CHAPTER II

Review of Literature
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2.1 Introduction

Among all the problems of financial management, the problem of working capital management has probably been recognized as the most crucial one. It is because of the fact that working capital always helps a business concern to gain vitality and life strength. The progress of any business depends on the proper use of working capital. The position of working capital is considered as the index of the state of financial health of a particular firm. Studies on corporate finance generally focus on main decisions like capital structure, dividend and capital budgeting. It is obvious that working capital is neglected in finance literature, compared to long term financing decisions. Efficient management of working capital is an important component of the general strategy aiming at increasing the market value (Howorth and Westhead, 2003; Deloof, 2003; Afya and Nazir, 2007). Since working capital influences liquidity and profitability of a firm, it affects investment and financing decisions too.

Decisions related to working capital management have direct impact on liquidity and profitability. And hence, lack of understanding about its impact on profitability, lack of clarity about its determinants, lack of management ability to plan and control its components may lead to financial distress and bankruptcy of a company. A quest for a balance between liquidity and profitability requires a constant monitoring of the elements forming working capital and their management. Proper management of working capital leads to a material savings and ensures financial returns at the optimum level even on the minimum level of capital employed. Therefore, management of working capital is important to the health of businesses of all sizes.

Implementing an effective working capital management system is an excellent way for many companies to improve their earnings. Therefore, this managerial accounting strategy has become a fascinating field of research in the literature of finance. Many researchers have carried out studies on working capital management by focusing on how well the constituents of working capital are effectively managed for the benefits of a firm. The dimensions of research have remained wide covering various aspects of working capital. As far as units of study are concerned, mostly manufacturing enterprises have been extensively examined. Steel industry which is more vital for the development and growth of economy of a country is relegated a back seat.
To have a clear understanding of the previous research studies which are carried out by many researchers in various angles, it becomes very essential for a researcher to evaluate the previous studies undertaken to have an in-depth idea about what has already been done and how far the methodology is adopted to analyse and how interpretations are derived at. This will definitely help the researcher to find out the research gap that can be filled up in the research work to be carried on by the researcher.

In this chapter, it is proposed to review the existing literatures in the field of working capital management. Many researchers, both in India and abroad, have analysed the working capital management in different ways. A review of this analysis is important in order to decide a method of analysis that can be employed in the context of steel companies in India. For this purpose the relevant studies in foreign countries as well as studies in India are reviewed and presented in the following order.

i. Studies in the foreign countries

ii. Studies in India.

2.2 Studies in foreign countries.

Walker (1964) has examined the effect of the change in the level of working capital and the rate of return in nine industries for the year 1961 and found the relationship between the level of working capital and the rate of return to be negative.

Muhammad Rafiqual Islam (1996) examined the overall performance of working capital management of paper mills in Bangladesh covering a period of 11 years from 1983-84 to 1993-94. The empirical results relating to the practices of working capital management revealed that policies of working capital were formulated by directors. Monthly review was done to ensure effective working capital management. Regarding the size and structure of working capital, the analysis showed a negative working capital in the paper mills and mainly 48 per cent of total assets were in the form of current assets. Inventory was the main component (63 per cent) of working capital of the paper industry and there was an upward trend throughout the period of study. Receivables occupied the second position with 35 per cent share of current assets. Cash component in working capital occupied a low proportion of three per cent only. But the analysis revealed an increasing trend of cash balance. Liquidity analysis revealed the
existence of poor liquidity due to inefficient inventory management, poor collection of debtors as well as low cash and bank balances.

Beumont Smith (1997) has made an attempt to identify associations between traditional and alternative working capital measures and operating profit in industrial firms listed in the Johannesburg Stock Exchange, South Africa. The study covered a period of 10 years from 1984 to 1993. The required data had been collected from the data bank of the Bureau of Financial Analysis. The result of the analysis showed that the traditional working capital leverage measure displayed the greatest association with operating profit.

Cleverley, Stanko and Zeller (1997) have made an attempt to identify a concise set of critical financial ratios that describe hospitals’ major financial characteristics. The data had been collected from Center for Healthcare Industry Performance Studies, for the years 1989 through 1992. They concluded that in general, the ideal situation would be to have low debt and ample cash on hand to generate more profit.

Pandey and Parera (1997) provided an empirical evidence of working capital management policies and practices of the private sector manufacturing companies in Sri Lanka. The information and data for the study were gathered through questionnaires and interviews with chief financial officers of a sample of manufacturing companies listed on the Colombo Stock Exchange. They have found that most companies in Sri Lanka had informal working capital policy. Company size had an influence on the overall working capital policy (formal or informal) and approach (conservative, moderate or aggressive). Moreover, the methods of working capital planning and control had an influence on company profitability.

Hyun-Han Shin and Luc Soenen (1998) have carried out research on a large sample of listed American firms for the period from 1975 to 1994. They have stated that efficient working capital management is an important part of the overall corporate strategy to create shareholder value and profitability of firms. Results showed a strong negative relation between cash conversion cycle and corporate profitability.

Lyroudi and Lazaridis (2000) have examined the validity of cash conversion cycle as a liquidity indicator of the food industry and determined its relationship with profitability. The data were taken from the major companies in the food and beverage industry of Greece. The results
showed that cash conversion cycle was positively related to the return on assets and the net profit margin.

