CHAPTER I

INTRODUCTION AND DESIGN OF THE STUDY

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CHAPTER - I

INTRODUCTION AND DESIGN OF THE STUDY

The prosperity of a country, the Gross Domestic Product, the standard of living and the per capita income of the people of a country depend, to a larger extent, on the performance of the economy. Major portion of any country’s Gross Domestic Product is contributed by its corporate sector. India is a country of 846 million people with 3.28 square million kilometers of land and endowed with enormous amount of natural resources. The success of India depends on the exploitation of all these resources for its development. Corporates provide the medium through which these resources could be profitably exploited. The success of the country and its economy to a larger extent depend on the performance of its corporations. By endowing the resources to the able performers, India could prosper well. So it is imperative to evaluate the performance of the corporate sector, to help the direction of the investments.

The performance of a company can be analysed in many ways. It can be judged in respect to market place, technology adoption, competitiveness, environmental protection and strategic positioning. The performance of a company in the above areas would be naturally reflected in the financial statements of a company. "Financial statements are organised summaries to provide information in convenient form". "By analysing these financial statements and evaluating the relationship between the
components, a firm's financial position and performance could be easily established. Financial performance is the operating efficiency of a corporation in terms of the financial parameters. The financial efficiency of a corporation can be measured in terms of Solvency, Stability, Liquidity, Capitalisation, Turnover ability, Appropriation effectiveness, Coverage ability, Profitability, Leverages, Cost of capital and Operating cycle.

There are many methods to analyse the financial performance of a corporation. They are Common Size Statements, Comparative Statements, Trend Percentage Analysis, Funds Flow Analysis and Accounting Ratios. Accounting Ratio Analysis is the most commonly and widely used financial tool. Many of the financial analysts stop with inter and intra firm comparisons to judge the performance of corporations. Conventional tools in judging the financial performance were inadequate and ineffective. Liberalisation in India had started in 1985 and culminated in 1991. This has opened up new business opportunities and allowed the expansion of the existing business. Survival of the corporations depended more on their performance and global competitiveness than on protection. This new situation demands more accurate tools of measuring the financial performance. Share holders, Managers, Employees, Customers, Government and other interested people want to know whether the performance of the corporations justify the investments made in them. For them the conventional financial tools did not provide enough of the required information. So this study is aimed at building up new methods of analysing the financial performance, by taking cues from Accounting, Statistics, Finance and Quantitative methods.
1.1. Statement of the Problem

After take off stage in the primary sector, India is poised for a greater growth in the industrial and corporate sector. The liberalised policies of the government is expected to provide the necessary fillip to the corporate sector. Corporate performance depends on so many external and internal factors. It determines the capital allocation to companies and consequently influence capital formation of a country. Corporate performance may mean many things, starting from physical utilisation of capacities to financial efficiency of operations. Efficiency in every activity would ultimately be reflected in Financial Performance.

Efficiently performing corporations instill confidence among the investors. Hence it is imperative to measure the performance of companies and compare them with that of the industry, as the industries' performance influence 40-50 per cent of the companies' performance and consequently the share prices of the corporations. There are lots of difficulties in measuring and evaluating the financial performance of corporations and in identifying the factors influencing the earnings power and wealth creation of the corporations.

These raise the following issues

1. Are there any need for more reliable and accurate tools, measuring the corporate financial performance?

2. Are the existing tools sufficient to measure the corporate financial performance? If not what are the other tools which could measure it accurately?
3. Can these tools bring out the financial, operating characteristics and the determinants of Profitability?

The present study thus aims at finding out solutions to the above raised issues apart from identifying the factors influencing the internal and external performance of corporates.

1.2. Review of Literature

This review is done in four parts. The First part deals with the studies relating to Financial Performance and Earnings Before Interest and Taxation. The Second part tabulates the important studies relating to the Financial performance. The Third part brings out the studies relating to Market Price Per Share. The Fourth and last part brings out other studies relating to Discriminant Analysis.

1.2.1. Studies Relating to Financial Performance and Earnings Before Interest and Taxation

Michel and Shaked had identified that companies diversifying into unrelated areas were able to generate performance, which was statistically superior to those with businesses that were predominantly related.4

Luffman and Reed had brought out that diversified companies had secured a significantly greater return for share holders than other companies with a greater risk. Conglomerate companies provided greater return at less risk than other groups.5

Lecraws through multiple discriminant analysis had uncovered that firms which did not follow the strategy
stated by those selected factors had suffered lower levels of profitability.⁶

- Palepu had concluded that the financial performance measured in terms of profitability of related diversified companies were far superior to that of unrelated diversified companies.⁷

- Paul had found out that the financial performance of diversified companies were better than non diversified companies.⁸

- Lall had found out that diversification had a positive impact on financial performance.⁹

- Carter had identified that synergy in diversification had lead to superior financial performance measured in terms of earnings.¹⁰

- Utton had revealed that there was no significant difference in terms of profit between diversified and non diversified firms. Diversified firms grow double the rate of non diversified firms.¹¹

- Arnould had stated that there was no significant relationship between any measures of diversification and profitability.¹²

- Gort had found out that no significant relationship between diversification and financial performance measured in terms of profit after tax to net worth.¹³

- Lakshmi had studied the financial performance of diversifiers in terms of profitability, risk and growth. Her findings were,
1. Related diversifiers perform better than unrelated diversifiers in terms of profitability and leverage.

2. The systematic risk of the related diversifiers is found to be statistically significantly different from that of unrelated diversifiers. Related diversifiers enjoy a lower level of systematic risk. The level of unsystematic risk suffered by the two groups of firms were not significantly different. Unrelated diversifiers suffer from a higher level of risk than related diversifiers.

3. Unrelated diversifiers grow faster than related diversifiers in terms of growth.¹⁴

Roberts had studied the trends in profitability of banks, the growth rates in the cost benefit factors and ascertained the operational efficiency of public sector banks. He concluded that the profitability of the public sector banks calculated from accounting profit and total income were on the decline from '73 to '87. Year wise analysis had shown that increase in the profitability of the banks was revealed in majority of the banks.¹⁵

Computer aided profit plan for professional service firm for financial control had identified Utilization rate, Net multiples, Revenue factor, Overhead rate, Break even rate multiplier, Operating profit multiplier are the determinants of financial performance.¹⁶

Vijayakumar A. had shown that growth rate of sales, vertical integration, leverage, current ratio and operating expenses to sales are the prominent variables which explain the profitability of firms in the sugar industry.¹⁷
Orner, Khursheet had stated that ploughing back of reported earnings provides signals to the market about future growth and the stewardship of the management.\textsuperscript{18}

Adler, Ralph William had found out accountants' assessment of organisational growth was mostly influenced by the organisation's financial indicators. Financial indicators are outcomes of organisational effectiveness and not its determinants.\textsuperscript{19}

Richard Taffler and Howard Tisshan had revealed that pretax profit to current liabilities, current assets to total liabilities, current liabilities to total assets can tell the corporate failures more accurately than others.\textsuperscript{20}

Mande, Vivek Gopal in his study had found out that when earnings precede dividend, they have greater impact on future earnings.\textsuperscript{21}

Ahn Byunajum had located that changes in Beta are positively and significantly related to changes in earnings and alphas vary during event period of earnings announcements.\textsuperscript{22}

Weisel, James Allen D.B.A., had shown that the performance judged by net worth to total liabilities was more accurately predicted by seven out of fifteen variables selected for analysis. One variable, net dividend and interest earnings to average assets consistently predicted the performance in all the years.\textsuperscript{23}

Choi, Kwan had identified that economic factors such as firm size, inventory level, capital intensity, product type and degree of competition have significant impact on inter firm differences in the time series
properties. But they have not affected the cash flows very much.24

Charles L. Merwin had brought out that three ratios are successful predictors of failure, five years prior to discontinuance. They were, Net working capital to total Assets, Current ratio and Net worth to total debt.25

Ramser and Foster concluded that less successful firms tend to have ratios which were lower than the more successful firms.26

Winakor and Smith had found out that the ratios of failed firms were frequently below the mean values used for comparison. Net working capital to Total Assets was the most accurate and steady indicator of failure.27

Paul J. Fitz Patrick conducted a study to examine whether there was a significant difference in the trend of ratios for failed and non-failed firms at least three years prior to the failure. He found out that all the ratios of failed firms were persistently different from non-failed firms at least three years prior to failure.28

Sastry E.S. in his study, Physical and financial performance of some transport undertakings in India has tried to establish the influence of physical factors on financial performance. The study titled as "Analysis of financial statements of state electricity boards in India" 1985 conducted by Verma B.L has highlighted the poor working capital position in State Electricity Boards.29

Ismael G. Dambolena and Sarhis Khoury in their article, "Ratios Stability and corporate failure" it has been pointed out that standard deviation is the most
appropriate measure of stability. The stability and liquidity ratios indicate corporate solvency. Fixed Assets to Net worth represent the historical reason for corporate failure.\textsuperscript{30}

N. Kanagasabai in his article on "Determinants of profitability - A case study of a state co-operative bank" analysed the profitability through multiple regression.\textsuperscript{31}

I. M. Pandey through his study, "Leverage, Risk and the choice of capital structure has found out that income maximising capital structure would be highly levered and risky".\textsuperscript{32}

Roubi, Faseruk and Bastn have found out that more rigorous models are linked to higher risk environment as depicted by industry Beta, Debt components would also restrict the capital investment evaluation model, where as the compensation plans of the employees would not influence the same.\textsuperscript{33}

I. M. Pandey in his study "The Financial Leverage in India" has found out that Indian companies were highly levered, the size of the companies are greatly associated with leverage, the profitability and the growth has increased as the leverage increased.\textsuperscript{34}

Chandrasekaran N., in his study had measured the performance of cement companies through profitability, efficiency and growth. He had also found out that external finance and cash flow are the important determinants of investment in the cement industry.\textsuperscript{35}

