. The result indicates that there was ineffective and inefficient utilization of FA and efficient and effective utilization of GWC.

The calculated value of 't' for partial regression coefficient (b12.3) of Sales and FA was 2.06 when GWC held constant. Where as calculated value of 't' for partial regression coefficient (b13.2) of Sales and GWC was 5.62 when FA held constant. It means FA was non-significant variable and GWC was significant variable for increasing Sales.

The coefficient values arrived in the above shown **table no 5.48** were used to esitmate the expected value of sales as per the model in order to test whether the model is a good fit for the data. The Chi-square test was conducted between the actual value of sales and expected of sales and the result are tabulated in the above **table no 5.46**. The result of chi-square could accept the null hypothesis. Hence, it is concluded that there is no significant impact of total investment in FA and GWC on sales.

The above analysis indicates effective and efficient utilization of GWC. As a result annual compound growth rate of Sales was 6.4% during the study period so working capital was more contributing factors than FA for increasing sales.

AUSTIN ENGINEERING COMPANY LTD. – JUNAGADH

For the purpose of analysis and evaluation of investment decision of Aust. Eng. following null hypothesis is tested.

Null Hypothesis

There is no significant impact of Total Investment in FA and GWC on Sales of Aust. Eng.

The following evaluation emerges from multiple correlations, multiple regressions, 't' test, 'F' test, chi-square test and its results in respect of AUST. ENG.- JUNAGADH.

Multiple Correlation, Multiple Regression equation, 'F' test and 't' test approach

TABLE NO 5.49

KEY INDICATORS OF INVESTMENT DECISION AUSTIN ENG

YEAR	SALES (X_1) (Rs. In Crores)	F. A. (X_2) (Rs. In Crores)	GWC (X_3) (Rs. In Crores)	EST. SALES (Rs. In Crores)	χ^2	F.A. Turn Over Ratio	G.W.C Turn Over Ratio
94-95	24.05	5.85	21.84	21.14	0.40	4.11	1.10
95-96	33.75	11.04	24.68	28.97	0.79	3.06	1.37
96-97	37.08	12.22	27.47	32.42	0.67	3.03	1.35
97-98	37.79	12.48	25.98	31.55	1.24	3.03	1.45
98-99	30.38	12.30	25.59	31.05	0.01	2.47	1.19
99-00	26.07	11.81	23.55	28.93	0.28	2.21	1.11
00-01	22.84	11.06	25.52	29.65	1.56	2.07	0.89
01-02	23.12	10.20	25.61	28.79	1.12	2.27	0.90
02-03	23.96	9.52	27.40	29.45	1.02	2.52	0.87
03-04	31.20	7.83	28.28	28.30	0.30	3.98	1.10
TOTAL	290.24	104.31	255.92	290.24	7.39	28.74	11.34
AVG	29.02	10.43	25.59	29.02	0.74	2.87	1.13
SD	5.80	2.17	1.92	3.08	0.49	0.72	0.21
R	0.47	0.25	0.36				
CV	19.99	20.76	7.51	10.61	66.93	24.89	18.29
R1.23 = 0.53		$(R1.23)^2 = 0.28$		R2.13 = 0.48		R3.12 = 0.37	
CGR = 2.29%							

(Source : Annual report of Aust. Eng. Co. Ltd. from 1994-95 to 2003-04)

Multiple Regression Equation for line X_1 on X_2 and X_3

$$X_1 = -2.20 + 1.08\,(X_2) + 0.78\,(X_3)$$

Where

X_1 = Sales, X_2 = Fixed Assets, X_3 = Gross Working Capital (GWC)

Table No 5.49 provides data regarding Net Sales, Fixed Assets, Gross Working Capital, Estimated Sales, value of Chi-Square, Fixed Asset Turnover Ratio and Gross Working Capital Turnover Ratio of Austin Engineering Company Ltd. – Junagadh.

FA Turn over ratio was decreasing from 4.11 to 2.52 times during year 1994-95 to 2002-03, but increased in 2003-04 only and reached up to 3.99 times. The result indicates that utilization of FA has slowed down.

Working capital turnover ratio was also more or less decreased during study period. It shows that utilization of GWC has also slowed down.

The coefficients of multiple correlation (R1.23) of AUST ENG. was 0.53 indicating significant correlation among the variables. It means sales was significantly affected with F.A. and GWC. The coefficient of multiple determination $(R1.23)^2$ of AUST. ENG. was 0.2809. This implied that 28.09% variation in Sales was due to the variation of FA and variation of GWC and the rest 71.91% was due to other reason on the assumption that linear co-relation among the variables.

ANOVA TABLE NO 5.50						
Sources of vari.	Degree of Freedom	Sum of square	Mean Of Square	'F' ratio	Critical Value @ 5%	Result
Regression (SSR)	2.00	85.31	42.66	1.37	F (2, 7) = 4.74	Non – Sign.
Error (SSE)	7.00	217.55	31.08			
Total (SST)	9.00	302.86				

Above **table no 5.50** shows regression analysis. The calculated value of 'F' was 1.373, which was less than the table value 'F' (v1=2, v2=7) at 5% level of significance. This result implies that there is not any significant difference of the regression of the whole that means the whole independence variable was not related to dependent variable.

TABLE NO 5.51

VARIABLE IN EQUATION						Chi-Square	
Variable	Partial Regre. Coeffi. (B)	S.E. (B)	| t | Value	Critical Value @ 5%	Result	χ^2 Value	Critical Value @ 5%
Constant	-2.20	-	-	-	-	7.39	D. F (9)
X_2	1.08	0.89	1.22	2.37	Non-Sign.		16.92
X_3	0.78	1.00	0.78	2.37	Non-Sign.	Non-Sign.	

The partial regression coefficient for independent variable FA indicates positive relationship with dependent variable (Sales) during the period of study. It implies that the additional one crore increase in FA and Rs. 1.08 crores held GWC constant as it was in the past. Where as the partial regression coefficient for independent variable GWC indicates positive relationship with dependent variable (Sales) during the period of study. It implies that the additional one crore increase in GWC and FA was held constant than there is increase in cash flow by Rs. 0.78 crore as it was in the past. The result indicates that FA was more significant variable than GWC for increasing Sales.

The calculated value of 't' for partial regression coefficient (b12.3) of Sales and FA was 1.22 when GWC held constant. Where as calculated value of 't' for partial regression coefficient (b13.2) of Sales and GWC was 0.78 when FA held constant. It means FA and GWC both the variable were non-significant variable for increasing Sales.

The coefficient values arrived in the above shown **table no 5.51** were used to estimate the expected value of sales as per the model in order to test whether the model is a good fit for the data. The Chi-square test was conducted between the actual value of sales and expected of sales and the result are tabulated in the above **table no 5.49**. The result of chi-square could accept the null hypothesis. Hence, it is concluded that the model is a good fit.

The above analysis indicates that FA efficiency and GWC efficiency both are not satisfactory, as a result Sales efficiency also not sound. Company could earn annual compound growth rate in sales only 2.9% due to ineffective and in efficient utilization of FA and GWC.

DIGVIJAY CEMENT COMPANY LTD. – JAMNAGAR

For the purpose of analysis and evaluation of investment decision of DCCL, following null hypothesis is tested.

Null Hypothesis

There is no significant impact of Total Investment in FA and GWC on Sales of DCCL.

The following evaluation emerges from multiple correlations, multiple regressions, 't' test, 'F' test, chi-square test and its results in respect of DCCL. - JAMNAGAR.

Multiple Correlation, Multiple Regression equation, 'F' test and 't' test approach

TABLE NO 5.52

KEY INDICATORS OF INVESTMENT DECISION OF DCCL

YEAR	SALES (X_1) (Rs. In Crores)	F. A. (X_2) (Rs. In Crores)	GWC (X_3) (Rs. In Crores)	EST. SALES (Rs. In Crores)	χ^2	F.A. Turn Over Ratio	G.W.C Turn Over Ratio
94-95	219.86	64.22	120.66	207.83	0.70	3.42	1.82
95-96	194.50	61.90	134.14	221.26	3.24	3.14	1.45
96-97	188.01	47.19	101.48	174.68	1.02	3.98	1.85
97-98	157.26	42.77	88.93	157.64	0.00	3.68	1.77
98-99	171.19	89.95	83.32	183.98	0.89	1.90	2.05
99-00	229.24	97.31	96.84	204.14	3.09	2.36	2.37
00-01	175.40	116.37	67.64	184.76	0.47	1.51	2.59
01-02	190.11	107.24	62.15	172.33	1.83	1.77	3.06
02-03	141.01	99.43	51.55	155.12	1.28	1.42	2.74
03-04	153.20	89.93	60.07	158.05	0.15	1.70	2.55
TOTAL	1819.78	816.31	866.78	1819.78	12.67	24.89	22.25
AVG	181.98	81.63	86.68	181.98	1.27	2.49	2.23
SD	28.29	25.72	27.19	22.97	1.13	0.97	0.51
R	-0.07	-0.66	0.66				
CV	15.55	31.50	31.37	12.62	89.32	39.16	23.00
R1.23 = 0.81		$(R1.23)^2$ = 0.66		R2.13 = 0.81		R3.12 = 0.90	

Multiple Regression Equation for line X_1 on X_2 and X_3.

$$X_1 = 28.94 + 0.69 (X_2) + 1.11 (X_3)$$

Where

X_1 = Sales, X_2 = Fixed Assets, X_3 = Gross Working Capital (GWC)

Table No 5.52 provides data regarding Net Sales, Fixed Assets, Gross Working Capital, Estimated Sales, value of Chi-Square, Fixed Asset Turnover Ratio and Gross Working Capital Turnover Ratio of Digvijay Cement Company Ltd. – Jamnagar.

FA Turn over ratio was continuously decreasing during the study period due to decrease in sales and increase in FA. It indicates that utilization of FA has slowed down.

Working capital turnover ratio was also more or less increasing during study period. It shows that utilization of GWC was increasing during the study period but increasing in GWC turnover ratio was only due to decrease in GWC not due to increase in Sales.

The coefficients of multiple correlation (R1.23) of DCCL was 0.812 indicating significant correlation among the variables. It means sales was significantly affected with F.A. and GWC. The coefficient of multiple determination $(R1.23)^2$ of DCCL was 0.656. This implied that 65.60% variation in Sales was due to the variation of FA and variation of GWC and the rest 34.40% was due to other reason on the assumption that linear co-relation among the variables.

ANOVA TABLE NO 5.53						
Sources of vari.	Degree of Freedom	Sum of square	Mean Of Square	'F' ratio	Critical Value @ 5%	Result
Regression (SSR)	2.00	4747.04	2373.52	6.76	F (2, 7) = 4.74	Significant
Error (SSE)	7.00	2458.20	351.17			
Total (SST)	9.00	7205.24				

Above **table no 5.53** shows regression analysis. The calculated value of 'F' was 6.76, which was greater than the table value 'F' (v1=2, v2=7) at 5%

level of significance. This result implies that at least one independent variable is correlated to dependent variable.

TABLE NO 5.54

	VARIABLE IN EQUATION					Chi-Square	
Variable	Partial Regre. Coeffi. (B)	S.E. (B)	| t | Value	Critical Value @ 5%	Result	χ^2 Value	Critical Value @ 5%
Constant	28.94	-	-	-	-	12.76	D. F (9)
X_2	0.69	0.32	2.15	2.37	Non-Sign.		16.92
X_3	1.11	0.30	3.66	2.37	Significant	Non-Sign.	

The partial regression coefficient for independent variable FA indicates positive relationship with dependent variable (Sales) during the period of study. It implies that the additional one crore increase in FA and GWC was held constant than there is an increase in Sales by Rs. 0.69 crore as it was in the past. Where as the partial regression coefficient for independent variable GWC indicates positive relationship with dependent variable (Sales) during the period of study. It implies that the additional one crore increase in GWC and FA was held constant than, there is increase in Sales by Rs. 1.11 crores as it was in the past. The result indicates that GWC was more significant variable than FA for increasing Sales.

The calculated value of 't' for partial regression coefficient (b12.3) of Sales and FA was 2.15 when GWC held constant. Where as calculated value of 't' for partial regression coefficient (b13.2) of Sales and GWC was 3.66 when FA held constant. It means GWC was significant variable for increasing Sales.

The coefficient values arrived in the above shown **table no 5.54** were used to estimate the expected value of sales as per the model in order to test whether the model is a good fit for the data. The Chi-square test was conducted between the actual value of sales and expected of sales and the result are tabulated in the above **table no 5.52**. The result of chi-square could accept the null hypothesis. Hence, it is concluded that there is no significant impact of total investment in FA and GWC on sales.

The above analysis indicates that there was decrease in sales volume. There was not sound FA efficiency and GWC efficiency. GWC was only

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significant variable to increase the Sales. Multiple correlations among the variables were significant but due to inefficient and ineffective utilization of FA and inadequate working capital, company felt to increase the sales.

➔ OVERALL EVALUATION OF INVESTMENT DECISION OF SELECTED UNITS OF SAURASHTRA REGION

For the purpose of overall evaluation of investment decision of selected units of Saurashtra region, profitability, trend value of sales revenue, return on investment, trend value of total investment and investment pattern are evaluated through one-way analysis of variance 'F' test (ANOVA) as follows.

➔ CASH FLOW INDICES OF THE SELECTED COMPANIES AND 'F' TEST ONE WAY ANALYSIS OF VARIANCE

For the purpose of analysis and evaluation of Profitability of selected units of the Saurashtra region during the study period, following null hypothesis is tested.

Null Hypothesis

There is no significant difference in Average Cash Flow within the sampled units of Saurashtra region during the period of study.

To see whether there is any significant different in cash flow of sampled units during the period of study 'F' test one way analysis of variance was conducted and result are tabulated as follows.

TABLE NO 5.55
ANOVA FOR CASH FLOW INDICES OF SELECTED UNITS

Sources of vari.	Degree of freedom	Sum of square	Mean of square	'F' ratio	Result @ 5 %
BETWEEN COMPANIES (SSC)	8.00	6408346.39	801043.30	3.43	F (8,81) = 2.02
WITHIN THE COMPANIES (SSE)	81.00	18913307.52	233497.62		Significant.
TOTAL (SST)	89.00	25321653.91			

The above **table no 5.55** reveal that the calculated 'F' value is 3.43 and the table value of at 5% level of significant with d. f. (8,81) is 2.02. Null hypothesis is rejected it means there is a significant difference in cash flow generated through sales and TCE within the sampled units.

→ **SALES INDICES OF THE SELECTED COMPANIES AND ''F'' TEST ONE WAY ANALYSIS OF VARIANCE**

For the purpose of analysis and evaluation of sales Efficiency of selected units of the Saurashtra region during the study period, following null hypothesis is tested.

Null Hypothesis

There is no significant difference in Average Sales Trend within the sampled units of Saurashtra region during the period of study.

To see whether there is any significant different in sales efficiency of sampled units during the period of study ''F'' test one way analysis of variance was conducted and results are tabulated as follows.

TABLE NO 5.56
ANOVA FOR SALES INDICES OF SELECTED UNITS

Sources of Vari.	Degree of freedom	Sum of square	Mean of square	'F' ratio	Result @ 5 %
Between Companies (SSC)	8.00	1848997.35	231124.67	6.64	F (8,81) =2.02
Within The Companies (SSE)	81.00	2821124.56	34828.70		Significant
TOTAL (SST)	89.00	4670121.91			

The above **table no 5.56** reveal that the calculated ''F'' value is 6.64 and table value at 5% level of significant with d. 'F'. (8,81) is 2.02. Null hypothesis is rejected it means there is a significant difference in sales efficiency.

→ **RETURN ON INVESTMENT OF THE SELECTED COMPANIES AND ''F'' TEST ONE WAY ANALYSIS OF VARIANCE**

For the purpose of analysis and evaluation of Return On Investment of selected units of the Saurashtra region during the study period, following null hypothesis is tested.

Null Hypothesis

There is no significant difference in Average ROI within the sampled units of Saurashtra region during the period of study.

To see weather there is any significant difference in Return On Investment within the sampled units during the period of study, ''F'' test one way analysis of variance was conducted and results are tabulated as follows.

TABLE NO 5.57
ANOVA FOR RETURN ON INVESTMENT

Sources of vari.	Degree of freedom	Sum of square	Mean of square	'F' ratio	Result @ 5 %
Between the Company (SSC)	8.00	2814.03	351.75	9.64	F (8,81) = 2.02
Within the Company (SSE)	81.00	2956.85	36.50	Significant	
Total (TSS)	89.00	5770.88			

The above **table no 5.57** reveal that the calculated ''F'' value is 9.64 and the table value at 5% level of significant with d. f. (8,81) is 2.02. Null hypothesis is rejected it means there is a significant difference in profitability within the sampled units during the period of study.

→ **TOTAL CAPITAL EMPLOYED OF THE SELECTED COMPANIES AND ''F'' TEST ONE WAY ANALYSIS OF VARIANCE**

For the purpose of analysis and evaluation of trend of Total Capital Employed of selected units of the Saurashtra region during the study period, following null hypothesis is tested.

Null Hypothesis

There is no significant difference in Investment trend within the sampled units of Saurashtra region during the period of study.

TABLE NO 5.58

ANOVA FOR TOTAL CAPITL EMPLOYED OF SELECTED UNITS

Sources of vari.	Degree of Freedom	Sum of Square	Mean of Square	'F' ratio	Result @ 5 %
Between the Company (SSC)	8.00	6258596.05	782324.51	0.75	F (8,81) = 2.02
Within the Company (SSE)	81.00	84675218.36	1045373.07	Non-Sign.	
Total (TSS)	89.00	90933814.41			

The above **table no 5.58** reveals that the calculated ''F'' value is 0.75 and the table value at 5% level of significant with d. f. (8,81) is 2.02. Null hypothesis is accepted it means there is no significant difference in total investment within the sampled units during the period of study.

→ **FIXED ASSETS TO GROSS WORKING CAPITAL RATIO OF THE SELECTED COMPANIES AND ''F'' TEST ONE WAY ANALYSIS OF VARIANCE**

For the purpose of analysis and evaluation of Investment pattern of selected units of the Saurashtra region during the study period, following null hypothesis is tested.

Null Hypothesis

There is no significant difference in Investment pattern within the sampled units of Saurashtra region during the period of study.

TABLE NO 5.59

ANOVA FOR FIXED ASSETS TO GROSS WORKING CAPITAL

Sources of vari.	Degree of Freedom	Sum of Square	Mean of Square	'F' ratio	Result @ 5 %
Between the Company (SSC)	8.00	91.28	11.41	0.28	$F_{(8,81)}$ = 2.02
Within the Company (SSE)	81.00	3281.58	40.51	Non-Significant.	
Total (TSS)	89.00	3372.86			

The above **table no 5.59** reveals that the calculated "F" value is 0.28 and the table value at 5% level of significant with d. f. (8,81) is 2.02. Null hypothesis is accepted it means there is no significant difference in investment pattern within the sampled units during the period of study.

The above result clears that the total capital employed and pattern of investment (FA to GWC ratio) are not significantly difference within sampled units of Saurashtra region, even though, all selected units are different from the viewpoint of profitability, sales efficiency and return on investment. It is sign of inequality in total investment efficiency. The inequality in investment efficiency is one of the strong evidence of difference in effectiveness and efficiency of investment decision. So there is a significant difference among investment decisions of selected companies.

➜ COMPARATIVE ANALYSIS OF INVESTMENT DECISION OF SELECTED UNITS OF SAURASHTRA REGION

The comparison of Investment decision of selected units of Saurashtra region of the period from 1994-95 to 2003-04 is given in table no 5.60.

Table No. 5.60

COMPARATIVE ANALYSIS OF INVESTMENT DECISION OF SELECTED UNITS OF SAURASHTRA REGION FROM 1994-95 TO 2003-04

(Figures Rs. In Crores)

COMP	IRIL	RIL	TCL	GACL	GHCL	GSFC	OAL	Aust. Eng.	DCCL
AVG. CASH FLOW	201.42	4167.96	337.90	296.88	64.41	154.90	5.82	1.13	-12.00
AVG SALES	1334.53	22844.00	1468.04	1130.20	342.83	1860.37	83.82	29.02	181.98
TCE	1927.71	29692.80	3006.10	2495.40	393.13	2511.20	44.40	26.65	176.71
ROI	10.05	12.13	14.18	11.60	18.26	8.38	22.89	7.70	2.86
CF/ SALES r12	0.43	0.99	0.06	0.98	0.16	-0.21	0.97	0.74	-0.02
SALES/ TCE r23	0.27	0.99	0.70	0.93	0.70	0.63	0.52	0.55	-0.10
CF/ TCE r13	0.89	0.99	-0.16	0.89	-0.41	0.02	0.53	-0.03	-0.26
R1.23	0.91	0.99	0.29	0.98	0.75	0.28	0.97	0.90	0.26
χ^2	31.83	202.26	124.51	12.01	6.13	375.58	4.66	38.57	-2635.82
% of CF ON SALE	15.10	18.25	23.02	26.27	18.79	8.33	6.95	3.89	-6.59
% of CF ON TCE	10.45	14.04	11.24	11.90	16.39	6.17	13.12	4.24	-6.79

From the above **table no 5.60** it clears that in case of IRIL, RIL, GACL, GHCL, OAL & Aust. Eng, multiple coefficient of correlations (R1.23) is more than 0.5. It indicates than cash flow of these company is highly correlated to other two variable, net sale revenue and total capital employed, return on investment and return on net sales revenue are found too much differ from companies to companies. In case of TCL multiple correlation (R1.23) is less

than 0.5, but return on investment and return on sales are quite better, where as in case of DCCL multiple correlation (R1.23) is less than 0.5, return on investment and on sales both are quite bad simple correlation coefficient between cash flow and sales (r12) and between sales and TCE (r23) are also found quite different in case of selected companies. Therefore multiple effects of sales & TCE on cash flow are also not found equal in case of all companies.

The chi-square value in the case IRIL (31.83), RIL (202.26), TCL (124.51) and GHCL (375.58) are greater than the table value (16.92) at 5% level of significant with d. f. 9. So null hypothesis is rejected that means there is a significant impact of net sales revenue and total capital employed on cash flow but in case of other company, the chi-square value is less than table value it indicates there is no significant impact of net sales revenue and total capital employed on cash flow.

The above result indicates that the inequality in profitability is one of the evidence of inequality in management efficiency influences on quality of decision-making. The one of the alternative for improving quality of decision-making is more and more use of statistical tools in decision-making process. In empirical study it was found that IRIL, RIL and TCL are give more important to statistical tools in managerial decision making, they enjoy quite better profitability; efficiency and solvency rest could not.

CHAPTER – VI

COMPARATIVE ANALYSIS OF DIVIDEND DECISION

CONTENTS

(1) INTRODUCTION

(2) IMPACT OF DIVIDENDS ON THE VALUATION OF THE FIRM

(3) DIVIDEND POLICY

(4) EXPLANATION OF VARIABLES (TERMS) USED FOR EVALUATION OF DIVIDEND DECISION

(5) TOOLS & TECHNIQUES USED FOR EVALUATION OF DIVIDEND DECISION

(6) ANALYSIS OF DIVIDEND DECISION OF SELECTED COMPANIES

(7) DIVIDEND PAYOUT RATIOS & 'F' TEST ONE-WAY ANALYSIS OF VARIANCE.

(1) <u>INTRODUCTION</u>

Dividend decision is a part of financial decision of the company. Dividend decision is the problem of management of earning. Dividends refer to those portions of a firm net earning, which are paid out to the ordinary shareholders. Issue of taking dividend decision is arisen before management only for paying the dividend to the ordinary shareholders because preference shares are entitled to a stipulated rate of dividend. Moreover it is the issue for public limited companies. Management of earning deal with the divisible profit of the company can distribute the divisible profit to shareholders as dividend or reinvested for financing the investment requirement of the firm.

A major decision of financial management is the dividend decision in the sense that the firm has to choose between distributions the profits to the shareholders and ploughing them back into the business. The choice would obviously hinge on the effect of the decision on the maximization of shareholders' wealth. Given the objective of financial management of maximizing present values, the firm should be guided by the consideration as to which alternative use is consistent with the goal of wealth maximization. That is, the firm would be well advised to use the net profits for paying dividends to the shareholders if the payment will lead to the maximization of the wealth of the owners. If not, the firm should rather retain them to finance investment programmes. The relationship between dividends and value of the firm should, therefore, be the criterion for taking a decision.

If dividend policy is strictly a financing decision, whether dividends are paid out of profits, or earnings are retained, will depend upon the available investment opportunities. It implies that when a firm has sufficient investment opportunities, it will retain the earnings to finance them. Conversely, if acceptable investment opportunities are inadequate, the implication is that the earnings would be distributed to the shareholders. The test of adequate acceptable investment opportunities is the relationship between the return on the investments (r) and the cost of capital (k). As long 'r' exceeds 'k', a firm has acceptable investment opportunities. In other words, if a firm can earn a return (r) higher than its cost of capital (k) it will retain the earnings to finance investment projects. If the retained earnings fall short of the total funds

required (r > k) it would raise external funds–both equity and debt–to make up the shortfall. If, however, the retained earnings exceed the requirements of funds to finance acceptable investment opportunities, the excess earnings would be distributed to the shareholders in the form of cash dividends. The amount of dividend will fluctuate from year to year depending upon the availability of acceptable investment opportunities. With abundant opportunities, the dividend payout ratio (D/P Ratio i.e. the ratio of dividends to net earnings) would be zero. When there are no profitable opportunities, the D/P ratio will be 100. For situations between these extremes, the D/P Ratio will range between zero and 100.