Nguyen Ninh Kieau (2000) has investigated the working capital management practices of small and medium Enterprises (SMEs) of Vietnam firms by conducting a survey. The survey revealed that eighty per cent SMEs often prepared and reviewed cash budgets on monthly basis. Cash surplus rather than cash shortage is a problem for these SMEs due to non-availability of properly developed money market for investing the cash surplus in money market instruments. However, this affected SMEs profitability and a trade-off between liquidity and profitability needed to be considered carefully. SMEs followed monthly review of receivables and bad debts regularly and kept bad debts at less than 10 per cent of sales which showed efficient receivables management. SMEs did not have sufficient knowledge for effective control of inventory.

William Muffee Visemith (2001) has made an attempt to determine the optimum size of working capital. Required data had been collected from Cameroon Development Corporation (CDC). The analysis revealed that Cameroon Development Corporation had acute working capital problems resulting in losses. These problems stemmed from poor working capital management approaches employed over the years.

Deloof (2003) has investigated the relation between working capital management and corporate profitability of Belgian firms during the years from 1992 to 1996. He used a sample of 1009 Belgian firms and data had been obtained from the database of National Bank of Belgium. The result showed that there was a negative relationship between cash conversion cycle and profitability of Belgian firms.

Rabiul Alam and Syed Zabid Hossian (2004) have made an attempt to examine the strengths and weaknesses of working capital management of Khulna Shipyard Ltd., (KSLE) in Bangladesh during 1987 to 1997. Necessary data had been collected from annual reports. The study revealed that KSL had no working capital policy. Accounting ratios indicated that KSL had negative working capital due to excess current liabilities and showed an increasing trend. Inventory and accounts receivables occupied 95 per cent of current assets which was the main reason for poor liquidity; and ineffective utilization of current assets was observed. KSL depended highly on short-term bank credit for financing working capital while the company allowed more trade credit than it obtained from others.
Filbeck and Krueger (2005) have highlighted the importance of efficient working capital management by analyzing the working capital management policies of thirty-two non-financial industries in the USA. According to their findings, significant differences existed among industries in working capital practices over time. Moreover, these working capital practices, themselves, changed significantly within industries over time.

Md. Sayaduzzaman (2006) analyzed working capital management of British American Tobacco Bangladesh Company Limited (BATBCL). The results of the study indicated that working capital management of BATBCL was highly effective. It had no problem in the management of inventory, debtors, cash balances, and current liabilities. The liquidity position of the company was also very much satisfactory due to good turnover of current assets, inventory, debtors, and cash balances. There was a good collection of receivables due to good credit and collection policy. Effective utilization of working capital had resulted in a satisfactory business growth of the company.

Lazaridis and Tryfonidis (2006) have undertaken a study to investigate the relationship between working capital management and firm's profitability of 131 companies listed in Athens Stock Exchange for the period from 2001-2004 covering four years. The required financial data had been collected from the ICAPS database. The analysis revealed that the operating profit was negatively correlated with variables like number of days of accounts receivables, number of days of accounts payable, and cash conversion cycle. The results were consistent with the view that the shorter the operating cycle, the larger will be the firm's profitability. Regression resulted revealed a strong significant negative relationship between cash conversion cycle and gross operating profit.

Khan Safi Ullah, Shah Amir and Hijazi Syed (2006) have conducted a research based on listed Pakistani companies. The study analyzed the effect of working capital on the profitability of firms. For this research, they took a sample size of 30 firms. Their results showed a significant negative relationship between firm's gross profit and the average age of inventories, accounts payable, and cash conversion cycle.

Amir Shah and Aisha Sana (2006) have made an attempt to investigate the relationship between working capital and the profitability of listed companies of oil and gas sector of Pakistan for the period from 2001 to 2005 by using working capital ratios, correlation and
regression analysis. Results showed a negative relationship between gross profit margin and the number of days’ of inventory, number of days’ of accounts receivable, cash conversion cycle and sales growth, whereas there was a positive relationship between gross profit margin and the number of days’ of accounts payables. Regression analysis showed that working capital management affected profitability of the firm.

Kesseven Padachi (2006) examined the impact of working capital management on profitability, the trend in working capital as well as the causes for the differences among industries in Mauritian Small Manufacturing firms. The sample included 58 firms from five industrial sub sectors – Food and beverage, leather garments, paper, pre-fabricated metal products and wooden furniture. The study covered a period of 6 years from 1997-98 to 2002-03. Necessary data had been collected from the Directory of Small Medium Industrial Development Organization (SMIDO). The analysis showed that a comparison of inventory composition of industries over the years showed only slight improvement for the food and beverages industry as well as for the paper products industry. There was a consistent improvement of trade debtors in all industries except in food and beverages industry. Excepting paper products industry, the other four industries had a greater reliance on short-term funds. In terms of liquidity, small scale industries had lesser liquid assets to meet their current obligations. Liquid assets constituted major portion of total assets which reduced the fixed assets and thus reduced the profit.

Teruel and Solano (2006) examined the effects of working capital management on the profitability of a sample of small and medium sized (SME) Spanish firms covering a period of seven years from 1996 to 2002. They had obtained data from the AMADEUS database. The result revealed that there was a significant negative relationship between profitability and the number of days’ of accounts receivables and the days’ of inventory.

Abdul Raheman and Mohamed Nasr (2007) have made an attempt to examine the effect of different variables of working capital management on the net operating profitability of 94 Pakistani firms listed in Karachi Stock Exchange for a period of 6 years from 1999-2004. The results showed that there was a significant negative relationship between net operating profitability and the amount of working capital.