U. K. Mallik in his article on "Impact of Financial leverage on EPS and Risk" has found out that
Financial leverage and EPS are negatively correlated, Financial Break Even Point and Margin of Safety are inversely related. Financial leverage would improve the Return on Capital. Even financial leverage of less than one could lead to assumption of lower risk than the average firm in the industry.36

K.P.Singh in his study on "Capital structure and Returns" had found out that the size of the units(Cement) had a great bearing on their capital structure. Improving the size of the smaller units would increase their profitability.37

N.Krishna Rao and N.Ramachandran in their study on "Working Capital Management and the Concept of Leverage" had identified that working capital leverage (change in R.O.C/change in CAs) for the industries, they have studied had been more than one, but for iron and steel industry. Working capital change had less than proportionate change in the Return on Capital.38

Kuppli Srinivasan in his study on Operating and Financial leverage has brought out that leverages are quantitative pointers towards the latent risk of the business. When there is substantial uncontrollable cost, proper financial plan should be adopted to minimise the operational financial leverage.39

Gupta R.K., Sharma L.V.L.N and Lalitha Sarma in their article on "Financial Leverage, dividend policy and cost of Capital" examined the influence of Financial Leverage on dividend policy and market value of the firm, the positive impact of financial leverage on dividends and market value of the firm.40
Franco Modigliani and Merton H. Miller in their article on "Corporate income taxes and the cost of capital: A Correction" had found out that leverage is a negative linear function of earnings growth. Further when the influence of growth is isolated the influence of leverage on cost of capital was positive.\textsuperscript{41}

Reilly and Weeker based on Soloman's assumptions has formulated a theory that the weighted average cost of capital is identical with overall cost of capital.\textsuperscript{42}

Raghunathan V. and Verma J.R., has pointed out that cost of equity should be computed on the issue price of shares than on the par value. The real cost of debt will be equal to yield to maturity and the divisional cost of capital should be used for evaluating divisional projects.\textsuperscript{43}

Sastry, K.S., had developed organisational index combining financial and non financial performance measures to evaluate the performance of public enterprises.\textsuperscript{44}

The Institute of Chartered financial Analysts had identified the best performing companies through an index of the annual compound growth rate of net worth.\textsuperscript{45}

Barges had identified that when degree of leverage exceeded moderate levels, it influenced the stock yield very much positively.\textsuperscript{46}

Westen had found out through multiple regression that the growth had a highly significant and negative influence on stock yield. when leverage was used with size and growth it had lost its influence on stock yield.\textsuperscript{47}
In the words of Helfert "Ratio analysis guides and clues especially in spotting bonds towards better or poor performance, and finding out significant deviations from any average or relatively applicable standard".48

Darling had brought out that inverse correlation existed between dividend growth and growth in sales.49

Mittal R.K., had found out that retained earnings were influenced mostly by Income after taxes, Return on capital employed, effective tax rate, and Debt equity ratio.50

Samuels and Smith, in their study on the relationship between profitability (post-tax rate of return on net assets) and size of the firm (net assets) found that they were inversely related to each other for the years 1954-63.51

Barthwal explained the variation in profitability of cotton textile industry in India using past profitability, size of the firm, age of the firm, past growth, capital-output ratio and changes in average cost of production as explanatory variables. Among them, past profitability and changes in average cost of production over previous years emerged as significant determinants of profitability for the firms in the industries, in different regions of the country. Factors like capital-output ratio,
size of the firm and past growth etc., were insignificant or explained less than 25 per cent variation in the profitability.  

Bhabatosh Banerjee analysed the trend of liquidity position and its relationship with the profitability of the industries of medium and large public limited companies in the corporate sector in India during the period, 1971-78. He concluded that there are some industry groups, where a rise in liquidity will lead to rise in profitability and vice-versa (printing and publishing, Ferrous/non-Ferrous metal products and shipping). There are others, where increase in liquidity will be associated with a decline in profitability (other non-ferrous metals, tobacco, silk and rayon textiles).  

Kumar examined the relationship between profitability and growth in 83 large companies in India’s corporate sector during 1969-79. The results of the study show significant inter-industry differences in the growth process of firms under study. Due to the very low values of $R^2$ in all the cases, the profitability explains only a small fraction of the growth of firms in India’s corporate sector.
### 1.2.2. Other Important Studies on Financial Performance