That dividends are irrelevant, or are a passive residual, is based on the assumption that the investors are indifferent between dividends and capital gains. So long as the firm is able to earn more than the equity capitalization rate (k_e), the investors would be content with the firm retaining the earnings. In contract, if the return were less than the k_e, investors would prefer to receive the earnings (i.e. dividends). [29]

(2) <u>IMPACT OF DIVIDENDS ON THE VALUATION OF THE FIRM</u>

There is a controversy opinion about the impact of dividends on valuation of the firm. According to the school of thought, dividends are irrelevant so that the amount of dividends paid has no effect on the valuation of a firm. On the other hand certain theories consider the dividend decision as relevant to the value of the firm measured in terms of the market price of the shares.

→ <u>M. M. Hypothesis</u>

M. M. maintain that dividend policy has no effect on the share prices of the firm. According to them if the investment policy of the firm is given, then dividend policy is a trade off between cash dividends and issue of common shares. The share price will adjust by the amount of dividend distributed. Thus the existing shareholders are neither better off nor worse off. It is wealth,

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29 - Khan M. Y., Jain P. K. - Financial Management - Tata McGraw Hill Publishing Company Ltd., New Delhi – P-543-544

which remains unchanged. For their new M. M. assume perfect capital market, no transaction costs and no taxes.

➔ Walter's Model View

Walter's model supports the doctrine that dividends are relevant. The investment policy of a firm cannot be separated from its dividend policy and both are according to Walter, interlinked. The choice of an appropriate dividend policy affects the value of an enterprise.[30]

Whether dividend will increase value or not may depend on the profitable investment opportunities available to the firm. In Walter's view it depends on the profitability of investment opportunities available to the firm and the cost of capital. If the firm has profitable opportunities, its value will be maximum when 100 percent of earnings are retained, Walter's another view is that because of the uncertainty of capital gains, investors like more dividends. This implies therefore that the market price of shares of high payout companies will command premium.

The practical words, it is not simple to say that dividend effects on value of firm transaction cost as well as taxes rate also effects on dividend policy. One view is that investors like cash dividends. Thus there are clienteles for high payout shares except tax exempt investors there does not seem to be a strong reason for investors to prefer high payout shares. In fact, in a tax differential world, where capital gains are taxed at low rate, investment in high tax brackets would prefer low payout shares. Thus, there does not seem to be a consensus on whether dividends matter or not. In practice, a number of factors will have to be considered before deciding about the appropriate dividend policy of the firm.[31]

➔ Lintner's Model View

John Lintner's basis his model on a series of interviews which he conducted with corporate manager in the mid 1950s his findings are relevant even today.

He has found that firm generally thinks in terms of proportion of earning to be paid out. Investment requirements are not considered for modifying the

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30 - **Walter J. E., Dividend Policy, Its Influence on the value of the enterprise" Journal of Finance – May 1963, P-280.91**
31 - **Pandey I. M. - Financial Management - Vikas Publishing House Pvt. Ltd., - P7**

pattern of dividend behavior. Thus firms generally have target payout ratios in view while determining change in per share. Lintner's has also found that firms change the dividend slowly and gradually even when there are large increases in earning.

Under the Lintner's model, the current year's dividend (DIV_T) depends on current year's earning (EPS_T) as well as the past year dividend per share (DIV_{T-1}), the past year dividend per share depends on that year's earning per share and dividend per share in the year before.

Lintner's model has been expressed in the firm of the following regression equation

$$DIV_T = a + bp\ (EPS_T) + (1-b)\ DIV_{T-1}$$

Where

DIV_T = expected dividend in current year

a   = Constant of the regression equation

b   = Speed of adjustment

1-b   = Safety factor

DIV_{T-1} = Past year dividend per share

p   = Target payout ratio

Above model was use here to estimate expected dividend per share in the current year on the basis of current year's earning per share and past year dividend per share.

(3) DIVIDEND POLICY

Dividend policy means the rules and regulation determined by the company to pay the dividend to the equity shareholders. It is concern with dividing firm's net earning into two part retained earnings and dividend. The retained earnings provide funds to finance the firm's long-term growth. Dividends are generally paid in cash. Thus, the distribution of earnings uses the available cash of the firm. A firm, which intends to pay dividends and also

needs funds to finance its investment opportunities, will have to use external sources of financing. Such as the issue of debt or new common shares, dividend policy of the firm thus has its effect on both the long term financing and the wealth of shareholders. The payment of dividend may significantly affect the market price of the share. Higher dividends increase the value of the share and lower dividends reduce the value of the share on the other hand, when dividends are increased, though there may be a favourable reaction in the stock markets, but the firm may have to forego some profitable investment opportunities for want of funds and consequently, the future earnings per share may decrease.

Therefore, management should develop such a dividend policy, which divides the net earning into dividends and retained earning in an optimum way to achieve the objective of maximizing the wealth of shareholders.[32]

(4) EXPLANATION OF VARIABLES (TERMS) USED FOR EVALUATION OF DIVIDEND DECISION

→**Dividend Yield Ratio**

Dividend yield ratio explains the percentage of dividend earned by shareholder on market price of shares. Dividend yield ratio is calculated dividing dividend per share by average market price per share. Hence, dividend yield is the ratio of dividend per share to market price per share.

$$\text{D. Y. Ratio} = {}^{DPS}/_{AMP} \times 100$$

Dividend yield ratio indicates earning in form of dividend in average market price per share. A high dividend yield ratio signifies a high earning on average market price.

→**Dividend Payout Ratio**

Dividend payout ratio in the dividend per share is divided by earning per share as follow.

$$\text{D. P. Ratio} = {}^{DPS}/_{EPS} \times 100$$

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32 - **Richard D. Irwin - The investment, financing and valuation of corporation – 1962 – Ch – 19**

Dividend payout ratio indicates the part of the net profit distributed to the shareholders as dividend. A high payout signifies a liberal distribution policy and a low pay out reflects conservative distribution policy.

→Earning Yield Ratio

Earning yield ratio explains the percentage of earning on market price of the shares. It is calculated dividing EPS by Average Market Price per share hence earning yield is the ratio of EPS to Average Market Price.

$$\text{E.Y. Ratio} = {}^{EPS}/_{AMP} \times 100$$

A high earning ratio signifies a high earning on Average Market Price.

(5) TOOLS AND TECHNIQUES USED FOR EVALUATION OF DIVIDEND DECISION

For the purpose of analysis and evaluation of dividend decision, various ratio liked Dividend payout ratio, Target dividend payout ratio, Dividend yield ratio, Earning yield ratio, are calculated. Moreover, statistical technique such as standard deviation, co-efficient of variation, average, multiple co-relation, determination of multiple co-relation, multiple regression equation, 't' test, X^2 test and ANOVA test were also applied to analysis the consistency, otherwise the stability and overall trends in the difference financial aspect of the companies. Data has been converted in to relative measure such as ratios, percentages, indices rather than the absolute data.

Following four hypothesis have been tested with four corresponding alternative hypothesis for the purpose of analyzing dividend decision of selected companies of Saurashtra region.

FIRST:

Hypothesis based on t test for regression coefficient.

⇨ Null Hypothesis: There is no significant difference between partial regression coefficient of sample and population data of sampled units during the study period of Saurashtra region.

⇨ Alternative Hypothesis: There is a significant difference between partial regression coefficient of sample and population data of sampled unit during the study period of Saurashtra region.

SECOND:

Hypothesis based on 'F' test (one way ANOVA) for multiple regressions.

⇨ Null hypothesis: There is no significant difference of the regression, as a whole that means whole independent variable were not related with dependent variable.

⇨ Alternative hypothesis: There is a significant difference of the regression as a whole that means at least one of the independent variable was related with dependent variable.

THIRD:

Hypothesis based on chi-square test

Lintner's model has been used to estimate the expected dividend per share than after target payout ratio has been calculated with the help of EPS and expected dividend per share. The chi-square test was conducted between the actual dividend payout ratio and target dividend payout ratio to test the following hypothesis.

⇨ Null hypothesis: There is no significant difference dividend decision policy of selected units of Saurashtra region.

The acceptance of the above hypothesis clears that management is more likely to increase dividend overtime rather than cut them and rejection of the above hypothesis clears that management is not always likely to increase dividend.

FOURTH:

Hypothesis based on ANOVA 'F' test – One-Way analysis of variance.

Forth one hypothesis has been developed to see whether there is any significant difference in dividend decision of the selected units of the saurashtra region. For evaluating dividend decision mainly three variables namely Dividend per share, EPS and Dividend payout ratio of all nine units are summarized. To evaluate these three variables with a view to analysis

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overall dividend decision of all nine selected units of Saurashtra region, following hypothesis based on ANOVA ('F' test) is developed. The acceptance of following null hypothesis would reveal that there is no significant difference in dividend decision within the sample units. However, rejection of the null hypothesis would also suggest, there is a significant difference in dividend decision within sampled units of Saurashtra region.

Null Hypothesis

There is no significant difference in dividend payout ratio within the sampled units during the period of study of Saurashtra region.

Alternative Hypothesis

There is a significant difference in dividend payout ratio within the sampled units during the period of study of Saurashtra region.

(6) ANALYSIS OF DIVIDEND DECISION OF SELECTED COMPANIES LOCATED IN SAURASHTRA REGION AND LISTED WITH STOCK EXCHANGE.

Here, the researcher has considered only those companies that paid dividend in at least four years out of the ten years under the study period. The two selected sampled units such as DCCL and Orient Abrasives Ltd. have not been considered, as they have not paid dividend for at least four years out of ten years under the study period.

INDIAN RAYON & INDUSTRIES LTD. VERAVAL

For the purpose of analysis and evaluation of dividend decision of IRIL, following null hypothesis is tested

Null Hypothesis

There is no significant difference in dividend decision policy of IRIL

The following evaluation emerges from multiple correlations, multiple regressions, 't' test, 'F' test, chi-square test and its results in respect of IRIL. VERAVAL.

**Multiple correlations, multiple regression equation, 'F' test and 't'
test approach.**

TABLE NO 6.1

KEY INDICATORS OF DIVIDEND DECISION OF IRIL

YEAR	DIV$_T$ (In Rs.) (X_1)	EPS (In Rs.) (X_2)	DIV$_{T-1}$ (In Rs.) (X_3)	DPR (In %)	TDPR (In %)	χ^2	DYR (In %)	EYR (In %)	AMP (In Rs.)
94-95	5.75	29.69	5.50	19.37	16.83	0.38	1.28	6.60	450.00
95-96	6.25	41.10	5.75	15.21	15.40	0.00	1.34	8.84	465.00
96-97	6.75	47.75	6.25	14.14	14.84	0.03	2.30	16.30	293.00
97-98	5.00	31.49	6.75	15.88	16.30	0.01	2.79	17.59	179.00
98-99	4.00	15.71	5.00	25.46	21.48	0.74	4.94	19.40	81.00
99-00	1.00	9.20	4.00	10.87	28.97	11.31	1.82	16.73	55.00
00-01	3.00	11.44	1.00	26.22	27.19	0.03	3.75	14.30	80.00
01-02	3.30	7.04	3.00	46.88	35.08	3.96	4.58	9.78	72.00
02-03	3.75	18.79	3.30	19.96	20.44	0.01	5.00	25.05	75.00
03-04	4.00	18.59	3.75	21.52	20.39	0.06	2.12	9.84	189.00
TOTAL	42.80	230.80	44.30	215.49	216.93	16.55	29.93	144.42	1,939.00
AVG	4.28	23.08	4.43	21.55	21.69	1.65	2.99	14.44	193.90
SD	1.71	13.85	1.75	10.15	6.71	3.60	1.46	5.69	157.47
R	0.91	0.77	0.67						0.81
CV	40.06	60.00	39.56	47.10	30.92	217.78	48.86	39.42	3,679.10
R1.23 = 0.91	(R1.23)^2 = 0.83								

(Source: annual report of IRIL from 1994-95 to 2003-04)

Multiple regression equation for the line x_1 on x_2 and x_3

$$X_1 = 1.82 + 0.12(X_2) - 0.06(X_3)$$

Where X_1 = Current year's dividend per share, X_2 = Current year's EPS and

   X_3 = Past year's dividend per share.

Table No 6.1 provides data regarding current year's Dividend per
share and EPS, past year's Dividend per share, Dividend payout ratio, Target
dividend payout ratio, Dividend yield ratio, Earning yield ratio, Average market
price and value of chi-square of Indian Rayon & Industries Ltd. Veraval

   The maximum EPS of Rs. 47.75 was first reached in 1996-97, but than
it declined to Rs. 7.04 in 2001-02, the EPS again increase up to Rs 18.79 in
2002-03. The maximum DPS of Rs. 6.75 was also first reached in 1996-97,
but than it declined to Rs 1 per share in 1999-00, the DPS again increased up
to Rs 4 in 2003-04, it implies that proportionate variation in DPS and EPS are
in the same direction (See **chart no 6.1**).

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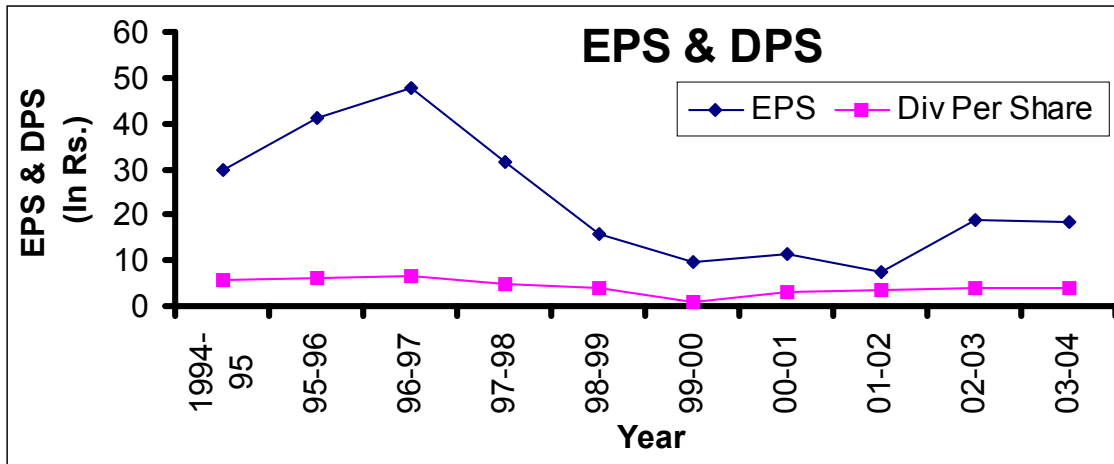
Chart No. 6.1

As a result, dividend payout ratio has shown more variation (see **chart no 6.2**).

Chart No. 6.2
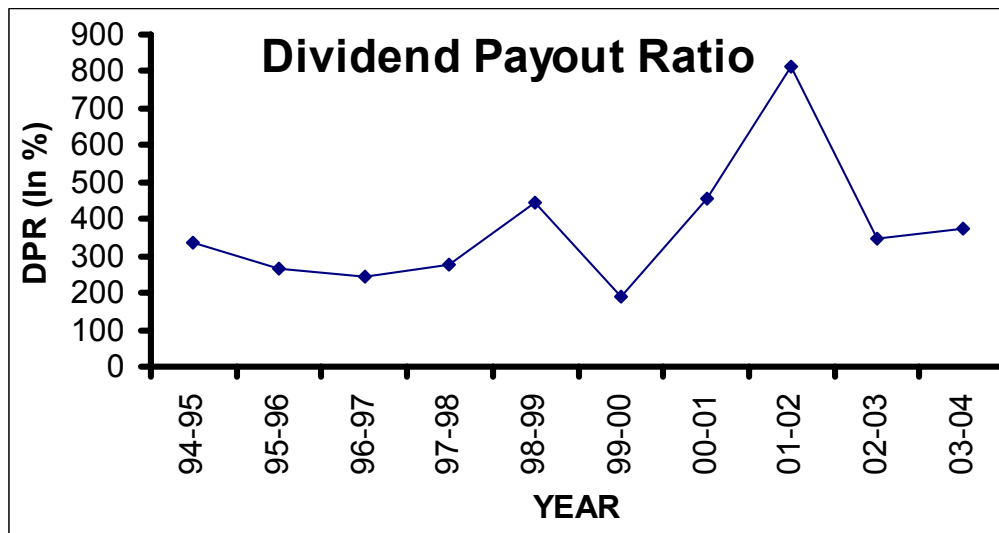
The average dividend payout ratio is around 21.55%; it was nearest to 21.52% in the year 2003-04. It is evident of steadily growing in DPS.

The average market price of IRIL has been decreasing (See **chart no 6.3**) It may be partly due to the poor financial performance and inefficient dividend policy of the company.

Chart No. 6.3

Average Market Price
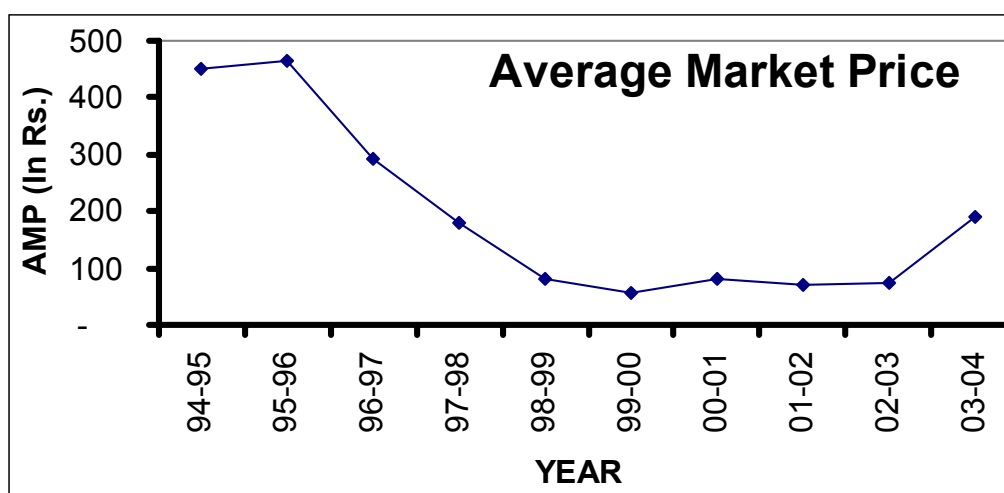
Average market price is positively correlated with DPS. The correlation co-efficient between DPS and AMP is 0.81, which is significant so DPS is significant factor for determination of AMP. The maximum AMP of Rs 465 was in 1995-96, but than decline to Rs 55 in 1999-00. In 2003-04 the AMP went up to Rs 189. The dividend yield ratio of IRIL has been increasing; it implies that company's share price has been decreasing faster than decrease in DPS. Earning yield ratio has been fluctuated during the study period; it is reason of variation in EPS and AMP.

ANOVA TABLE NO 3.2						CHI SQUARE	
Sources of vari.	Degree of freedom	Sum of square	Mean of square	'F' ratio	Critical Value @ 5%	χ^2 Value	Result @ 5%
Regression (SSR)	2.00	21.83	10.92	16.53	F(2, 7) = 4.74	16.55	D.F. (8)
Error (SSE)	7.00	4.62	0.66	Significant			15.50
Total (SST)	9.00	26.46				Significant	

VARIABLE IN EQUATION TABLE NO 3.3

Variable	Partial Regre. Coeffi.	S.E. (B)	$\lvert t \rvert$ value	Critical value @ 5%	Result
Constant	1.82	-	-	-	-
X_2	0.12	0.03	3.87	2.37	Significant
X_3	-0.06	0.24	0.25	2.37	Non-Sign.

Researcher has used Lintner's model to evaluate the dividend decision of IRIL. The model expressed in multiple regression equation form and

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analysis significances of independent variable EPS and past year's DPS. The result tabulated in above **table no 6.2 & 6.3**. The result indicates that EPS and past year's DPS both were significant variables. 't' value indicates that statistically there is a significant correlation between current year's DPS and EPS but not between current year's DPS and past year's DPS.

The coefficient value arrived above shown in **table no 6.3** were used to estimate the expected DPS as per Lintner's model and calculated target dividend payout ratio. The chi-square test was conducted between the actual dividend payout ratio and target dividend payout ratio and result are tabulated in **table no 6.1**. From the result it observes that the result of the chi-square test could not accept the null hypothesis. Hence, it is concluded that there is a significant difference between actual dividend payout ratio and target dividend payout ratio. It means there is a significant difference in Dividend policy.

The above analysis indicates that company dividend policy mostly depends upon current year earning (EPS); actual dividend was far away from excepted dividend (chi-square result). There is less stability in dividend policy it may be reasonable for wealth maximization of shareholder but not for investors satisfaction. Company's average dividend payout ratio was 21.55%, it is evident of high retention of earning, it is advisable if company has large up coming capital expenditure program.

RELIANCE INDUSTRIES LTD. JAMNAGAR

For the purpose of analysis and evaluation of dividend decision of RIL, following null hypothesis is tested

Null Hypothesis

There is no significant difference in dividend decision policy of RIL

The following evaluation emerges from multiple correlations, multiple regressions, 't' test, 'F' test, chi-square test and its results in respect of RIL. JAMNAGAR.

Multiple correlations, multiple regression equation, 'F' test and 't' test approach.

TABLE NO 6.4

KEY INDICATORS OF DIVIDEND DECISION OF RIL

YEAR	DIV_T (In Rs.) (X_1)	EPS (In Rs.) (X_2)	DIV_{T-1} (In Rs.) (X_3)	DPR (In %)	TDPR (In %)	χ^2	DYR (In %)	EYR (In %)	AMP (In Rs.)
94-95	5.50	11.70	5.25	47.01	43.50	0.28	2.10	4.47	261.46
95-96	6.00	14.00	5.50	42.86	36.94	0.95	2.82	6.58	212.67
96-97	6.50	14.40	6.00	45.14	37.28	1.66	2.08	4.60	312.94
97-98	3.50	17.60	6.50	19.89	31.50	4.28	1.97	9.93	177.23
98-99	3.75	18.00	3.50	20.83	24.08	0.44	2.87	13.79	130.50
99-00	4.00	22.40	3.75	17.86	19.64	0.16	1.26	7.07	316.68
00-01	4.25	25.10	4.00	16.93	17.84	0.05	1.09	6.42	391.18
01-02	4.75	23.40	4.25	20.30	19.62	0.02	1.19	5.87	398.38
02-03	5.00	29.30	4.75	17.06	16.19	0.05	1.81	10.60	276.53
03-04	5.25	36.80	5.00	14.27	13.00	0.12	0.98	6.84	538.20
TOTAL	48.50	212.70	48.50	262.14	259.57	8.01	18.18	76.18	3015.77
AVG	4.85	21.27	4.85	26.21	25.96	0.80	1.82	7.62	301.58
SD	0.99	7.76	0.99	13.14	10.54	1.33	0.69	2.94	0.99
R	-0.19	-0.19	0.42						0.72
CV	20.36	36.48	20.36	50.13	40.61	165.86	37.76	38.59	0.33
R1.23 = 0.43	$(R1.23)^2$ = 0.18								

(Source: annual report of RIL from 1994-95 to 2003-04)

Multiple regression equation for the line x_1 on x_2 and x_3

$$X_1 = 3.07 - 0.01(X_2) + 0.4(X_3)$$

Where X_1 = Current year's dividend per share, X_2 = Current year's EPS and
   X_3 = Past year's dividend per share.

Table No 6.4 provides data regarding current year's Dividend per share and EPS, past year's Dividend per share, Dividend payout ratio, Target dividend payout ratio, Dividend yield ratio, Earning yield ratio, Average market price and value of chi-square of Reliance Industries Ltd. Jamnagar.

EPS of the company has been continuously growing. It was reached from Rs. 11.70(1994-95) to Rs. 36.80 per share (2003-04). It has grown at annual compound rate of 13.60%. DPS has been growing from 1994-95 to 1996-97 at the faster rate, than after decreased from Rs 6.5 per share to Rs 3.5 per share in 1997-98 (see **chart no 6.4**). One of the reasons for decreasing in EPS might be issue of bonus share (1997-98) with the rate of 1:1. From 1998-99 again started to grown and reached up to 5.25 in 2003-04.

Chart No. 6.4
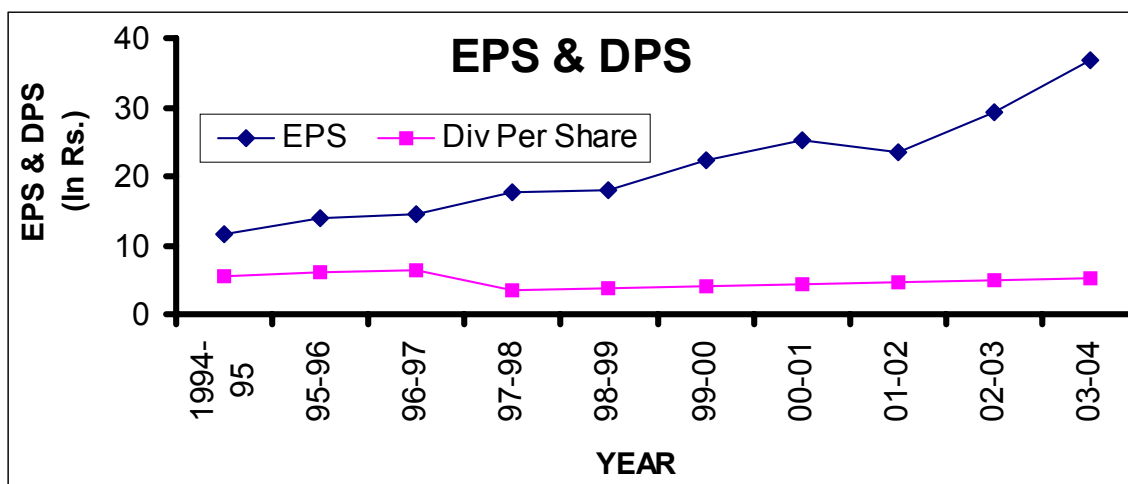
There was continuous decrease in dividend payout ratio (see **chart no 6.5**). It implies that company's EPS has been growing faster than growth in DPS. IPCL merged with RIL in 2002-03. Merging decision has improved EPS due to effective and efficient financial performance of IPCL. The average dividend payout ratio of RIL is around 26.21% but it was only 14.27% in 2003-04. It is evident of decreasing in DPR.

