CHAPTER II

REVIEW OF LITERATURE
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It is mandatory to review the literature available with respect to the area of the research study. Measuring the performance of the corporate sector has always been an area of controversies from the point of view of the government, shareholders, prospective investors, creditors, employees and any other stake holder. Several studies have been undertaken to analyse profitability in the corporate sector. This chapter presents some of the excerpts of various studies conducted by financial analysts in the past.

Paul J. Fitz Patrick (1932)\(^1\) has conducted a study on 20 failed and 19 non-failed firms, applying a trend of 13 financial ratios to examine whether there was a significant difference in the trend of ratios, at least three years prior to the failure. He has found that there was a persistent and significant difference in all the ratios of failed firms in relation to those of non-failed firms at least three years prior to the failure. The best indicators were net profit to net worth, net worth to total debt and net worth to fixed assets.

Winakor and Smith (1935)\(^2\) have taken a trend of means of 21 financial ratios and found that there was a significant deterioration of average ratio values of those firms which failed subsequently. They also have found that the ratio of net working capital to total assets was the most accurate and steady indicator of failure.

Charles Merwin (1942)\(^3\) has found out that the ratios are successful predictors of failure, five years prior to discontinuance. The ratios, namely, net working capital to total assets, current ratio and networth to total debt were found to be extremely sensitive and the most significant predictors among them.

Bain (1951)\(^4\) through his study on 'Relation of Profit Rate to Industry Concentration', has found that the differences in accounting rates of return could be explained by differences
in industry concentration ratios or barriers to entry. He asserted the hypothesis by finding a correlation coefficient of 0.28 between rates of return on net worth of 42 industries and concentration of these industries.

Abd El. Mataal (1958)⁵, has found in his study on "working capital and its role in the short term liquidity policy of industrial concerns", that failure of a business is undoubtedly due to poor management and abuse of management skill, which is evidenced by shortage of working capital. He also found that inadequacy of working capital is a symptom and sometimes an excuse but not the cause of business failure.

O'Donnell and Goldberg (1964)⁶ have identified that the survival or demise of an enterprise is determined by the adequacy of cash and other assets alongwith their efficient handling. They also have revealed that business failure takes place due to the lack of working capital.

Beaver (1966)⁷, has taken a trend of thirty financial ratios for 79 paired failed and non-failed US firms and has found that there was a significant difference in the ratios of both category of firms. In 1969, he has made a comparison of predictive ability of different ratios of the same paired firms, and he has identified that three ratios, namely, cash flow to total debt, net income to total assets and total debt to total assets ratios are the best indicators. He has identified that the ratios of failed firms differed significantly from those of non-failed firms, and they deteriorated sharply during the five years prior to failure.

Brown and Ball (1967)⁸ examined the (i) influence of economy and industry factors on financial ratios of firms with available data for the period 1947-1965, and industries with 15 or more firms were considered for the study. Four variables of earnings were used, namely, net income, operating income, net income after tax and interest expenses and
adjusted EPS. The study concluded that (i) on an average, 35 – 40% of the variability of a firm's annual earnings can be associated with the variability of earnings averaged over all firms, and (ii) on an average, a further 10-15% can be associated with the industry average. These results were found to hold good for all the four forms of earnings variables of earnings examined.

Altman (1968) took 66 firms in general and applied Multiple Discriminant Analysis to discriminate the failed firms from the non-failed firms. On the basis of the weighted combination of five financial ratios. The weighted combination of working capital to total liabilities, cumulative retained earnings to total assets, earnings before interest and tax to total assets, market value of equity to book value of total debt and sales to total assets was able to predict the bankruptcy with 45% degree of accuracy. He also found that the predictive ability of the model declined very sharply when the number of years prior to the failure increased.

Samuels and Smith (1968), in their study on "profits, variability of profits and firm size", have studied the relationship between profitability (Profit after tax on net assets) and size of the firm (net assets) and have found that they were inversely related to each other for the years 1954-63.

Brealey (1968) examined similar issues to those prescribed by Brown and Ball (1967), for the 1948-1968 period for Earnings per share and found that economy factors explained on an average, 21% of the variability of changes in the earnings of firms; and the industry factors explained, on an average, further 21% of this variability.

Van Horne (1969), in his study on 'A Risk-Return Analysis of a Firm's Working Capital Position', has examined separately the level of a firm's liquid assets and the maturity composition of its debt in order to illustrate the respective trade off between risk and return.
Lower the level of liquid assets, greater the risk of not being able to meet the current obligations. The risk of technical insolvency can be minimised by maintaining a high proportion of liquid assets. The longer the maturity schedule, the more costly is likely to be financing and vice versa.

Lev (1969), took 245 firms covering a period from 1947-1966 and tested whether the industry norms represents a target ratio for firms in that industry. The following model was used in the analysis.

\[ Z_t - Z_{t-1} = \beta(Z_t^* - Z_{t-1}), \quad 0 < \beta \leq 1 \]

where \( Z_t \) is a firm's financial ratio in time \( t \) and \( Z_t^* \) to be the industry mean (equally weighted) ratio in time \( t-1 \). His findings concluded that financial ratios (including profitability ratios) were adjusted towards the industry average over time. The speed of adjustment is determined by the size of \( \beta \); the closer \( \beta \) is to 1, the faster the period of adjustment.