<table>
<thead>
<tr>
<th>No.</th>
<th>Study</th>
<th>Data Used</th>
<th>Methodology</th>
<th>Findings</th>
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</thead>
<tbody>
<tr>
<td>1.</td>
<td>Raiser and Foster (1931)</td>
<td>173 firms in general</td>
<td>Trend of 11 financial ratios</td>
<td>Less successful firms have poorer financial ratios, except sales/net worth and sales/total asset ratios</td>
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<td>2.</td>
<td>Fitzpatrick (1932)</td>
<td>20 failed and 19 non-failed firms</td>
<td>Trend of 13 financial ratios</td>
<td>Significant difference in the trend of ratios for the two groups at least three years prior to failure. NP/NW, NW/TD and NW/PA ratios found to be the best indicators</td>
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<td>3.</td>
<td>Winakor and Ramond (1935)</td>
<td>Data for firms failed subsequently</td>
<td>Prior trend of the means of 21 financial ratios</td>
<td>Significant deterioration of average ratio values prior to failure. NW/TA ratio found as the most accurate indicator</td>
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<tr>
<td>4.</td>
<td>Merwin (1942)</td>
<td>Data for continuing and discontinued firms; also industry ratios</td>
<td>Six year trend of unspecified number of financial ratios with mean industry ratios</td>
<td>Significant decline in the ratio trend continuously even up to six years before failure. WC/TA, NW/TD and CA/CL were found to be extremely sensitive</td>
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<tr>
<td>5.</td>
<td>Bain, J.S. (1951)</td>
<td>Time-Series, 1936-40</td>
<td>Regression models</td>
<td>The relationship between profitability and concentration was found to be positive.</td>
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<td>6.</td>
<td>———— (1956)</td>
<td>Time-Series, 1936-40 &amp; 1947-51.</td>
<td>Regression models</td>
<td>Concentrated industries had shown higher returns on equity when entry barriers were medium or high</td>
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<td>7.</td>
<td>Beaver (1966)</td>
<td>Seventy-nine failed and non-failed firms</td>
<td>Trend of 30 financial ratios for both the groups of firms</td>
<td>Significant difference in the ratios of failed and non-failed firms. CF/TD ratio found to be the most sensitive one</td>
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<td>8.</td>
<td>Altman (1968)</td>
<td>Sixty-six firms in general</td>
<td>Used Multiple Discriminant Analysis (M.D.A.) to discriminate the failed firms on the basis of weighted combination of five financial ratios</td>
<td>The weighted combination of five financial ratios viz WC/TL, RE/TA, EBIT/TA, E(HV)/TD, sales/TA is able to predict bankruptcy with 45 percent accuracy. But the predictive ability of the model declines rapidly as the number of years prior to failure increase.</td>
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<tr>
<td>9.</td>
<td>Samuels, J. and Smith, D. (1968)</td>
<td>Time-Series, 1954-63</td>
<td>Regression models</td>
<td>Profitability (post-tax rate of return on net assets) and size of the firm (net assets) was found inversely related.</td>
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<td>10.</td>
<td>Beaver (1969)</td>
<td>Seventy-nine paired failed and non-failed firms as used in the 1966 study</td>
<td>Compared the predictive ability of different ratios</td>
<td>Three non-liquid asset ratios viz CP/TA, NI/TA and TD/TA ratios are the best indicators. Also found that there was no marked trend in the ratios of non-failed firms.</td>
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<tr>
<td>11.</td>
<td>Sarma and Rao (1971)</td>
<td>Failed and non-failed firms of 30 each</td>
<td>MDA using various financial ratios. Replication of Altman's (1968) model in the Indian situation</td>
<td>Found that NW/TA, DTR, WC/TA, RE/TA, EBIT/TA ratios have significant predictive power. Basis as Altman's model, the predictive ability decreases as the number of years prior to failure increases</td>
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<tr>
<td>12.</td>
<td>Deakin (1972)</td>
<td>Thirty two pair-wise failed and non-failed firms</td>
<td>(a) Comparative assessment of 13 financial statement item (b) MDA of 14 financial ratios</td>
<td>(a) There was substantial asset expansion before failure, mainly by debt and preferred stock (b) Cash/TA, WC/TA, and TD/TA ratios were found to be significant. Predictive ability decreases over the years.</td>
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<td>14</td>
<td>Edmister (1972)</td>
<td>Tri-annual sample of 42 borrowers and annual sample of 562 borrowers, all small firms</td>
<td>Step-wise MDA using seven financial ratios</td>
<td>Found that the discriminant function classifies failed and non-failed firms with substantial accuracy. But the data for at least three consecutive years are necessary.</td>
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<td>15</td>
<td>Blum (1974)</td>
<td>One hundred and fifteen pair-wise failed and non-failed firms</td>
<td>(a) Discriminant analysis by using various financial ratios</td>
<td>(a) Distinguished failed and non-failed firms with up to 94 percent accuracy. Amount the ratios, CF/TD ratio got the first position. (b) Financial variables taken directly, without ratios</td>
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<td>16</td>
<td>Sinkey (1975)</td>
<td>Matched sample of 110 problem banks and non-problem banks identified in 1972 and 1973.</td>
<td>Employed MDA using financial ratios for liquidity, efficiency, and capital adequacy</td>
<td>Found that, as per the Lachenbruch's (1968) classification method, the rate of misclassification is reduced substantially.</td>
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<tr>
<td>17</td>
<td>Orr, D. (1975)</td>
<td>Time-series</td>
<td>Regression models</td>
<td>Be found that the barrier index was a significant determinant of profitability only when it took a high value. Where barriers were low, the index was not significant.</td>
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<td>19</td>
<td>Cowling, K and Waterson, M. (1976)</td>
<td>Time-series, 1958-68.</td>
<td>Regression models</td>
<td>There was a positive association between profitability and concentration index.</td>
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<td>20</td>
<td>Altman, Haldeman, &amp; Narayanan (1977)</td>
<td>Sixty-six firms in general without distinction between failed and non-failed ones.</td>
<td>Developed Zeta model using financial ratios used MDA with both linear and quadratic structure</td>
<td>Firms were classified into bankrupt and non-bankrupt with 69.8 per cent degree of accuracy three years prior to bankruptcy.</td>
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<td>22.</td>
<td>Taffler and Tisslham (1977)</td>
<td>Two groups of failed and non-failed firms of 46 in each group</td>
<td>MDA-Z score as used by Altman, Haldeman, and Narayanan (1977) using various financial ratios</td>
<td>Supported Altman (1968)'s findings. EBIT/TL, CA/TL, CL/TA etc., were found to be the significant ratios. But the study does not provide any theoretical explanation.</td>
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<td>23.</td>
<td>Gupta (1979)</td>
<td>Data for 20 sick and 21 non-sick companies from the textile industry</td>
<td>Differentiating power of 56 financial ratios were measured by using a simple non-parametric test</td>
<td>Found that profitability ratios are superior to B/S ratios. EBIT/Sales, NW/TD and TL/Tangible Asset ratios have significant predictive power.</td>
</tr>
<tr>
<td>24.</td>
<td>Walker, Stowe, and Moriarity (1979)</td>
<td>Data for eight failed and eight non-failed firms from 1966 to 1977</td>
<td>Used three decomposition measures viz: Asset decomposition, liability decomposition, and balance sheet decomposition</td>
<td>Found that (1) decomposition measures are generally larger for failing firms, (2) the liability decomposition measure is generally larger than the asset decomposition measure, (3) the decomposition measures have about the same bankruptcy prediction power as a good ratio.</td>
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<td>25.</td>
<td>Aharony, Jones, and Swary (1980)</td>
<td>Capital market data for 45 bankrupt and 65 non-bankrupt firms</td>
<td>Cross sectional and time series analysis of risk and return using capital market data</td>
<td>Suggested the method of comparing failure probability of individual firm with that of an industry as a whole. The method suffers from the inconsistency of capital market data.</td>
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<tr>
<td>26.</td>
<td>Asha Jain (1981)</td>
<td>Time-series</td>
<td>Regression models</td>
<td>Cost factors emerged as significant determinants of profitability and variables like concentration ratio, capacity utilisation, growth and capital intensity had shown mixed pattern.</td>
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<td>27.</td>
<td>Kaveri (1980)</td>
<td>Used data for 524 small firms classified into good, regular, and weak</td>
<td>Discriminant analysis using 22 common financial ratios</td>
<td>Found that five ratios, viz., CA/CL, STR, CA/Sales, NP/TCF and NW/TL have significant powers of classification</td>
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<td>28.</td>
<td>Largay and Stickney (1980)</td>
<td>Data of one failed firm W.T. Grant from 1966 to 1974</td>
<td>Comparision of the levels and trends of cash flow with other traditional financial statement ratios and stock price of the company</td>
<td>Cash flow provided a more accurate and timely signal of W.T. Grant's impending failure as compared to other conventional measures</td>
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<td>29.</td>
<td>Raja, Nosworthy, and Goureja (1980)</td>
<td>15 'growth' and 21 'problem' companies as categorised by a commercial bank</td>
<td>Step-wise linear discriminant analysis using cash flow data from 1972 to 1978. No hold out sample. Unpaired analysis</td>
<td>CF/TD was the most significant univariate discriminant factor Type I error 21%, Type II errors 35% and overall error 28%</td>
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<td>30.</td>
<td>Srivastava (1981)</td>
<td>Two groups of sick and non-sick companies, Indian data</td>
<td>Discriminant analysis using seven financial ratios from B/S and P/L A/C</td>
<td>Classification made with 100 percent accuracy when the seven ratios, viz. NE/TA, net block/NW, NP/TA, TL/NW, CA/CL, capacity utilisation ratio and plant utilisation ratios taken together.</td>
</tr>
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<td>31.</td>
<td>Bhabotosh Banerjee (1982)</td>
<td>Time-series 1971-78</td>
<td>Correlation analysis</td>
<td>A positive correlation between liquidity and profitability was found in respect of printing and publishing, Ferrous/non-ferrous metal products and shipping and it was negative in the case of other non-ferrous metal (basic), Tobacco and silk &amp; Royon Textiles.</td>
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<td>32.</td>
<td>Gombola (1983)</td>
<td>Two groups of 52 failed and non-failed firms. Failed firms were taken, from Dun and Bradstreet's Business failure record</td>
<td>Factor analysis of important cash flow variables. Resulting factor scores used in linear discriminant and probit analysis. Paired analysis by size and industry classifications.</td>
<td>Cash flow factors are significantly different between failed and non-failed firms only in first year prior to failure and probit model significant only for first year prior to failure.</td>
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<td>33.</td>
<td>Mensah (1983)</td>
<td>ex post sample of 60 firms and ex ante sample of 46 firms. A matched pair design was used and 35 non-bankrupt firms were selected for the ex post sample.</td>
<td>Multiple discriminant analysis and logistic regression using specific price level adjusted financial ratios. Also Lachenbruch's (1968) U method to evaluate the ex post classification accuracy of the discriminant model</td>
<td>Found that specific price level model was the preferred one when discriminant analysis was used. While the historical cost-specific price level model was superior when logit analysis was used. In overall sense, the availability of SPL data may help to improve bankruptcy prediction.</td>
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<td>34.</td>
<td>Casey and Bartczak (1985)</td>
<td>Sixty firms that had petitioned for bankruptcy during 1971-82 and 230 non-failed firms from the coequity industrial tape.</td>
<td>Operating capital data for the non-failed firms were taken from time periods contemporaneous with the failed firms. Used canonical correlation, linear MDA, and conditional step-wise logit analyses for each year.</td>
<td>The results suggest that operating cash flow data do not provide incremental predictive power over accrual based ratios. It justifies the omission of cash flow ratios in the bankruptcy studies of Altman (1968) and others.</td>
</tr>
<tr>
<td>35.</td>
<td>Chew Hg (1985)</td>
<td>Financial Ratios of one bankrupt firm, Trustee Executors and Agency (TEA) Company Ltd</td>
<td>Tested the usefulness of Altman's (1968) 'Z' score to predict the failure of the Trustee Executors and Agency Company Ltd</td>
<td>Found that the 'Z' scores for all the five years before failure were well below one. But the analysis confines to the data of only one company.</td>
</tr>
<tr>
<td>36.</td>
<td>Frydman, Altman, and Kao (1985)</td>
<td>Fifty-eight bankrupt industrial companies which failed during 1971-81 and selected at random 142 non-bankrupt manufacturing and retailing firms.</td>
<td>Recursive partitioning algorithm is adopted by using 20 financial variables which had been found significant in predicting business failure by Altman (1968), Deakin (1972) and Altman et. al. (1977)</td>
<td>Recursive partitioning algorithm was found to possess the joint positive attributes of multivariate information content and univariate simplicity. The classification accuracy of RPA is superior to that of the traditional discriminant model.</td>
</tr>
<tr>
<td>37.</td>
<td>Venkatachalap, G &amp; Dakshinamurthy, D. (1986)</td>
<td>1973-74 to 1982-83.</td>
<td>Structural Ratios</td>
<td>Current assets to total net assets ratios are decreasing in all manufacturing industries as well as different constituent industry groups except in core and basic sectors; of all the industry groups, ratio of current assets to current liabilities is the highest in capital goods industry.</td>
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<td>No.</td>
<td>Study</td>
<td>Data Used</td>
<td>Methodology</td>
<td>Findings</td>
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<td>38</td>
<td>Lawrence and Bear (1986)</td>
<td>Paired sample of 42 bankrupt and non-bankrupt firms during the period 1975 to 1981 listed in NYSE and AMEX</td>
<td>Employed discriminant analysis using 10 financial ratios with special consideration to lease data</td>
<td>Found that additional lease capitalisation does not improve the ex post classification accuracy of bankruptcy models</td>
</tr>
<tr>
<td>39</td>
<td>Barniv and Ravesh (1989)</td>
<td>Two samples, the first one consists of 58 failed firms and 142 non-failed firms and the second one consists of failed and non-failed firms of 69 each</td>
<td>Discriminant analysis through non-parametric approach using linear combination of financial ratios</td>
<td>The non-parametric model improves the separation indices as compared to conventional discriminant analysis</td>
</tr>
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<td>40</td>
<td>Gilbert, Menon, and Schwartz (1990)</td>
<td>Three groups of firms 73 bankrupt, 304 random, and 304 distressed (in the US)</td>
<td>Step-wise logistic regression models using 14 financial-cum-operating ratios drawn from Casey and Bartczak (1985) and Altman (1968)</td>
<td>Found that the financial dimensions that set apart bankrupt firms from healthy firms are different from those that separate bankrupt from distressed but not bankrupt firms</td>
</tr>
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<td>41</td>
<td>Keasey and McGuinness (1990)</td>
<td>Pair-wise matching of 37 failed and non-failed firms in the UK</td>
<td>Employed logistic analysis and entropy analysis using 16 financial ratios drawn from Zavgren (1983)</td>
<td>Logit function shows increasing information as progress is made from a five year to a one year prior function. Also found that profitability and efficiency ratios are significant explanatory variables.</td>
</tr>
<tr>
<td>42</td>
<td>Laitinen (1991)</td>
<td>Randomly selected 40 failed firms and an equal number of non-failed matching firms in Finland</td>
<td>Used six financial ratios selected based on a theoretical model which identified five dimensions viz (1) profitability, (2) growth, (3) capital intensity, (4) loan taking incentives, and (5) harmony of debt financing</td>
<td>Higher prediction accuracy in the first year before failure. The predictive power of the model did not improve when the number of ratios was increased to 20. Also found that the predictive power of the model decreases as the number of years prior to failure increases</td>
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<td>No.</td>
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<td>Data Used</td>
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<td>43.</td>
<td>Nanda and Dhir</td>
<td>A set of 15 sick and 15</td>
<td>Refining of Altman's (1977) MDA</td>
<td>the model predicted failure in a</td>
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<td></td>
<td>(1991)</td>
<td>healthy textile companies</td>
<td>model. Used five financial</td>
<td>better way as compared to</td>
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<td>in the private corporate</td>
<td>ratios selected out of 20</td>
<td>Altman’s Z score model. D/E,</td>
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<td>sector in India.</td>
<td>ratios for a period of seven</td>
<td>EBIDT/TL, WC/TA, CA/S, and S/MM found to be the significant</td>
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<td>44.</td>
<td>Agarwal, R.N.</td>
<td>Time-series, 1966-67 to</td>
<td>Multiple Regression models</td>
<td>Profitability is found to be</td>
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<td>(1991)</td>
<td>1986-87.</td>
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<td>explained mainly by age of the</td>
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<td>firm, vertical integration, diversity and industry policy</td>
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<td>dummy variables.</td>
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<td>45.</td>
<td>Stephen Machin &amp;</td>
<td>1975-86</td>
<td>Regression models</td>
<td>Firm - level profit margins are</td>
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<td>John Van Reenen</td>
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<td>seen to be determined by market</td>
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<td>(1993)</td>
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<td>share and previous period concentration and industry - level by</td>
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<td>concentration.</td>
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<td>46.</td>
<td>Sidharth Sinha</td>
<td>1986-87 to 1988-89</td>
<td>Ratios and Regression Technique</td>
<td>The most significant, explanatory</td>
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<td></td>
<td>(1993)</td>
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<td>variables for the capital structure patterns are the measures for</td>
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<td>asset type and profitability.</td>
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1.2.3. Studies Relating to Market Price Per Share