Chart No. 6.5
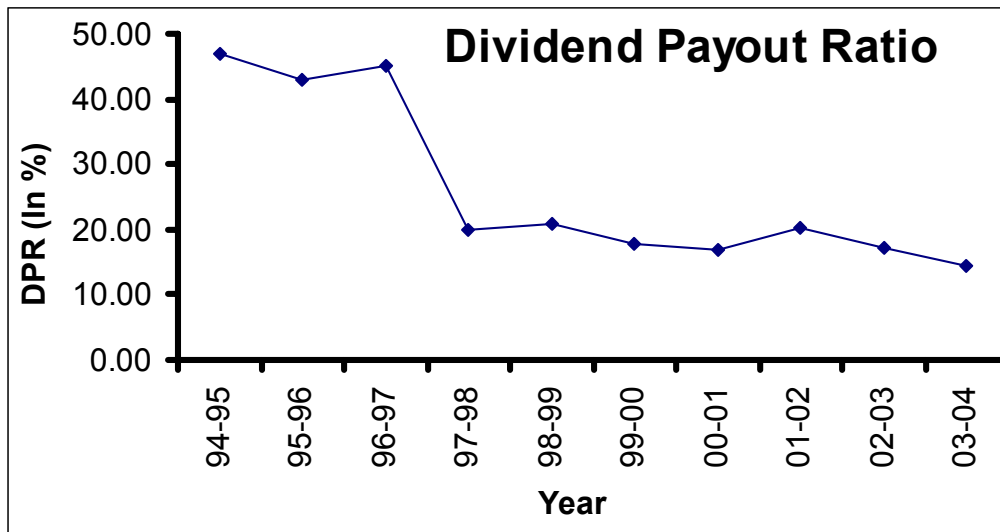
The average market price of RIL has been steadily growing during the study period (see **chart no 6.6**). It may be partly due to the financial performance and policy of the company. Perhaps shareholders like the company's dividend policy. Average market price is positively related to DPS the correlation co-efficient between DPS and AMP is 0.72.

Chart No. 6.6
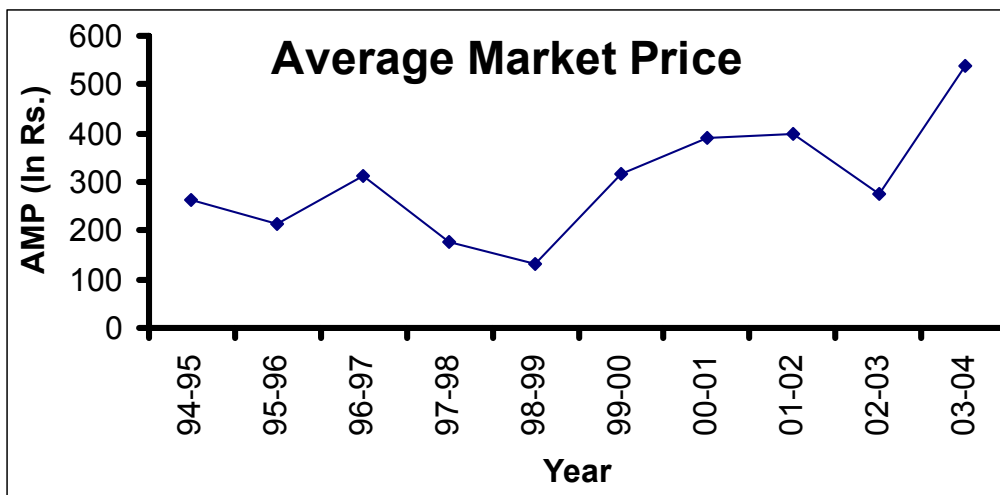
The maximum average share price of Rs 312.94 was first reached in 1996-97, but it declined to Rs 130.5 in 1998-99. In 2003-04, the average price went up to a high level of Rs 538.20. The dividend yield of the company has been declined; this implies that company's share price has been growing faster than growth in DPS. Earning yield ratio has been fluctuated during the study period; it is result of variation in EPS and AMP.

ANOVA TABLE NO 6.5						CHI SQUARE	
Sources of vari.	Degree of freedom	Sum of square	Mean of square	'F' ratio	Result @ 5 %	χ^2 Value	Result @ 5%
Regression (SSR)	2.00	1.60	0.80	0.78	F (2,7) =4.74	8.01	D.F. (8)
Error (SSE)	7.00	7.17	1.02	Non-Sign.			15.05
Total (SST)	9.00	8.78				Non-Sign.	

VARIABLE IN EQUATION TABLE NO 6.6

Variable	Partial Regre. Coeffi.	S.E. (B)	| t | value	Critical value @ 5%	Result
Constant	3.07	-	-	-	-
X_2	-0.01	0.05	0.18	2.37	Non-Sign.
X_3	0.40	0.36	1.11	2.37	Non-Sign.

Researcher has used Lintner's model to evaluate the dividend decision of RIL. The model expressed in multiple regression equation form and analysis significances of independent variable EPS and past year's DPS. The result tabulated in above **table no 6.5 & 6.6**. The result indicates that EPS and past year's DPS both were non-significant variables. 't' value indicates that statistically there was no significant correlation between current year's DPS and EPS as well as between current year's DPS and past year's DPS.

The coefficient value arrived above shown in **table no 6.6** were used to estimate the expected DPS as per Lintner's model and calculated target dividend payout ratio. The chi-square test was conducted between the actual dividend payout ratio and target dividend payout ratio and result are tabulated in **table no 6.4**. From the result it observes that the result of the chi-square test could accept the null hypothesis. Hence, it is concluded that there is no significant difference between actual dividend payout ratio and target dividend payout ratio. It means there is no significant difference in Dividend policy.

The above analysis indicates that company's dividend policy is less stable but quite reasonable from the view point of investor's satisfaction and wealth maximization of share holders in future. Current year earning is not

determination of policy but other that factors reflects more important in determining policy. The low dividend payout ratio is evident of high retain earning ratio. It implied that company has large up coming capital expenditure program. RIL is one of the faster growing companies; which gives precedence to the retention of earning over the payment of dividends in order to finance its expanding activities.

TATA CHEMICALS LTD. MITHAPUR

For the purpose of analysis and evaluation of dividend decision of TCL, following null hypothesis is tested

Null Hypothesis

There is no significant difference in dividend decision policy of TCL

The following evaluation emerges from multiple correlations, multiple regressions, 't' test, 'F' test, chi-square test and its results in respect of TCL. MITHAPUR.

Multiple correlations, multiple regression equation, 'F' test and 't' test approach.

TABLE NO 6.7

KEY INDICATORS OF DIVIDEND DECISION OF TCL

YEAR	DIV_T (In Rs.) (X_1)	EPS (In Rs.) (X_2)	DIV_{T-1} (In Rs.) (X_3)	DPR (In %)	TDPR (In %)	χ^2	DYR (In %)	EYR (In %)	AMP (In Rs.)
94-95	6.50	25.38	6.00	25.61	26.49	0.03	2.97	11.60	218.88
95-96	6.50	21.83	6.50	29.78	30.19	0.01	3.08	10.35	210.99
96-97	6.50	13.96	6.50	46.56	42.83	0.32	4.12	8.85	157.75
97-98	6.50	15.97	6.50	40.70	38.42	0.14	4.35	10.68	149.50
98-99	5.00	10.06	6.50	49.70	56.43	0.80	6.96	14.01	71.80
99-00	5.00	6.50	5.00	76.92	76.55	0.00	9.52	12.38	52.50
00-01	5.00	9.13	5.00	54.76	56.73	0.07	13.14	24.00	38.04
01-02	5.00	7.02	5.00	71.23	71.45	0.00	10.75	15.10	46.50
02-03	5.50	10.88	5.00	50.55	48.85	0.06	8.35	16.51	65.88
03-04	5.50	10.25	5.50	53.66	52.76	0.02	5.16	9.62	106.59
TOTAL	57.00	130.98	57.50	499.47	500.71	1.44	68.41	133.09	1118.43
AVG	5.70	13.10	5.75	49.95	50.07	0.14	6.84	13.31	111.84
SD	0.71	6.28	0.72	16.03	16.30	0.25	3.50	4.49	68.15
R	0.86	0.62	0.70						0.95
CV	12.54	47.92	12.47	32.10	32.55	174.26	51.12	33.72	60.93
R1.23 = 0.89	$(R1.23)^2$ =0.78								

(Source: annual report of TCL from 1994-95 to 2003-04)

Multiple regression equation for the line x_1 on x_2 and x_3

$$X_1 = 3.05 + 0.08(X_2) + 0.28(X_3)$$

Where X_1 = Current year's dividend per share, X_2 = Current year's EPS and

X_3 = Past year's dividend per share.

Table No 6.7 provides data regarding current year's Dividend per share and EPS, past year's Dividend per share, Dividend payout ratio, Target

dividend payout ratio, Dividend yield ratio, Earning yield ratio, Average market price and value of chi-square of Tata chemicals Ltd. Mithapur.

DPS of TCL remains more or less same during the study period, but there was considerable decreased in EPS (see **chart no 6.7**). CV rate of EPS was 47.92%, which indicate more fluctuation in EPS. It was decreased from Rs 25.38(1994-95) to Rs 10.25(2003-04) but stable dividend per share.

Chart no 6.7
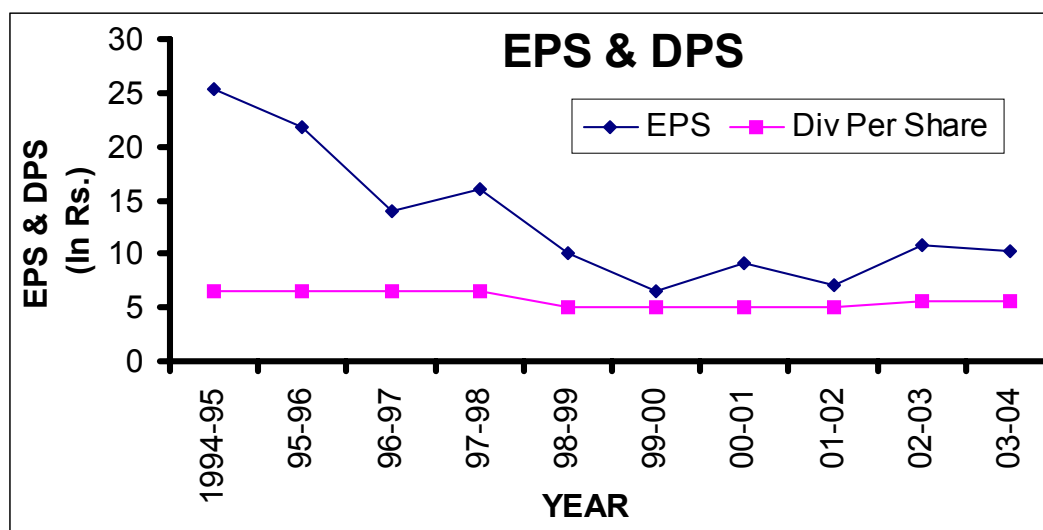
DPR was decreased (see **chart no 6.8**). The average dividend payout ratio of the company is 49.95% during the study period. In the year 2003-04, DPR was 53.66%.

Chart no 6.8.
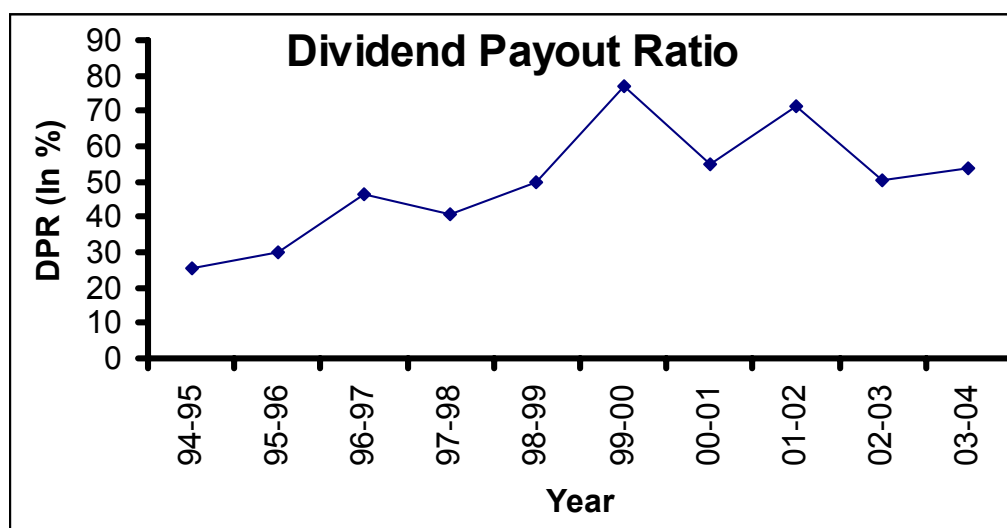
The average market price of share of TCL has been decreased during the study period (See **chart no. 6.9**). Highest average market price was Rs 218.88 in the year 1994-95 than it declined to Rs. 38.04 in the year 2000-01.

It may be partly due to poor financial performance and inefficient dividend policy of the company.

Chart no 6.9.
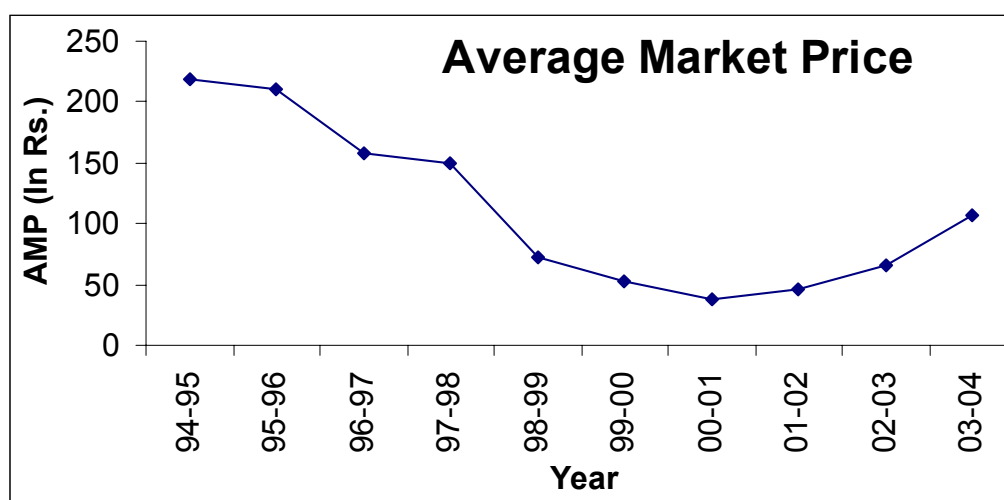
In the year 2003-04, the average market price of the share went up to Rs. 106.59. The dividend yield of the company has been increasing. This implies that company's share price has been decreasing faster than decrease in DPS during the last ten years under the study period; TCL has paid the bonus share one times in 1995-96.

ANOVA TABLE NO 6.8						CHI SQUARE	
Sources of vari.	Degree of freedom	Sum of square	Mean of square	'F' ratio	Result @ 5 %	Chi-square Value	Result @ 5%
Regression (SSR)	2.00	3.60	1.80	12.67	$F_{(2, 7)}$ = 4.74	1.44	D.F (8)
Error (SSE)	7.00	1.00	0.14	Significant			15.50
Total (SST)	9.00	4.60				Non. – Sign.	

VARIABLE IN EQUATION TABLE NO 6.9

Variable	Partial Regre. Coeffi.	S.E. (B)	| t | value	Critical Value @ 5%	Result
Constant	3.05	-	-	-	-
X_2	0.08	0.03	3.05	2.37	Significant
X_3	0.28	0.22	1.27	2.37	Non-Sign.

Researcher has used Lintner's model to evaluate the dividend decision of TCL. The model expressed in multiple regression equation form and analysis significances of independent variable EPS and past year's DPS. The

result tabulated in above **table no 6.8 & 6.9**. The result indicates that EPS and past year's DPS both were significant variables. 't' value indicates that statistically there was no significant correlation between current year's DPS and EPS as well as between current year's DPS and past year's DPS.

The coefficient value arrived above shown in **table no 6.9** were used to estimate the expected DPS as per Lintner's model and calculated target dividend payout ratio. The chi-square test was conducted between the actual dividend payout ratio and target dividend payout ratio and result are tabulated in **table no 6.7.** From the result it observes that the result of the chi-square test could accept the null hypothesis. Hence, it is concluded that there was no significant difference between actual dividend payout ratio and target dividend payout ratio. It means there is no significant difference in Dividend policy.

The above analysis indicates that company determined consistent dividend policy. We can conclude that company may pay about 43% to 50% of its earning as dividend in future provided that if financial position will be improved. The present dividend policy may be quite reasonable to maximize the wealth of shareholders.

GUJARAT HEAVY CHEMICALS LTD. – SUTRAPADA

For the purpose of analysis and evaluation of dividend decision of GHCL, following null hypothesis is tested

Null Hypothesis

There is no significant difference in dividend decision policy of GHCL

The following evaluation emerges from multiple correlations, multiple regressions, 't' test, 'F' test, chi-square test and its results in respect of GHCL. SUTRAPADA.

Multiple correlations, multiple regression equation, 'F' test and 't' test approach.

TABLE NO 6.10

KEY INDICATORS OF DIVIDEND DECISION OF GHCL

YEAR	DIV_T (In Rs.) (X_1)	EPS (In Rs.) (X_2)	DIV_{T-1} (In Rs.) (X_3)	DPR (In %)	TDPR (In %)	χ^2	DYR (In %)	EYR (In %)	AMP (In Rs.)
94-95	1.00	4.10	1.00	24.39	33.93	2.68	18.35	75.23	5.45
95-96	1.50	5.22	1.00	28.74	31.12	0.18	21.58	75.11	6.95
96-97	1.80	5.88	1.50	30.61	33.90	0.32	23.84	77.88	7.55
97-98	2.00	5.11	1.80	39.14	38.59	0.01	23.53	60.12	8.50
98-99	2.00	4.49	2.00	44.54	43.11	0.05	22.50	50.51	8.89
99-00	1.25	2.62	2.00	47.71	59.03	2.17	13.59	28.48	9.20
00-01	1.80	2.78	1.25	64.75	44.33	9.41	18.00	27.80	10.00
01-02	2.50	4.81	1.80	51.98	39.70	3.79	20.08	38.63	12.45
02-03	2.30	4.87	2.50	47.23	46.13	0.03	12.31	26.07	18.68
03-04	1.50	3.16	2.30	47.47	56.90	1.56	6.58	13.87	22.78
TOTAL	17.65	43.04	17.15	426.55	426.75	20.20	180.36	473.70	110.45
AVG	1.77	4.30	1.72	42.65	42.67	2.02	18.04	47.37	11.05
SD	0.46	1.11	0.52	12.17	9.41	2.92	5.62	23.67	5.52
R	0.43	-0.13	0.45						-0.26
CV	26.24	25.79	30.24	28.53	22.06	144.39	31.16	49.96	49.95
R1.23 = 0.67	$(R1.23)^2$=0.45								

(Source: annual report of GHCL from 1994-95 to 2003-04)

Multiple regression equation for the line x_1 on x_2 and x_3

$$X_1 = 0.07 + 0.21(X_2) + 0.46(X_3)$$

Where X_1 = Current year's dividend per share, X_2 = Current year's EPS and

X_3 = Past year's dividend per share.

Table No 6.10 provides data regarding current year's Dividend per share and EPS, past year's Dividend per share, Dividend payout ratio, Target dividend payout ratio, Dividend yield ratio, Earning yield ratio, Average market price and value of chi-square of Gujarat Heavy Chemicals Ltd. Sutrapada.

There was up and down in DPS and EPS. Lowest DPS was Rs 1 per share in the year 1994-95 and highest Rs 2.5 per share in the year 2001-02. An annual compound growth rate of is 4.5% in DPS during the study period. The company has been steadily increasing its DPS. CV rate of EPS and DPS both are almost same indicating equal fluctuation in EPS and DPS (see **chart no. 6.10**).

Chart no 6.10.
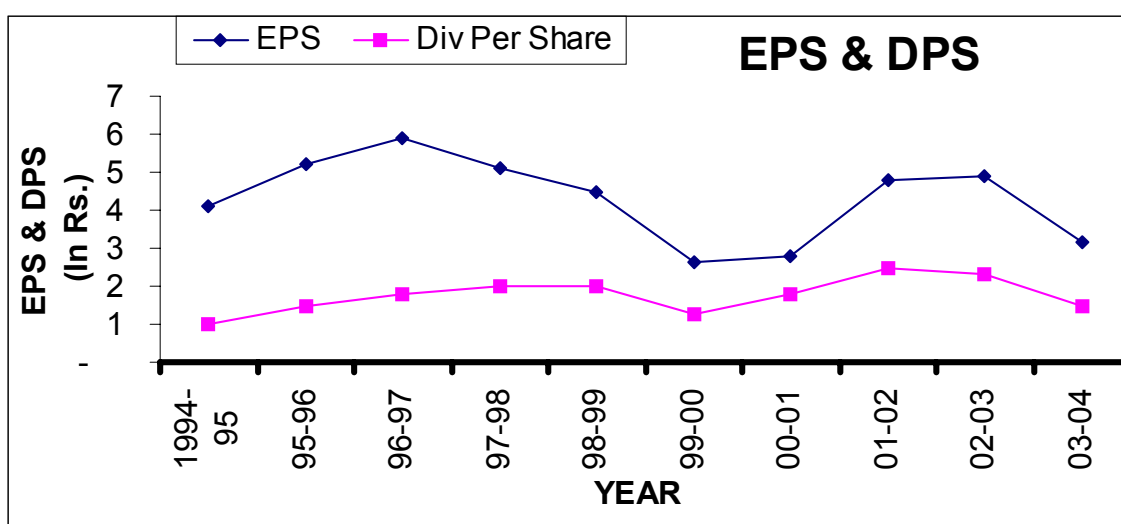
Dividend payout ratio was almost in increasing trend during study period (see **chart no 6.11**). The average dividend payout ratio of company is around 42.65%. In the year 2003-04 it was 47.47%.

Chart no 6.11.
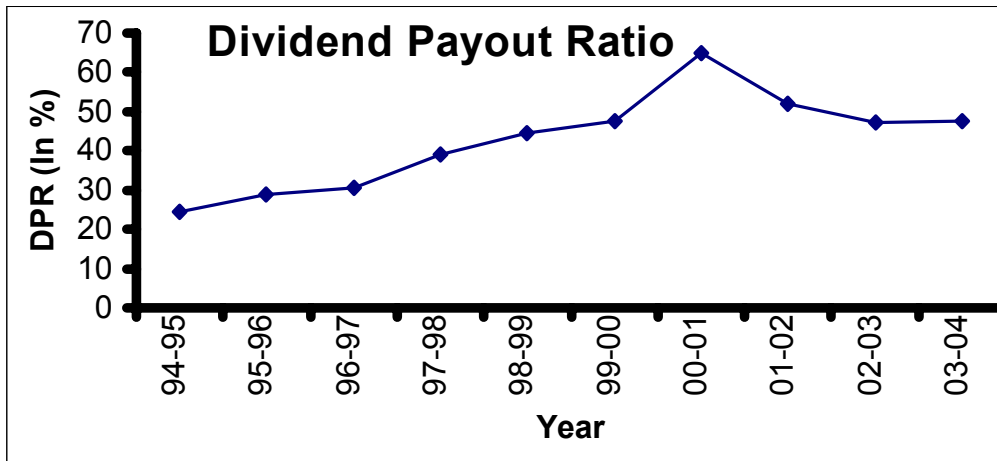
It implies that company's DPS has been growing faster than growth in EPS.

The average market price of GHCL's share has been gradually growing (see **chart no 6.12**). It increases from 5.45 in 1994-95 to 22.78 in the year 2003-04. It may be partly due to the financial performance and policy of the company. Perhaps shareholders like the company's dividend policy.

Chart no 6.12.
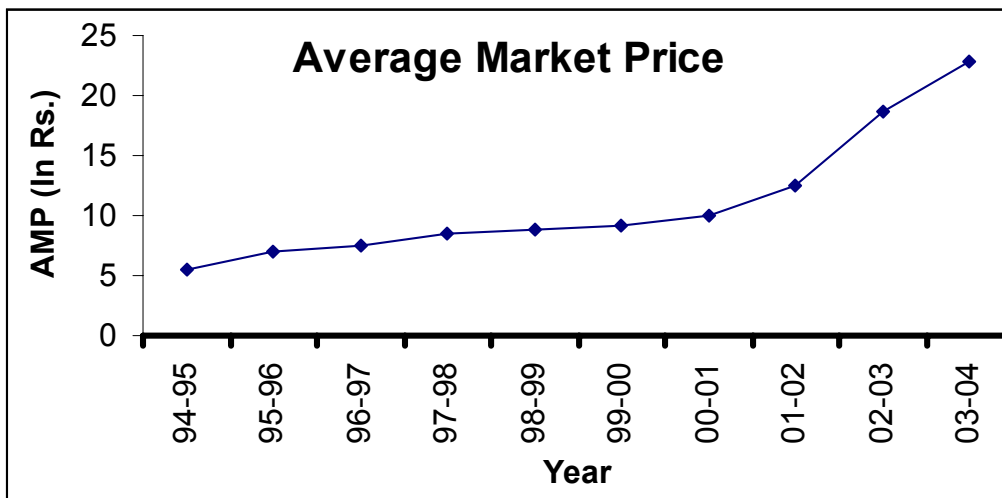
The share price is negatively related to DPS. The correlation co-efficient between DPS and AMP is –0.26. The dividend yield of the company has been increased up to 1996-97, than after declined, this implies that company's share price has been growing faster than growth in DPS.