Afza and Nazir (2007) have investigated the relationship between the aggressive / conservative working capital policies for seventeen industrial groups and a large sample of 263
public limited companies listed in Karachi Stock Exchange for the period from 1998 to 2003. The study found significant differences among their working capital investment and financing policies across different industries. Moreover, rank order correlation confirmed that these significant differences are remarkably stable over the period of the study. Ordinary Least Square Regression Analysis showed a negative relationship between profitability measures of firms and the degree of aggressiveness of working capital investment and financing policies. This study further investigated the impact of the degree of aggressiveness of working capital policies on market measures of profitability, i.e. market rate of return, and Tobin’s q as well as the risk of firms and found negative relationship between these two.

**Chowdhury and Amin (2007)** have critically evaluated working capital management practices in select firms of pharmaceutical industry enlisted in Dhaka Stock Exchange (DSE), Bangladesh. A sample of eight out of twenty-five firms listed in DSE was selected following stratified random sampling method. The study covered a period of four years from 2000 to 2003. The result revealed that the sample firms were efficient in managing cash, accounts receivables and payables. Further, maintaining large volume of inventory did not reflect inefficient management. Liquidity and activity ratios indicated efficient management of liquidity. Firms increased their return on asset by following more aggressive working capital policy or simply by keeping low current assets and simultaneously following a conservative approach in financing the current assets. Further, increase in inventory days increased return on assets. Discriminant analysis showed that firms had to maintain a certain level of cash balance and manage the inventory level effectively lest they might fail in achieving overall efficiency in the performance.

**Vedavinayagam Ganesan (2007)** has made an attempt to analyse the working capital efficiency and its impact on profitability and liquidity on a sample of 349 telecommunication equipment companies in USA. The required data had been obtained from annual financial statements covering a period of seven years from 2001 to 2007. The study revealed that the working capital management efficiency was negatively associated with profitability which is statistically significant. It was observed that there was no significant statistical evidence that the firms managed the components of working capital equally. Regression analysis showed that a day’s sales outstanding did not have much impact on the return on assets. It was found that the working capital management efficiency in telecommunication industry was not satisfactory.
Kessevan Padachi, Narasimham, Durarry and Howorth (2008) have made an attempt to investigate the structural changes of working capital in 58 small manufacturing companies from 5 groups of industries – Food and Beverages (FB), Leather and Garments (LG), Paper Products and Printing (PPP), Prefabricated Metal Products (PMP) and Wood Furniture (WF). The data for analysis had been collected from annual reports of the sample units. The study covered a period of six years from 1998 to 2003. The result showed that, above 80 per cent of investments in current assets were in the form of inventory and receivables which adversely affected the cash flow and lead to disproportionate increase in current asset investment in relation to sales resulting in sharp decline in working capital turnover. Further, the overall liquidity of the sample firms in the later years was better than that in earlier years of the study and there was no close association among the liquidity of various components of working capital. It was also observed from the study that there was a negative relationship between liquidity and profitability.

The study of Olufemi Falope.I and Olubanjo T.Ajilore (2009) aimed to provide empirical evidence about the effects of working capital management on profitability for a sample of Nigerian quoted non-financial firms for the period from 1996 to 2005. By using descriptive analysis, the study found a significant negative relationship between net operating profitability and the average collection period, inventory turnover in days, average payment period and the cash conversion cycle for a sample of fifty firms listed in the Nigerian Stock Exchange. Furthermore, the study found no significant variation in the effects of working capital management between large and small firms.

Umara Noreen, Sabeen Khurram Khan and Qaisar Abbas (2009) made a study towards finding out international working capital management practices of 150 multi-national firms in Pakistan. The information and data for the study were gathered through questionnaires. One way Anova and Chi-square test were used for analysing the data. The study found that firms had shifted their concerns towards low cost and efficient methods related to international working capital management decisions and there was no significant difference in the usage of international cash management operation with respect to different sectors / industries.

measure of working capital management. Statistical tools used in this study are Spearman’s Correlation and Regression analysis. The results indicated a significant negative relationship between cash conversion cycle, liquidity and profitability of firms.

**Adina Elena Damuletiu (2010)** analysed the efficiency of working capital management of 20 companies from Alba County. Pearson’s correlation analysis was used for examining the relationship between working capital management efficiency and profitability. Annual financial statements of 20 companies were analysed. And the study concluded that there was a weak negative linear correlation between working capital management indicators and profitability rates.

**Mustafa Afeef (2011)** examined the potential effect of working capital management on the profit performance of small and medium sized firms in Pakistan, by having a sample of 40 Pakistani small and medium enterprises listed in Karachi Stock Exchange. The results of the study depicted that there was significant relationship between the profitability variable and the payable deferral period and cash conversion cycle of the firms.

**Hashem Valipour, Javad Moradi and Fatemeh Dehghan Farsi (2012)** examined the effect of company characteristics, i.e. profitability, operating cash flow, company size, sales growth, current ratio, quick ratio and debt ratio, on the working capital management by taking a sample of 83 firms listed in Tehran Stock Exchange for a period of 10 years from 2001 to 2010. The result of the study showed that the relationship between profitability and cash conversion cycle was negative and significant. The negative relationship indicated the efficiency in working capital management and when profitability increased cash flow cycle was shorter and there was no significant relationship between medium and small levels. Smaller the size of the company, the longer will be cash conversion cycle.