Rosenthal and Sullivan had identified that standardised market value of diversified firms was significantly less than that of the comparable portfolio of single industry firms.\textsuperscript{55}

Cheng, Payyu has concluded that information content of the funds variable vary from quarter to quarter and working capital measures have more significant impact on the financial market than cash flow measures.\textsuperscript{56}

Kennedy, Gilbert William, Sr., had found out that announced increase in capital expenditure had significant influence on stock prices. Whereas the decrease in the expenditure had only insignificant influence on the stock prices.\textsuperscript{57}

Choi, Won Wook had revealed that the return on common equity suffers out of numerator and denominator effect. Usually the denominator book value is understated in Financial Statements. So in effect it overstates the return, on the other hand firm with higher operating assets have inflated numerator and the denominator effect would be multiplied. Further market value of the firm was not significantly associated with the amortization expense.\textsuperscript{58}

Chang, Chung-yuch, C., had identified the impact of innovations in earnings level, innovations in earnings growth and noise in earnings. Innovations in earnings level and growth have significant and definite impact on security returns. Empirical evidence shows that decomposition of earnings into earnings' components increases the explanatory power of earnings on security returns.\textsuperscript{59}
Angima Jacob M., had found out that earnings though useful to investors contribute only modestly to the prediction of stock price outcomes. Cash Return Rate in most cases outperform the accounting profit rates in explaining the variations in stock returns.\textsuperscript{60}

Forsyth, Timothy Bush in his study had pointed out that leverage ratio was the most reliable predictor of bankruptcy. No relationship was found out between abnormal stock returns and quarterly bankruptcy. Unfavourable news release had definitely affected the stock returns.\textsuperscript{61}

Beaver had concluded that there is difference in the ratio of failed and non-failed firms. Cash flow to total debt ratio was the most successful predictor of failure. Non liquid asset measures were far better predictors of corporate failure. Stock prices predicted the failures much sooner than other financial ratios.\textsuperscript{62}

Richardson, Mathew Philip in his study "The predictability of Stock returns" had established that long term stock returns can not be predicted from the past returns. When the stock prices are serially independent simulations can reveal the patterns in stock prices.\textsuperscript{63}

Linter points out that as long as the expected return is more than marginal cost of debt, debt financing for investment would rise the value of the firm and its share prices.\textsuperscript{64}

Miller and Modigliani had brought out that leverage displayed a significant positive influence on the stock yield.\textsuperscript{65}
Durand had found out that the effect of dividend payout on stock prices alone was significant on public utility stocks.\textsuperscript{66}

Prasanna Chandra had identified the influence of economic and financial variables on the share prices.\textsuperscript{67}

Kumar and Hundal had identified that Return was the most effective determinant of the market price of the shares of Textile, Chemical and Engineering Industry. Growth showed a positive influence in case of Textile Industry. Leverage had a negative influence on share prices.\textsuperscript{68}

Dixit through multiple regression, had found out that dividend, earnings and size turned out to be the most significant predictive variables of the market price of the shares.\textsuperscript{69}

Keim had pointed out that higher the portfolio's price to book value ratio, the higher would be corresponding values of market capitalisation.\textsuperscript{70}

Balakrishnan had concluded that Book value per share and Dividend per share were the most influencing variables of the share prices of General Engineering and Cotton Textile Industries.\textsuperscript{71}

Zahis and Khanna had revealed that Dividend per share emerged as a significant determinant of share price. This was followed up in Book Value Per Share and Earnings dividend multiplier.\textsuperscript{72}

Desai, Srivastava, Chandra and Others have stated that dividend per share is the most influencing variable of the share prices.\textsuperscript{73}
Fred and Puckett had shown that dividend influenced the non growth industries' share prices more than the growth industries' share prices.\textsuperscript{74}

Fisher had identified that dividend per share had a high and significant influence of the share price. Retained earnings had a lesser but significant influence on the market price.\textsuperscript{75}

Gordon had found out that dividend had a much higher influence on share price as compared to retained earnings and other variables.\textsuperscript{76}

As per the study conducted by Eicher Consultancy services (ECS) the financial criteria to identify the top performance among the 101 companies, those qualified six parameters were

1. Return on equity  
2. Return on input  
3. Return on sales  
4. Growth in assets  
5. Growth in profits  
6. Growth in sales

As per Pebers & Waterman the criteria for evaluating performance of the companies are, asset growth, equity growth, market value to book value, return on capital, return on equity and return on sales.

Meghnad Desai had shown that rate of growth in earnings and market price were not significant.\textsuperscript{77}

Shupert, Harkay and Gordon had revealed that there was close relationship between price earnings ratio and dividend earnings ratio. Firms retaining more profits enjoyed a higher growth in the stock prices.\textsuperscript{78,79}

\subsection*{1.2.4. Other Studies Relating to Discriminant Analysis}

Srivastava developed a linear discriminant factors of share ratio parameters which could achieve 100
percent predictive accuracy at 1 percent level of significance.\textsuperscript{80}

Ram Avtar Yadav had developed the following discriminant model as the best predictor of corporate health.

\[ Y = 19.8927X_1 + 0.0047 X_2 + 0.7141X_3 + 0.4860X_4 \]
\[ Y = \text{Overall discriminant score} \]
\[ X_1 = \text{EBIT/Total Assets} \]
\[ X_2 = \text{Current Assets/Current Liabilities} \]
\[ X_3 = \text{Net Sales/Total Tangible Assets} \]
\[ X_4 = \text{Defensive Assets/Total Operating Expenses} \textsuperscript{81}\]

Kaveri had found that the health of the firm is better predicted by current ratio, stock to cost of goods sold, current assets to net sales, net profit before taxes to capital employed and net worth to total outsiders liabilities and the accuracy of multiple discriminant analysis was reduced as the years to failure increased.\textsuperscript{82}

Gupta had revealed that EBIT to sales and operating cash flows to sales are the best ratios in predicting future bankruptcies. The ratios relating to net worth were found to be worst predictor of bankruptcy. Solvency ratios were reliable indicators of strength.\textsuperscript{83}

Damolena had shown that ratios with their standard deviations had predicted corporate failures more accurately one year before the failure.\textsuperscript{84}

Marc Blum had found out that firms do not fail because of excess inventory. Total debt of failed firms increased more than twice of non-failed firms rapidly.\textsuperscript{85}

Pifer had revealed that financial ratios were to be used along with other factors such as local economic
conditions, general economic conditions, quality of management to make better prediction of corporate failures. \cite{86}

Deakin's had shown that failed firms have increased their fixed assets in the third and fourth year prior to failure. These firms were unable to generate sales to support the high level of assets. \cite{87}

Altman developed a model for predicting corporate failure it was

\[
Z = 0.12X_1 + 0.014X_2 + 0.033X_3 + 0.006X_4 + 0.999X_5
\]

\begin{itemize}
  \item $X_1$ = Working capital to total assets
  \item $X_2$ = Retained Earnings to total assets
  \item $X_3$ = EBIT/Total Assets
  \item $X_4$ = Market value to book value of equity
  \item $X_5$ = Sales to total assets. \cite{88}
\end{itemize}

Altman had found out that firms securing less than 30 in the index of risk tend to fail more than others. Profits trend, equity capital and reserves to total liabilities were considered to be the best indicators of failure.