Roger Cossaboom (1971), in his study, "Let's reassess the profitability - Liquidity trade off", has found out the significant importance gained by the profitability-liquidity trade off. He has identified four aspects, namely, liquidity flexibility, sensitivity, innovation and segmental financing which should be examined by the firm, to reduce the firm's vulnerability to further liquidity squeeze. He has identified financial flexibility and innovation by financial managers as the best approach for future liquidity management.

Chakraborthy (1973) though his study, has drawn the attention to each component of operating cycle rather than on the cycle itself. He has claimed that component-wise computation of forecasted cash funds was better than applying one single operating cycle duration and deriving working capital needs from its turnover. However, there had not been
any fundamental shift from his basic theory. This view was also upheld by V.E. Ramamoorthy.

Chakraborty et al., (1973)\textsuperscript{16} has made a study on the use of operating cycle concept for better management of working capital. He has examined the working capital as a segment of capital employed. He has found that excessive working capital would reduce the capital turnover ratio and bring down overall return on capital employed. The study has proved that though a very small working capital would yield an immediate higher return, it would reduce the earning capacity of the fixed capital employed.

Smith (1974)\textsuperscript{17} has made a study to identify the dual goals, of working capital management, namely, profitability and liquidity. He has suggested that the role of financial managers lies in achieving a trade off between the two. He has used Rate of return on Equity Investment as a measure of profitability and net working capital and current ratio as measures of liquidity for his study. Based on a set of simulation equations, his study has indicated the future financial statement of firm. He has used the model in which current assets and current liability are directly related to the sales of the firm.

His Second study (1974)\textsuperscript{18} was related to profitability versus liquidity trade off in working capital management. It has suggested the use of parallel monthly forecasts of liquidity and profitability for the evaluation of trade off between the two goals, in estimating the impact of certain working capital policies on these goals and in reflecting the uncertainty of the future.

Bierman Chopra and Thomas (1975)\textsuperscript{19}, through their study, have made an attempt to inter-relate the working capital and the capital structure decisions. According to them, working capital is used not only as a cushion to avoid ruin but also to offset sales. According
to the study, working capital affects both the expected earnings and variance of earnings. The study states that if \( W \) is the amount of working capital, \( W^* \) is the optimum level of working capital, and \( S_0 \) is the initial amount of Equity, then the loss of \( W^* \) is the ruin which would reduce equity to \( S_0 - W^* \) and the firm is forced to borrow \( g(S_0 - W^*) \), where \( g \) is a constant between 0 and 1. It is assumed that \( W = W^* \) before the ruin occurs. After the firm borrows \( g(S_0 - W^*) \), the firm will again get back to \( W^* \). Given a certain level of revenues, dividends can be paid only after discharging the liability of interest on long term debt and reaching \( W^* \).

Barthwal (1976)\(^{20}\) in his study on "The determinants of profitability in Indian Textile Industry" has identified the factors which cause variation in the profitability. The explanatory variables used by him are past profitability, size of the firm, age of the firm, past growth, capital-output ratio and changes in average cost of production. Among them, past profitability and changes in the average cost of production over the previous years had been found to be significant determinants of profitability for the firms in the industry, in different regions of the country. The other factors like capital-output ratio, size and age of the firm and past growth had explained less than 25% of the variation in the profitability and were considered as insignificant.

Richard Taffler and Howard Tisshan (1977)\(^{21}\) has shown that the pretax profit to total liabilities, current assets to total liabilities and current liabilities to total assets are the significant ratios which can explain the corporate failures more accurately than others. This study has supported Altman's (1968) findings.

Altman, Haldeman and Narayanan (1977)\(^{22}\) have developed a Zeta model, using financial ratios. Multiple Discriminant Analysis was used with both linear and quadratic
structure. The model could discriminate the bankrupt firms from the non-bankrupt firms with 69.8% degree of accuracy three years prior to bankruptcy.

To determine the effectiveness of work capital management, Battacharya, and Raghavachari (1977)\textsuperscript{23} have conducted a study taking 72 large Indian companies and 14 large Indian Banks and Financial Institutions. The study has used 11 ratios namely, current ratio \((x_1)\), quick ratio \((x_2)\), average finished goods inventory as number of days sales \((x_3)\), average raw material as number of days of raw material consumption \((x_4)\), average receivables as number of days sales \((x_5)\), cash flow as percentage of sales \((x_6)\), creditors as percentage of raw material consumed \((x_7)\), profit after tax as percentage of sales \((x_8)\), sales as number of times of total assets \((x_9)\), profit after tax as percentage of total assets \((x_{10})\) and debt as percentage of equity \((x_{11})\).

The discriminant function analysis identified the following 4 factors as significantly influencing factors.

1. Profit after tax as a percentage on sales (25.2%).
2. Sales as number of times of total assets (25.2%).
3. Quick assets as percentage of current liabilities (15.5%).
4. Average receivables as number of days sales (15.3%).

Chakraborty (1977)\textsuperscript{24} had examined similar issues and found a negative correlation between debt-equity ratio and profitability.