**Zahra Mousavi and Azam Jari (2012)** evaluated the relationship between the working capital management and corporate performance of 56 companies listed in Tehran Stock Exchange. They used factors such as return on total assets, return on owner’s equity and market value to book value ratio for evaluating corporate performance and net liquidity balance as criterion for evaluating of working capital management. Regression and correlation analysis have been used for the analysis. Research results showed that there is a positive relationship between the working capital management (Net Liquid Balance) and corporate performance.
Zeeshan Khan, Syed Tehseen Jawaid, Imtiaz Arif and Muhammad Nadeem Khan (2012) investigated the effects of working capital management on firm’s profitability in Pakistan by using average annual cross sectional data from 2004 to 2009. Four different sectors namely textile, chemical, engineering and sugar and allied are considered. Inventory turnover, average payment period, current ratio, firm size, average collection period and debit ratio are used. Regression results indicated that the average collection period has insignificant effects on profitability except in sugar and allied sector. At the same time debit ratio also has insignificant effect on profitability except in engineering sector. Furthermore average payment period has insignificant effect only in sugar and allied sector. Inventory turnover, current ratio and firm size has significant effects on profitability in all sectors.

2.3 Studies in India

Chakrabarthy (1973) applied operating cycle concept to know the impact of working capital and pointed out that return on capital employed would be adversely affected by excessive working capital as well as too little working capital.

Chakrabarthy (1974) applied operating cycle concept to four companies over the period 1965-1969. The study revealed ineffective management of current assets. He emphasized the need for determination of future cash requirements on the basis of estimated sales and costs by using operating cycle concept.

Misra (1975) studied the problems of working capital with special reference to six selected public sector undertakings in India over the period from 1960-61 to 1967-68. The result showed that inventory was a major element of working capital. Further, overstocking of inventory, very low receivables turnover, more cash than warranted by operational requirements and total mismanagement of working capital in public sector undertakings were found.

Gangadhar (1981) examined the statistical trends in working capital position among medium and large as well as small public and private companies in Indian corporate sectors during 1961-76. Relevant data had been taken from RBI bulletins. Statistical trend has been fit for current assets to total net assets ratio, current assets to gross fixed assets and current assets to net sales. The results revealed that the value of current assets was more in private limited
companies (75.68 and 73.26 times) than the value of current assets of (56.84 and 67.04 times) public limited companies. The amount of change in current assets was found to be positive and higher in the case of public limited companies (0.71 and 0.83 times) than that in the case of medium and large (0.27 times) as well as small companies (0.38 times) of private limited companies. There had been an acceleration in the trend of current assets of medium and large public limited companies (0.19) unlike deceleration in the trend (-0.29) in case of their private limited counterparts. A minor acceleration in trend (0.04) was found in small private limited companies as opposed to a deceleration (-0.01) in small public limited companies. The trend in the amount of working capital used for a given amount of fixed assets was relatively more in medium and large (191.08) as well as in small (177.33) private limited companies than in their counter parts in public limited companies (75.28, 123.80). The amount of change in use of working capital was higher and positive (0.90 and 0.83) in medium and large as well as small public limited companies than their counter parts of private limited companies (-3.48 and 0.38). There was acceleration in the change (0.17) in the use of current assets to gross fixed assets.

Panda (1981) examined the management of inventory in a paper mill. He has found that though the relationship between the inventory and working capital indicated a positive relationship, yet the percentage of inventory in working capital exhibited a declining trend. Working capital position was significantly affected by this declining trend.

Venkatachalam and Dakshina Murthy (1986) examined the working capital trends in medium and large public limited companies in India over a decade from 1973-74 to 1982-83. Required data had been collected from the monthly bulletins of Reserve Bank of India. The study revealed that current assets showed a declining trend. Inventories constituted major portion of current assets. The composition of different current assets did not show much variation during the decade. The liquidity position of the large and medium public limited companies was not satisfactory during the period of study.

Kamta Prasad Singh, Anil Kumar Sinha and Subash Chandra Singh (1986) examined different aspects of working capital management in fertilizer industry in India during the period from 1978-79 to 1982-83. Sample units included those from public sector as well as from joint sector. The study revealed that loss incurred by the public sector units was due to the poor utilization of current assets. Apart from this, overstocking of inventory, excess investment
in receivables coupled with poor collection and very low cash resources in relation to operational requirements were also responsible for incurring losses. For financing working capital, long-term funds were employed due to insufficient internal accruals.

Yadav (1986) conducted a study to identify factors that influence effective management of working capital. Selecting a sample of 78 companies, consisting of 39 sick units and 39 healthy units, he developed a model using Multiple Discriminant Analysis to differentiate units with effective working capital management from units with ineffective management of working capital. In his model he included three variables which he found out to determine the managerial efficiency of working capital. They are cash flow to total tangible assets, net sales to total tangible assets and defensive assets to total operating expenditure. The results revealed that 94.87 per cent of the companies were correctly classified by the discriminant function.

Sarker and Saha (1987) have examined the working capital management of Cement Corporation of India Ltd. The data had been collected from annual reports covering a period of 10 years from 1973-74 to 1982-83. They found an increase in investment in current assets, fixed assets as well as net working capital. Inventory control was not satisfactory whereas debtors' collection was very prompt. The maximum investment in current asset was in the form of loans and advances. Further, the analysis revealed that for financing working capital needs, current liabilities and equity/long-term loans were widely used.