ANOVA TABLE NO 6.11						CHI SQUARE	
Sources of vari.	Degree of freedom	Sum of square	Mean of square	'F' ratio	Result @ 5 %	$\chi 2$ Value	Result @ 5%
Regression (SSR)	2.00	0.87	0.43	2.87	F (2, 7) = 4.74	20.20	D.F. (8)
Error (SSE)	7.00	1.06	0.15	Non-Sign.			15.50
Total (SST)	9.00	1.93				Significant	

VARIABLE IN EQUATION TABLE NO 6.12

Variable	Partial Regre. Coeffi.	S.E. (B)	| t | value	Critical value @ 5%	Result
Constant	0.07	-	-	-	-
X_2	0.21	0.12	1.76	2.37	Non-Sign.
X_3	0.46	0.25	1.84	2.37	Non-Sign.

Researcher has used Lintner's model to evaluate the dividend decision of GHCL. The model expressed in multiple regression equation form and analysis significances of independent variable EPS and past year's DPS. The result tabulated in above **table no 6.11 & 6.12**. The result indicates that EPS and past year's DPS both were non-significant variables. 't' value indicates that statistically there was no significant correlation between current year's DPS and EPS as well as between current year's DPS and past year's DPS.

The coefficient value arrived above shown in **table no 6.12** were used to estimate the expected DPS as per Lintner's model and calculated target dividend payout ratio. The chi-square test was conducted between the actual dividend payout ratio and target dividend payout ratio and result are tabulated in **table no 6.10**. From the result it observes that the result of the chi-square test could not accept the null hypothesis. Hence, it is concluded that there is a significant difference between actual dividend payout ratio and target dividend payout ratio. It means there is a significant difference in Dividend policy.

The above analysis indicates that company's dividend policy does not follow Lintner's model the company change the dividend speedily with increase in earning. The company is not using some standard target payout

ratio to determine dividend policy. There was no proper trade off between dividend and retain earning. Company's dividend policy envisage that company may pay about 40% to 50% of its earning as dividend in future which may reasonable to satisfy investor but not maximizing the wealth of the share holders in the future.

GUJARAT AMBUJA CEMENT LTD. – KODINAR

For the purpose of analysis and evaluation of dividend decision of GACL, following null hypothesis is tested

Null Hypothesis

There is no significant difference in dividend decision policy of GACL

The following evaluation emerges from multiple correlations, multiple regressions, 't' test, 'F' test, chi-square test and its results in respect of GACL. KODINAR.

Multiple correlations, multiple regression equation, 'F' test and 't' test approach.

TABLE NO 6.13

KEY INDICATORS OF DIVIDEND DECISION OF GACL

YEAR	DIV_T (In Rs.) (X_1)	EPS (In Rs.) (X_2)	DIV_{T-1} (In Rs.) (X_3)	DPR (In %)	TDPR (In %)	χ^2	DYR (In %)	EYR (In %)	AMP (In Rs.)
94-95	4.00	16.00	3.5	25.00	29.03	0.56	1.90	7.61	210.15
95-96	5.00	20.00	4.00	25.00	27.67	0.26	2.22	8.87	225.50
96-97	5.00	18.00	5.00	27.78	32.28	0.63	2.90	10.45	172.25
97-98	6.00	18.00	5.00	33.33	32.28	0.03	3.38	10.14	177.55
98-99	7.00	21.00	6.00	33.33	32.56	0.02	3.81	11.44	183.50
99-00	4.00	12.00	7.00	33.33	50.53	5.85	2.13	6.40	187.50
00-01	5.00	13.00	4.00	38.46	34.49	0.46	2.74	7.12	182.50
01-02	6.00	12.00	5.00	50.00	40.92	2.02	3.16	6.32	190.00
02-03	7.00	14.00	6.00	50.00	41.34	1.81	3.51	7.02	199.50
03-04	8.00	19.00	7.00	42.11	37.45	0.58	2.88	6.83	278.25
TOTAL	57.00	163.00	52.50	358.34	358.56	12.22	28.63	82.20	2006.70
AVG	5.70	16.30	5.25	35.83	35.86	1.22	2.86	8.22	200.67
SD	1.34	3.37	1.23	9.23	6.88	1.76	0.63	1.87	31.59
R	0.37	-0.02	0.52						0.31
CV	23.46	20.66	23.44	25.74	19.18	144.37	21.98	22.71	15.74
R1.23 = 0.65	$(R1.23)^2$=0.42								

(Source: annual report of GACL from 1994-95 to 2003-04)

Multiple regression equation for the line x_1 on x_2 and x_3

$$X_1 = 0.22 + 0.15(X_2) + 0.58(X_3)$$

Where X_1 = Current year's dividend per share, X_2 = Current year's EPS and

X_3 = Past year's dividend per share.

Table No 6.13 provides data regarding current year's Dividend per share and EPS, past year's Dividend per share, Dividend payout ratio, Target dividend payout ratio, Dividend yield ratio, Earning yield ratio, Average market price and value of chi-square of Gujarat Ambuja Cement Ltd. Kodinar.

The EPS and DPS both were steadily growing (see **chart no 6.13**). The annual compound growth rate of 8% in DPS and of only 2% in EPS, it indicates that increase in DPS is more than increase in EPS. The proportionate increase in DPS in many years is more than in EPS.

Chart no 6.13.
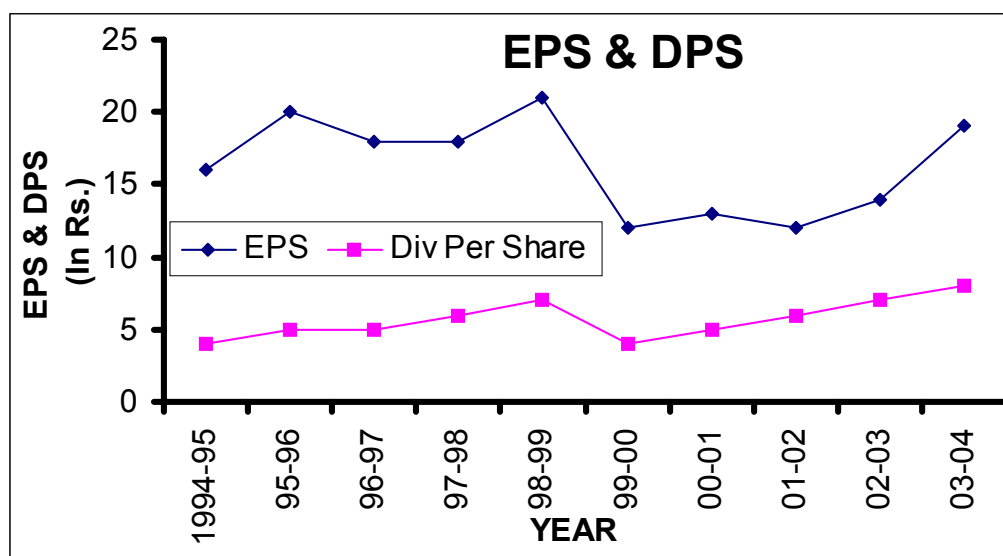
As a result payout ratio was also continuously increase during the study period (see **chart no 6.14**). The average dividend payout ratio of the company is around 36.83%, which is nearest to 42.11% in the year 2003-04.

Chart no 6.14.

Dividend Payout Ratio
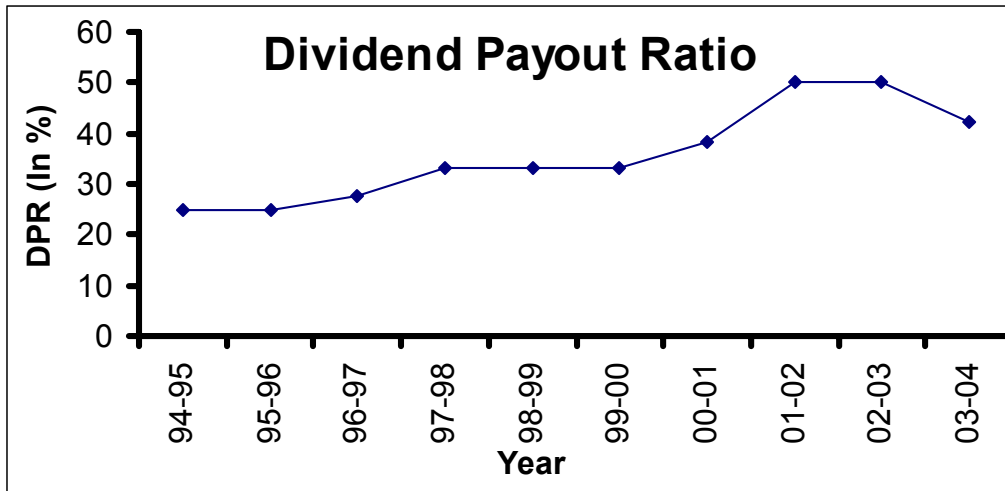
The average market price of GACL has been also growing steadily (see **chart no 6.15**). It may partly due to financial performance and policy of company. Share price is positively related to DPS. It declined from Rs 210.15 (1994-95) to Rs 172.25 (1996-97) but than after increase and reached up to Rs 278.25 in the year 2003-04.

Chart no 6.15.

Average Market Price
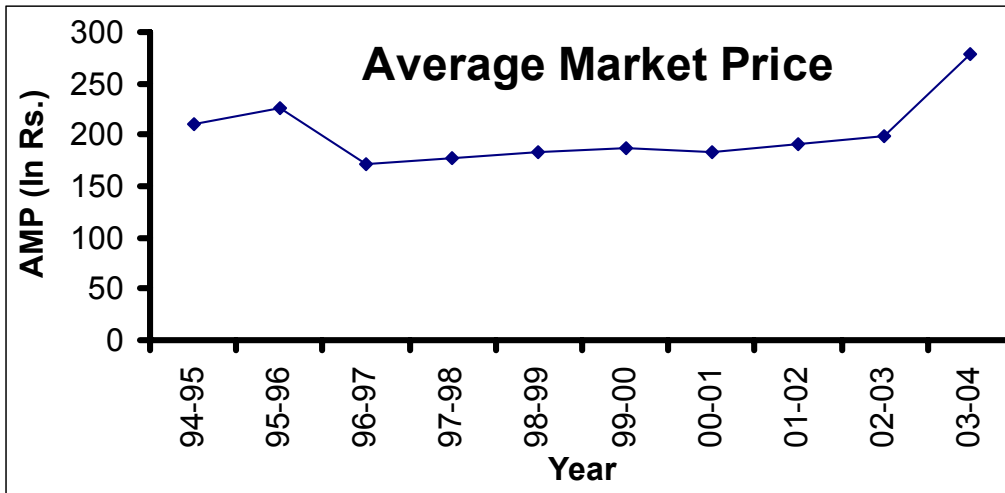
In last ten years under the study period, GACL has paid bonus share one time in the year 1999-00. Hence DPS and EPS both shows lowest due to increase in number of equity share in that year. Dividend yield ratio and earning yield ratio of the company has been fluctuated in up and down trend, it implies that company's average market price, EPS and DPS have been growing in almost same proportion.

ANOVA TABLE NO 6.14						CHI SQUARE	
Sources of vari.	Degree of freedom	Sum of square	Mean of square	'F' ratio	Result @ 5 %	χ^2 Value	Result @ 5%
Regression (SSR)	2.00	6.71	3.35	2.50	F (2, 7) = 4.74	12.22	D.F (8)
Error (SSE)	7.00	9.39	1.34	Non-Sign.			15.50
Total (SST)	9.00	16.10				Non – Significant	

VARIABLE IN EQUATION TABLE NO 6.15

Variable	Partial Regre. Coeffi.	S.E. (B)	| t | value	Critical value @ 5%	Result
Constant	0.22	-	-	-	-
X_2	0.15	0.11	1.31	2.37	Non-Sign.
X_3	0.58	0.31	1.84	2.37	Non-Sign.

Researcher has used Lintner's model to evaluate the dividend decision of GACL. The model expressed in multiple regression equation form and analysis significances of independent variable EPS and past year's DPS. The result tabulated in above **table no 6.14 & 6.15**. The result indicates that EPS and past year's DPS both were non-significant variables. 't' value indicates that statistically there was no significant correlation between current year's DPS and EPS as well as between current year's DPS and past year's DPS.

The coefficient value arrived above shown in **table no 6.15** were used to estimate the expected DPS as per Lintner's model and calculated target dividend payout ratio. The chi-square test was conducted between the actual dividend payout ratio and target dividend payout ratio and result are tabulated in **table no 6.13**. From the result it observes that the result of the chi-square test could accept the null hypothesis. Hence, it is concluded that there was no significant difference between actual dividend payout ratio and target dividend payout ratio. It means there is no significant difference in Dividend policy.

The above analysis indicates that company generally preferred consistent dividend policy. The management is more likely to increase dividend over time. Thus we can conclude that company's dividend policy showing proper trade off between dividends and retained earning. The

growing ratio of dividend creates significant effect on market price of shares. The average dividend payout ratio of 35.83% envisages that it may be enough to maximize wealth of shareholders and to satisfy investors.

GUJARAT STATE FERTILIZERS CORPORATION LTD.
SIKKA PLANT- JAMNAGAR

For the purpose of analysis and evaluation of dividend decision of GSFC, following null hypothesis is tested

Null Hypothesis

There is no significant difference in dividend decision policy of GSFC

The following evaluation emerges from multiple correlations, multiple regressions, 't' test, 'F' test, chi-square test and its results in respect of GSFC. JAMNAGAR.

Multiple correlations, multiple regression equation, 'F' test and 't' test approach.

TABLE NO 6.16

KEY INDICATORS OF DIVIDEND DECISION OF GSFC

YEAR	DIV_T (In Rs.) (X_1)	EPS (In Rs.) (X_2)	DIV_{T-1} (In Rs.) (X_3)	DPR (In %)	TDPR (In %)	χ^2	DYR (In %)	EYR (In %)	AMP (In Rs.)
94-95	3.30	17.00	3.30	19.41	19.51	0.00	1.54	7.93	214.50
95-96	4.00	31.00	3.30	12.90	12.92	0.00	2.81	21.75	142.50
96-97	4.50	27.00	4.00	16.67	16.48	0.00	3.75	22.50	120.00
97-98	4.50	21.00	4.50	21.43	21.97	0.01	4.31	20.10	104.50
98-99	4.50	17.00	4.50	26.47	25.98	0.01	5.63	21.25	80.00
TOTAL	20.80	113.00	19.60	96.88	96.85	0.03	18.03	93.53	661.50
AVG	4.16	22.60	3.92	19.38	19.37	0.01	3.61	18.71	132.30
SD	0.53	6.23	0.60	5.09	5.01	0.01	1.54	6.09	51.28
R	0.19	-0.37	0.83						-0.07
CV	12.67	27.56	15.35	26.29	25.87	116.93	42.75	32.55	38.76
R1.23 = 0.99	$(R1.23)^2$=0.98								

(Source: annual report of GSFC from 1994-95 to 2003-04)

Multiple regression equation for the line x_1 on x_2 and x_3

$$X_1 = -0.54 + 0.05(X_2) + 0.92(X_3)$$

Where X_1 = Current year's dividend per share, X_2 = Current year's EPS and

X_3 = Past year's dividend per share.

Table No 6.16 provides data regarding current year's Dividend per share and EPS, past year's Dividend per share, Dividend payout ratio, Target dividend payout ratio, Dividend yield ratio, Earning yield ratio, Average market

price and value of chi-square of Gujarat State Fertilizers Corporation Ltd. (Sikka Plant) Jamnagar.

GSFC has declared and paid dividend only in five years out of ten years under the study period. From 1999-00, dividend has been not paid. So dividend decision of GSFC is evaluated only by considering first five years under the study period.

There was considerable decrease in EPS due to poor financial performance, as a result, DPS has not been grown it was most stable at Rs 4.5 per share (see **chart no 6.16**).

Chart no 6.16.
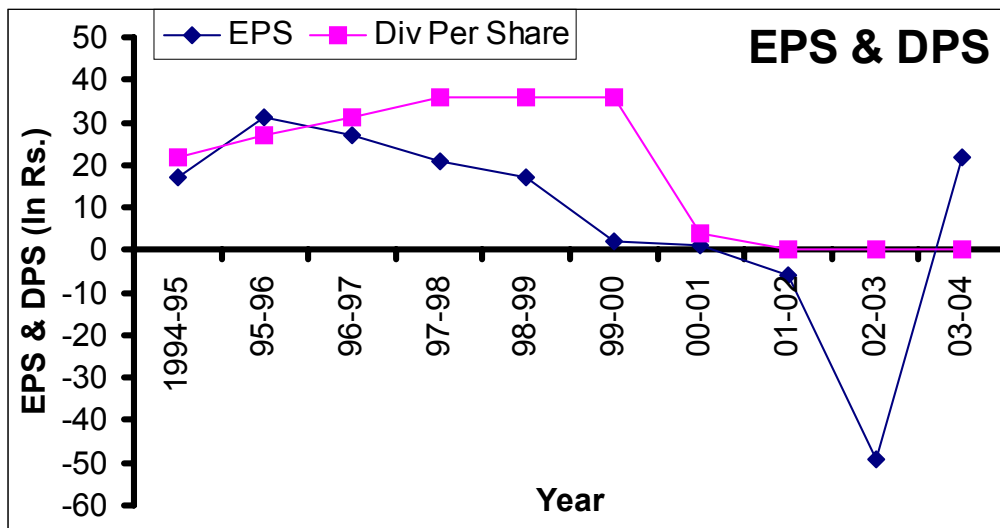
DPS also fluctuated due to variation in EPS. Average dividend payout ratio of GSFC is around 18.41%during five years; in 1999-00 it was 26.47% (see **chart no 6.17**)

Chart no 6.17.
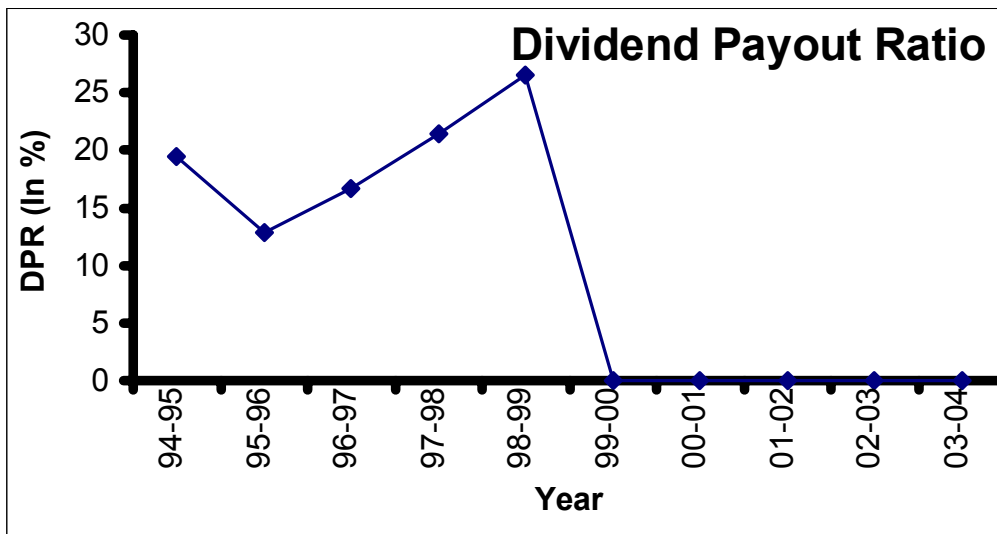
Average market price of share of GSFC has been decreasing at the fast rate (see **chart no 6.18**). It may be partly due to the poor financial performance and inefficient policy of the company.

Chart no 6.18.
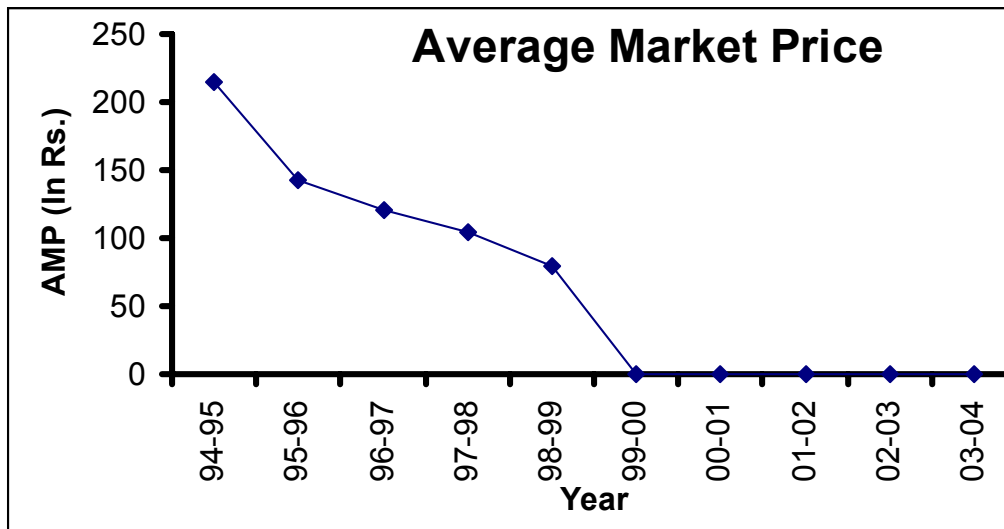
The dividend yield of the company has been increasing. It implies that company's share price has been decreasing faster than decrease in DPS.

ANOVA TABLE NO 6.17						CHI SQUARE	
Sources of vari.	Degree of freedom	Sum of square	Mean of square	'F' ratio	Result @ 5 %	χ^2 Value	Result @ 5%
Regression (SSR)	2.00	1.09	0.54	168.79	F (2, 7) = 4.74	0.03	D.F. (3)
Error (SSE)	7.00	0.02	0.00	Significant			7.81
Total (SST)	9.00	1.11				Non – Significant	

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VARIABLE IN EQUATION TABLE NO 6.18

Variable	Partial Regre. Coeffi.	S.E. (B)	| t | value	Critical value @ 5%	Result
Constant	-0.54	-	-	-	-
X_2	0.05	0.01	5.34	2.37	Significant
X_3	0.92	0.10	9.63	2.37	Significant

Researcher has used Lintner's model to evaluate the dividend decision of GSFC. The model expressed in multiple regression equation form and analysis significances of independent variable EPS and past year's DPS. The result tabulated in above **table no 6.17 & 6.18**. The result indicates that EPS and past year's DPS both were significant variables. 't' value indicates that statistically there is a significant correlation between current year's DPS and EPS as well as between current year's DPS and past year's DPS.

The coefficient value arrived above shown in **table no 6.18** were used to estimate the expected DPS as per Lintner's model and calculated target dividend payout ratio. The chi-square test was conducted between the actual dividend payout ratio and target dividend payout ratio and result are tabulated in **table no 6.16**. From the result it observes that the result of the chi-square test could accept the null hypothesis. Hence, it indicates that there is no significant difference between actual dividend payout ratio and target dividend payout ratio. It means there is no significant difference in Dividend policy.

Above analysis indicates that there was consistent dividend policy of the company. It has continues to pay dividend at stable rate (Rs. 4.5 per share) even though EPS decrease till EPS was not negative. Company's dividend policy is quite reasonable to maximize the wealth and to satisfy the investors provided that in future financial performance will improve. At present it is not supporting to encourage the potential investors and satisfying the existing shareholders.

AUSTIN ENGINEERING LTD. – JUNAGADH

For the purpose of analysis and evaluation of dividend decision of Aust. Eng., following null hypothesis is tested

Null Hypothesis

There is no significant difference in dividend decision policy of Aust. Eng.

The following evaluation emerges from multiple correlations, multiple regressions, 't' test, 'F' test, chi-square test and its results in respect of Aust. Eng. JUNAGADH.

Multiple correlations, multiple regression equation, 'F' test and 't' test approach.

TABLE NO 6.19

KEY INDICATORS OF DIVIDEND DECISION OF AUSTIN ENG

YEAR	DIV_T (In Rs.) (X_1)	EPS (In Rs.) (X_2)	DIV_{T-1} (In Rs.) (X_3)	DPR (In %)	TDPR (In %)	χ^2	DYR (In %)	EYR (In %)	AMP (In Rs.)
94-95	1.50	3.77	1.1	39.79	40.02	0.00	13.39	33.66	11.20
95-96	1.80	5.18	1.50	34.75	34.35	0.00	16.51	47.52	10.90
96-97	1.80	4.96	1.80	36.29	37.06	0.02	21.43	59.05	8.40
97-98	1.80	4.39	1.80	41.00	40.40	0.01	32.73	79.82	5.50
TOTAL	6.90	18.30	6.20	151.83	151.83	0.03	84.06	220.05	36.00
AVG	1.73	4.58	1.55	37.96	37.96	0.01	21.02	55.01	9.00
SD	0.15	0.63	0.33	2.93	2.83	0.01	8.48	19.52	2.65
R	0.85	0.61	0.90						-0.04
CV	8.70	13.80	21.40	7.71	7.46	81.76	40.35	35.49	29.44
R1.23 = 0.98	$(R1.23)^2$=0.96								

(Source: annual report of AUST. ENG. from 1994-95 to 2003-04)

Multiple regression equation for the line x_1 on x_2 and x_3

$$X_1 = 0.78 + 0.11(X_2) + 0.28(X_3)$$

Where X_1 = Current year's dividend per share, X_2 = Current year's EPS and

X_3 = Past year's dividend per share

Table No 6.19 provides data regarding current year's Dividend per share and EPS, past year's Dividend per share, Dividend payout ratio, Target

dividend payout ratio, Dividend yield ratio, Earning yield ratio, Average market price and value of chi-square of Austin Engineering Lt. Junagadh.