Pandey (1978)\textsuperscript{25}, in his study “Leverage, risk and the choice of capital structure” has found that a company, having a highly levered and risky capital structure will be able to maximize its income.
Ramamoorthy (1978)\textsuperscript{26} has found profitability and solvency as the twin goals of working capital management. According to him, a firm's survival and growth depend on its ability to achieve these goals. If liquid assets can pay off current liabilities, financial strength can be created and the firm can sustain its reputation.

Gupta (1979)\textsuperscript{27}, in his study on "Financial Ratios as forewarning indicators of sickness", has made a study of 41 Indian Textile Companies, 20 sick and 21 non-sick, to test the predictive power of 63 financial ratios and concluded that the two ratios, viz., Earnings Before Depreciation, Interest and taxes / Sales and Operating cash flow/Sales \((\text{PAT} + \text{Depreciation})/\text{Sales}\) were significant.

Kulshrestha (1980)\textsuperscript{28} has made a study on "corporate liquidity-X rayed". He has found from his study that excessive liquidity would reflect lower profitability and deterioration in managerial efficiency exhibited through inappropriate decisions taken in the spheres of expansion, credit policies and dividend policies.

Singh (1981)\textsuperscript{29} has found out that the size of the units has a significant role in the capital structure of the cement industry. His study has revealed that the returns and profitability can be increased by increasing the size from small to big.

Bhabatosh Banerjee (1982)\textsuperscript{30} in his study on 'Corporate liquidity and profitability in India', has analysed the trend of liquidity position of industries of medium and large public limited companies in the corporate sector of India during 1971-78 and has identified the relationship of liquidity with their profitability. His study has evidenced that in industry groups belonging to publishing, ferrous / non-ferrous metal products and shipping, a rise in liquidity had led to a rise in profitability and vice versa. But in other industry groups
belonging tobacco, silk and rayon textiles, a rise in liquidity has been found to have a decline in profitability.

Banerjee (1982)\textsuperscript{31}, in his study on 'Corporate Liquidity and Profitability in India' has analysed the trend of liquidity position and its relationship with the profitability, taking medium and large scale public limited companies in the corporate sector for the period 1970-71 to 1977-78. In his study he has found that in India, in certain industry groups, a rise in liquidity has led to a rise in profitability and vice versa, whereas in other industry groups, the association between the liquidity and profitability has been negative.

Myers (1984)\textsuperscript{32} made an analysis on the theory of debt-equity structure and Myers called it as the pecking order theory of capital structure. Two important empirical implications of the pecking order theory are:-

(i) Most profitable firms tend to borrow the least, and

(ii) Less profitable firms have a higher debt-equity ratio.

Sharma and Reddy (1985)\textsuperscript{33} have identified the factors influencing liquidity, by conducting a study on the liquidity position of Nigam Sagar Fertilizers Ltd., during the period 1974-75 to 1981-82. They have concluded that Government Policy with respect to input and output has significantly affected the liquidity.

Pandey (1985)\textsuperscript{34} has conducted a study on financial leverage in India and found that there was no definite structural relationship between the degree of financial leverage, on the one hand and profitability and growth on the other hand, though profitability and growth have improved over time and so had the degree of leverage.
He also found out through his study (1985) on "The financial leverage in India" that Indian companies follow a high levered capital structures, the size of the companies are highly associated with leverage and as the leverage increased, the profitability and growth also increased.

Kumar (1985) in his study on "corporate growth and profitability in the large Indian companies", has examined the relationship between profitability and growth in 83 large companies in India's corporate sector during 1969-79. The study reveals a significant inter-industry differences in the growth process of firms under study. The very low value of R² in all the cases shows that only a small fraction of the growth of firms in Indian corporate sector has been explained by profitability.

Arthur Krown, David Scon, John Martin and William Petty (1985), through their study on 'Basic Financial Management', have found out that managing firm's liquidity and managing the firm's investment in current assets and its use of current liabilities are the important problems of working capital management. Each of these problems was shown to involve risk return trade off. The study revealed that by investing in current assets, a firm could reduce its risk of illiquidity but at the cost of a lower overall rate of return on its investment in assets. Further, use of long term sources of financing has enhanced the firm's liquidity, reducing the rate of return on its assets.

Mukerjee (1986) in his study on "Management of working capital in public enterprises" in respect of Central Government industrial undertakings, and covering a period from 1974-75 to 1978-79, has found that

(i) the current assets increased due to the accumulation of inventories and current liabilities increased due to increase in financing through payables;
(ii) The overall size of the working capital had been significantly influenced by the overall size of sales and output.

(iii) The working capital requirements of the units were not ascertained based on the considerations as suggested for prudent financial management.

(iv) There was a significant negative correlation between overall profitability and size of working capital.

(v) The liquidity and profitability had a very significant negative correlation.

(vi) There was an over investment in structural determinants and huge size of working capital due to faulty financial policies adopted by the units.