Donald E. Miller attempted to present a cause and effect ratio approach, he divided the ratios into causal ratios and ratios which measure the effect but did not find out the effect of those ratios on the survival of the firm. Attempts were made by L.V.L.N. Sharma and G.B.Rao to duplicate Altman model. A similar attempt was also made by K.M.Pande and C.D.Bhattacharya to ascertain the corporate financial strengths through multiple discriminant analysis. Wilcox had found out a new model for ascertaining the financial strength. He assigned arbitrary weightage for various variables and found out the net liquidation
value which in turn would decide the financial strength. However this model was not convincing, realistic and arbitrary. 89

Ram N.Lal had studied the physical and financial aspects of capital formation. S.R.Bastikar and others have analysed and interpreted the ratios of 54 textile mills in Ahmedabad. S.K.Battacharya and others made an attempt to determine the effectiveness of working capital management with the help of ratios using multiple discriminant analysis. 90

After carefully going through the literature on Financial Performance it was found that many of the studies were of inter and intra firm comparisons, thereby comparing the financial statement ratios. Not enough attention was paid to measure the variability or volatility and significance of the difference from industry means. They mostly restrict their analysis to a comparison made with the industry. Equity related and capital market related data were rarely and sparingly compared. Companies' potential and their performance were never compared in terms of assets, sales and divided growth rates. Not enough efforts were made to compare the costs of capital, leverages and operating cycles and Betas. Many of the analysts were simply carried away by window dressing and not enough attention was paid to capital market related data. Studies did not pay attention towards effective utilisation of the corporations' potential.

Earnings Before Interest and Taxation (EBIT) is the key profitability measure. Many internal and external variables would influence it. External variables remain outside the control of the company. But efforts were not
made to identify the key internal variables and the extent of their influence on the EBIT.

Market Price Per Share is the single important external measure of the performance of the company. It might also be influenced by internal and external variables. External variables remain out of control. Over the years not many studies have paid attention in determining internal determinants and the extent of their influence of the market prices. Many of the earlier studies have made compartmental and separate analysis of the ratios. No effort was made to integrate these ratios into composite Index. Many studies conducted in this direction have tried to identify the set of ratios which could discriminate failed companies from successful companies. Not enough efforts were made to identify the financial health by discriminating more efficiently performing companies from less efficiently performing companies through composite index. Some studies conducted in this direction also did not combine financial data with capital market data for the construction of the index. All the above gaps and deficiencies finally warrant a different structure of analysis to provide greater insight into the corporate performance. Hence this study aims at filling such gaps by combining traditional financial tools with modern quantitative and non-conventional financial tools of analysis.

1.3. Objectives

1. To evaluate the Financial Performance of selected companies.

2. To ascertain the vital internal financial variables which influence the earnings power of the companies and to measure the degree of influence of such variables.
3. To identify the key equity related variables which influence the market prices of shares of the companies and to measure the degree of influence of such variables.

4. To construct indices of ratios which could discriminate more efficient companies from less efficient companies.

1.4. Scope

This study had taken into account financial, accounting and quantitative data for analysing. While analysing, the significant differences from the industry means their variables were also judged upon. To ascertain their association with the industry variables, Analysis of variance was used. This study provides a wholesome and integrated approach. While ascertaining the determinants of Earnings Before Interest and Taxation (EBIT) and Market Price Per Share (MPS) only the vital internal financial variables were considered. By identifying the important and key variables which influence the EBIT and MPS, corporates can pay more attention to improve those of key variables and consequently improve their performance. In ascertaining the financial strength, strategic and important financial parameters alone were made use of. The study was basically restricted to companies listed in the Bombay Stock Exchange. Physical and market performance of the companies were not paid any attention, because good performance in them would ultimately be reflected in the financial variables taken into consideration in this study.

1.5. Frame Work of Analysis

When the data were collected, it was found that for some companies, they were for more than 12 months. Such
data were suitably annualised for 12 months, so as to make them uniform and comparable with other companies. When there were differences in the face value of shares, the figures were converted to the base of 10, so as to make the data comparable. Financial figures were converted into nearest thousands and made use of. Ratios were approximated to the nearest three decimals. For ascertaining ratios either percentages, decimals or number of times were used as units of measurements in tune with the present practice of the industries. When the ratios run into multiple decimals exponential formats were used for expression. The equity data were also suitability adjusted for Rights and Bonus also. But no dilutions were made for the conversions.

**Financial Ratio Analysis** was used as a base for evaluating corporate performance. The analysis was done under three major heads. They were Financial Statements’ Related Performance, Equity Related Performance Measures and Other Financial Related Performance Measures. Financial Statements’ Related Performance was evaluated based on Stability ratios, Liquidity ratios, Profitability ratios, Turnover ability ratios, Appropriation ratios, Coverage ability ratios and Capitalisation ratios. Only vital ratios under the above heads were computed and taken up for further analysis, the ratios taken up and the formulas used were explained under the head tools of analysis.

The mean values and standard deviations of the ratios of the sample companies and the respective industries were computed and tabulated. To ascertain their difference from the industry mean values ‘t’ test was conducted and its significance was tested at 0.01 level of significance. Ratios which were significantly different
from the industry means were marked with * marks in the respective tables.

To judge the performance of the companies the best of the ratios were identified and appropriate interpretations were made. To find out the variability of these ratios co-efficient of variations were computed and appropriate interpretations were made. In order to ascertain the homogeneity of the of these ratios with the industry figures, Analysis of Variance (ANOVA) test was conducted by taking one important ratio from each headings and suitable interpretations were made. Ratios thus selected were Net Worth to Total Assets Ratio, Current Ratio, Net Sales to Total Assets Ratio, Return on Total Capital Employed Ratio, Debentures to Net Worth and Debentures Ratio.

Equity related performance was judged under three heads viz., Per Share Related Performance Measures; Capital Market Related Performance Measures and Other Equity Related Variables' Performance Measures. The mean values, standard deviations and their significant difference were also compared with the respective industry's bench marks and appropriate interpretations were made. To test the homogeneity of the equity related variables, six vital ratios of Net Sales Per Share, Earnings Per Share, Market Price Per Share, Price Earnings Ratio, Market Value to Book Value Ratio and Net Sales to Equity were tested on ANOVA to find out the homogeneity of these ratios among the companies.

Under the head Other Financial Related Variables, Weighted Cost of Debt, Weighted Cost of Equity, Weighted Average Cost of Capital, Operational Leverage, Financial Leverage, Combined Leverage, Operating Cycle,
Sustainable growth rate, Annual compound growth rate of Assets, Sales, Dividend and Beta were used. The mean values of the above variables were computed and compared with the industry's benchmarks and suitable interpretations were made. Moreover, to test their association with other companies in the industry, ANOVA test was conducted for costs of capital, Leverages and Operating cycles and suitable interpretations were made accordingly.

To identify the Determinants of Earnings Power, Earnings Before Interest and Taxation was taken as the dependent variable and many internal independent variables were selected for multiple regression model. These variables were drawn out of financial statements. Before selecting them, a correlational analysis was made to identify less correlated variables and that test had finally identified eight variables. The variables identified were Current Assets, Current Liabilities, Cost of Sales, Deferred Liabilities, Fixed Assets, Net Worth, Operating Expenses and Profits Retained.

The $R^2$ and adjusted $R^2$ were identified to find the explaining power and the reliability of those models. Further to test their significance 'F' ratio and 'P' values were computed and compared with table values to ascertain their significance at 0.05 level of significance and appropriate interpretations were made. To test the most influencing variables, best subset regression was run. Based on the $R^2$ the model with the highest $R^2$ for two variables was identified as the best one and to test that models' reliability and significance, adjusted $R^2$, 'F' ratio and 'P' values were computed and appropriate inferences were made.
To test the homogeneity of these variables among the companies in an industry, ANOVA test was conducted and suitable interpretations were made. Factor analysis was made to confirm these results.

In the similar way Multiple Regression models for the determinants of Market Price of the shares were computed. The variables identified were Book value per share, Dividend per share, Earnings per share, and Net sales per share. To ascertain their significance 'F' test was conducted. Based on the R² best subset regression was also identified. ANOVA test was conducted to ascertain the relationship among the determinants and suitable interpretations were made. Factor analysis was used as a confirmation test.

To ascertain the combined effect of all the ratios used, Multiple Discriminant Model was used to construct the indices based on Stability, Liquidity, Profitability, Turnover ability, Appropriation, Equity related variables, Other financial related variables and Overall analysis. Companies whose Return on Total capital employed was higher than that of the respective industry's were classified as more efficient companies and others into less efficient companies. Through multiple discriminant analysis Z values were obtained and companies were ranked in ascending order of the Z values. Based on the actual ranking and the earlier classification the discriminating power of the Z values under the respective heads were interpreted. By combining all the 15 vital variables a comprehensive discriminant model was also built. All these discriminant models were also finally tested for their significance through ANOVA.
1.6. Geographical Coverage and Period of Analysis

This study covers only companies which were listed in Bombay Stock Exchange and operating in India. The period of analysis was from the financial year 1985 - 1986 to 1994 - 95, covering a period of 10 financial years.

1.7. Field work and Data collection method

The researcher himself had collected all the data from various sources. For this he had visited Bombay, Bangalore, Madras, Hyderabad, New Delhi, Ahmedabad, Bangalore and also searched through the internet.

Tools used for analysis were classified into two major sections. In the first section Statistical and Quantitative tools were explained. In the second section Accounting Ratios and Financial tools were discussed.

### 1.8.1. Statistical and Quantitative Tools

1. **Mean** : \( \bar{x} \)
   - Mean is a central tendency measure representing the arithmetic average of a set of observations. It is calculated by the following formula.
   \[
   \bar{x} = \frac{\sum x}{n}
   \]

2. **Weighted mean** : \( \bar{x}_w \)
   - It is an average that takes into account the importance of each value. It is calculated by
   \[
   \bar{x}_w = \frac{\sum (W \times X)}{\sum W}
   \]
   This was used for computing the weighted costs of various types of capital.