Aust. Eng. has declared and paid dividend only for four years out of ten years under the study period, so only four years data are considered to evaluate dividend decision.

Except some fluctuation, the company's EPS has been steadily growing. DPS has been steadily growing up to 1995-96, than after it became constant, company has decided to pay dividend at Rs. 1.8 per share as a minimum dividend. (See **chart no 6.19**).

Chart no 6.19.
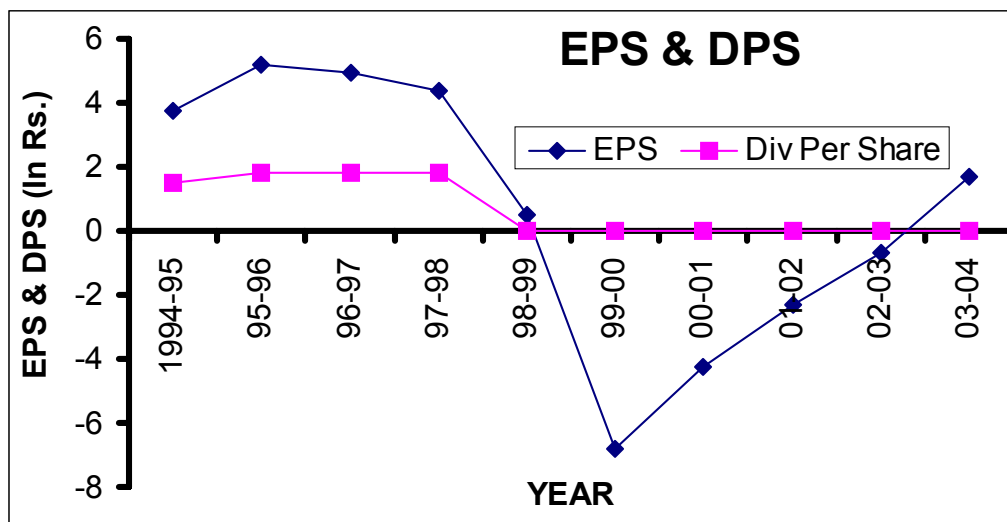
Company has continued to pay dividend at constant rate till EPS was positive up to 1997-98, than after no dividend has been paid. During the same period dividend payout ratio has been growing (see **chart no 6.20**). Average dividend payout ratio of Aust. Eng. company is around 37.96% during four years period, which is nearest to 41% of the year 1997-98.

Chart no 6.20.

Dividend Payout Ratio

Chart showing DPR (In %) on the y-axis (0 to 45) versus Year on the x-axis (94-95 to 03-04). Values: 94-95 ≈ 40, 95-96 ≈ 35, 96-97 ≈ 36, 97-98 ≈ 41, then dropping to 0 from 98-99 through 03-04.

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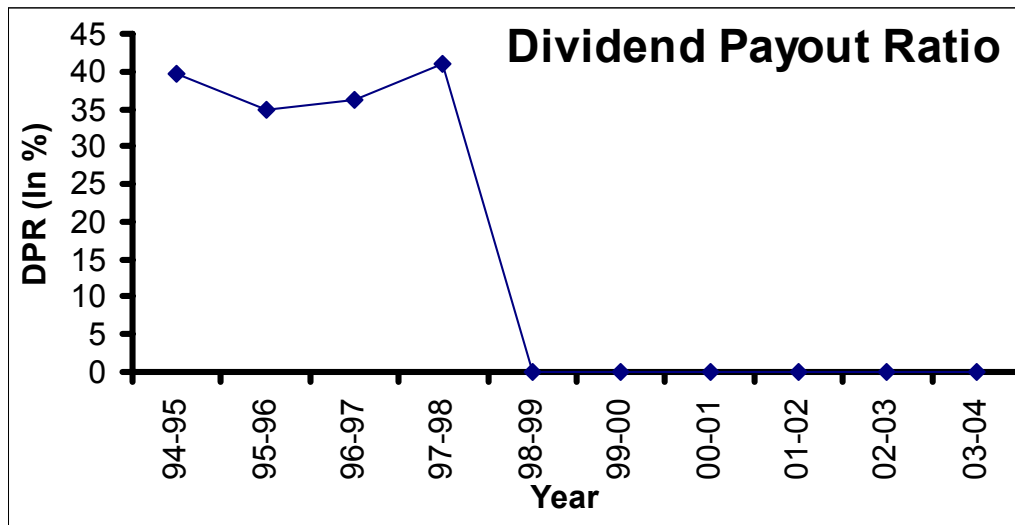
The average market price of share of the company has been decreasing at the faster rate; it may be partly due to poor financial performance and inefficient policy of the company (see **chart no 6.21**).

Chart no 6.21.
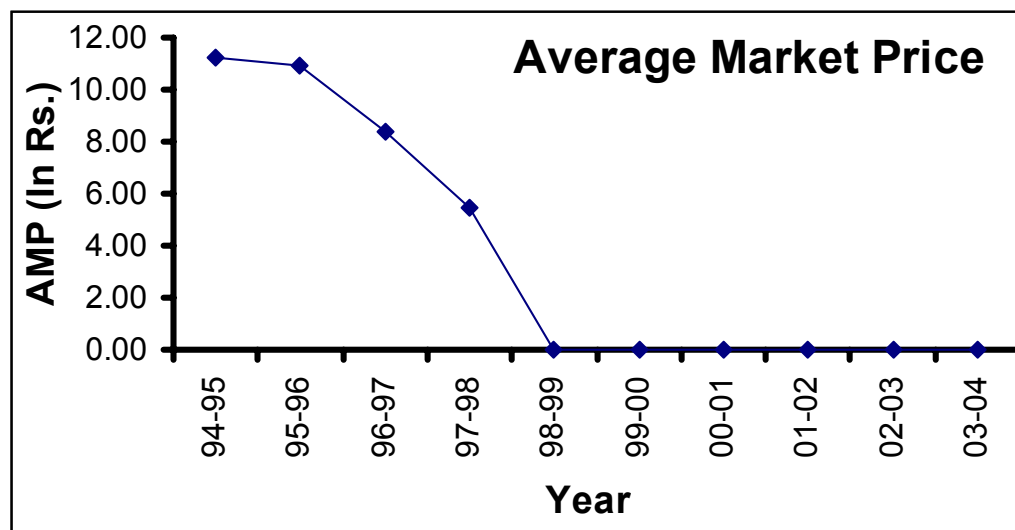
Average Market Price

Chart showing AMP (In Rs.) on the y-axis (0.00 to 12.00) versus Year on the x-axis (94-95 to 03-04). Values: 94-95 ≈ 11.2, 95-96 ≈ 11.0, 96-97 ≈ 8.3, 97-98 ≈ 5.4, then dropping to 0.00 from 98-99 through 03-04.

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The dividend yield of the company has been increasing; it implies that company's DPS has been growing faster than growth of AMP. Earning yield ratio has been also increasing; it implies that company's EPS has been growing faster than growth in AMP.

ANOVA TABLE NO 6.20						CHI SQUARE	
Sources of vari.	Degree of freedom	Sum of square	Mean of square	'F' ratio	Result @ 5 %	$\chi 2$ Value	Result @ 5%
Regression (SSR)	2.00	0.06	0.03	85.88	F (2, 7) = 4.74	0.03	D.F. (2)
Error (SSE)	7.00	0.00	0.00	Significant		.	5.99
Total (SST)	9.00	0.07				Non-Significant	

VARIABLE IN EQUATION TABLE NO 6.21

Variable	B	SE (B)	| t | value	Critical value @ 5%	Result
Constant	0.78	-	-	-	-
X_2	0.11	0.04	2.70	2.37	Significant
X_3	0.28	0.08	3.49	2.37	Significant

Researcher has used Lintner's model to evaluate the dividend decision of Aust. Eng. The model expressed in multiple regression equation form and analysis significances of independent variable EPS and past year's DPS. The result tabulated in above **table no 6.20 & 6.21**. The result indicates that EPS and past year's DPS both were significant variables. 't' value indicates that statistically there was no significant correlation between current year's DPS and EPS but significant correlation between current year's DPS and past year's DPS.

The coefficient value arrived above shown in **table no 6.21** were used to estimate the expected DPS as per Lintner's model and calculated target dividend payout ratio. The chi-square test was conducted between the actual dividend payout ratio and target dividend payout ratio and result are tabulated in **table no 6.19**. From the result it observes that the result of the chi-square test could accept the null hypothesis. Hence, it is concluded that there was no significant difference between actual dividend payout ratio and target dividend payout ratio. It means there is no significant difference in Dividend policy.

Given company's consistent past dividend policy, we can conclude that it may pay about 38% to 42% of its earning as dividend in future provided that if financial position will be improved. It may be quite reasonable to improve wealth and satisfying the investors.

(7) DIVIDEND PAYOUT RATIOS OF SELECTED COMPANY'S AND 'F' TEST ONE-WAY ANALYSIS OF VARIANCE.

For the purpose of analysis and evaluation of dividend payout ratio of sampled units of Saurashtra region, following null hypothesis is tested.

Null Hypothesis

There is no significant difference in Average dividend payout ratio within the sampled units during the period of study.

To see weather there is any significant difference in dividend payout ratio of sampled unit during the period of study, 'F' test one-way analysis of variance was conducted and results are tabulated in **table no 6.22** as follows.

TABLE NO 6.22

ANALYSIS OF VARIANCE OF DIVIDEND PAYOUT RATIO

YEAR	IRI	RIL	GSFC	AUS. ENG	GACL	GHCL	TCL
94-95	19.37	47.01	19.41	39.79	25.00	24.39	25.61
95-96	15.21	42.86	12.90	34.75	25.00	28.74	29.78
96-97	14.14	45.14	16.67	36.29	27.78	30.61	46.56
97-98	15.88	19.89	21.43	41.00	33.33	39.14	40.70
98-99	25.46	20.83	26.47	N/A	33.33	44.54	49.70
99-00	10.87	17.86	N/A	N/A	33.33	47.71	76.92
00-01	26.22	16.93	N/A	N/A	38.46	64.75	54.76
01-02	46.88	20.30	N/A	N/A	50.00	51.98	71.23
02-03	19.96	17.06	N/A	N/A	50.00	47.23	50.55
03-04	21.52	14.27	N/A	N/A	42.11	47.47	53.66
TOTAL	215.49	262.14	96.88	151.83	358.34	426.55	499.47
AVG	21.55	26.21	19.38	37.96	35.83	42.65	49.95
SD	10.15	13.14	5.09	2.93	9.23	12.17	16.03
CV	47.10	50.13	26.29	7.71	25.74	28.53	32.10

ANOVA TABLE NO 6.23

Sources of vari.	Degree of Freedom	Sum of Square	Mean of Square	'F' ratio	Result @ 5 %
Between the Company (SSC)	6.00	2217.44	369.57	1.68	F (6, 52) =2.25
Within the Company (SSE)	52.00	11419.99	219.62	Non-Sign.	
Total (TSS)	58.00	13637.43			

The above table reveals the data of dividend payout ratio of all sampled unit for ten years of the study period the calculated value of 'F' is 1.68 and table value at 5% level of significant with degree of freedom (6.52) is 2.25. Null hypothesis is accepted it means there is no significant difference in dividend payout ratio within the sampled unit. It signifies that there were uniform dividend decisions of selected sampled companies. Dividend decision is managerial approach. Management of each company signifies several factors affecting on dividend policy are almost same.

CHAPTER – VII

ANALYSIS AND EVALUATION OF OVERALL PROCESS OF MANAGERIAL DECISION-MAKING

CONTENTS

(1) INTRODUCTION

(2) EVALUATION OF RELATIONSHIP BETWEEN STATISTICAL TOOLS AND MANAGERIAL DECISION

    (A) TOOLS & TECHNIQUES USED IN ANALYSIS AND EVALUATION OF RELATIONSHIP BETWEEN STATISTICAL TOOLS & MANAGERIAL DECISION MAKING.

    (B) ANALYSIS AND EVALUATION OF PROFITABILITY

    (C) ANALYSIS AND EVALUATION OF EFFIENCY

    (D) ANALYSIS AND EVALUATION OF SOLVENCY

(3) COMPARISON OF MANAGERIAL DECISION PROCESS:

(1) <u>INTRODUCTION</u>

Managerial decision-making is an essential part of every manager's job from the viewpoint of managing several business activities like production, marketing, finance, personnel etc. Effective and efficient decision making system must be there managers manage all such business activities by making decisions and getting them implemented through their subordinates. Information is the basic input of decision-making. The quality and timeliness of information determines the effectiveness of decision-making. Managers make several type of decision on the basis of available information, intuition and creativity. Managers have often to make decisions under uncertainty and risky conditions. Their own success and future of their organizations largely depends upon the quality of decisions and their implementation, managers try to be rational decision makers but their rationality is bounded due to several constraints such as uncertain future, lack of required information, incapacity bias and so on. Managers, in real life have to settle for satisfying or reasonably good decision. The decision maker should keep his eyes and ears open in order to anticipate problems and to collect all relevant information. Managerial decision-making process depend upon certain specified basic principles but it change with change in business environment and changes of business environment create changes in degree of risk and uncertainty. So output of managerial decision-making are not remain same everywhere. Thus we found variability in decision-making. It is one of the serious problem remain with the researcher that is there any variation in decision making systems of the corporate sectors or not? If yes, what are the main reasons responsible for variation?

There are three managerial decisions namely financing, investment and dividend decision evaluated individually in past chapters, in this chapter comparative evaluation of all these three decisions are made.

Financial manager generally takes the financial decisions. The financial manager has to take rational decision from time to time keeping in view the objectives of his company.

Financing decision revolve around analyzing cost of various types of financial instrument in different capital and money markets, only those kind of financial instrument should be selected to form capital structure, which are minimizing weighted average cost of capital (WACC). Thus suitable balance among various instruments should be determined.

In the evaluation of investment decision cash flow analysis remains in the focus not profit. Basically cash is invested to generate cash. Accounting profit is arrived at after adjusting for many non-cash items.

Time value of money should be considered while evaluating investment proposal as cash in flow are generated at different future points of time in an investment proposal which needs to be compared with the amount of initial investments future cash flows are usually discounted applying cost of capital to arrive at minimum cash series that makes the investment proposal viable.

Finally, a company has to decide how much of the net cash flow it has generated should be paid out and how much should be retained in the business. Dividend decision / dividend policy is concern with distribution of profit.

(2) EVALUATION OF RELATIONSHIP BETWEEN STATISTICAL TOOLS AND MANAGERIAL DECISION

Researcher has conducted group discussion during personal visit of selected units with the responsible authorities and found that not a single corporate unit which takes managerial decision without using statistical tools, on other hand all corporate units are not use statistical tools for taking 100% managerial decisions. Here researcher has collected the information through questionnaire about use of statistical tools and managerial decision maker come to knowledge that percentage of managerial decisions of selected companies taken by using statistical tools are classified in three groups as follows:

Group – I

Those companies that using statistical tools for taking more than 75% managerial decisions. These companies are

1. Reliance Industries Ltd. – Jamnagar Unit.
2. Indian Rayon & industries Ltd – Veraval Unit.
3. Tata Chemicals Ltd – Mithapur Unit.

Group – II

Those companies that using statistical tools for taking more than 25% but up to 75% managerial decision. These companies are

1. Gujarat Heavy Chemical Ltd. – Sutrapada Unit.
2. Gujarat Ambuja Cements Ltd. – Kodinar Unit.
3. Gujarat State Fertilizers & Chemicals Ltd. – Sikka Unit.

Group – III

Those companies that using statistical tools for taking only up to 25% managerial decision. These companies are

1. Orient Abrasives Ltd. – Porbandar Unit.
2. Austin Engineering Co. Ltd. – Junagadh Unit.
3. Shri Digvijay Cement Co. Ltd. – Jamnagar Unit.

For evaluating impact of use of statistical tools in managerial decision-making, average of EPS, D/E and Net Sales indices for each year of three groups of companies are calculated and profitability efficiency and solvency of these three groups are evaluated.

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→ **AVERAGE EPS**

It is calculated for each group of companies with a view to analysis profitability. Each selected company has uniform face value of equity share and EPS is quite suitable for analyzing profitability therefore average EPS is considered as parameter.

$$\text{Average EPS} = \frac{\text{Total EPS per year for each group of companies}}{\text{No. of Companies}}$$

→ **AVERAGE D/E RATIO**

It is calculated for each year of each group of companies with a view to analysis solvency

$$\text{Average D/E Ratio} = \frac{\text{Total D/E Ratio per year for each group of companies}}{\text{No. of Companies}}$$

→**AVERAGE SALES INDICES**

It is calculated for each year of each group of companies with a view to analysis efficiency.

$$\text{Average Sales Indices} = \frac{\text{Total Sales Indices per year for each group of companies}}{\text{No. of Companies}}$$

(A) TOOLS & TECHNIQUES USED IN ANALYSIS AND EVALUATION OF RELATIONSHIP BETWEEN STATISTICAL TOOLS & MANAGERIAL DECISION MAKING.

For the purpose of analysis and evaluation of relationship between statistical tolls and manag3eria decision, Average of EPS, D/E Ratio and Net sales indices are calculate. Moreover, statistical technique such as standard deviation, coefficient of variation and ANOVA are also applied. Data has been converted in to relative measurement such as ratios, percentages, indices rather than absolute data.

Following hypothesis has been tested for the purpose of analysis relationship between statistical tools & managerial decision.

"There is no relationship between the uses of statistical tools for managerial decision and without use of statistical tools for managerial decision in selected units of the study of Saurashtra region."

For the purpose of testing above hypothesis profitability, efficiency and solvency of selected companies are analyzed by using EPS, net sales indices and D/E Ratio as a parameter. In the relation to above hypothesis, researcher has further set up following three null hypotheses.

(a)   There is no significant difference in profitability of three groups of companies.

(b)   There is no significant difference in efficiency of three groups of companies.

(c)   There is no significant difference in solvency of three groups of companies.

(B) ANALYSIS AND EVALUATION OF PROFITABILITY

Table No. 7.1

Earning Per Share			
YEAR	Group I	Group II	Group III
94-95	22.26	12.37	0.56
95-96	25.64	18.74	3.88
96-97	25.37	16.96	-1.39
97-98	21.69	14.70	-6.11
98-99	14.59	14.16	-34.01
99-00	12.70	5.54	-6.59
00-01	15.22	5.59	-16.09
01-02	12.49	3.60	-7.57
02-03	19.66	-10.04	-4.82
03-04	21.88	14.72	18.31
TOTAL	**191.49**	**96.35**	**-53.83**
AVERAGE	**19.15**	**9.63**	**-5.38**
SD	**5.02**	**8.65**	**13.50**
CV	**26.22**	**89.74**	**-250.77**

Above **Table no 7.1** provides data regarding average EPS, S.D. and CV of three groups of selected companies.

From the above table, it can be observed that the average EPS of three groups of selected companies are 19.15, 9.63 and -5.38 respectively

EPS of Group I and II is positive and of Group III is negative, which is lowest than Group I and II. The standard deviation and coefficient of variation of Group I and II are lowest than Group III. Coefficient of variation is 26.22%, 89.74% and -250.77% of Group I, II and III respectively, which indicates that there is more stability in earning per share of Group I as compare to Group II & III. The highest EPS of three groups in 1995-96 was 25.64, 18.74 and 3.88 respectively and there after in case of Group I, since 1999-00, it has declined from 25.64 to 12.70. EPS again increases from 12.70 to 21.88 since 2003-04 but in case of Group II and III, EPS has been continuously decline during the period under the study. Therefore, the average EPS of Group I and II are better than Group III and EPS of Group I is quite better than that of Group II & III.

Chart No. 7.1
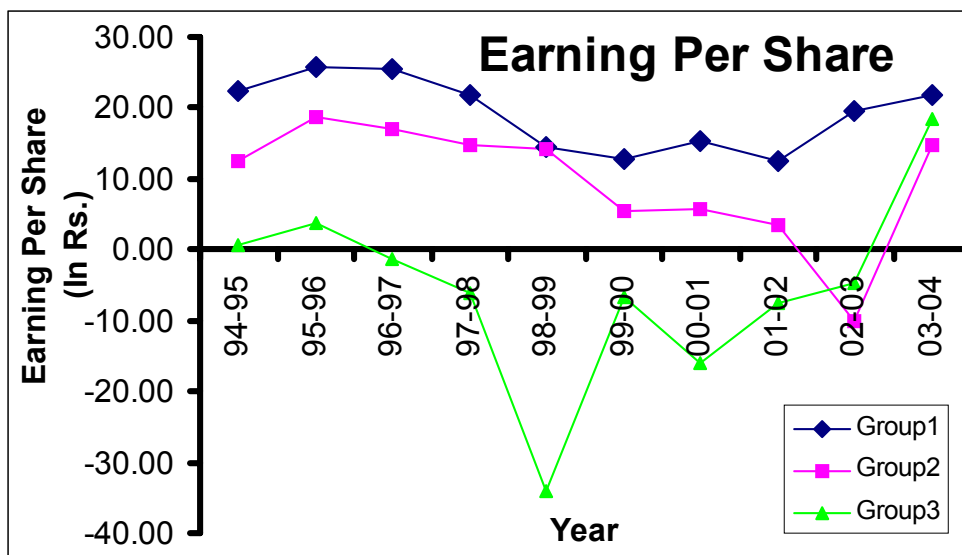
The above **chart no 7.1** indicates that there is a significant deviation in EPS of three groups of company. It is evidence of inequality in profitability of the company.

→ **HYPOTHESIS TESTING**

Hypothesis based on mean test ('t' test)

→ **Null Hypothesis:**

There is no significant difference in mean value of the EPS in-group first and group second of sampled companies during the period of study.

→ **Alternative Hypothesis:**

There is a significant difference in mean value of the EPS in-group first and group second of sampled companies during the period of study.

Table no 7.2

MEAN VALUE, STANDARD DEVIATION, AND THEIR 't' VALUE OF EPS OF GROUP I AND II

	Group I		Group II		$\lvert t \rvert$ Value	D. F.	Table Value @ 5%	Result
	$\overline{X}$	σ	$\overline{X}$	σ				
Earning Per Share	19.15	5.02	9.63	8.65	2.86	18	2.101	Significant

From the **table no 7.2**, the calculated value of 't' (2.86) is greater than the table value of 't' (2.101) at 5% level of significant with D.F. 18. Hence, it implies that there is a significant difference in mean value of EPS in Group I, and II.

→ **Null Hypothesis:**

There is no significant difference in mean value of the EPS in-group second and group third of sampled companies during the period of study.

→ **Alternative Hypothesis:**

There is a significant difference in mean value of the EPS in-group second and group third of sampled companies during the period of study.

Table no 7.3

MEAN VALUE, STANDARD DEVIATION, AND THEIR 't' VALUE OF EPS OF GROUP II AND III

	Group II		Group III		|t| Value	D. F.	Table Value @ 5%	Result
	$\overline{X}$	σ	$\overline{X}$	σ				
Earning Per Share	9.63	8.65	-5.38	13.50	2.81	18	2.101	Significant

From the **table no 7.3**, the calculated value of 't' (2.81) is greater than the table value of 't' (2.101) at 5% level of significant with D.F. 18. Hence, it implies that there is a significant difference in mean value of EPS in Group II, and III.

Table no 7.4

MEAN VALUE, STANDARD DEVIATION, AND THEIR 't' VALUE OF EPS OF GROUP I AND III

	Group I		Group III		|t| Value	D. F.	Table Value @ 5%	Result
	$\overline{X}$	σ	$\overline{X}$	σ				
Earning Per Share	19.15	5.02	-5.38	13.50	5.11	18	2.101	Significant

From the **table no 7.4**, the calculated value of 't' (5.11) is greater than the table value of 't' (2.101) at 5% level of significant with D.F. 18. Hence, it implies that there is a significant difference in mean value of EPS in Group I, and III.

Hypothesis based on ANOVA.

→ **Null Hypothesis:**

There is no significant difference in profitability within the three groups of sampled companies during the period of study.

→ **Alternative Hypothesis:**

There is a significant difference in profitability within the three groups of sampled companies during the period of study.

ANOVA TABLE NO. 7.5

Sources of Variances.	Degree of freedom	Sum of square	Mean of square	'F' ratio	Critical value @ 5 %	Result
Between the Groups of Companies (SSC)	2.00	3059.56	1529.78	16.27	F (2,27) = 3.354	
Within the Group of Companies (SSE)	27.00	2539.43	94.05			Signi.
Total (TSS)	29.00	5598.99				

From the above **table no 7.5**, it is observed that 'F' calculated value is 16.27 and table value of 'F' at 5% level of significant with degree of freedom (2,27) is 3.354 which is quite less than calculated value of 'F'. So null hypothesis is rejected and concluded that there is a significant difference in profitability within three groups of sampled companies during the period of study.