Srivastav and Yadav (1986) through their study of selected Indian data of 78 companies developed the following discriminant function:

\[ Y = 19.8927 V_9 + 0.0047 V_{25} + 0.7141 V_{31} + 0.4860 V_{35} \]

where,

\[ V_9 = \frac{EBIT}{Total \text{ tangible assets}}. \]
\[ V_{25} = \frac{Current \text{ Assets}}{Current \text{ liabilities}} \]
\[ V_{31} = \frac{Net \text{ sales}}{Total \text{ Tangible assets}} \]
\[ V_{35} = \frac{Defensive \text{ assets}}{Total \text{ operating expenses}} \]

The cut of value was determined at 1.425.

Yadav (1986) developed a multivariate model to establish the determinants of effective working capital management, considering 78 companies including 39 sick units. A discriminant model consisting of 4 variables, namely cash flow from operations to total tangible assets, current ratio, net sales to total tangible assets and defensive assets to total operating expenses, was employed as the best discriminating function in determining the effectiveness of working capital management. It was found that the model could correctly
classify 95% of the companies as 'non-effective' in working capital management. The ratio of cash flow to total tangible assets is the most significant variable followed by the ratio of net sales to total tangible assets, in classifying the companies into sick and healthy in working capital management.

Pandey and Bhat (1988) have analysed the financial ratio patterns in Indian manufacturing industries, by taking 612 companies from R.B.I. data tape for 1965-66 to 1984-85. They have identified three groups of ratios which contain the maximum amount of information about profitability and applied these ratios for the analysis of only manufacturing and processing industries. The three groups of financial ratios are: (1) Return on Investment (Profit before depreciation, interest and tax to total tangible assets), (2) Sales efficiency (Profit after tax to Net Sales) and (3) Equity intensiveness (Retained cash flow from operations to Tangible net worth). Their study observed a declining trend in profitability in relation to sales, shareholder's equity and total investment, the impact of which increased with the increasing interest burden. It was also found that these three groups of ratios of profitability showed a consistent declining trend across most of the firms.

Verma (1989) has made a study on the 'management of working capital' in respect of Iron and Steel industry in India, covering both public and private sectors. He has observed that during his study period from 1978-79 to 1985-86, there was a problem of working capital which was more due to surplus investments than due to inadequacy in the inventory and receivables. He has also found that almost all the units had experienced inadequacy of cash during that period. To overcome this situation, he has suggested that there should be a good co-ordination in the functioning of strategic departments such as purchasing, production, marketing and finance.
Chandrasekaran (1989)\(^43\) has made a study on the performance of cement companies, measuring the profitability efficiency and growth. He has also identified that the cash flow and external funds are the key determining factors of investment in cement industry.

Brealey and Myers (1991)\(^44\) pointed out that according to the trade off theory high profit should mean more debt servicing capacity and more taxable income to protect resulting in a higher optimal debt-equity ratio. According to them, nonprofitable companies with risky, intangible assets must rely primarily on equity financing.

Sinha (1993)\(^45\) conducted a study to investigate debt-equity ratio in the private sector in India. His study showed that there was a negative correlation between debt-equity ratio and profitability only in the case of public limited companies but in the case of private limited companies, the margin on sales had a negative correlation with debt-equity ratio. His study was based on Chakraborty’s study in 1977.

The Institute of Chartered Financial Analysis (1994)\(^46\) has identified the best performing companies by means of an index of the annual compound growth rate of networth.

Vijayakumar and Venkatachalam (1995)\(^47\) have made an empirical analysis on working capital and profitability, taking 13 firms from sugar industry, covering a period from 1982-83 to 1991-92. Correlation and regression analysis have been applied to measure the impact of working capital ratios on profitability. Liquid ratio, inventory turnover ratio, receivables turnover ratio and cash turnover ratio have been considered to measure their impact on profitability (PBT/TA). The study has revealed that liquid ratio and cash turnover ratio have negatively influenced profitability and inventory turnover ratio and receivables turnover ratio have positively influenced the profitability.
Sukamal Datta (1995) in his study on working capital of paper industry in West Bengal, has analysed the size and causes of changes in working capital. He has also found out that the concerns which run with high profits had adequate working capital and those concerns with low profit found their working capital position to be inadequate.

Hyderabad (1995) in his article on 'capital structure planning: A new approach', has discussed about the financial risk (risk on account of the use of debt in the capitalisation plan) and NEDC Risk (Risk on account of Non-Employment of Debt capital) and the trade-off between Risk (Financial Risk) and Return (NEDC Risks). The assumption regarding the behaviour of cost of equity capital (Ke) under traditional approach has been contradicted by his article. He argues that Ke does not decrease with a decrease in Debt/Total capital (D/V) Ratio all the time. Initially, it may decrease with the decrease in the D/V Ratio because of reduced exposure to financial risk. But when the Equity Capital to Total Capital (inverse of D/V) ratio increased abnormally, the Ke will show an increasing trend because of lost opportunities. This is because rational investors cannot remain indifferent to EPS level variations between levered company and unlevered company. Rational investors would always prefer 'moderate-debt using companies' to 'no-debt / unlevered companies' or 'only-debt/levered companies'. Ke would always be higher for those two kinds of companies than for 'moderate debt using companies'. The firm should arrive at a trade off between the two extremes and balance the financial risk and NEDC risks by minimising the total risks/costs, and follow an optimum capital structure. This article has made certain assumptions in its discussion.