3. **Standard Deviation** : \( (S.D) \)
   - Standard Deviation is the square root of variance, it is a measure of dispersion in the same units as the original data. Higher the S.D. greater is the dispersion. The formula used was
   \[
   \sigma = \sqrt{\frac{\sum x^2}{n} - \mu^2}
   \]
   This was used to compute the Standard Deviation of various ratios.

4. **Variance** : \( (\sigma^2) \)
   - It is a measure of the average squared distance between the mean and each item of the population. Higher the variance greater is the dispersion. The formula used was
5. Co-efficient of variation : (C.V)

It is a relative measure of dispersion, comparable across distributions, which expresses the standard deviation as a percentage of the mean.

\[ C.V = \frac{\sigma}{\mu} \times 100 \]

More the co-efficient of variation greater is the dispersion. When the outliers are more it may exceed even 100. This was used to measure the variability of various ratios.

6. Correlation \(^{91, 92, 93}\) (r) For finding out correlation the following formula was made use of

\[ r_{xy} = \frac{\sum(x_i - \bar{x})(y - \bar{y})}{\sqrt{\sum(x_i - \bar{x})(y - \bar{y})}} \]

Further to test its significance the following formula was made use of

\[ |t| = \frac{|r|}{\sqrt{\frac{1 - r^2}{n - 2}}} \]

When the computed |t| is more than the table value at 0.05 level of significance the null hypothesis of no significant correlation among the financial variables was rejected and the alternate hypothesis of significant correlation among the variables was established.
7. Analysis of variance (ANOVA)\textsuperscript{94,95} This is used to test the significance of the differences among more than two sample means. The steps followed are

1. Between column variance was calculated by the following formula
\[
\sigma^2 = \frac{\sum n_j (x_j - \bar{x}_j)^2}{k - 1}
\]

2. Within column variance was calculated by using the following formula.
\[
\sigma^2 = \sum \left[ \frac{n_j - 1}{n_T - k} \right] s_j^2
\]

3. F ratio was computed by the following formula
\[
F = \frac{\text{Between column variance}}{\text{Within column variance}}
\]

4. The Null Hypothesis ($H_0$) and Alternative Hypothesis ($H_a$) were framed as stated below.

$H_0$ : No significant difference among sample means.

$H_a$ : Significant difference exists among sample means.

5. When the probability value of F ratio was more than the significance value $\alpha = 0.05$ the $H_0$ was not rejected. When the probability value of F ratio was less than the 0.05 level the $H_0$ was not accepted.

6. Homogeneity test was also used to classify the sample means into groups. When all the sample means were in the same group homogeneity was established. Otherwise heterogeneous nature was identified.
7. For computing all these a statistical package SX version four was used.

8. In this study ANOVA was used to find out the significance of the differences between different financial variables of the sample companies selected.

8. Multiple Regression : (M.R)\textsuperscript{96,97}

MR is a statistical process by which several variables are used to predict another variable. The following formula was used.

\[ Y = a + \beta_1X_1 + \beta_2X_2 + \ldots + \beta_nX_n \]

While selecting the independent variables, to a larger extent variables which were less correlated were selected in order to avoid multi collinearity problem. The F ratio and P value for the model was also computed to test its significance. If the computed P value was lower than the critical level of \( \alpha = 0.05 \) the model was determined as statistically significant. The co-efficient of determination \( R^2 \) was also computed to find out the percentage of the explaining power of the model. \( R^2 \) would always increase when all independent variables are added, Adjusted \( R^2 \) will come down if the added variable does not reduce the unexplained variations. The adjusted \( R^2 \) was calculated by

\[
\text{Adjusted } R^2 = 1 - (1 - R^2) \frac{N - 1}{N - K}
\]

\( N = \text{Number of sample observations} \)
\( K = \text{Number of parameters} \)

If the adjusted \( R^2 \) was close to \( R^2 \), addition of any further independent variable would not help for better prediction. When there is a wide difference it is an indication about the need for inclusion of some more
independent variables. The sign of the Beta co-efficients indicate the positive or negative movement of the dependent variable for a given change in the independent variable. The value of the Beta co-efficients indicated the percentage of change in the dependent variable for an one percentage change in the independent variable.

Further Best subset regression was computed by generating all the possible combinations of the selected independent variables. Two variables model with higher $R^2$ was chosen as the best model.

For predicting changes in EBIT the independent variables used were Current Assets (CAs), Current Liabilities (CL), Cost of Sales (COS), Deferred Liabilities (DL), Fixed Assets (FA), Net worth (NW), Operating Expenses (OPEX), and Profits Retained (PR). These variables were largely less correlated financial variables. These were identified to avoid the multi collinearity problem. To identify the changes in MPS internal equity related variables used were, Book Value Per Share (BVPS), Dividend Per Share (DPS), Earnings Per Share (EPS), and Net Sales Per Share (NSPS). These internal variables were selected after a preliminary correlation test to avoid multi collinearity problem. All these calculations were made through SX software.

9. Discriminant Analysis$^{98,99,100}$: Financial ratios provide univariate analysis of financial strength. Discriminant analysis combines all these ratios and forms an index that allows classification of an observation into one of several priori groupings. This involves three steps.
1. Establishing mutually exclusive group classifications. Each group is distinguished by a probability distribution of characteristics.

2. Collecting the data for each group.

3. Deriving linear combinations of the characteristics that best discriminate between the groups. Best discrimination is that discrimination which minimises the probability of misclassification.

\[ Z_i = ax_i + by_i \]

\( Z_i \) = The discriminate score
\( x_i \) = The value of one ratio
\( y_i \) = The value of another ratio
\( a, b \) = Parameter to be estimated

4. The discriminate function which best distinguishes between the two groups can be obtained by

\[ F(Z) = \frac{(Z_1 - Z_2)^2}{\sum_{i=1}^{n_1}(Z_i - \bar{Z}_1)^2 + \sum_{i=1}^{n_2}(Z_i - \bar{Z}_2)^2} \]

\( Z_1 \) = Mean value of the \( Z_i \) scores of group 1
\( Z_2 \) = Mean value of the \( Z_i \) scores of group 2
\( (Z_i - \bar{Z}_1)^2 \) = Square of the mean deviations for group 1
\( (Z_i - \bar{Z}_2)^2 \) = Square of the mean deviations for group 2

To obtain the values of \( a \) and \( b \) such that \( F(Z) \) is maximised we should set the partial derivatives with respect to \( a \) and \( b \) equal to zero. Doing so we get the normal equations.

\[ a \sigma x^2 + b \sigma xy = (\bar{x}_1 - \bar{x}_2) \]
\[ a \sigma xy + b \sigma xy = (\bar{y}_1 - \bar{y}_2) \]

Solving these equations one can get \( a \) and \( b \).
5. Given the values of a and b, the Z values is estimated for each company. Then cut off value is established.

6. The predictive ability of the model is examined with reference to a new sample. The predicted classifications are compared against the actual classification and the ratio of right classification/total number of classifications measures the predictive power of the model.

7. Then Z index is used to rank the companies according to Z scores.

This analysis was used for finding which set of the ratios effectively classify the companies. For this, the selected companies were classified into Group one (companies whose returns on capital employed were higher than the industry mean) and Group two (companies whose returns on capital employed were lower than the industry mean). Finally all the vital ratios in each category were grouped together to form a composite set for analysis. Based on the composite score, companies were ranked to ascertain their overall performance.

10. Factor Analysis Factor Analysis takes a large number of variables or objects and searches to see whether they have small number of factors in common, which account for their inter correlation. There are three steps in factor analysis. The first is to develop a set of correlation between all combination of variables. The second step is to extract a set of initial factors for final solution. In this study, factor analysis was used only as a confirmation test of the effectiveness of the independent variables used in multiple regression models, for the number of variables were less in number.
determinants of EBIT and MPS were fed into the computer to obtain vector scores, eigen values and the percentage of variance explained. Depending on the explaining power of factors, the analysis was restricted. If the initial factor explained a very high percent of variation or having a higher eigen value, then subsequent analysis was restricted to analysing and interpretation of that factor's vector scores only. In case, if the first factor could not explain much, the analysis was continued for the next factor. Factor loadings in terms of vector values indicate the level of association with other variables.

**T Test**

To find out whether the company mean ratios were different from the industry mean ratios the following $H_0$ was tested through t test

$H_0$: "Company mean ratios were not different from the industry mean ratios"

t values were calculated by the following formula

$$
\frac{x - \mu}{\sigma} \sqrt{n - 1}
$$

If the calculated t values were higher than the critical value at 0.01 level i.e., 3.25 the $H_0$ was not accepted and significant difference in those cases were established. In other cases $H_0$ were rejected.

1.8.2. Ratios and other Financial tools used for Analysis:

For comparative analysis the ratio classification followed by the Bombay Stock Exchange official directory was adopted. It classifies ratios under six heads. They are
Stability Ratios

These are ratios which explain the long term solvency and the ability of the company to service its long term lenders and investors. Higher the borrowing greater would be the leverage and risk. These were expressed in percentage terms.

1. **Net Worth to Total Assets (NWTA)**: It is computed by \((\text{Net Worth}/\text{Total Assets}) \times 100\). Net Worth includes Equity Capital, Preference Capital, Deferred Capital and shareholders' reserves. Total Assets include Current Assets, Fixed Assets, Investments, Miscellaneous Assets and Intangible Assets. Higher the ratio better is the stability. A ratio below 50 percent may be alarming. A ratio of 33 percent is a reasonable level for a manufacturing company. But these standards very much depend on the industry's benchmark.

2. **Net Block to Net Worth (NBNW)**: It is computed by \((\text{Net Block}/\text{Net Worth}) \times 100\). Net Block is computed by deducting depreciation from Gross Fixed Assets. It explains the percentage of owners' funds invested in Fixed Assets. Higher the ratio better would be the stability.