(C) ANALYSIS AND EVALUATION OF EFFIENCY

TABLE NO. 7.6

SALES INDICES			
YEAR	GROUP I	GROUP II	GROUP III
94-95	100.00	100.00	100.00
95-96	141.62	134.02	111.48
96-97	155.01	154.51	112.02
97-98	197.78	173.19	104.71
98-99	200.99	187.38	96.54
99-00	270.59	192.79	105.95
00-01	360.98	212.89	96.38
01-02	642.29	227.02	101.31
02-03	710.49	259.55	102.48
03-04	838.11	290.22	125.64
TOTAL	3617.86	1931.57	1056.51
AVERAGE	361.79	193.16	105.65
SD	268.33	57.22	8.85
CV	74.17	29.62	8.38

Above **table no 7.6** provides data regarding average net sales indices, standard deviation and coefficient of variation of three groups of selected companies.

From the above table, it can be observed that net sales indices of Group I and II are continuous increase during the period of study. In case of Group III, there is no significant increase in net sales indices during the period of study. Average net sales indices of three Groups of selected companies are 361.79, 193.16 and 105.65 respectively. Average net sales indices of Group I and II are better than that of Group III and further it is observed that average net sales indices of Group I is quite better than that of Group II and III. Coefficient of variation of group I, II and III are 74.17%, 29.62% and 8.38% respectively, which is revealed that there is more variation in net sales of Group I and II and negligible variation in net sales of Group III during the study period. The rate of increase in net sales of Group I is quite better than that of Group II and III.

It can be noted that poor sales efficiency of Group II and III is one of the reasons for poor profitability.

Chart No. 7.2
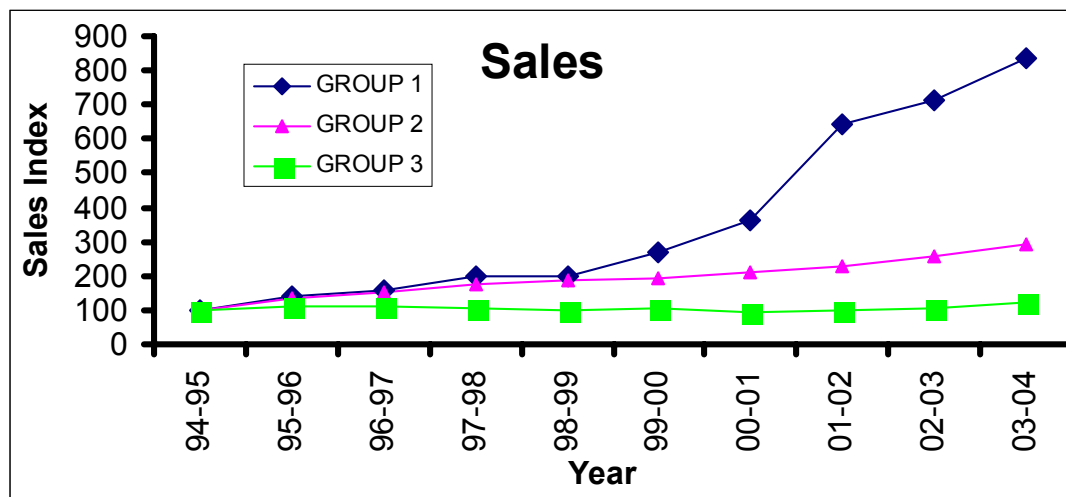
The above **chart no 7.2** indicates that the comparison of sales efficiency of three groups and reflects better efficiency of Group I as compare to Group II and III.

Hypothesis Testing

Hypothesis based on mean test ('t' test)

→ **Null Hypothesis:**

There is no significant difference in mean value of the sales indices in-group first and group second of sampled companies during the period of study.

→ **Alternative Hypothesis:**

There is a significant difference in mean value of the sales indices in-group first and group second of sampled companies during the period of study.

Table no 7.7

MEAN VALUE, STANDARD DEVIATION, AND THEIR 't' VALUE OF SALES INDICES OF GROUP I AND II

	Group I		Group II		| t | Value	D. F.	Table Value @ 5%	Result
	$\overline{X}$	σ	$\overline{X}$	σ				
Sales Index	361.79	268.33	193.16	57.22	1.85	18	2.101	Non Significant

The above **table no 7.7** shows that the calculated value of 't' (1.85) is less than the table value of 't' (2.101) at 5% level of significant with D.F. 18. Hence, it implies that there is no significant difference in mean value of Sales indices in Group I, and II.

→ **Null Hypothesis:**

There is no significant difference in mean value of the Sales Indices in-group second and group third of sampled companies during the period of study.

→ **Alternative Hypothesis:**

There is a significant difference in mean value of the Sales Indices in-group second and group third of sampled companies during the period of study.

<div align="center">**Table no 7.8**</div>

<div align="center">**MEAN VALUE, STANDARD DEVIATION, AND THEIR 't'
VALUE OF SALES INDEX OF GROUP II AND III**</div>

	Group II		Group III		| t | Value	D. F.	Table Value @ 5%	Result
	$\overline{X}$	σ	$\overline{X}$	σ				
Sales Index	193.16	57.22	105.65	8.85	4.53	18	2.101	Significant

The above **table no 7.8** shows that the calculated value of 't' (4.53) is greater than the table value of 't' (2.101) at 5% level of significant with D.F. 18. Hence, it implies that there is a significant difference in mean value of Sales indices in Group II, and III.

<div align="center">**Table no 7.9**</div>

<div align="center">**MEAN VALUE, STANDARD DEVIATION, AND THEIR 't'
VALUE OF SALES INDEX OF GROUP I AND III**</div>

	Group I		Group III		| t | Value	D. F.	Table Value @ 5%	Result
	$\overline{X}$	σ	$\overline{X}$	σ				
Sales Index	361.79	268.33	105.65	8.85	2.86	18	2.101	Significant

The above **table no 7.9** shows that the calculated value of 't' (2.86) is greater than the table value of 't' (2.101) at 5% level of significant with D.F. 18. Hence, it implies that there is a significant difference in mean value of Sales Indices in Group I, and III.

Hypothesis base on ANOVA

→ **Null Hypotheses (H_0)**

There is no significant difference in efficiency within the three groups of sampled companies.

→ **Alternative Hypotheses (H_a)**

There is a significant difference in efficiency within the three groups of selected companies.

ANOVA TABLE 7.10

Sources of variance.	Degree of freedom	Sum of Square	Mean of Square	'F' ratio	Critical value @ 5 %	Result
Between the Groups of Companies (SSC)	2.00	338995.35	169497.68	6.75	F (2,27) = 3.354	
Within the Group of Companies (SSE)	27.00	678164.21	25117.19			Signi.
Total (TSS)	29.00	1017159.56				

Above **Table No. 7.10** shows that calculated value of 'F' is 6.75and table value of 'F' at 5% level of significant with degree of freedom (2,27) is 3.354, which is less than calculated value of 'F', so null hypothesis is rejected and concluded that there is a significant difference in efficiency within three groups of sampled companies during the period of study.

The mean test result indicates that in case of companies, which are included in group I & group II. There is no significant difference in efficiency.

(D) ANALYSIS AND EVALUATION OF SOLVENCY

TABLE NO 7.11

Debt Equity Ratio			
YEAR	GROUP I	GROUP II	GROUP III
94-95	0.85	1.41	0.82
95-96	0.83	1.02	0.90
96-97	0.93	0.92	0.91
97-98	0.77	0.90	1.83
98-99	0.78	0.78	8.11
99-00	0.74	0.88	9.31
00-01	0.57	0.96	9.52
01-02	0.51	0.91	9.59
02-03	0.40	1.07	9.49
03-04	0.38	0.88	7.73
TOTAL	6.76	9.74	58.21
AVERAGE	0.68	0.97	5.82
SD	0.20	0.17	4.11
CV	28.87	17.86	70.55

Above **Table No. 7.11** provides data regarding average D/E ratio, standard deviation and coefficient of variance of three groups of selected companies.

Above **Table No. 7.11** shows that average D/E ratio of three groups of selected companies are 0.68, 0.97 and 5.82 respectively. Average D/E ratio of Group I and II is quite lowest than that of Group III, standard deviation and coefficient of variation of Group I & II are also quite lowest than that of Group III. Coefficient of variation of three groups of companies is 28.87%, 17.86% and 70.55% respectively, which indicate that there is more stability in D/E ratio of Group I and II as compare to Group III. Highest D/E ratio of Group I was 0.93 in 1996-97, thereafter since 2003-04, it has been decline from 0.93 to 0.38. Highest D/E ratio of Group II was 1.41 in 1994-95, thereafter since 1998-99 it has been decline from 1.41 to 0.78 but it was increased from 0.78 to 1.07 during the period of 1998-99 to 2002-03. In case of Group III, there was a continuously increased in D/E ratio during the period of study. Lowest D/E ratio was 0.82 in the year 1994-95 and since 2002-03 it was increased from 0.82 to 9.59, therefore solvency of Group I and II is better than that of Group III and solvency of Group I is quite better than that of Group II and III.

It can be cleared that poor solvency of Group II and III is one of the reason for poor profitability.

Chart No. 7.3
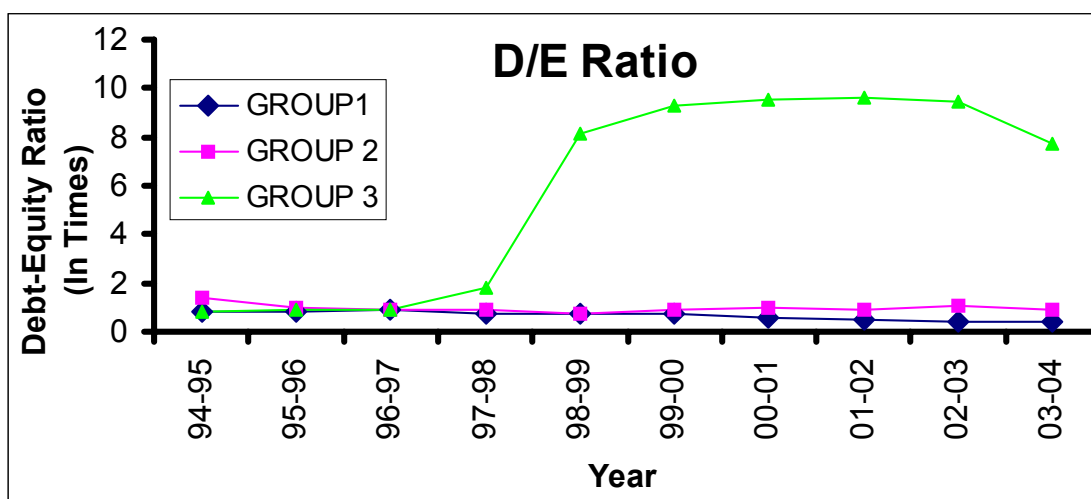
The above chart indicates comparison of solvency of three groups. The solvency of Group III is quite worse as compare to Group I & II. It is the evidence of inequality in financing decision.

Hypothesis Testing

Hypothesis based on mean test ('t' test)

→ **Null Hypothesis:**

There is no significant difference in mean value of the D/E ratio in-group first and group second of sampled companies during the period of study.

→ **Alternative Hypothesis:**

There is a significant difference in mean value of the D/E ratio in-group first and group second of sampled companies during the period of study.

Table no 7.12

MEAN VALUE, STANDARD DEVIATION, AND THEIR 't' VALUE OF D/E RATIO OF GROUP I AND II

	Group I		Group II		$\|t\|$ Value	D. F.	Table Value @ 5%	Result
	$\overline{X}$	σ	$\overline{X}$	σ				
D/E Ratio	0.68	0.20	0.97	0.17	3.32	18	2.101	Significant

The above **table no 7.12** shows that the calculated value of 't' (3.32) is greater than the table value of 't' (2.101) at 5% level of significant with D.F. 18. Hence, it implies that there is a significant difference in mean value of D/E ratio in Group I, and II.

→ **Null Hypothesis:**

There is no significant difference in mean value of the D/E ratio in-group second and group third of sampled companies during the period of study.

→ **Alternative Hypothesis:**

There is a significant difference in mean value of the D/E ratio in-group second and group third of sampled companies during the period of study.

Table no 7.13

**MEAN VALUE, STANDARD DEVIATION, AND THEIR 't'
VALUE OF D/E RATIO OF GROUP II AND III**

	Group II		Group III		|t| Value	D. F.	Table Value @ 5%	Result
	$\overline{X}$	σ	$\overline{X}$	σ				
D/E Ratio	0.97	0.17	5.82	4.11	3.54	18	2.101	Significant

The above **table no 7.13** shows that the calculated value of 't' (3.54) is greater than the table value of 't' (2.101) at 5% level of significant with D.F. 18. Hence, it implies that there is a significant difference in mean value of D/E Ratio in Group II, and III.

Table no 7.14

**MEAN VALUE, STANDARD DEVIATION, AND THEIR 't'
VALUE OF D/E RATIO OF GROUP I AND III**

	Group I		Group III		|t| Value	D. F.	Table Value @ 5%	Result
	$\overline{X}$	σ	$\overline{X}$	σ				
D/E Ratio	0.68	0.20	5.82	4.11	3.75	18	2.101	Significant

The above **table no 7.14** shows that the calculated value of 't' (3.75) is greater than the table value of 't' (2.101) at 5% level of significant with D.F. 18. Hence, it implies that there is a significant difference in mean value of D/E ratio in Group I, and III.

Hypothesis based on ANOVA

→ **Null Hypothesis:**
There is no significant difference in solvency within three groups of sampled companies.

→ **Alternative Hypothesis**
There is a significant difference in solvency within three groups of sampled companies.

Sources of variance.	Degree of freedom	Sum of square	Mean of square	'F' ratio	Critical Value @ 5 %	Result
Between the Groups of Companies (SSC)	2.00	166.85	83.42	14.78	F (2,27) = 3.354	
Within the Group of Companies (SSE)	27.00	152.41	5.64			Significant
Total (TSS)	29.00	319.26				

Above **Table No. 7.14** shows that calculated value of 'F' is 14.78 and table value of 'F' at 5% level of significant with degree of freedom (2,27) is 3.354, which is quite less than calculated value of 'F'. So null hypothesis is rejected and concluded that there is a significant difference in solvency within three groups of sampled companies.

The above evaluation of profitability, efficiency and solvency of three groups of sampled companies indicate that all three groups of sampled companies are not uniform; there is a significant difference in profitability, efficiency and solvency. It reveals that profitability, efficiency and solvency of Group I are quite better than that of Group II & III and it is also true to say that profitability, efficiency and solvency of Group II are poor than that of Group I but better than that of Group III.

All the companies in Group I are using statistical tools for taking more than 75% managerial decision. The better profitability, efficiency an solvency are result of efficient and effective managerial decision making and efficient and effective managerial decision making is the result of using more and more statistical tools in taking managerial decisions.

All the companies in Group II are using statistical tools for taking more than 25% but up to 75% managerial decisions. Profitability, efficiency and solvency of this group are comparatively poor than companies in Group I but quite better than companies in Group III. It is also result of efficient and effective managerial decision-making, and efficient and effective managerial

decision making is result of using statistical tools in taking managerial decisions.

All the companies in Group III are using statistical tools for taking only up to 25% managerial decisions. These companies are suffering from very poor profitability, efficiency and solvency situation. It is due to ineffective and inefficient managerial decision-making, and inefficient and ineffective managerial decision-making is result of lesser use of statistical tools for taking managerial decisions.

Therefore it is clear to say that all above results are evidences of relationship between use of statistical tools for managerial decisions and without use of statistical tools for managerial decisions in selected units of the study of Saurashtra region.

(3) <u>COMPARISON OF MANAGERIAL DECISION PROCESS:</u>

For the purpose of comparison of managerial decision process general agreement of opinion has been obtained from managers of selected units regarding managerial decision, which is classified in five groups as follows:

(1)   Issue of Quality of Decision makers.
(2)   Issue of Financing Decision.
(3)   Issue of Investment Decision.
(4)   Issue of Dividend Decision.
(5)   Issue of Using Statistical Tools in Decision-making.

The questionnaire has been prepared with five point scaling techniques as primary data collection tools. It includes various aspects of managerial decision such as quality of decision maker, participation of staff members in decision-making, financing, investment and dividend decision-making process. It also includes influence of statistical tools on managerial decision-making.

The researcher believes that each selected company is one of the important variables to build the perception of managerial person of each company. Hence, these variables and overall general agreements of opinion regarding financing decision, investment decision and dividend decision have been taken to justify the deviation in various managerial decisions of the companies.

The questionnaire contained total 50 questions. Nine respondents have answered the questions. The score of each question has been note down and tabulated in table given below.

**SCORE OF GENERAL AGREEMENT OF OPINION FROM
DECISION MAKERS**

	STATEMENT	RIL	TCL	IRIL	GHCL	GACL	GSFC	AUST. ENG	OAL	DCCL	TOTAL	PERC	CV
	(A) Issue of Quality of Decision Makers												
A	Strongly agree	40	45	35	25	30	10	10	25	5	225	60.48	56.57
B	Agree	8	4	12	12	16	8	16	12	16	104	27.96	36.49
C	Neutral	0	0	0	0	0	12	3	6	3	24	6.45	153.48
D	Disagree	0	0	0	2	0	4	6	0	6	18	4.84	132.29
E	Strongly disagree	0	0	0	0	0	0	0	0	1	1	0.27	300.00
	TOTAL	48	49	47	39	46	34	35	43	31	372	100.00	
	(B) Issue of Financing Decision												
A	Strongly agree	35	15	45	20	15	0	10	20	15	175	46.54	68.57
B	Agree	12	28	4	24	16	28	20	12	16	160	42.55	45.16
C	Neutral	0	0	0	0	9	9	6	9	3	36	9.57	106.07
D	Disagree	0	0	0	0	0	0	2	0	2	4	1.06	198.43
E	Strongly disagree	0	0	0	0	0	0	0	0	1	1	0.27	300.00
	TOTAL	47	43	49	44	40	37	38	41	37	376	100.00	
	(C) Issue of Investment Decision												
A	Strongly agree	30	15	20	15	20	35	20	20	0	175	47.68	50.53
B	Agree	12	16	16	24	20	4	20	20	16	148	40.33	35.34
C	Neutral	3	6	6	3	3	3	0	0	9	33	8.99	79.51
D	Disagree	0	2	0	0	0	2	0	0	4	8	2.18	163.46
E	Strongly disagree	0	0	0	0	0	0	1	1	1	3	0.82	150.00
	TOTAL	45	39	42	42	43	44	41	41	30	367	100.00	
	(D) Issue of Dividend Decision												
A	Strongly agree	45	40	35	20	20	0	10	10	5	185	53.94	78.30
B	Agree	0	0	4	8	16	20	8	4	8	68	19.83	89.55
C	Neutral	3	6	6	12	6	9	9	9	3	63	18.37	42.86
D	Disagree	0	0	0	0	0	2	6	8	8	24	7.00	135.21
E	Strongly disagree	0	0	0	0	0	1	0	0	2	3	0.87	212.13
	TOTAL	48	46	45	40	42	32	33	31	26	343	100.00	
	(E) Issue of Use of Statistical Tools in Managerial Decision												
A	Strongly agree	30	35	0	0	24	0	0	0	0	89	33.97	152.56
B	Agree	16	12	32	24	12	8	0	4	0	108	41.22	89.75
C	Neutral	0	0	6	9	0	9	3	0	0	27	10.31	132.29
D	Disagree	0	0	0	2	0	4	9	0	2	17	6.49	159.80
E	Strongly disagree	0	0	0	0	0	3	0	9	9	21	8.02	167.36
	TOTAL	46	47	38	35	36	24	12	13	11	262	100.00	
	Grand Total	234	224	221	200	207	171	159	169	135	1720		
	Total Score out of 250 Points (%)	93.60	89.60	88.40	80.00	82.80	68.40	63.60	67.60	54.00			
	CV	2.79	8.70	9.78	8.48	8.97	21.33	36.09	37.09	36.19			

The above **Table no. 7.16** reveals overall score of managerial decisions aspects of selected nine companies. There are 50 questions relating to quality of decision maker, financing decision, investment decision, dividend decision and use of statistical tools in managerial decision. As per five-scale technique total score is assigned 250 points. Here, out of total scores RIL, TCL, IRIL, GHCL and GACL companies scored 93.60%, 89.60%, 88.4%, 80.00% and 82.80% respectively and remaining companies scored lowest score. It indicates that those companies, which have high score, are significantly agreed with majority statements of all five issues of managerial decisions and those companies, which have low score, are not significantly agreed with majority statements of all five issue of managerial decision.

The first 10 statements from 1 to 10 included in Group A are for collecting information for quality of decision maker. Out of total points of general agreement of nine respondents 60.48% agreed strongly, 27.96% agreed, 6.45% neutral, 4.84% disagreed and 0.27% strongly disagreed. It indicates that all the respondents have agreed with majority statements for quality of decision maker.

The second 10 statements from 11 to 20 included in Group B are for collecting information of financing decision. In Group B 46.54% strongly agreed, 42.55% agreed, 9.57% neutral, 1.06% disagreed and 0.27% strongly disagreed. It indicates that all that respondents agreed with the majority statements of financing decision.

The third 10 statements from 21 to 30 in Group C are for collecting information for investment decisions. In Group C 47.68% strongly agreed, 40.33% agreed, 8.99% neutral, 2.18% disagreed and 0.82% strongly disagreed. It also indicates that all the respondents agreed with the majority statements of investment decision.

The fourth 10 statements from 31 to 40, included in Group D are for collecting information for dividend policy decision. In Group D 53.94% strongly agreed, 19.83% agreed, 18.37% neutral 7.00% disagreed and 0.87% strongly disagreed. It indicates agreement with majority statements of dividend policy decisions but with low score of points.

The fifth 10 statements from 41 to 50 included in Group E are for collecting information for use of statistical tools in managerial decision. In

Group E 33.97% strongly agreed, 41.22% agreed, 10.31% neutral, 6.49% disagreed and 8.02% strongly disagreed. It indicates very low agreement with statements of use of statistical tools in managerial decision.

The study envisages that all respondent agreed with majority statements of Group A, B, C & D but there is high rate of coefficient of variation. The score of Group E shows very high coefficient of variation that is due to inequality about use of statistical tools in managerial decision. It is clear with hypothesis. The following hypothesis has been tested.

<div align="center">

Table No. 7.17
Kruskal – Wallis Test, Rank

</div>

GROUP	RIL	IRIL	TCL	GSFC	GACL	GHCL	AUST	OAL	DCCL
A	42.5	44.5	40	19.5	37	11	12.5	30	7.5
B	40	30	44.5	32.5	21.5	15.5	17.5	24	15.5
C	34.5	19.5	27	27	30	32.5	24	24	6
D	42.5	37	34.5	21.5	27	9	10	7.5	5
E	37	40	17.5	12.5	14	4	2	3	1
TOTAL	196.5	171	163.5	113	129.5	72	66	88.5	35
Average	39.30	34.20	32.70	22.60	25.90	14.40	13.20	17.70	7.00
CV	8.93	28.55	32.77	33.57	33.56	75.89	62.39	66.30	76.10

→ **Null Hypothesis (H$_0$)**

There is no significant difference among managerial decisions in selected units of the study of Saurashtra region.

→ **Alternative Hypothesis (H$_a$)**

There is a significant difference among managerial decisions in selected units of the study of Saurashtra region.

For the purpose of testing above hypothesis Kruskal – Wallis test has been used. This is non – parametric test the non-parametric tests are used when the knowledge of the population distribution is not known. Kruskal – Wallis test can handle more than two samples simultaneously and decide whether or not these samples belong to the same populations and effectiveness, quality, measurement, goodness of fit etc are same or not. In the test all the elements of different samples are together and ranked with the lowest score receiving a rank value of 1. If there are ties in the rank, the average rank to such pairs is assigned by averaging their rank position.

$$H = \left[\frac{12}{n\,(n+1)} \left(\frac{(\Sigma\,R\,I)^2}{n} \right) \right] - 3\,(n+1)$$

H follows Chi – square distribution with (K – 1) degree of freedom

N = Total number of elements in K sample

$\Sigma\,R\,i$ = Sum of the ranks of all items in sample.

$$H = \frac{12}{45\,X\,46}\;(28544.40)\;-\;3\,X\,46$$

$$= 27.48$$

The calculated value of H = 27.48 is higher than the Chi – square table value (15.5) at 5% level of significant with d. f. 8. It states that the null hypothesis is rejected. This indicates that there exists significant difference in managerial decision amongst nine companies. The ranking was done and shown in above **table No. 7.17**

➔ <u>CONCLUSION</u>

The study has brought to light that nine sample companies follow different policy and practice for taking managerial decision. It is evident that all the companies are not identical from the viewpoint of process of managerial decision making therefore they have not performed equally well in all fronts. Inequality in performance is evident of deviation in management efficiency. Those companies, which give more and more important to the statistical tools in taking various managerial decisions, can success in taking effective managerial decision. IRL, IRIL and TCL are evidence of important of statistical tools in managerial decision. Therefore use of statistical tools in managerial decision-making is only the alternative of taking effective and efficient decision. So it is advisable for the companies to use more and more statistical tools. In my empirical study found that those company which are using statistical tools in managerial decision are quite better from the viewpoint of profitability, solvency and efficiency but those company which are not using statistical tools or which are using less statistical tools in managerial decision are not quite better from viewpoint of profitability, solvency and efficiency.

CHAPTER VIII

SUMMARY, FINDING CONCLUSION AND SUGGESTIONS

CONTENTS

(1) INTRODUCTION

(2) FINANCING DECISION

(3) INVESTMENT DECISION

(4) DIVIDEND DECISION

(5) MANAGERIAL DECISION-MAKING PROCESS

(1) **INTRODUCTION**

Today industries are universally accepted at the ultimate answer to the development and advancement of economy. Many of the well established Indian industrial houses have achieved development and are on the path of significant advancement at global level. Reliance, Tata, Birla, Maruti, Bajaj and Ambuja are few name amongst them, which have considerably contributed to economic development and technological advancement of India.