Subir Nath Sarkar (1987) has made an attempt to study the different aspects liquidity management through a case study of The Durgapur Project Ltd., a public sector enterprise of the Government of West Bengal. Despite recurring losses, the liquidity position of the company was not at peril. Another reason for the unimpaired short-term liquidity position of the company was the fact that debt-equity ratio was always on the high side. This showed that short-term credits (current liabilities) in relation to long-term debts in different years appeared to be extremely low. The resultant effect was that the firm was required to meet high amount of debt-service charges year after year which was one of the reasons for the recurring losses. The company assumed a non-risk position in terms of its liquidity almost deliberately at the cost of its profitability. There was no proper trade-off between risk and profitability, which is a must for any firm in connection with its liquidity management.
Mishra and Kan (1990) made an attempt to make a detailed case analysis to highlight the policies and practices of working capital management pursued by Electronic Corporation of India Ltd (ECIL) for a period of three years from 1983-84 to 1985-96. It was evident from the analysis that during the period of study ECIL had more than 80 per cent investment in current assets which was not an ideal situation. Current ratio also showed an increasing trend. This had been one of the reasons for the low return in ECIL. Raw material constituted about 65 to 70 per cent of the inventory. Outstanding dues were for more than two years, showing poor collection policy of ECIL.

Jagdish Prakash and Sanjay Kumar Srivastava (1990) have examined the size and components of working capital in the U.P. State Textile Corporation. The study was confined to a period of six years from 1978-79 to 1983-84. A declining trend in working capital was found. However, the amounts of inventories and cash balances had been increasing in accordance with increase in the quantum of sales and production. For working capital requirements, cash credits and over-draft limits had been obtained from various banks.

Panda and Panda (1990) have examined current asset management in 12 State Public Sector Undertakings of Orissa and compared it with Central Public Sector undertakings at all India level covering a period from 1974-75 to 1984-85. Working capital trend was examined by fitting a non-linear trend equation for the ratios of current assets to total net assets, current assets to gross fixed assets and current assets to net sales. For analysis, the State Public Sector undertakings were further classified into service and manufacturing sectors. The analysis revealed that, there was an accelerated trend in the State Public Sector units of Orissa in comparison with Central Public Sector units. Further, it was found that within the State Public Sector undertakings, the manufacturing sector showed an accelerated trend in current assets to total net assets and current assets to gross fixed assets, while the service sector showed an accelerated trend in current assets to net sales only.

Bhagawati Prasad and Eresi (1990) made an attempt to study the management of working capital in Small Scale Industries (SSI) of the state of Karnataka. Both primary and secondary data had been collected for a period of three years from 1986-87 to 1988-89. The study revealed that the liquidity position was not satisfactory. More than 50 per cent of total...
assets were in the form of current assets. Inventory and receivables constituted major portion of current assets due to inefficient control of inventory and debt collection policies.

**Rao and Rao (1991)** carried out a study to probe into the effectiveness of the various techniques in evaluating working capital efficiency by selecting Karnataka Public Sector Enterprises as the study unit. The results were mixed. Investment in working capital was considerable which was observed from the high ratio of current asset to total asset. But the same was not revealed in the current ratio and quick ratio. Thus, the utility of liquidity ratios portraying the efficiency of working capital turned out to be limited. Operating cycle concept too could not make much headway in breaking the impasse as revealed in the analysis that working capital requirements were shown to be much less and yielded negative operating cycle period. Further, simple regression model was powerful enough to identify and highlight the ineffective planning and control of working capital. Bhattacharya model was proved to be a welcome exercise in judging the efficiency of working capital management.

**Chinta Rao (1993)** undertook a study to evaluate the efficiency of working capital management in select State Enterprises of Karnataka. The study revealed that excess amount of working capital was maintained due to high investment in inventories. Further, it was observed that poor collection policy, more variations in holding cash balances, ineffective control of cash inflows and outflows and short-term sources like bank credit and trade credit were used for financing working capital.

**Chakravarthy and De (1994)** analyzed working capital trend in the Eastern Coalfields Limited (ECL). The study was confined to seven years, from 1979-80 to 1985-86. They had found unsatisfactory short-term financial position. Major part of the long-term funds had been used to finance the current liabilities to meet the requirement of current obligations which decreased the profitability position of the ECL. It was evident from inventory to sales ratio that there was inefficient management of inventory. ECL used minimum cash balance of four to five per cent as evidenced by cash to current assets ratio which was a good sign for the company. Working capital to sales ratio of ECL showed that it had maintained inadequate working capital in the early period of study but had gradually improved it to a positive working capital.

**Vijayakumar, Siva Subramanian and Venkatachalam (1994)** have carried out a case study of National Sugar Mills, Madurai. For analysis they collected data from annual reports
covering a period six years from 1984-85 to 1989-90. Their study relates to working capital analysis, financing of working capital and its impact on profitability. The analysis revealed that the company followed a moderate approach towards working capital investment. Among the various elements of working capital, inventory and receivables were the dominant contributory causes for the galloping increase in working capital in some years. Major discrepancies between the actual and the estimated working capital were noticed in all the years except in 1984-85 and 1987-88. Liquidity position was found satisfactory during the period of study. Both positive and negative impact of working capital on profitability had been found.