Vijayakumar (1996) has revealed that the growth rate of sales, leverage, current ratio, operating expenses to sales and vertical integration are the important variables which determine the profitability of firms in sugar industry.
George Schilling (1996)\textsuperscript{51} in his article on 'Working capital's role in maintaining corporate liquidity', has explored how investments in working capital establish the liquidity position of a company. He has identified the significance of cash conversion cycle in working capital management. He has explained how it is referred to as a company's net liquidity float, and how it is used as a tool in arriving at optimum liquidity position. He has also illustrated how Economic Value Added concept can be applied in working capital management. His study, thus, establishes the fact that CCC must be kept as short as possible but maintained at a length that is both consistent with the current level of business activity and flexible enough to allow for achievement of overall corporate business goals as they adjust to changes in the market place.

Beaumont Smith and Begemann (1997)\textsuperscript{52} have made a study to measure the association between working capital and Return on Investment and also to find out whether the more recently developed alternate working capital measures show improved association with Return on Investment to that of traditional working capital ratios. The firms listed on Johannesburg Stock Exchange were considered for study. Chi-square test and step-wise regression were applied and it was found that the traditional working capital leverage measure of total current liabilities divided by fund flow accounted for the greatest association with Return on Investment.

Hyun-Han Shin and Luc Soenen (1998)\textsuperscript{53}, in their study on 'Efficiency on working capital management and corporate profitability of 58,985 firm years covering the period of 1975-1994, on a compustat sample, have identified that there is a strong negative relationship between the length of the firms' Net Trade Cycle (NTC) and its profitability. In addition, shorter Net-Trade Cycles are associated with higher risk-adjusted stock returns. They also
have found that the NTC is measuring liquidity differently from the more conventional current ratio, which is positively related to profitability.

Amit Mallick and Debasish Sur (1998)\textsuperscript{54} have explored the relationship between ROI and several ratios relating to working capital management, by conducting a case study on tea industry. They have used working capital management ratios and ROI for the analysis. Simple correlation, multiple correlation and multiple regression analysis have been applied to find out the relationship between ROI and each of the working capital ratio, to assess the joint effect of those ratios upon the profitability and to test the significance of cause and effect. They have also examined the working capital leverage of the tea industry. Their study has revealed that out of the 9 ratios selected for the study, 5 ratios, viz., Working Capital Ratio, Acid Test Ratio, Current Assets to Sales Ratio, Inventory Turnover Ratio and Debtors Turnover Ratio, have registered a negative correlation with ROI. The regression results have evidenced that only Inventory Turnover Ratio has negatively influenced the profitability and the other 4 ratios have witnessed a positive influence on profitability. The working capital leverage of the company had recorded a fluctuating trend during the period under study and it had always been less than unity, proving that the increase in the profitability of the company was less than proportion to the decrease in the working capital.

Vijayakumar (1998)\textsuperscript{55} has, in his study, 'Determinants of corporate size, growth and profitability', identified that growth is significantly associated with profitability. Return on net worth has been used as a measure of profitability, Annual Average Growth Rate of assets has been taken for measuring the growth. The period covered by the study is 1980-81 to 1995-96. The techniques like average, correlation and linear and multiple regression analysis have been used. His study has identified that profitability has explained a considerable part of the growth of the firms in the Indian public sector industry.
Robert Linn (1999)\textsuperscript{56}, in his article on 'Manage Company's cash flow and control working capital', has explained the significance of cash flow cycle and its control. He has proved how reduction in cash-flow cycle would enable a firm to reduce its expensive debt and reinvest in assets to support increased sales levels. Cut in lead times, acceleration of accounts receivable and deceleration of accounts payable within the terms negotiated would help a firm to have minimum investment in short term assets and enjoy non-interest bearing loans from the suppliers which in turn would help the firm to accomplish its goals of profit and growth. The author opines that it would be appreciable if these goals are spelt out to suppliers and vendors as a close, candid relationship can benefit both the customer and supplier.

Jane Cote and Claire Kamm Latham (1999)\textsuperscript{57}, in their study have exposed that lack of attention to working capital management would ultimately contribute to the demise of a once profitable organisation. Failure to manage cash conversion cycle will cause a firm's demise, though the traditional liquidity ranges were within the acceptable ranges during the period. They have brought the effects of three of the current asset and current liability accounts into a single "Merchandising Ratio" which provides a measure of the net effect of a firm's working capital management strategy. Merchandising Ratio, according to them, is a composite of the three turnover ratios, which is computed as:

\[
\text{Merchandising Ratio} = \text{Average Receivables Turnover} + \text{Inventory Turnover} - \text{Average Payable Turnover},
\]

which can also be expressed in days. Their study suggests that analysis of the trends in Merchandising Ratio will discern clues about changes in strategy or managerial skill.
Carol Lancaster, Jerry Stevens and Joseph Jennings (1990) analysed the incremental explanatory power of cash flow, over the accrual income in explaining differences in measures of liquidity, for a large sample of firms. They extended the analysis further to consider industry effects. They found that relationships between cash flow, accrual income and liquidity are sensitive to the sample period and the measure of liquidity. According to them, cash flow has significant incremental explanatory power over accrual income when a more recent period is analysed and when the cash conversion cycle is used as an alternative measure of liquidity. The sample had 417 firms, including 253 firms from manufacturing, 55 firms from retail / wholesale, 45 firms from services, 42 firms from professional services, 15 firms from natural resources, 4 firms from construction and 2 firms financial services. Findings from their study suggest that industry differences exist in relationships between liquidity, accrual income and cash flow. The industry effects found in this study suggest the need for more caution in generalising relationships between accrual income, cash flow and liquidity measures.