Management plays vital role for success of industries. In modern times, there are a number of problems faced by the industries. Scientific and effective management system is the only ultimate solution of all such problems. For an effective management system, there must be the use of statistical tools in various managerial decisions.

The present study is related to financial decisions of companies. For the purpose of evaluating such decision, nine companies of Saurashtra region of the Gujarat state have been selected. The scope of study is very vast. But in the present study nine selected companies have been analyzed from the viewpoint of effectiveness of financial decision only. How far these nine companies have succeeded in fulfilling their objectives of excellence in using invested fund, formation of capital structure, maximization of earning per share, dividend policy, use of statistical tools in managerial decision, market leadership, raising share of market capitalization, efficiency, solvency, profitability have been the subject matters. The conclusion being presented here, have been drawn primarily on the basis of financial decision analysis only based on annual accounts of respective companies and supported with primary data.

The study shows main problem in taking managerial decision specifically by the companies located in Saurashtra region of Gujarat state. The selected companies are some of giant group of Indian company. The study also shows the usefulness of statistical tools in managerial decision-making. The group of selected companies has great contribution in developing Indian economy.

Chapter–I – OVERVIEW OF SELECTED INDUSTRIES OF SAURASHTRA REGION

It is said that Indian economy is economy of agriculture. But it is not very true, in our past we were developed in industry also but after British rule our industrial sectors collapse and so our economy, we became underdeveloped. Now things are changing we grow at 8% GDP. At present sector-wise share of service sector is more than 50%. It means we are at the take off stage. Primary sector came down to 24% with industrial sector. In this changing scenario we are also capable to compete with international standards.

By looking at our development path or industrial history after independence, we can say that our policy makers never follow any particular philosophy so long. In our first industrial policy of 1948 we adopt socialistic approach than in second industrial policy of 1956, we shifted to mixed economy in which public & private both sectors go together. It works up to few decades but in 1970, 1977, 1980, 1984 and in 1986 we are roaming with different attitude. Parallel to this after 1980's we found that our public sector units made huge losses & their productivity has become negative during this time in international market China, Hong Kong, Singapore, Malaysia & few other countries developed at a higher rate with market economy so we decide to shift again to private sector from public and we launch new industrial policy in 24th of July 1991 under the leadership of P. V. Narshimaharao. In this policy we are committed with free and liberal economy. We promote private sector, abolish MRTP act, license policy, open our door to foreign investment, technology and goods. Ultimately within few years we find dynamism in our economy. Competition has increased, quality improves and development at 8% of GDP. Industrial development crosses 10% for the first time. Import and export is so huge that now we can make difference in international market and with this policy the whole business environment is changed. Now the only thing is "Struggle for Existence, Produce or Perish, Do or Die, Make it or Leave it". If you want to survive in this market you have to innovate, compete, invest and implant. Now market is totally a battlefield. Those who are capable can win and those who are not will die. No emotions and no relation. In this open market our few businessman like Reliance, Tata, Birla, and Videocon

put India on a globe and we are proud of them. Now one thing comes very natural that in this market those who are not working with management, with strategy or logic, they cannot survive. We have plenty of examples in public sector. They never apply any theory or logic in their working and they are gone.

In my research I found that if you apply statistical tools in your policy and implement them you could survive productivity or profitability. Now it is not your wish but the structure or the environment of market is designed by such a way that you do not have any option. You must apply statistical tools; otherwise you will waste your resources. So those, who have less resources or not aware of scientific tools have no place in this market. Competition is very hard and strong. The only alternatives are live with science, with strategy and apply to your behaviour. In our past because of huge population and less competition any body got profit but now in this present scenario with so many competition it is hard to survive.

I have made the effort to know several kinds of policy and practice followed by small and large-scale industrial sectors of Saurashtra Region. I have considered my study period for ten years commencing from 1994-95 to 2003-2004. During my study period, I made attempt for making survey of financial, marketing, production, personnel aspect of selected industrial sectors of Saurashtra Region. I did the comparative study of about nine units located in Saurashtra Region. All such industrial units are found slightly different from the viewpoint of product policy, financial policy and system of several kind of managerial decision making, profitability. Some of the units are too much rich from the viewpoint of infrastructure facility, availability finance even though they are suffering from the problem of market, production, personnel etc. Some of them suffering loss, whereas some of the units are financially sound and earning adequate amount of profit. I tried to find out uniformity in various kinds of policy, practice and procedure prevailing in the organization of such units with regard to prominent business activities. I gave more emphasis on managerial decision policy used by all such selected units. I found during my study that most of the units used to take managerial decision at higher-level authority. Assignment of authority and responsibility for taking decision to the concern officer or manager depends upon

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significance of decision in business activities. Departmental heads makes some routine and less risky decisions. But top management generally makes those kinds of decision, which are more important and very risky. I had given more focus on some important aspects mainly investment, finance, production and marketing. I have gone through the prominent matter of selected units and diagnoses are made in depth and with detail description of various matters effecting to the policy procedure and practice of units.

I attempted to assess the financial structure of the selected industry units with a view to evaluating its capabilities to generate focus needed for undertaking the desire expansion during the next decade. The study extends that the poor profitability and consequent low rate of dividend declaration places a serious limitation on its capacity to raise funds.

Chapter – II – CONCEPTUAL FRAMEWORK OF MANAGERIAL DECISION-MAKING

Managerial decision-making is concern with several business activities like, production, finance, marketing, and personnel so it includes production decision, marketing decision, financing decision and human resources decision etc. system of managerial decision-making differs from organization to organization as it is effected by factors. It is not fair to say that decision taken by using statistical tools is more effective than the decision taken without using statistical tools, decision is one of the manual process not purely mechanism process. Human being always takes it. It is also affected by skill, knowledge, experience, intuition, and ethical value of human being. But day by day with innovation of new technology and change in business environment, size of organization going to increase and business activities does not merely remain limited up to production market finance and human resource but it is beyond such limit so it become too much difficult for the management to take the decision. Thus decision-making process becomes too much complicated and difficult. Rules of the intuition and traditions are no longer sufficient for making decision. In general forces of competition are imposing a need for more effective decision-making at all levels in organization. Today's good decisions are driven by data in all aspects of our

lives, and importantly in the business context. An amazing diversity of data is available for inspection and analytical insight. Business managers and professionals are increasing required to justify decisions on the basis of data. They need statistical model based decision support system, statistical skills enable them to collect, analyze and interpret data relevant to their decision-making intelligently. Statistical concepts and statistical thinking enable them to solve problems in diversity of contexts, odd substance to decision and reduce Guesswork.

But it does not mean that intuition is neglected as a managerial tool for decision-making when the business environment becomes unpredictable, uncertain and competitive, intuitive thinking. Combined with logical reasoning helps executives to make appropriate decisions.

Chapter – III – RESEARCH METHODOLOGY

The data collected for the study from the annual audited reports of various units and personal interviews. For the analysis financial decisions, EPS, D/E Ratio, ROI, Interest Coverage Ratio, Price Earning Ratio, Dividend Payout Ratio, Capitalization Rate, etc. are calculated for the period from 1994-95 to 2003-04. Only various Ratios are not reflecting efficiency, solvency and profitability of selected companies, it also requires to facilitate comparison and easy understanding of financial data. The trend of some financial aspect is also measured with the help of indices. For calculating indices 100 are considered as base year 1994-95 index, increase or decrease in indices indicate soundness or weakness in relevant to financial aspect. In addition to these statistical tools like Chi-square, Mean Standard Deviation, Coefficient of Variation, ANOVA, 't' test, correlation and regression analysis, Kruskal-Wallis test etc. have been calculated for the purpose of analyses.

In the courses of this study following hypothesis have been tested:

→ **Hypothesis for Financing Decision**

1)   There is no significant impact of debt equity Ratio and PBIT on EPS of the selected unit of Saurashtra Region.

2)   There is no significant difference in capital structure within the sampled units during the period of study.

3)   There is no significant difference in average EPS within the sampled units during the period of study.

On the basis of acceptance of above hypothesis no. 1, it is easy to know that D/E ratio and PBIT have no significant impact on EPS of selected units. However, in case of rejection of this hypothesis, it is concluded that there is a significant impact of D/E ratio and PBIT on EPS and such companies were studied on the basis of their individual merits. The hypothesis no 2 and 3 concern with uniformity of capital structure and average EPS for each companies over ten year are stated. Acceptance of these hypothesis state the uniformity and rejection state significantly difference in capital structure and average EPS within the sampled companies during the study. These hypothesis based on one-way ANOVA–'F' test.

→ **Hypothesis for Investment Decision**

1)   There is no significant impact of total investment and net sales revenue on cash flow of the selected units of Saurashtra Region.

2)   There is no significant impact of investment in FA and GWC on net sales revenue of the selected units of Saurashtra Region.

3)   There is no significant difference in average cash flow within the sampled units during the period of study.

4)   There is no significant difference in Average Sales Trend within the sampled units of Saurashtra region during the period of study.

5)   There is no significant difference in Average ROI within the sampled units of Saurashtra region during the period of study.

6)   There is no significant difference in investment trend within the sampled units during the period of study.

7)   There is no significant difference in investment pattern within the sampled units during the period of study.

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On the basis of acceptance of above hypothesis no 1 and 2, it is stated that there is no significant impact of total investment and net sales revenue on cash flow as well as there is no significant impact of investment in FA and GWC on net sales revenue of selected units. However, in case of rejection of hypothesis no 1 & 2, it is concluded that there is a significant impact of total investment and net sales revenue on cash flow as well as there is a significant impact of investment in FA and GWC on net sales revenue of selected units. These hypotheses are based on chi-square test. Hypothesis no 3, 4, 5, 6 & 7 are concern with average cash flow, sales trend, average ROI, total investment trend and investment pattern within the sampled unit during the period of study. These hypotheses are based on one-way ANOVA.

→ **Hypothesis for Dividend Decision**

1) There is no significant difference in dividend decision policy of selected units of Saurashtra region.

2) There is no significant difference in dividend payout ratio within the sampled units during the period of study of Saurashtra region.

In the course of this study two null hypothesis have been tested, the first hypothesis based on Chi-square test. On the bases of acceptance of this hypothesis, it is concluded that there is no significant difference in dividend decision policy. However, in case of rejection of this hypothesis it is concluded that there is a significant difference in dividend decision policy of sampled companies and such companies were studied on the basis of their individual merits. The second hypothesis concerning dividend payout ratio for each companies over ten years has been stated. This hypothesis is based on one-way ANOVA and it is concerned with inter company comparisons.

→ **Hypothesis for overall system of managerial decision – making**

1) There is no relationship between the use of statistical tools for managerial decision and without use of statistical tools for managerial decision in selected units of the study.

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2)   There is no significant difference among managerial decision in selected units of the study.

→ <u>**Objectives Of The Study**</u>

The objectives of the present study are:

1-   To find out managerial problem facing by the business enterprise in taking managerial decision-making.

2-   To determine various area of decision of business enterprise, particularly financing investment and dividend decision of a company.

3-   To study the factors of taking managerial decision-making.

4-   To evaluate effect of statistical tools in managerial decisions.

5-   To study relationship between the use of statistical tools for managerial decision and without use of statistical tools for managerial decision making in selected units.

6-   To suggest appropriate correct steps to improve managerial decision making process.

Chapter – IV –   <u>COMPARATIVE ANALYSIS OF FINANCING DECISION</u>

Financing decision is the one of the important function to be performed by the financial manager. Financing decisions revolve around the analyzing cost of various types of financial instruments in different capital and money market. Having analyzed cost of various types of financial instruments, the next steps is to strike a suitable balance among various instruments to give shape of proper capital structure that minimizes overall cost of capital at an acceptable level of risk. For the purpose of evaluation of financing decision various ratio like debt to asset ratio, capitalization rate, debt-equity ratio, earning per share, interest coverage ratio and P/E ratio are used.

→ <u>Interest Coverage Ratio</u>

The interest coverage ratio of RIL (5.15), IRIL (4.07), TCL (2.64), GACL (2.88) and GHCL (2.71) was more than two times. It indicates better

capacity of companies to pay the interest during the study period. Interest coverage ratio of DCCL (0.20) was less than one time, it indicates worse position of paying interest on debt, but in case of GSFC (1.61), Aust. Eng. (1.26), OAL (1.87), it was more than 1 time but less than 2 times so these companies also enjoy better capacity of paying interest.

→ **Price Earning Ratio**

As per general guideline P/E ratio should be in normal range of $^5/_1$ to $^{10}/_1$. In case of TCL, IRIL and GSFC, average P/E ratios were 8.14, 8.06 and 8.44, which were within the normal range. They indicate that the profit earned by the company as compare to the price of stock was reasonable during the study period. In case of RIL and GACL average P/E ratio were 14.74 and 12.66 respectively, which were above the normal range. It indicates that profit earned by the company as compare to price of stock was too much more than required during the study period. In case of GHCL, OAL Aust. Eng. and DCCL, average P/E ratios were 2.83, -17.58, 1.22 and 1.40 respectively, which were below the normal range. It indicates that profit earned by these companies as compare to the price of the stock was not reasonable during the study period.

→ **Earning Per Share**

The highest average earning per share was Rs. 23.08 in case of IRIL and average D/E ratio of the same company was 0.51 times, which was lowest as compare to other selected companies and the lowest average earning per share was Rs. –26.71 in case of DCCL and average D/E ratio of the same company was 15.45 times, which was highest as compare to other selected companies. The earning per share of RIL, GACL and TCL was Rs. 21.27 per share, Rs. 16.30 per share, Rs. 13.10 per share respectively which were more than face value (Rs. 10) per equity share and D/E ratio of the same companies were 0.68, 0.95, and 0.84 respectively during the period of study, which were less than the D/E ratio as per general guideline. The earning per share in case of GSFC, Aust. Eng. OAL and GHCL was Rs. 8.30, Rs. 0.64, Rs. 9.92 and Rs. 4.30 respectively. Earning per share indicates profitability of the company. Average EPS of IRIL, RIL, GACL and TCL were

better with low debt-equity ratio. It indicates the sound profitability with better solvency.

The chi-square value of IRIL (12.56) and RIL (13.10) is less than table value, so first null hypothesis is accepted. It indicates that EPS of these company is not significantly affected by D/E ratio and PBIT, but in case of other companies, chi-square value is greater than table value so null hypothesis is rejected. It indicates that there is a significant impact of D/E ratio and PBIT on EPS.

The above study brought to light that those company of which EPS is highly correlated to PBIT but negatively correlated to D/E ratio with low interest coverage ratio and high debt-equity ratio show significant adverse impact of D/E ratio and PBIT on EPS. GSFC, GACL, GHCL, DCCL, Aust. Eng. And OAL is the evidence of above result. This situation declines EPS so, it is advisable for this company to decrease debt and increase PBIT through effective and efficient financing decision.

→ **Debt Equity Ratio**

The average debt equity ratio of IRIL (0.51), RIL (0.68), TCL (0.84), GACL (0.95), GHCL (0.72), GSFC (1.26), OAL (1.45), Aust. Eng. (0.56) and DCCL (15.45), where as, as per general guideline D/E ratio is 1:1. In case of GSFC, OAL and DCCL, debt-equity ratios were exceed the general guideline during the period of study, which indicate none conservative approach of financial management that means, the companies mostly prefer borrowed fund to raise the additional fund for expansion and other business purpose. It implies high risk for shareholders. The debt-equity ratios of IRIL, RIL TCL GHCL Aust. Eng and GACL were less than general guideline during the period of study. It indicate conservative approach of financial management that means company mostly prefers own fund to raise the additional fund for expansion and other business purpose, so this result indicates that capital structure of company offers less risk and high solvency for the shareholders.

The coefficient of variation of D/E ratio arrived at 37.79% for the industry, which shows the fluctuation in capital structure during the period of study. The coefficient of variation in D/E ratio was lowest 22.82% in case of Aust. Eng. It means there was higher stability as compared to industry in

capital structure. The coefficient of variation for RIL and GSFC was 24.98% and 23.85% respectively, which were nearest to lowest coefficient of variation also indicating higher stability in capital structure while highest variability was recorded in case of DCCL (78.60%). The coefficient of variation worked out oat 37.11% for IRIL, 43.48% for OAL, 27.38% for GACL, 37.49% for GHCL and 44.40% for TCL, which were nearest to combined average 37.79% for the industry as a whole indicating better stability in capital structure as compared to combined average.

The 'F' test (ANOVA) value of the selected companies as a whole is 14.39 and table value @ 5% level of significant with D. F. (8,81) is 2.02, 2[nd] null hypothesis is rejected; it means there is a significant difference in capital structure within the sampled units. The capital structure of the selected sampled units is not uniformed during the period of study.

The Third null hypothesis based on ANOVA. It is rejected as the 'F' test (ANOVA) value for the selected companies as a whole is 10.23, which is the more than table value (2.02) at 5% level of significant with D. F. (8,81). It means there is a significant difference in earning per share within the sampled units. It signifies that there is no uniform EPS of selected units.

It is also noted that a very important reason for the losses or low level of profits of the industries in Saurashtra was ineffective and inefficient management. DCCL, OAL and GSFC are mostly suffering losses. It is the result of high debt equity ratio and lack of proper utilization of fund. Interest cost of these companies has reduced earning available to ordinary shareholders. EPS has been badly affected by leverages. It also concluded that the cost of capital is affected by debt apart from its tax advantages.

It is evident that all the companies have not performed equally well in solvency as well as profitability. RIL, IRIL, GACL, and TCL are evidence of effective and efficient utilization of fund and proper balancing between solvency and profitability. It is also evidence that financing decision of these companies regarding formation of capital structure selecting various sources of funds and utilization of fund was rational and long-term perspective.

The following suggestions are necessary to improve efficiency and effectiveness of financing decision.

(1)   The companies, which have low profitability and solvency and EPS is declining should give first priority to improve the effectiveness and efficiency of financing decision.

(2)   It may be noted that optimum utilization of invested fund and raising the fund for expansion of business through cheapest financial instrument are mostly concern with financing decision of the company.

(3)   The environment opportunities and threats should be evaluated in the light of the strengths and weakness of internal factors comprising finance technology and skill, production facilities, personnel and marketing capabilities.

(4)   There should be increased application of statistical tools in financing decision-making process.

(5)   Management should try to reduce overall cost by improving cost reducing and cost control technique.

(6)   Long term borrowing should be redeemed, so that the cost of fixed burden will be reduced in future and D/E ratio of company come down to strengthen the capital structure position.

(7)   Management should find out key indicators, which are responsible for weakness of financing decision and controlling over it.

Chapter – V – <u>COMPARATIVE ANALYSIS OF INVESTMENT DECISION</u>

Investment decision is one of the managerial decisions. It is the primary function of the finance manager and when idea regarding starting new business or major alteration in existing business is developed; problem of new investment of fund arises. Investment decision is one of the crucial decisions of the corporate sector. At the time of taking investment decision, several factors such as market situation, cost of capital availability of financial resources, profitability, risk associated with business, Government policy, pattern of controlling management affairs etc. are considered.

So capital budgeting decision relates to huge amount of expenditure, long-term investment high degree of risk and future benefits. The benefits may be either in the form of increased revenue or reduced in costs.

→ Return on Investment, Total Assets Turnover Ratio and Net Profit Ratio

The average return on investment of selected units is worked out 12%. It may be said that every 100 rupees investment in business, profit for the industry is Rs 12. In case of RIL (12.13%), TCL (14.18%), GHCL (18.24) and OAL (22.89%) average ROI is higher than the average ROI of industries as a whole. It is a sign of better profitability. In case of IRIL (10.05%), GACL (11.60%), GSFC (8.38%), Aust. Eng. (7.70%) and DCCL (2.86%) average ROI is less than the average ROI of industry as a whole; these units are not performing well as compare to others.

The average net profit ratio of selected units as a whole is worked out 7.4%. In case of IRIL (9.45%), RIL (14.98), TCL (17.08%), GACL (16.84%) and GHCL (12.22%), NPR is higher than the average NPR of industry as a whole. It is sign of better profitability. In case of GSFC (4.03%), OAL (3.24%), Aust. Eng. (0.18%) and DCCL (-11.47%) NPR is less than the average NPR of industry as a whole; these units are not performing well as compare to others.

The average total assets turnover ratio is worked out 0.80 times for industry as a whole. In case of IRIL (0.80), OAL (1.44), Aust. Eng. (0.81) and DCCL (1.08), total asset turnover ratio is higher than average total assets turnover ratio of industry as a whole; these units perform at better assets efficiency and sales efficiency. In case of RIL (0.68), TCL (0.49), GACL (0.52), GHCL (0.72) and GSFC (0.61), total assets turnover ratio is less than the average total asset turnover ratio of industry as a whole, it indicates that these units do not perform at better assets efficiency and sales efficiency.

From the above evaluation it is cleared that profitability of RIL, TCL, GACL and GHCL is better at lower level of sales efficiency and asset efficiency. It is the result of low financial cost; better-cost control and proper risk return decision. In case of GSFC, OAL Aust. Eng and DCCL, the profitability is too much poor even though there is high total asset turnover ratio. It is a sign of high financial cost, lack of proper cost control and risk return decision.

The chi-square value of the selected units is worked out, the table value of chi-square @ 5% level of significant with D.F (9) is 16.92. In case of GACL (12.04), GHCL (6.13) and OAL (14.66) is less than table value, the first null hypothesis based on chi-square test is accepted, it indicates that there is no significant impact of total investment and sales revenue on cash profit. In case of IRIL (31.83), RIL (202.26), TCL (124.51), GSFC (375.58) and Aust. Eng (38.57) and DCCL (-2635.82), it is greater than the table value so null hypothesis is rejected. It indicates that there is a significant impact of total investment and sales revenue on cash profit. Chi-square value of DCCL is negative it is a sign of adverse impact of total investment and sales revenue on cash profit. In case of DCCL and GSFC there is a negative correlation between cash profit and sales, so cash profit is adversely affected by sales therefore these two companies suffering problem of low profitability and high fluctuation period.

→ **Fixed Asset Turnover Ratio**

The sales efficiency can be measured with the help of fixed assets efficiency and GWC efficiency. Here, the average fixed assets turnover and GWC turnover ratios are calculated. The average F.A. turnover ratio of IRIL, RIL and TCL are 1.43, 1.04 and 0.79 times with high rate of coefficient of variation. C.V. rate was 34.10%, 41.47% and 34.80% during the study period, which shows fluctuation in F.A. efficiency, but trend of FA turnover ratio of above companies were in increasing. In case of GACL and GHCL it was 0.66 and 1.12 times with low coefficient of variation. C.V. rate was 19.95% and 10.17% respectively during the study period, which shows increasing trend of FA turnover ratio at lower rate average FA turnover ratio of GSFC, OAL Aust. Eng. and DCCL were 1.01, 4.29, 2.87 and 2.49 times respectively with high rate of coefficient of variation. C.V rate of the companies was 11.14%, 28.40%, 24.89% and 39.16% respectively but FA turnover ratio of these companies is in decreasing trend.

→ **Gross Working Capital Turnover Ratio**

The average GWC turnover ratio of IRIL (1.83), RIL (1.94) and TCL (1.33) times with the C.V. rate of these companies 30.78%, 29.48% and

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20.18% respectively, which shows high rate of fluctuation in GWC turnover ratio. In case of GACL (2.6) and GHCL (2.12) times with C.V. rate 25.14% and 17.39% respectively during the study period. The fluctuation in GWC turnover ratio in case of above companies shows increase in trend of GWC turnover ratio but GWC turnover ration in case of GSFC (1.54), OAL (2.20), Aust. Eng. (1.13) and DCCL (2.23) times with C.V. rate 10.94%, 13.75%, 18.29% and 23.00% respectively but fluctuation in GWC turnover ratio in case of these companies arises due to decrease in GWC turnover ratio.

The above evaluations indicates that the increase in FA turnover ratio and GWC turnover show sound efficiency of total investment in FA and GWC. The sound efficiency of total investment gives positive effect of sales, so sales efficiency of IRIL, RIL, TCL, GACL and GHCL is better than the other companies. So profitability of these companies is also better than other companies. GSFC, OAL, Aust. Eng. and DCCL are suffering from fluctuation period due to inefficiency of utilization of fund invested in FA and GWC.

→ **Sales Revenue**

Sales efficiency means trend of sales during the study period. Trend of sales indicates progress made in sales during the study period for sales efficiency. The highest average index (434.30) was recorded for RIL. This means that RIL improved its sales efficiency at the higher rate during the study period. The compound growth rate in sales of RIL was also 30.10% during the study period. TCL (216.77) and GACL (305.46) show a better performance as compared to industries combined average (182.92). The compound growth rate of these companies also 15.90% and 20.40% during the study period. On the other hand IRIL (143.75), GHCL (148.51), GSFC (125.50), DCCL (82.77), Aust. Eng. (120.68) and OAL (113.50) are performed below the combined average. It indicates that the sales efficiency of RIL, GACL and TCL is quite better than of the other selected companies.

The chi-square value of RIL (8353), IRIL (262.75), TCL (160.01), GACL (80.30) and GHCL (18.96) is higher than the table value. The table value of chi-square @ 5% level of significance with D.F 9 is 16.92. Hence, second null hypothesis is rejected. It indicates that there is a significant impact of total investment in FA and GWC on sales. It is a sign of sound sales efficiency and

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investment efficiency. The chi-square value of GSFC (15.39), OAL (8.56), Aust. Eng. (7.39) and DCCL (12.67) is lower than the table value. Hence, second null hypothesis is accepted. It indicates that there is no significant impact of total investment in FA and GWD on sales. It is a sign of poor sales efficiency and investment efficiency.