Vijayakumar and Venkatachalam (1995) have also examined the impact of working capital on profitability in sugar industry in Tamil Nadu by selecting a sample of six units in co-operative sectors and seven units in private sector over a period from 1982-83 to 1991-92. Working capital had been found to have an influence over profitability. Further, they observed that demand for working capital and its components were a function of both sales and carrying costs.

Verma and Garg (1995) attempted to identify the emerging guidelines in managing working capital in an industry on the basis of their investigation in iron and steel industry in India. The study included public sector as well as private sector units. To evaluate the management’s performance in the area of working capital in the selected units, both primary and secondary data were used. It had been observed that inventory and receivables jointly account for 95 per cent of total current assets. The study revealed that the firms in the industry had used excessive cash-credit offered by banks.

Indrasena Reddy and Someswar Rao (1996) made an attempt to examine the working capital management practices in Hindustan Cables Limited (HCL) - a public sector enterprise, by collecting required data from the annual reports for a period of five years from 1989-90 to 1993-94. They had found the liquidity position of HCL to be satisfactory. Turnover ratios revealed that the company’s ability in managing the current assets for generation of sales had not improved much. Proportion of debtors to current assets showed a slight decline whereas the proportion of inventory to current assets had increased. More than fifty per cent of current assets were in the form of debtors showing liberal credit policy and poor collection practice of the company.
Chabi Majumdar (1996) has made an attempt to know the pattern of financing of the corporate working capital in India. The study covered a period of 10 years from 1981 to 1990. The study included 20 companies - 10 from private sector and 10 from public sector. The analysis revealed that private sector companies had adopted aggressive policy of financing working capital whereas public sector companies had adopted a conservative policy.

Vijayakumar and Venkatachalam (1996) examined the size, composition, trend, source of finance and impact of working capital on profitability of Tamil Nadu Sugar Corporation covering a period of nine years from 1985-86 to 1993-94. The company was found to follow a moderate approach for investment in working capital. Increase in working capital was due to inventory and loans and advances. Profitability was adversely affected due to excess inventories.

Indrasena Reddy (1997) attempted to evaluate the efficiency in the liquidity management of Bharat Heavy Electricals Ltd (BHEL), a Central Public Sector Enterprise. An eight year period from 1987-88 to 1994-95 was selected and data required for the study had been obtained from the annual reports of BHEL. The study found an increasing trend in the liquidity position. It had positive net working capital during the study period. Further, the liquidity ratio showed satisfactory liquidity management in BHEL.

Yadav, Gambhir and Jain (1998) have made an attempt to analyse the financial health of private corporate manufacturing companies in India. A sample of 150 units were selected and data had been obtained from Bombay Stock Exchange Official Directory for a period of five years from 1990 to 1994. The study revealed that, trends in current ratio had shown consistency over the period 1990-2004 but there was not sufficient cushion in the current assets. Nearly 40 per cent of the current assets were in the form of inventories. A healthy trend was found in working capital turnover. Further, a decreasing trend was found in debt-equity ratio.

Vijayakumar (1998) undertook a comparative study on working capital performances of Sugar Industry by selecting a sample of five units in co-operative sector and another five units in the private sector in Tamil Nadu by collecting required data from the annual reports, covering a 10 year period from 1982-83 to 1991-92. It was found that there was a sound liquidity position in all the sample units. Effective utilization of working capital was found in Private Sector Sugar companies. Growth in current assets, more than the growth in sales, was observed in both types of sugar companies indicating poor working capital management. Adequate working capital was
observed only in a few units. The comparison of good and poor risk units as per the current ratio and as per discriminant score showed that misclassification had been noticed in most of the years of study. The analysis of working capital trend revealed differences from the standards of the industry. Liquidity position was better in private sector than in co-operative sector but this was not satisfactory. Correlation and regression analysis revealed both positive as well as negative impact of working capital on profitability.

Amit Mallick and Debasish Sur (1998) have carried out a study to identify the influence of working capital on the profitability of AFT Industries Ltd., by collecting required data from Bombay Stock Exchange Official Directory for a period of 10 years from 1986-87 to 1995-96. For measuring profitability, Return on Investment (ROI) was used. It was found that, there was a positive as well as negative association of working capital measures with return on investment. Current ratio, acid test ratio and current asset to sales ratio showed significant negative association with return on investment. Current assets to total assets ratio and working capital turnover ratio showed a significant positive association with return on investment. Only increase in current assets to total assets ratio, debtors turnover ratio, cash turnover ratio and miscellaneous current assets turnover ratio, had the ability of increasing profitability significantly while increase in inventory turnover ratio reduced profitability. Further, working capital leverage was always less than unity indicating that a decrease in working capital increased profitability but at a lesser proportion.

Hyderabad (1999) has made an attempt to study working capital leverage and its impact on liquidity and profitability risk in three Indian private sector firms. The results showed that a decrease in working capital resulted in a large ‘gain’ than the ‘loss’ that resulted from an increase in working capital.