3. **Total Liabilities to Net Worth (TLNW)**: It is computed by \((\text{Total Liabilities}/\text{Net Worth}) \times 100\). Total Liabilities include Current Liabilities and Deferred Liabilities. Lower the ratio greater would be the stability. Higher ratios are advised for firms with great growth and risk taking potential.
Credit Ratios

These are otherwise called as Liquidity ratios. They measure the ability of the firm to meet its short term obligations and reflect the short term financial health of the company.

4. Current Assets to Current Liabilities (CACL) : It is computed by (Current Assets/Current Liabilities). It is also called as working capital ratio. Current Assets include cash, bank balances, sundry debtors, inventory and miscellaneous current assets. Current Liabilities include short term loans and advances, sundry creditors, provisions and miscellaneous current liabilities. Higher the ratio greater would be the firm’s ability to meet current obligations and greater would be the safety of funds of short term creditors.

5. Quick Assets to Current Liabilities (QACL) : It is computed by (Quick Assets/Current Liabilities). Quick assets is computed by deducting Inventory from Current assets. It is a rigorous measure of a firm’s ability to service its short term liabilities. Higher the ratio greater would be the liquidity of the firm.

Turnover Ratios

These are also called as activity ratios, efficiency or asset management ratios. These reflect the efficiency, speed and rapidity with which the assets are converted into sales. They are expressed in number of times. Higher the ratio better it is for the company.

6. Net Sales to Total Assets (NSTA) : It is computed by Net Sales/ Total Assets. Net sales is sales excluding sales returns and stocks consumed. It measures the overall
ability of the firm's assets to generate sales. Higher the ratio better it is for the company.

7. Net Sales to Net Worth and Debentures (NSND) : It is computed by Net Sales/Net Worth and Debentures. It measures the number of times the Owners' funds and Debentures are turned over. Higher the ratio greater would be the turnover efficiency of the firm.

8. Net Sales to Plant and Machinery at Cost (NSPC) : It is computed by Net Sales/Plant and machinery at cost. It indicates the number of times the plant and machinery values are turned over. Higher the ratio greater would be the operating ability of the company.

9. Sundry Debtors to Average Daily Sales (SDAS) : It is computed by (Sundry Debtors/Credit sales)x365. It indicates the number of days credit sales that is locked up in Debtors. Lower ratio indicates better receivables management.

Profitability Ratios¹⁰⁹, ¹¹⁰, ¹¹¹

Profitability is a measure of efficiency and also acts as an incentive to achieve efficiency. Profits provide funds for debt repayment and internal financing. It measures the return from the asset usage.

10. Return on Total Capital Employed (RTCE): It is computed by (Net profit after taxes plus interest/Total capital employed)x100. This indicates the internal rate of return generated by the capital. Higher the ratio better it is for companies.

11. Net Profit plus Debenture Interest to Net Worth plus Debentures (NIND): This is computed by (Net profit +
Debenture Interest/Net Worth + Debentures) x 100. This shows the profitability of the firm before the effect of interest. Here again higher the ratio better it is for the company. However the proper benchmark here would be the industry average.

12. Net Profit to Total Assets (NPTA): This is computed by (Profit after tax/Total Assets) x 100. This shows the ultimate earnings of the company on its Fixed and Current assets put together. Higher the ratio greater would be its profitability.

Appropriation Ratios

These ratios show the amount of internal funds generated through the various charges created on profits. Higher these ratios better would be the retention which would further pave the growth.

13. Depreciation Reserves to Gross Block (DRGB): This is computed by (Depreciation reserves as on date / Gross Block) x 100. Higher the ratio greater would be the funds available for investment. A higher ratio indicates better funds position for investment.

14. Depreciation Provision to Block Written down value (DNB): This is computed by (Depreciation Provision/Written Down value of the Block) x 100. This would indicate the annual change on the written down value of the assets. Higher the ratio greater would be the internal funds.

15. Taxation provision to Pre tax Profit (TPPP): It is computed by (Taxation provision/Pre tax profit) x 100. Higher ratio indicates greater tax obligation. A good firm would try to minimise this liability. Hence lower the ratio better it is for the company.
Coverage Ratios\textsuperscript{113}:

These ratios are used to measure the firm's ability to cover the financial charges associated with the financial leverage.

16. Times Debenture Interest Covered (TDC) : This is computed by Earnings Before Interest and Taxation/Debenture Interest). A higher ratio indicates better coverage ability of the company which in turn reveals higher safety for the debenture holders.

17. Times Preference Dividend Covered (TPC) : It is computed by (Profit after interest and taxes/Preference dividend). A high ratio shows the better preference dividend serving capacity of the company.

Capitalisation Ratios\textsuperscript{114}:

These ratios would indicate the capital mix of a company. For growing firms a greater amount of debt would be tolerable and help them to grow faster, for others a lower level of debt would be safer.

18. Preference Capital plus Debentures to Equity Capital (PDE): It is computed by (Preference Capital + Debentures / Equity Capital) x 100. For growing firms a higher ratio would be helpful for others lower ratios would be appropriate. However this also depends upon the industry averages also.

19. Debentures to Net Worth plus Debentures (DND): This is computed by (Debentures/Net Worth plus Debentures) x 100. Higher the ratio greater would be the debenture borrowings. For firms with a great potential for growth, a higher ratio would be better.
20. Preference Capital to Net Worth plus Debentures (PND): This is computed by \((\text{Preference Capital} / \text{Net Worth + Debentures}) \times 100\). In India preference capital was not at all a popular source of finance, hence this ratio would be very insignificant for many of the companies.

21. Equity Capital plus Reserves to Net Worth plus Debentures (ERND): This is computed by \((\text{Equity Capital plus Reserves/Net Worth + Debentures}) \times 100\). It is a ratio of owners funds to total funds. Higher ratio indicates greater confidence of the share holders in the company.

Per Share Related Ratios\(^{115}\)

Under this head important financial variables are related to number of shares. Higher values under this head would mean better performance. When the financial variables were converted into per share basis, certain problems were faced in the treatment of different face values, rights shares issue, bonus share issue and timing of these issues. Suitable adjustments were carried out for them. When there was a difference every figure was converted for a face value of Rs. 10. The formula used was

\[
\frac{\text{Original Per share variable}}{\text{Original face value of the share}} \times 10
\]

When bonus shares and rights shares were issued the original per share value was converted by applying the following formula

\[
\frac{\text{Original per share value}}{\text{New number of shares after bonds or rights}} \times \frac{\text{Old number of shares before bonus or rights}}{\text{New number of shares after bonds or rights}}
\]
However no adjustment was carried out for the issue of convertibles, warrants and the timing of the bonus and rights issues, for they were not significant.

22. **Net Sales Per Share (NSPS)**: This is computed by \( \frac{\text{Net Sales}}{\text{Total number of Equity shares outstanding}} \). Sales provides the basis for all the activities of the company. So higher the value of this ratio better it is.

23. **Earnings Per Share (EPS)**: It is computed by \( \frac{\text{Profit after tax}}{\text{Number of shares outstanding}} \). EPS is a major determinant of the Market Price Per Share, a higher value of EPS would be a better indicator of performance.

24. **Book Value Per Share (BVPS)**: This is computed by \( \frac{\text{Share holders Net Worth}}{\text{Number of Equity Shares outstanding}} \). It reflects the worth of a share as per the financial statements. This also indicates the asset value per share as per books. Higher the ratio better it is.

25. **Market Price Per Share (MPS)**: This is the quoted market price of the share. On every trading day there may be many quotations, like that for the entire period of analysis there may be innumerable quotations. In order to arrive at a workable figure the mean value of the maximum and minimum was computed and used for further analysis.

26. **Dividend Per Share (DPS)**: This is computed by \( \frac{\text{Distributed Profits}}{\text{Number of shares}} \). In India dividends are declared on the face value of the shares. The rupee value of dividend was arrived at for further analysis.

**Capital Market Related Ratios**: Under this head vital financial variables were related to the market price of the share. It is based on the concept that all better performances would be reflected in the market price of the scrips.
27. Price Earnings Ratio (PER) : It is computed by (Market Price of the Shares/Earnings Per Share). The market price would vary every day, so the mean values of the high and low market prices after adjusting for the difference in face value bonus and rights was computed. The latest earnings per share was taken into account. Naturally there would be a time gap between the current year’s market price and the previous year’s earnings. But those were the latest figures available to match, a higher ratio indicates the greater confidence of the investors on the scrip.

28. Dividend Per Share to Earnings Per Share (DPEP) : This is computed by (Dividend Per Share/Earnings Per Share)x100. Otherwise it is the payout ratio. A higher payout would naturally enthuse the investors. Large number of studies in this context have confirmed it. But at the same time companies with high growth potential should pay less, so that they can plough back profits and help the share holders to reap a better market price at a later date.

29. Dividend to Market Price (DMP) : This is computed by (Dividend Per Share/Market Price Per Share)x100. This is otherwise the yield ratio of the shares. A high ratio on this count indicates better immediate return to the share holders. In the Indian context, dividends were one of the major determinants of the market price. So Indian investors prefer this than a distant market price appreciation. However, for efficiently performing companies this ratio was lower.

30. Market Value to Book Value (MVBV) : This is computed by (Market price per share/Book value per share). It is the relative of the valuation done by the accountants and the investors. Usually the accountants underestimate the asset
values hence this ratio for most of the companies would be more than one. A high ratio indicates a higher value attached to the earning power by the investors. So higher the ratio better it is.

Other Equity Ratios:

Under this head vital financial variables were related to the net worth of the share holders and comparisons were made with the industry averages. Higher these ratios better it is for the companies.

31. Net Sales to Equity (NSE) : This is computed by (Net Sales/ Share holders Net Worth). It indicates the sales generated per unit of the share holders fund. Higher the ratio better it is for the company.

32. Cash Flow to Equity (CFE) : It is computed by (Cash flow/Share holders Net Worth). If the sales and earnings do not fructify into cash flow, it is of no use to the share holders. This ratio should be higher for better performing companies.