The third one hypothesis is based on ANOVA ('F' test). This null hypothesis is rejected, as calculated value (3.43) is more than table value. The table value @ 5% level of significant with D.F (8,81) is 2.02. It indicates that there is a significant difference in cash profit generated through sales and total capital employed within the sampled units.

The forth one hypothesis is based on ANOVA ('F' test). This null hypothesis is rejected, as calculated value (6.64) is more than table value. The table value @ 5% level of significant with D.F (8,81) is 2.02. It indicates that there is a significant difference in average sales trend within the sampled units during the study period. it indicates that there is an inequality in sales efficiency due to inequality of investment efficiency during the study period.

The fifth one hypothesis based on ANOVA for ROI is rejected it indicates that there is a significant difference in ROI within the sampled units during the study period. It is found that there is an inequality in utilization efficiency of invested capital.

The sixth one hypothesis based on ANOVA for total investment is accepted. It indicates that there is no significant difference in trend value of total capital employed within the sampled units during the study period.

The seventh one hypothesis based on ANOVA for investment pattern is accepted. It indicates that there is no significant difference in investment pattern within the sampled units during the study period. It means ratio of fixed assets to GWC is uniformed in each selected units.

The various key indicators of investment decision are evaluated and it is found that there is no uniformity in investment decision pattern. OAL, Aust. Eng. DCCL and GSFC are having better total assets turnover ratio, FA turnover ratio and GWC turnover ratio, even though having too much less profitability. The fixed assets to GWC ratio of these non profitable units is also too much low

The above study points out that a very important reason for the losses or low level of profits of selected units of Saurashtra region is ineffective and inefficient utilization of total capital employed, one more reason of low profitability is also shortage of working capital. Main objectives of investment decision are to arrange the needed fund at right time, from the right sources and for the right period so that the proper trade off among profitability, liquidity and efficiency may be realized.

Following suggestions are necessary to improve effectiveness and efficiency of investment decision.

(1) Those company of which profit is badly affected by high cost of production unfavourable market condition etc. should adopt scientific method of cost reduction and create more and more market opportunity through advertisement, product diversification quality improvement etc.

(2) Activity based costing systems should be used, which reveal a wide range of opportunities of cost reduction.

(3) There should be proper management control system, so that the investment decision-making process can be renationalized.

(4) In the investment decision-making process the responsible manager has to keep the goal perception in more clarity with timing of taking decision as a better control mechanizing with least cost.

(5) The investment decision-making process has to be linked with the organization goal and personnel goal to motivate the responsible managerial groups.

(6) Adopting the modern manufacturing process should increase the labour productivity and material productivity. Computer based technology should be promoted which increase total productivity and decrease overall cost of production.

(7) To improve the liquidity position, long-term funds have to be used to finance core currents and part of temporary current assets.

(8) The total capital employed should be reduced through improvement in inventory level, more rapid collection of account receivable, putting excess cash to use and through economic control of additional to fixed capital.

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Chapter – VI – <u>COMPARATIVE ANALYSIS OF DIVIDEND DECISION</u>

Dividend decision is a part of financial decision of the company. Dividend decision is the problem of management of earning. Dividends refer to those portions of a firm net earning, which are paid out to the ordinary shareholders. Dividend policy must lead to maximize the wealth of shareholders. If dividend policy is strictly to financing decision, whether dividends are paid out of profit or earning is retained will depend upon the available investment opportunities. It implies that when a firm has sufficient investment opportunities, it will retain the earnings to finance them conversely, if acceptable investment opportunities are inadequate, the implication is that the earnings would be distributed to the shareholders.

There is a controversial opinion about the impact of dividends on the valuation of the firm M. M. Hypothesis started, that dividends are irrelevant to the valuation of the firm. According to Walter's model view. Dividends are relevant to valuation of firm. In Walter's view it depends on the profitability of investment opportunities available to the firm and the cost of capital. Lintner's model view is that the firm generally thinks in terms of proportion of earning to be paid out. Investment requirements are not considered for modifying the pattern of dividend behaviour. Thus, firms generally have target payout ratios.

Payment of dividend pays significantly affects the market price of the share. Higher dividend increases the value of the share and lower dividend, reduces the value of share. On the other hand, when dividends are increased, though there may be a favourable reaction in the stock markets but firm may have to forego some profitable investment opportunities for want of funds and consequently the future earnings per share may decrease.

Therefore management should always take dividend decision in such a way that divides the not earning into dividend and retained earning in an optimum way to achieve the objective of maximizing the wealth of shareholders.

→ <u>Dividend Per Share And Earning Per Share</u>

The highest average EPS Rs. 23.08 is for IRIL. It shows best profitability the lowest average EPS is in case of GHCL (4.30) and Aust. Eng.

(4.58) is there. It shows worse profitability. In case of RIL (21.27), TCL (13.10), GACL (16.30) and GSFC (22.60) average EPS is comparatively good which shows better profitability. The highest average dividend per share is in case of TCL (5.70) and GACL (5.71) and lowest in case of GHCL (1.77) and Aust. Eng. (1.73), other companies also pay dividend at higher rate. It indicates that low EPS, low dividend and high EPS, high dividend.

→ **Dividend Payout Ratio And Average Market Price**

The highest dividend payout ratio was in case of TCL 49.96% but its AMP is not comparatively too much high, its average market price was Rs. 111.84 per share on other side, there was a highest average market price Rs 301.58 per share in case of RIL, but its dividend payout ratio was not too much high. So it is not true to say that the higher dividend payout ratio is the higher market price. Trade of stock and reputation of company in the market also affect AMP.

The chi-square value of IRIL and GHCL is greater than the table value. So, it shows that there is a significant difference between actual dividend payout ratio and target dividend payout ratio. 1^{st} null hypothesis based on chi-square is rejected. These companies do not strictly follow stable dividend policy. Mostly it depends upon current year earning (EPS). In case of RIL, TCL, GSFC, GACL and Aust. Eng. null hypothesis is accepted, it shows that management is more likely to increase dividend overtime.

The 2^{nd} null hypothesis based on 'F' test one way analysis of variance is tested @ 5% level of significant is accepted, it means there is no significant difference in dividend payout ratio within the sampled units.

It signifies that there is uniform dividend decision policy used by companies. Dividend decision is management approach. Management of each company signifies several factors affecting on dividend policy are almost same. The firm's ability to pay dividend depends on its funds requirements for growth shareholders' desire and liquidity. A growth firm prefer to pay its dividend at low rate because of its high needs of funds.

The following suggestions are necessary to improve efficiency and effectiveness of dividend decision.

(1)   Those companies of which EPS is badly affected by high D/E ratio and high interest cost should be redeemed the debt and decrease interest cost.

(2)   The target dividend payout ratio must be there to maintain and improve the average market price.

(3)   Profit should be maximized through cost control; profit planning and proper risk return decision.

(4)   The management should develop such a dividend policy, which divides the net earning into dividends and retain earning in an optimum way to achieve the objective of maximizing the wealth of shareholders.

(5)   Dividend policy must be based on scientific and systematic principle & practice.

(6)   Using more and more statistical tools must minimize complexity in dividend decision process.

(7)   Using statistical tools must do evaluation and analysis of internal and external factors effecting on dividend policy.

Chapter – VII – ANALYSIS AND EVALUATION OF OVERALL SYSTEM OF MANAGERIAL DECISION-MAKING

Managerial decision-making is an essential part of every manager's job from the viewpoint of managing several business activities like production, marketing, finance, personnel etc. Effective and efficient decision making system must be there managers manage all such business activities by making decisions and getting them implemented through their subordinates. Information is the basic input of decision-making. The quality and timeliness of information determines the effectiveness of decision-making.

There are three managerial decisions namely financing, investment and dividend decision evaluated individually in past chapters, in this chapter comparative evaluation of all these three decisions are made.

→ **Evaluation Of Relationship Between Statistical Tools And Managerial Decision**

Researcher has conducted group discussion during personal visit of selected units with the responsible authorities and found that not a single corporate unit which takes managerial decision without using statistical tools, on other hand all corporate units are not use statistical tools for taking 100% managerial decisions. Here researcher has collected the information through questionnaire about use of statistical tools and managerial decision maker come to knowledge that percentage of managerial decisions of selected companies taken by using statistical tools are classified in three groups as follows:

Group – I

Those companies that using statistical tools for taking more than 75% managerial decisions. These companies are

1. Reliance Industries Ltd. – Jamnagar Unit.
2. Indian Rayon & industries Ltd – Veraval Unit.
3. Tata Chemicals Ltd – Mithapur Unit.

Group – II

Those companies that using statistical tools for taking more than 25% but up to 75% managerial decision. These companies are

1. Gujarat Heavy Chemical Ltd. – Sutrapada Unit.
2. Gujarat Ambuja Cements Ltd. – Kodinar Unit.
3. Gujarat State Fertilizers & Chemicals Ltd. – Sikka Unit.

Group – III

Those companies that using statistical tools for taking only up to 25% managerial decision. These companies are

1. Orient Abrasives Ltd. – Porbandar Unit.
2. Austin Engineering Co. Ltd. – Junagadh Unit.
3. Shri Digvijay Cement Co. Ltd. – Jamnagar Unit.

For evaluating impact of use of statistical tools in managerial decision-making, average of EPS, D/E and Net Sales indices for each year of three

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groups of companies are calculated and profitability efficiency and solvency of these three groups are evaluated.

Evaluation of profitability, efficiency and solvency of three groups of sampled companies indicate that all three groups of sampled companies are not uniform; there is a significant difference in profitability, efficiency and solvency. It reveals that profitability, efficiency and solvency of Group I are quite better than that of Group II & III and it is also true to say that profitability, efficiency and solvency of Group II is poor than that of Group I but better than that of Group -III.

All the companies in Group I are using statistical tools for taking more than 75% managerial decision. The better profitability, efficiency an solvency are result of efficient and effective managerial decision making and efficient and effective managerial decision making is the result of using more and more statistical tools in taking managerial decisions.

All the companies in Group II are using statistical tools for taking more than 25% but up to 75% managerial decisions. Profitability, efficiency and solvency of this group are comparatively poor than companies in Group I but quite better than companies in Group III. It is also result of efficient and effective managerial decision-making, and efficient and effective managerial decision making is result of using statistical tools in taking managerial decisions.

All the companies in Group III are using statistical tools for taking only up to 25% managerial decisions. These companies are suffering from very poor profitability, efficiency and solvency situation. It is due to ineffective and inefficient managerial decision-making, and inefficient and ineffective managerial decision-making is result of lesser use of statistical tools for taking managerial decisions.

The first null hypothesis is based on 'F' test one-way analysis. It states that there is no relationship between the use of statistical tools or managerial decision and without use of statistical tools for managerial decision in selected units of the study. This null hypothesis is rejected. Therefore it is clear to say that all above results are evidences of relationship between use of statistical

tools for managerial decisions and without use of statistical tools for managerial decisions in selected units of the study of Saurashtra region.

→ **Comparison of managerial decision process**

For the purpose of comparison of managerial decision process general agreement of opinion has been obtained from managers of selected units regarding managerial decision, which is classified in five groups as follows:

1. Issue of Quality of Decision makers.
2. Issue of Financing Decision.
3. Issue of Investment Decision.
4. Issue of Dividend Decision.
5. Issue of Using Statistical Tools in Decision-making.

The questionnaire has been prepared with five point scaling techniques as primary data collection tools. It includes various aspects of managerial decision such as quality of decision maker, participation of staff members in decision-making, financing, investment and dividend decision-making process. It also includes influence of statistical tools on managerial decision-making.

The questionnaire contained total 50 questions. Nine respondents have been answered the questions. The score of each question has been note down. The study envisages that all respondent agreed with majority statement of Group A, B, C & D but there is high rate of coefficient of variation, the score of Group E shows very high coefficient of variation that is due to inequality about use of statistical tools in managerial decision.

The second null hypothesis based on Kruskal – Wallis test has been tested, the null is stated that there is no significant difference among managerial decision in selected units of the study of Saurashtra region.

The calculated value of H = 27.48. It is greater than table value (15.5) at 5% level of significant with D. F. 8. It states that the null hypothesis is rejected; this indicates that there exists significant difference in managerial decision amongst nine companies.

The study has brought to light that nine sample companies follow different policy and practice for taking managerial decision. It is evident that all

the companies are not identical from the viewpoint of process of managerial decision making therefore they have not performed equally well in all fronts. Inequality in performance is evident of deviation in management efficiency. Those companies, which give more and more important to the statistical tools in taking various managerial decisions, can success in taking effective managerial decision. IRL, IRIL and TCL are evidence of important of statistical tools in managerial decision. Therefore the use of statistical tools in managerial decision-making is only the alternative of taking effective and efficient decision. So it is advisable for the companies to use more and more statistical tools. In my empirical study I have found that those company which are using statistical tools in managerial decision are quite better from the viewpoint of profitability, solvency and efficiency but those company which are not using statistical tools or which are using less statistical tools in managerial decision are not quite better from the viewpoint of profitability, solvency and efficiency.

Following suggestions are necessary to improve over all process of managerial decision–making.

(1)   Those company, who is suffering from the problem of poor performance & profitability should use statistical tools to improve the quality of management.

(2)   The uncertainty and risk are always in business. Most of the decisions are made in the face of uncertainty concept of probability so use of probability in decision-making process strengthens the effectiveness of managerial decision.

(3)   Those companies who have no competent sources to use the statistical tools, they should acquire competent manpower, so they can give first priority to statistical tools in managerial decision making.

(4)   If the financial analyst use regression and correlation than he can understand the relationship of a financial ratio to a set of other variables in business. It his helpful to observe significances of each variable in profitability and financial position.

(5)   A market researcher may use test of significant to accept or reject the hypotheses about a group of buyer to which the firm wishes

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to sell a particular product. It increases total sales and minimizes loss of debt and investment in receivable.

(6)   In all the area of decision-making like, production, marketing, personal finance etc. more and more statistical tools should be used.

(7)   In competitive environment of market, you must apply statistical tools for optimum utilization of resources; otherwise you waste your resources.

(8)   Ethical value is also equally important in decision making, so decision maker should also use the ethical principle along with economic principle in decision-making.

(9)   Operation research becomes more and more popular as valuable tools in decision making of business management. Therefore, it should not limited up to production sales and marketing and inventory but should be extended up to long range planning problem.

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QUESTIONNAIRE

(A) ISSUE OF QUALITY OF DECISION MAKER

(1) Managerial decision should always be under taken through co-ordination and co-operation of all staff member.

    (a) Strongly Agree ☐   (b) Agree ☐   (c) Neutral ☐

    (d) Disagree ☐   (e) Strongly Disagree ☐

(2) Quality and effectiveness of managerial decision is always depends upon quality and ethic of decision maker.

    (a) Strongly Agree ☐   (b) Agree ☐   (c) Neutral ☐

    (d) Disagree ☐   (e) Strongly Disagree ☐

(3) Managerial decision-making is not always mechanism process but also natural process.

    (a) Strongly Agree ☐   (b) Agree ☐   (c) Neutral ☐

    (d) Disagree ☐   (e) Strongly Disagree ☐

(4) Managers are borne, not created.

    (a) Strongly Agree ☐   (b) Agree ☐   (c) Neutral ☐

    (d) Disagree ☐   (e) Strongly Disagree ☐

(5) To be a successful manager not only education qualification is required but also natural skill and intuition.

    (a) Strongly Agree ☐   (b) Agree ☐   (c) Neutral ☐

    (d) Disagree ☐   (e) Strongly Disagree ☐

(6) Managerial decision is a continuous process of solving the problem.

    (a) Strongly Agree ☐   (b) Agree ☐   (c) Neutral ☐

    (d) Disagree ☐   (e) Strongly Disagree ☐

(7) Effective and efficient decision-making is only the alternative to stand in competitive environment.

    (a) Strongly Agree ☐   (b) Agree ☐   (c) Neutral ☐

    (d) Disagree ☐   (e) Strongly Disagree ☐

(8) Growth and development is the result of right managerial decision making.

    (a) Strongly Agree ☐   (b) Agree ☐   (c) Neutral ☐

(d) Disagree ☐ (e) Strongly Disagree ☐

(9) MIS must be scientific not only systematic.

    (a) Strongly Agree ☐ (b) Agree ☐ (c) Neutral ☐

    (d) Disagree ☐ (e) Strongly Disagree ☐

(10) Strategic policy of organization is also preferable not only the quality of decision maker for taking decision.

    (a) Strongly Agree ☐ (b) Agree ☐ (c) Neutral ☐

    (d) Disagree ☐ (e) Strongly Disagree ☐

(B) ISSUE OF FINANCING DECISION.

(11) Use of leverage in capital structure is helpful to increase wealth of shareholder.

    (a) Strongly Agree ☐ (b) Agree ☐ (c) Neutral ☐

    (d) Disagree ☐ (e) Strongly Disagree ☐

(12) True value of the firm indicated by market return rather than stock return.

    (a) Strongly Agree ☐ (b) Agree ☐ (c) Neutral ☐

    (d) Disagree ☐ (e) Strongly Disagree ☐

(13) Financial decision and investment decision are two sides of a coin.

    (a) Strongly Agree ☐ (b) Agree ☐ (c) Neutral ☐

    (d) Disagree ☐ (e) Strongly Disagree ☐

(14) The correct financing decision is one of the alternative to alive the business in worst situation.

    (a) Strongly Agree ☐ (b) Agree ☐ (c) Neutral ☐

    (d) Disagree ☐ (e) Strongly Disagree ☐

(15) Weakness in system of financial decision-making is one of the reasons for illness in profitability and productivity.

    (a) Strongly Agree ☐ (b) Agree ☐ (c) Neutral ☐

    (d) Disagree ☐ (e) Strongly Disagree ☐

(16) Ethical and honest manager can take only effective and efficient financial decision.

    (a) Strongly Agree ☐ (b) Agree ☐ (c) Neutral ☐

    (d) Disagree ☐ (e) Strongly Disagree ☐

(17) It is very difficult to form optimum capital structure but easy to form rational capital structure.

    (a) Strongly Agree ☐   (b) Agree ☐   (c) Neutral ☐

    (d) Disagree ☐   (e) Strongly Disagree ☐

(18) Cost of capital is cut off point for taking financial decision.

    (a) Strongly Agree ☐   (b) Agree ☐   (c) Neutral ☐

    (d) Disagree ☐   (e) Strongly Disagree ☐

(19) There is an influence of statistical tools on financing decision-making.

    (a) Strongly Agree ☐   (b) Agree ☐   (c) Neutral ☐

    (d) Disagree ☐   (e) Strongly Disagree ☐

(20) EVA is better than EPS to measure effectiveness of financing decision.

    (a) Strongly Agree ☐   (b) Agree ☐   (c) Neutral ☐

    (d) Disagree ☐   (e) Strongly Disagree ☐

(C) ISSUE OF INVESTMENT DECISION-MAKING.

(21) Investment decision is more complicated, expensive, time taking and risky decision.

    (a) Strongly Agree ☐   (b) Agree ☐   (c) Neutral ☐

    (d) Disagree ☐   (e) Strongly Disagree ☐

(22) Investment decision is the indication of prosperity and new opportunity in the business.

    (a) Strongly Agree ☐   (b) Agree ☐   (c) Neutral ☐

    (d) Disagree ☐   (e) Strongly Disagree ☐

(23) EVA is more effective concept than ROI for evaluation of long-term investment decision.

    (a) Strongly Agree ☐   (b) Agree ☐   (c) Neutral ☐

    (d) Disagree ☐   (e) Strongly Disagree ☐

(24) It is more beneficial to finance long-term investment proposal by borrowed sources.

    (a) Strongly Agree ☐   (b) Agree ☐   (c) Neutral ☐

    (d) Disagree ☐   (e) Strongly Disagree ☐

(25) Effectiveness of investment decision is high; if evaluation of investment proposal is made through cost benefit analysis and risk return approach.

    (a) Strongly Agree ☐   (b) Agree ☐   (c) Neutral ☐

(d) Disagree ☐ (e) Strongly Disagree ☐

(26) Corporate investment management committee is final authority for taking investment decision.

(a) Strongly Agree ☐ (b) Agree ☐ (c) Neutral ☐
(d) Disagree ☐ (e) Strongly Disagree ☐

(27) Good profitability and productivity is the result of optimum utilization of fund invested in business.

(a) Strongly Agree ☐ (b) Agree ☐ (c) Neutral ☐
(d) Disagree ☐ (e) Strongly Disagree ☐

(28) Return on investment is a parameter for measuring overall performance of management.

(a) Strongly Agree ☐ (b) Agree ☐ (c) Neutral ☐
(d) Disagree ☐ (e) Strongly Disagree ☐

(29) The use of statistical tools in investment decision is not tedious and time-consuming job but important for taking effective decision.

(a) Strongly Agree ☐ (b) Agree ☐ (c) Neutral ☐
(d) Disagree ☐ (e) Strongly Disagree ☐

(30) Investment decision is a function of only top authorities.

(a) Strongly Agree ☐ (b) Agree ☐ (c) Neutral ☐
(d) Disagree ☐ (e) Strongly Disagree ☐

(D) ISSUE OF DIVIDEND DECISION.

(31) Dividend policy influences in the market price of equity share.

(a) Strongly Agree ☐ (b) Agree ☐ (c) Neutral ☐
(d) Disagree ☐ (e) Strongly Disagree ☐

(32) Higher the dividend payout ratio, the higher would be the price of equity share.

(a) Strongly Agree ☐ (b) Agree ☐ (c) Neutral ☐
(d) Disagree ☐ (e) Strongly Disagree ☐

(33) A company should strike to maintain an uninterrupted record of dividend payment.

(a) Strongly Agree ☐ (b) Agree ☐ (c) Neutral ☐
(d) Disagree ☐ (e) Strongly Disagree ☐

(34) A company should have a target dividend payout ratio and periodical adjustment of this target.

    (a) Strongly Agree ☐   (b) Agree ☐   (c) Neutral ☐

    (d) Disagree ☐   (e) Strongly Disagree ☐

(35) Stock markets use dividend announcement as information for assessing the value of shares.

    (a) Strongly Agree ☐   (b) Agree ☐   (c) Neutral ☐

    (d) Disagree ☐   (e) Strongly Disagree ☐

(36) To pay the dividend is a sign for company's future prospects to shareholders.

    (a) Strongly Agree ☐   (b) Agree ☐   (c) Neutral ☐

    (d) Disagree ☐   (e) Strongly Disagree ☐

(37) Management should be responsive to its shareholders preferences regarding dividends.

    (a) Strongly Agree ☐   (b) Agree ☐   (c) Neutral ☐

    (d) Disagree ☐   (e) Strongly Disagree ☐

(38) Issue of bonus share affect on dividend distribution.

    (a) Strongly Agree ☐   (b) Agree ☐   (c) Neutral ☐

    (d) Disagree ☐   (e) Strongly Disagree ☐

(39) Shareholder's tax liability affect on dividend policy.

    (a) Strongly Agree ☐   (b) Agree ☐   (c) Neutral ☐

    (d) Disagree ☐   (e) Strongly Disagree ☐

(40) The cost of capital is also one of the determinants of dividend policy.

    (a) Strongly Agree ☐   (b) Agree ☐   (c) Neutral ☐

    (d) Disagree ☐   (e) Strongly Disagree ☐

(E) ISSUE OF RELATIONSHIP BETWEEN STATISTICAL TOOLS AND MANAGERIAL DECISION-MAKING.

(41) The use of quantitative technique for taking the managerial decision is essential.

    (a) Strongly Agree ☐   (b) Agree ☐   (c) Neutral ☐

    (d) Disagree ☐   (e) Strongly Disagree ☐

(42) The proper diagnosis of situation is possible only through statistical tools.

    (a) Strongly Agree ☐   (b) Agree ☐   (c) Neutral ☐

    (d) Disagree ☐   (e) Strongly Disagree ☐

(43) Risk and uncertainty can be minimized only through proper analyzing of information by statistical tools.

    (a) Strongly Agree ☐   (b) Agree ☐   (c) Neutral ☐

    (d) Disagree ☐   (e) Strongly Disagree ☐

(44) Statistical tools are helpful in taking effective decision.

    (a) Strongly Agree ☐   (b) Agree ☐   (c) Neutral ☐

    (d) Disagree ☐   (e) Strongly Disagree ☐

(45) There is a relationship between the use of statistical tools for managerial decisions and without the use of statistical tools for managerial decision.

    (a) Strongly Agree ☐   (b) Agree ☐   (c) Neutral ☐

    (d) Disagree ☐   (e) Strongly Disagree ☐

(46) It is very difficult to improve the quality of financial decision without using statistical tools.

    (a) Strongly Agree ☐   (b) Agree ☐   (c) Neutral ☐

    (d) Disagree ☐   (e) Strongly Disagree ☐

(47) Statistical tools are helpful in taking dividend decision and investment decision.

    (a) Strongly Agree ☐   (b) Agree ☐   (c) Neutral ☐

    (d) Disagree ☐   (e) Strongly Disagree ☐

(48) We observe difference in the situation of the companies, which are using statistical tools and do not using statistical tools.

    (a) Strongly Agree ☐   (b) Agree ☐   (c) Neutral ☐

    (d) Disagree ☐   (e) Strongly Disagree ☐

(49) The use of statistical tools in analyzing the information is essential to improve profitability and productivity.

    (a) Strongly Agree ☐   (b) Agree ☐   (c) Neutral ☐

    (d) Disagree ☐   (e) Strongly Disagree ☐

(50) There is significant influence of statistical tools on taking managerial decision.

    (a) Strongly Agree ☐   (b) Agree ☐   (c) Neutral ☐

    (d) Disagree ☐   (e) Strongly Disagree ☐