Hyderabad (1999) attempted to evaluate the working capital investment and financing policies of 756 non-government and non-financial large public limited companies in India based on the data published in Reserve Bank of India Bulletins for a three year period from 1994-95 to 1996-97. A majority of companies had a higher investment in current assets than in fixed assets and followed conservative policy of working capital. Only a small segment followed aggressive policy. Further, the study revealed, that a large majority of companies had resorted to the practice of excessive use of short-term funds.
Mallick and Debasish Sur (1999) undertook a study to assess the working capital management in Hindustan Lever Ltd., covering a period of 10 years from 1987 to 1996 by collecting required data from Bombay Stock Exchange Official Directory. Their study revealed that the general performance of working capital was very much encouraging. Though the company followed conservative working capital policy, profitability was not adversely affected due to the efficient utilization of working capital funds. There was an improvement in the usage of long term funds as a source of finance for working capital requirement. There was no significant variation of working capital between actual and estimated figures which is an indicator of better efficiency in managing working capital. Another remarkable feature of the study is that there was a positive relationship between liquidity and profitability which signified a favourable influence of liquidity on the profitability of the company which was against the general idea that increase in liquidity decreases profitability.

Mohamad Aamir Khan (1999) examined the working capital management practices, working capital financing as well as management of components of working capital in automobile industry in India covering a five year period from 1992-93 to 1996-97. Required data had been collected through questionnaire and from CAPITALINE data base. The analysis revealed that automobile companies were not engaging professional assistance, and working capital requirement was decided on past trends. For financing working capital, they relied more on bank borrowings and did not generate funds from internal sources. Further, the component analysis showed that, the investment in inventory was reducing due to improvement in managing inventory. A strict collection policy was followed. Ineffective cash planning was found. Loans and advances occupied major part of current assets which is non-performing. 

Sarma and Chary (1999) examined the trends in current assets investment, financing patterns of working capital as well as the effectiveness of working capital management in Vasir Sultan Tobacco and Company Ltd. (VST), Hyderabad, covering a period of eight years from 1989 to 1996 by collecting required data from annual reports. The study revealed disproportionate increase in current assets’ investment in relation to sales, resulting in sharp decline in working capital turnover. Changes in inventory investment did not reflect any consistent policy. In addition, credit policy of VST was highly volatile with increasing risk of bad debts. Fund Flow Analysis showed that, VST could not make use of the benefits of trading on equity for long-term financing and hedging approach for short-term financing.
Khan (1999) investigated the efficiency of working capital management of automobile industry particularly with reference to heavy commercial segment. Telco and Ashok Leyland were chosen as units of study. The result revealed that inefficient working capital practices were prevailing in these units. Further, it was found that accumulation of inventory was the prime cause for poor efficiency of working capital management which ultimately had an impact of lowering the profitability in these units.

Rajeswari (2000) examined liquidity management of Tamil Nadu Cement Corporation Limited. The investigation covered a period of five years from 1993-94 to 1997-98. The result revealed that the liquidity position was not stable and the liquidity management of the company was not satisfactory.

Chundawat and Shurveer Singh Bhanawat (2000) examined the working capital management practices that had been followed by IDBI-assisted tube and tyre companies. Five year data of post liberalization period (1993-94 to 1997-98) had been collected from the books published by IDBI. Industrial parameters had been collected from CMIE publication. It was found from the analysis that short-term liquidity position was not satisfactory. More than 93 per cent of the current assets were in the form of inventories and trade receivables. Liberal credit policy was followed. Srivastava and Yadav model showed that the overall working capital management was effective.

Debasish Sur (2001) has made a comparative analysis regarding the liquidity management in electricity generation and distribution industry for a period of 10 years from 1987-88 to 1996-97. The companies selected for the study are Ahmedabad Electricity Co. Ltd., (AEC Ltd.), Bombay Sub-urban Electric Supply Ltd. (BSES Ltd.), Calcutta Electric Supply Corporation (CESC Ltd.). The data had been collected from Bombay Stock Exchange Official Directory. The results indicated that the liquidity positions of the companies were not satisfactory and the capacities of the companies to meet their quick liabilities were not at all satisfactory. Variation of investment in current assets was maximum for BSES Ltd. and minimum for CESC Ltd. during the period of study. The efficiency of the inventory management of all the four companies under study was quite encouraging. It was found that there was an inefficient debt management and slackness of collection efforts in all the four companies. However AEC Ltd. witnessed an improvement in the efficiency on its credit management.
Motaal’s test showed that the liquidity situation differed over the years as well as across the companies. Spearman’s rank correlation revealed that in BSES Ltd. and in CESC Ltd, a significant positive association existed between working capital and return on capital employed implying favourable impact of the liquidity on their profitability. However, in AEC Ltd., and in CESC Ltd., though the degree of association was positive, the degree of influence of liquidity on their profitability was very low and insignificant.

Joginder Singh Dulta (2001) attempted to study the management of current assets and current liabilities of Horticulture Industry in Himachal Pradesh. The study revealed that net working capital position had worsened due to more increase in current liabilities than increase in current-assets, but the short-term liquidity position of the corporation had been found satisfactory. Further, it was observed that inventory and debtors accounted for two-third of the total current assets. It was evident from the analysis that HPMC failed to achieve a trade-off between liquidity and profitability, due to inefficient management of current assets. Correlation analysis revealed no association between growth of sales and working capital.

Manoj Anand (2001) conducted a study to identify some quantitative working capital benchmarks in order to help corporate India to manage its working capital more efficiently. Four hundred and sixty companies were selected in respect of which data were available for three years from 1997-98 to 1999-2000. The analysis revealed that companies with high cash conversion efficiency adopted aggressive financing strategy of having negative days of working capital.