The article on managing the cash gap (1999), by German Boer, emphasises the fact that the cash gap, (Inventory days on hand + receivables collection period – accounts payable period), affects profits directly as it has cost of financing which should be kept at low level. The cash gap can be shrunk by stretching out payment term on purchases for inventory, shortening the collection period and increasing the inventory turnover. The article, by analysing the cash gap of the Amazon.com, has proved that with a negative cash gap in 1998, (-64 days) the firm could manage to raise $83 million of interest free capital from its customers.

Burger and Hamman (1999), in their study on the relationship between the accounting sustainable growth rate (SGR) and the cash flow sustainable growth rate
(CFSGR), have found out the significance of cash flow sustainable growth rate over the accounting sustainable growth rate. They have defined the CFSGR as the rate at which a company can grow whilst still maintaining a target cash balance in the Balance Sheet. They have investigated the relationship between the accounting SGR and CFSGR and found that while the accounting SGR is not affected by non-cash components of working capital, nor by any changes in the non-cash components of working capital, the CFSGR is affected by these. Both the accounting SGR and CFSGR are influenced by the profitability of the company. The study identified that the accounting SGR is influenced by the growth in sales, but CFSGR is not. The authors have opined that a CFSGR is not a substitute for accounting SGR but a complement to it and a company, in its own best interest can pay attention to CFSGR also along with its accounting SGR as CFSGR has its own implications for the company's growth and cash position. The authors have investigated the relationship between the accounting SGR and the CFSGR, taking operating profit, cash cycle, and sales growth as variables. The effect of changes in these variables on accounting SGR, CFSGR, cash balance in the balance sheet, cash available from operating activities and debt-equity ratio, has also been examined. The study has revealed that if the company's accounting SGR is lower than the CFSGR, growth of the former will lead to a decrease in cash and the debt-equity ratio will remain constant. If the growth of CFSGR is higher than the accounting SGR, the cash balance will be kept constant, but it will lead to an increase in the debt-equity ratio. When the growth of CFSGR is lower than the accounting SGR, the cash balance will be constant but it will lead to a decrease in the debt-equity ratio. The study has emphasized that since the CFSGR is influenced by factors such as the structure of the Balance Sheet and profitability of the operations of the company and determination of CFSGR, and accounting SGR and their comparisons should be made on individual basis.
Achilleas Zapranis and Demetrios Ginoglou (2000)\textsuperscript{61}, through their study on 'Forecasting corporate failure with neural network approach: The Greek case', have stated that the recent developments in the field of non-parametric statistical analysis established neural networks as an efficient approach to identify the complicated relationships in multidimensional data sets, without making a priori assumption regarding the nature of these relationships. They have contrasted the neural networks approach with multivariate discriminant analysis in predicting corporate failure in Greece. They have found that neural networks outperform the linear approach, with in-sample average classification rate of 95%. The equivalent in-sample figure for multivariate discriminant analysis was 86.5% and the increased classification rates of neural models can be attributed to their improved ability to classify correctly the "problematic" firms. The linear model, used the accounting ratios namely, Fixed Assets / Total Assets, Net profit / Total Assets, Gross Profit / Total Assets, Gross Profit / Financial expenses, Total Debt / Total liabilities, Total Debt / Stockholders' Equity and (Current Assets - Short term Debt) / Total assets, as the discriminating variables. But the most important variables in the neural networks model appeared to be current assets / total assets, cash and cash equivalent / current assets and total debt / stock holders' equity.

Sahu (2000)\textsuperscript{62}, in his study, 'analysis of corporate profitability – a multivariate approach', has made an empirical study based on the secondary data from a sample of 100 non-financial non-government public limited companies, in Eastern India for a period of ten years from 1984-85 to 1993-94. He has chosen profitability ratios and interest coverage ratio for the analysis. Cross sectional spearman rank correlations of the profitability ratios for all the companies have been calculated and applied for selecting the ratios for analysis. He has arrived at a single index to measure the composite profitability of a firm and ranked the companies based on the overall score.
Mahammad Rafiqul Islam (2000), has made a study on 'profitability of fertilizer industry in Bangladesh", for a period from 1985-86 to 1994-95. Five out of seven fertilizer enterprises in Bangladesh under the control of Bangladesh Chemical Industries Corporation, have been taken for the study and he has examined the earning capacity of the selected enterprises. He has also identified the responsible factors which affect the earning power of such units. Ratio analysis has been used and he has found out that none of the selected unit's returns were consistent and all the units were plagued with declining profits. Higher cost of production, poor investment policy, defective capital structure, industrial unrest and frequent disruption of production process due to power cuts were found to be some of the reasons attributable for the uneven situation.