33. Earnings to Equity (EE) : This is computed by (Total Earnings/ Equity share holders funds). It reflects the earning capacity per unit of equity. A higher ratio reflects better performance.

34. Dividends to Equity (DE) : It is computed by (Total Dividends/ Share holders Net Worth). It shows the yield computed on book value basis. Higher the ratio better is the performance.
1.8.2.1 Sustainable Growth Rate (SGR)\textsuperscript{117}:  

Sustainable growth rate is the growth rate of sales supported by the growth rate of assets which is financed by the accrued internal equity and debt. This is computed by

\[
g = \frac{\text{m(1-d)} \frac{A}{E} - \frac{m(1-d)A}{S}}{\frac{A}{E} - \frac{m(1-d)A}{S}}
\]

where:
- \( m \) = Net profit margin
- \( d \) = Dividend payout
- \( E \) = Total Equity
- \( D \) = Total Debt
- \( A \) = Total Assets
- \( S \) = Sales
- \( g \) = growth rate in sales

This was used to compute the sustainable growth rate of the companies analysed and this growth rates were compared with that of the assets and sales growth rates. If the Annual Compound Growth Rate of sales was more than the sustainable growth rate it was considered as a sign of better performance.

1.8.2.2 Sustainable Growth Rate of Dividend\textsuperscript{118} It is that growth rate of the dividend attainable with no external financing. It is computed by

\[
g = \text{Return of Equity} \times \text{Retention ratio}
\]

This was compared with the annual compound growth rate of dividends and when a company's actual growth rate of dividend was higher than the sustainable growth rate, it was considered as a sign of better growth. This was based on the assumption that most of the Indian companies were conservative and pay only dividends out of profits earned.

1.8.2.3 Annual Compound Growth Rate (ACGR) :

Annual Compound Growth rate is the compounded growth rate of the variable computed per annum. The following formulae were used to compute them. When there was a continuous growth of the variable the formula used was
When there was a variable growth of the variable. The formula used was

\[ n \sum (1+r_1)(1+r_2)(1+r_3) \cdots (1+r_n) - 1 \]

r = growth rate

These were used to find out the growth rate of Assets, Sales and Dividends of companies.

1.8.2.4 Cost of Capital\textsuperscript{119, 120}:

It is the rate that must be earned in order to satisfy the required rate of return of the firm's investors. It is the rate of return on the investments at which the price of the firm's common stock will remain unchanged. In the analysis the costs were computed for Debt and Equity and aggregated to arrive at the overall cost of capital. Preference shares were insignificant for most of the firms. So it was excluded. The cost of retained earnings and depreciation funds would be automatically included in the growth rate, which is a component of the equity cost, hence they were also excluded from analysis.

1. Weighted Cost of Debt. Cost of Debt is the rate at which the lenders would be satisfied. It is computed by

\[
\frac{\text{Interest}}{\text{Long term Debt}} \times (1 - \text{Tax rate}) + \frac{\text{Debt}}{\text{Total Capital Employed}}
\]

Payment of interest enjoys tax shelter, so it is the after tax cost which is more relevant. Marginal cost of debt is important for investment decisions, on the other hand it is
the weighted cost of debt which is more relevant in judging the performance of the firm, for borrowing more would relevantly increase the firm's risk.

2. Weighted Cost of Equity. It is the return required to be earned to retain the existing equity capital in the capital structure. It was computed by

\[
\text{Weighted Cost of Equity} = \left( \frac{\text{Dividends expected in the next year}}{\text{Market Price of the Share}} + \frac{\text{growth rate of dividend}}{\text{Equity}} \right) \div \frac{\text{Total Capital Employed}}{}
\]

Proper weightage is also allocated for the cost of equity.

3. Overall Weighted Average Cost of Capital.

This is arrived at by adding the weighted cost of debt and weighted cost of equity. The value of the firm would be the maximum, when the overall cost of capital is the least, cost of capital shows the ability of the firm to mobilise cheaper capital from the investors.

1.8.2.5 Operating Cycle

It is the time gap within which the cash is invested and earned back by the firm. It is computed by

\[
\text{Operating Cycle} = \frac{\text{Inventory velocity} + \text{Debtors velocity} - \text{Creditors velocity}}{}
\]

Shorter the operating cycle better it is, some times this ratio can be negative, whereby indicating the firm's ability to borrow more from creditors and make use of it in the business to its advantage. It very much depends on the nature of the industry and hence industry bench marks would provide an appropriate standard.
1.8.3. Leverages\textsuperscript{122,123}: Leverage is the ability of the firm to magnify its EBIT and EPS through its cost and financial structure. It is divided into Operating, Financial and Combined leverages.

1. Operating Leverage: It is the ability of the firm to magnify its EBIT through employing more of fixed costs. It is computed by (Contribution/EBIT). If the computed ratio is more than one, it is said to be highly operationally levered, whereby indicating the higher sensitivity of the EBIT for a given level of change in the sales. High growth firms would have a higher operating leverage.

2. Financial Leverage: It is the ability of the firm to magnify its EPS through employing more of debt in the capital structure. It is computed by (EBIT/EBIT - Interest). A ratio of more than one, indicates high Financial Leverage. This shows the higher sensitivity of the EPS to a given level of change in sales. Growing and performing firms would have a higher financial leverage. Higher the leverage higher would be the debt and also the financial risk.

3. Combined Leverage: It is the ability of the firm to magnify its EPS for a given level of sales. It is computed by (Contribution/EBIT - Interest). A ratio of more than one, indicates the greater sensitivity of its EPS for a given level of change in sales. High growth firms would have higher combined leverage. This can also be obtained by multiplying the operating leverage with the financial leverage. Higher the leverage higher would be the growth and the risk. However a low operating leverage and a higher financial leverage would be ideal for a firm.
Beta is the relationship between an investment's return and the market return. It quantifies the systematic risk. In the analysis the beta of the company represents the sensitivity of a company's share price to the Bombay Stock Exchange National Index. If the beta is more than one, then the share price is more volatile than the market and would rise faster than the index, in the bull market and would fall faster than the index in the bear market. A share having more than one beta is aggressive and when the beta is less than one, it is said to be defensive. It was computed by

\[
\text{Beta} = \frac{\text{cov}_{im}}{\text{var}_m}
\]

\[
\text{cov}_{im} = \text{Covariance of the specific scrip with the return from the National Index}
\]

\[
\text{var}_m = \text{Variance of the National Index}
\]

For the purpose of analysis the Beta values computed by the Securities Research Division of Chartered Financial Analysts were just adopted.

1.9. Sampling Design

Stratified sampling was adopted. Companies fulfilling the following conditions were identified. The companies should have a market capitalisation of more than Rs. 1000 crores on 31.3.95 in the Bombay Stock Exchange. At least there must be more than one company available in the industry for analysis. Here the industry classification followed by Bombay Stock Exchange was adopted. Thirty nine
companies satisfied the first condition. Out of that 7 companies did not satisfy the second condition and 32 companies spanning over 11 industries were thus identified. Miscellaneous industries was heterogeneous in nature and suitable comparative analysis could not be made out of that, hence, companies belonged to that industry numbering four were dropped. When Electricity Industry was further probed into, it was found to contain Siemens India Ltd. and Tata Power. Siemens is an equipment manufacturer and Tata Power belonged to power generation, which are quit distinct from each other. So these two were also dropped from further analysis. Finally a list of 26 companies were selected for analysis spanning over nine industries. The number of companies identified according to industries were Aluminium (2), Cement (2), Chemical (3), Cotton Textiles (3), General Engineering (7), Hotel (2), Paper (2), Pharmaceutical (2) and Synthetic Textiles (3). Thus a highly significant part of market capitalised companies representing a cross section of the industries were selected for analysis.

1.10. Significance of the study

Even though many studies in this direction have been conducted, the present one would be of greater significance to many. It would help to understand the pattern and the structure of the financial variables of leading companies apart from identifying the financial relationship of companies with their respective industries. It would also enable to the share holders, investors and
investment analysts to identify the determinants of the financial performance. Further it would provide insight to Banks, Financial Institutions and Long Term Lenders to understand the financial capability and effectiveness of the companies. Moreover it would open up new vistas to the Industry Associations and the Government in understanding the characteristics of the companies for inter and intra firm comparisons. It might also help the Academic Researchers, Researchers in Securities, Industry and company watchers by providing different perspective of analysis.

1.11. Limitations of the study

1. The data for analysis is basically derived from financial statements. These statements released by the companies are historical, interim and based on conventions and personal judgments. Further they are not exact and do not make full disclosure and also not adjusted for inflation. The study based on such a data base also would suffer out of those impediments.

2. Financial statements reflect the book value and might not have been matched properly. Some times these might have been window dressed or manipulated.

3. Financial figures may not be normally and linearly distributed. Under this circumstance the results might not be truly representative.
4. When performance was measured quantitative considerations, physical performances, credit rating, executive dynamism, market standing, capacity utilisations and invisible asset values were not considered.

5. Earnings considered were primary, not diluted, and unadjusted, these may contain non-business incomes in a significant manner.

6. While performances were compared, industry structure, competitiveness and entry barriers were not considered.

7. The 26 selected companies may not be truly representative of the leading corporates.

8. Earnings and not the earnings' potential were considered. Increased volatility might lead to higher performance but at the same time may increase the risks also.

1.12. Scheme of the Report

This study has been classified into six chapters. Chapter one contains Introduction and the Design of the study. Chapter two analyses the Financial Performance while chapter three identifies the Determinants of Earnings Before Interest and Taxation of the companies. The Determinants of Market Price Per Share were examined in chapter four. In chapter five Cross Industrial Performance Analysis and Discriminant Analysis were made. The last chapter recapitulates the key findings into a summary.
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