Gopal Krishna Swami (2000) through his article on 'A forecasting model for sustainable corporate growth' has brought to light the application of Robert C.Higgins' sustainable growth model and his Extended Model in corporate growth. He has discussed about the different classes of sustainable growth problems associated with rapid growth firms which have no access to equity, slow growth firms, multinational firms and rapid growth firms which have access to equity. He has also explained how sustainable growth model is useful for assessing a company's credit worthiness. The advantages and caveats of the sustainable growth model have also been discussed in detail in his article.

Desai (2000) has assessed the capital structure of Gujarat Steel Tubes Ltd., for 10 years from 1980-81 to 1990-91 and found out that the real value of the equity shares had been far below their book value and also inconsistent during the entire period of study. He has found out that the company's capital structure was imbalanced, and, over capitalised financial plans have continued for a long period of time, preventing the company from earning profits. In his study, though he has discussed about various models of prediction of sickness, he has
applied Altman's Z score model and has identified that from the year 1980-81, till the latest year 1990-91, Gujarat Steel Tubes Ltd., had been scoring less than the minimum cut off value of 2.675 as suggested by Altman. He has also applied Argenti's score system for a subjective evaluation of defects in Management and Accounting mistakes and symptoms. He has concluded by analysing the reasons for the sickness of the company.

Narasimhan and Balasubramanian (2000)66, in their study on 'Quality of earnings: an accounting model for analysing corporate performance', have introduced an accounting model for assessment of corporate performance. They have taken a sample of 296 companies which had positive networth and positive profit margin and assessment has been made for the year ending March, 2000. According to them if the return on networth is greater than the return required to compensate for business and finance risk, quality of earnings exists in that company, which should be due to efficient asset management, cost management and leverage management. The performance of a company is compared with that of the industry. Their study has revealed the fact that a company can maximise its shareholder's wealth by maximising the quality of its earnings which in turn is possible with an efficient cost, asset and leverage management.

George Gallinger (2000)67 has examined the framework of Financial Statement Analysis in five parts. The first part of his study has focused on 'Return-on-asset performance'. It has examined the profitability of Salton company. He has examined the components related to return on sales and asset management in depth. According to him, inefficient asset management will result in destroyed market value of the company and will probably cause financial distress problems which may even result in bankruptcy. He has also opined that if the weighted average cost of capital on a before-tax basis exceeds the return-
on-asset, the company would need to improve the performance through higher return on sales, increased asset turnover or both.

George Gallinger (2000) through the second part of his study, on ‘Financial Leverage and Return on Equity’, has examined the role of financial leverage in converting the return on asset ratios into return on equity ratios. The impact of financial leverage has been ascertained by multiplying the interest multiplier by the financial multiplier, called, 'joint multiplier'. In other words, he has determined the amount of EBIT left after the interest payment and the amount of assets supported by each dollar of equity. The joint impact of these two effects has been determined to decide whether financial leverage is favourable or not. If the result is greater than one, debt financing is considered to provide a favourable leverage and if the result is less than one, it means unfavourable leverage and if it is equal to one, it means neutral leverage. Thus, he has linked financial leverage and return on assets to derive the return on equity ratio.

In the third part of his study, George W. Gallinger (2000) has determined the tax effects on profitability and sustainable growth. According to him, after tax return-on-equity performance before considering any non-operating effects can be derived by multiplying the before tax-return-on equity ratio by the "after income tax multiplier". For assessing the sustainable growth rate, he has applied the model-Return on Equity Ratio X firm's retention rate. He has used two items, namely, annual growth rates of sales and assets to assess growth and secondly, annual growth rates of debt and equity to assess how management has financed the growth, that is either higher or lower than the sustainable growth rate. He has found in his study that as long as the sustainable growth rate is bracketed by actual growth rates for sales and assets, a firm could sustain its actual growth without encountering financial difficulties. If the sustainable rate is less than both the actual growth rates for sales and
assets, a firm, without and access to new capital, will face financial difficulties in future and when the capital suppliers dry up, the firm must slow its actual growth, increase its sustainable growth or a combination of both the approaches. If the sustainable growth exceeds both actual growth in sales and assets over two or three years consecutively, the firm is likely to lose its market for more sales, profits and cash flows and its market share to its competitors.

George W. Gallinger (2000), in the fourth part of his study, has proved that share value of a firm is dependent on cash flows within the company and not accounting earnings; and EPS is not the true indicator of earnings power. He has examined the cash flow from operating activities, financing activities and investing activities. He has converted the 'accrual accounting based net operating profit' to a 'cash based operating profit'. According to him, the quality of earnings of a firm is low if the difference between adjusted net income and cash profit is large. He has also analysed and proved that though the accounting gross profit margin is high, if it is not followed by an equal cash profit margin, the quality of earnings would suffer. The difference, according to him, would be due to higher investment in receivables and inventories which translate into lower cash receipts than that is indicated by the accrual accounting sales figure. He has established the fact that important differences exist between accrual and cash accounting approaches and if a firm wants to have a better quality of earnings and improve its ability to sustain growth, it should recognise these differences.

George W. Gallinger (2000) has made a study on 'Prediction of Financial Distress' as the fifth part of the framework for financial statement analysis. He has used Number Cruncher mode of Kaplan and Urwitz that predicts the bond rating of a company, Z-score model by Edward I Altman and Lambda model by Gary Emery to test the solvency of the
company in his study, Bond rating model is dependent on the firm's size, longterm debt to total assets ratio, net income to sales, variability in the net income as measured by its coefficient of variation, and interest coverage ratio. Altman's Z-score Bankruptcy prediction model has been based on EBIT/Total assets, Net working capital to total assets, Market value of Equity to book value of debt, retained earnings to total assets and sales to total assets. Applying this model, he has identified whether the firm chosen for the study was under 'grey' area or 'no threat' area.

To estimate the probability of the company to be out of cash within the next year, Lambda model has been applied which is a ratio between the expected cash resources and the variability of cash flows.

Ramcharan (2000)\textsuperscript{72}, in his study on "top-line growth, bottom-line results", has identified the role of velocity in the improvement of ROI and thereby good growth and bad growth. According to him, a firm can raise its ROI by increasing sales relative to assets or by reducing assets relative to sales. Both, velocity, and the source and quality of EPS growth will have a major impact on P/E ratios. He has concluded saying that EPS growth alone is not sufficient and it is the P/E ratio that indicates whether a firm creates profitable and capital-efficient growth.

Hrishikes Bhattacharya (2001)\textsuperscript{73} made a first attempt to capture the essence of 'natural business year' and translated it to operating cycle and disproved the ideas of S.K. Chakraborty. The net operating cycle calculated by S.K.Chakraborty for Union Carbide of India, of 103 days (158 days – 55 days) which is more or less equivalent to net working capital, cannot be equated with 'natural business year' of the company within which all the current items mature and this operating cycle contradicts his own conceptual frame work. Hrishikes Battacharya is of the opinion that if the company could manage to obtain credit
from its suppliers equal to or more than 158 days, which is sometimes possible in Indian conditions and, when a unit has become financially sick and is unable to pay the creditors, then the company would have zero or negative operating cycle which betrays the concept of operating cycle because in such cases, all the current items would either mature on 'zero' days or on 'negative' days. According to him, if we follow the logic 'natural business year', then, the true operating cycle of a business should be either the days of current assets or current liabilities, whichever is higher.

Satish Chandra Varshney (2001)\textsuperscript{74} has made a case study on 'Trade credit and company liquidity' with special reference to Steel Authority of India Ltd., and Tata Iron and Steel Co., to find out if more liquid companies give relatively more net trade credit in 'squeeze' years. The period covered has been 1985-86 to 1996-97 and the significant variables chosen are current assets, current liabilities, liquid assets, net working capital, net assets, cash and short-term investments, cost of goods sold, sales, debtors and stocks. Ratio analysis and multiple regression analysis have been employed. He has inferred a positive correlation of very high degree among the variables chosen. Liquidity has been taken as the dependent variable and inventory turnover, inventory holding period, debtors turnover and average collection period have been taken as independent variables and the relationship has been measured. The impact of average change in net trade credit and change in stock in relation to liquidity has also been measured and a significant linear relationship is found to be existent.

Ganesan (2001)\textsuperscript{75} has selected State Bank group (8 units) and 19 nationalised banks as sample to identify the determinants of profits and profitability. The empirical examination of profit function shows that interest cost, interest income, other income, deposits per branch, credit to total assets, proportion of priority sector advances and interest income loss are the
significant determinants of profits and profitability of Indian public sector banks. The study has also identified the fact that banking sector reforms and individual bank's policies towards directed investments and direct credit programmes have played a significant role in improving the profits and profitability of banking sector.

Debasish Sur (2001) in his study on "Liquidity management an overview of four companies in Indian power sector", has made a comparative analysis of liquidity management of 4 major companies in Indian power sector, covering a period from 1987-88 to 1996-97. The technique of ratio analysis, Motaal's comprehensive rank test, simple statistical techniques like measures of central tendency and Spearman's rank correlation analysis have been used for the analysis. The liquidity ratios like current ratio, quick ratio, current assets to total assets ratio, inventory turnover ratio and debtors turnover ratio have been used for comparison and suitable interpretations have been made. Motaal's comprehensive test is used to analyse the liquidity more precisely. To measure the closeness of association between liquidity and profitability of the companies, Spearman's rank correlation coefficients have been used. The study has identified that the liquid ratio, working capital turnover ratio and working capital to total assets have negatively influenced the profitability whereas the inventory turnover ratio has a positive impact on profitability.

Ralph Udegbunam (2001), in his analysis on bank performance, has conducted an empirical analysis of the determinants of performance differences among commercial banks in Nigeria in the early 1990s. Two dependent variables that are common measures of bank performance, vis., ROA and ROE, have been taken. Using a simple model of bank performance and a pooled time-series cross section data and OLS estimation method, two sets of regression have been run to estimate ROA and ROE. The results of two sets of regression have suggested that capital adequacy, management quality and credit risk are the key determinants of bank performance, irrespective of the performance indicator used. The
evidence has also suggested notable differences. While a strong negative effect of credit policy on ROE is evidenced, the same factor has exerted a weak effect on ROA. He has also identified that when asset growth, liquidity and financial distress are found to exert strong effect on ROA, they have played a less significant role in bank ROE.
References