Sivaram Prasad (2001) examined the working capital management in paper industry by selecting a sample of 21 units consisting of large, medium and small units. The study covered a 10 year period from 1983-84 to 1992-93. The study revealed that investment in current assets was high. Despite this fact, working capital was inadequate in all the units during the study period. Inefficient utilization of working capital and negative rate of return were found. Further, it was evident that debt servicing capacity was very poor due to shortage of cash. A close relationship between profitability and efficiency of working capital existed. Component wise analysis of current assets showed inefficient utilization of inventory, poor collection procedures, as well as poor planning of cash balances. As far as financing of working capital, it was met from internal
sources. Further, to overcome negative working capital, paper mills were getting funds through advances from dealers and term lending institutions as well as public deposits.

**Harinatha Reddy (2001)** studied the working capital management of small scale industries in the Cuddapah District of Andhra Pradesh. His study covered a six year period from 1989-90 to 1994-95, with a sample of 30 SSI units from diverse industrial groups such as plastic, mineral, engineering, aluminium, chemical and miscellaneous. The study revealed that, by and large, the liquidity on technical lines sounded unwell, and these units were unable to meet their obligations when they were due. Further, it was observed that there was excessive investment in debtors and inventories and inefficient management of working capital in SSI units. In addition, it was found that in some units the rate of return was satisfactory whereas in others it was not so.

**Yadav, Jain and Rastogi (2001)** examined working capital management of Bharat Petroleum Corporation Limited (BPCL), Hindustan Petroleum Corporation Limited (HPCL) and Indian Oil Corporation Ltd (IOCL). A time span of ten years from 1987-88 to 1990-97 was chosen for the study. This study revealed that liquidity in BPCL was low which needed attention, where as IOCL and HPCL exhibited satisfactory liquidity position. Very high working capital turnover was seen in BPCL which was not desirable while HPCL and IOCL showed a satisfactory working capital turnover. Utilization of current assets was more effective in HPCL than in BPCL and IOCL. Inventory management was satisfactory in BPCL and HPCL while IOCL showed inefficient inventory utilization. Debtors’ collection was very efficient in HPCL but it was very poor in BPCL and IOCL. HPCL’s performance in the area of working capital management was efficient whereas it was not satisfactory in BPCL as also in IOCL.

**Satyanarayanchary and Venkateshwarlu (2003)** made an attempt to analyse the working capital management of Sri Venkata Narsimha Solvent Oils Limited for a period of six years from 1996-97 to 2001-02. The data for the study had been collected from the annual reports. Results of the study revealed that, the average investment in current assets in relation to total assets was 53 per cent, showing conservative working capital policy followed by the company. Among the components of working capital, inventory (71 per cent) and sundry debtors (21 per cent) were the dominating contributory causes for the galloping increase in working capital. The increasing trend of long-term funds being used for financing working capital showed that the company had not utilized its long-term funds more effectively by investing them in fixed
assets. It was found that the company had either excess or shortage of working capital and major variations between actual and estimated working capital were noticed in all the years except in 2000-2001 and 2001-02. Liquidity position of the company was satisfactory throughout the period of study. Further, a positive association was found between working capital and profitability.

Khatick and Pradeep Kumar Singh (2003) evaluated the efficiency in the liquidity management of Eicher Ltd., during the period from 1994-95 to 1998-99 by collecting the required data from published annual reports. Their study revealed that liquidity position was not satisfactory due to increase in collection period of debtors which had a negative impact on liquidity position whereas management of inventory was satisfactory which directly improved liquidity position.

Sudarsana Reddy, Sivarami Reddy and Mohan Reddy (2003) investigated the performance of the debtor’s management of the paper industry in Andhra Pradesh. They had chosen six mills as sample units and data had been collected from the annual reports of these units for a period of ten years from 1989-90 to 1998-99. The analysis revealed that the sample mills adopted liberal credit policy which had a favourable effect on sales. The size of trade debtors showed a declining trend. But, the collection period of debtors’ slowly increases indicating the slackness in collection efforts of the mills. ‘Ageing analyses’ of trade debtors depicted an overall rising trend.

Parasuraman (2004) undertook a study to understand the relationship between trade credit and profitability in pharmaceutical companies in India. Further, in order to check for differences in policy of the top companies, the top 10 companies were taken up separately and analysed. Secondary data relating to two years had been taken from Prowess database. The result revealed that the top pharmaceutical companies strategize on their working capital policy to relax the credit policy to achieve greater sales and greater profit.

Reddy and Patkar (2004) examined the working capital management of factoring companies. SBI and Canbank Factor were selected as samples. The study covered a period of ten years from 1991-92 to 2000-01. Required data had been collected from the annual reports. The study revealed that sundry debtors and trade creditors were the major components in current asset and current liabilities, respectively. Liquidity position of Canbank Factor was better than
To generate a sale of one rupee, lesser amount of working capital was required in SBI Factor than in Canbank Factor. Further, it was found that collection of debtors was better in Canbank Factor than SBI Factor. Rank correlation revealed a negative association between liquidity and profitability in both the firms but correlation was stronger in Canbank Factor than in SBI Factor.

Raghunatha Reddy and Kameswari (2004) have undertaken a study on the working capital management practices in Cipla Ltd., covering a period of six years from 1997 to 2002 by collecting necessary data from ‘prowess data’ base. Study revealed that, liquidity ratio and working capital turnover ratio were in conformity with the Indian Pharmaceutical Industry Performance Standards implying, that the working capital appeared to be efficiently utilized for generating funds from sales.

Mukhopadhyay (2004) carried out a study to analyse the performance of working capital management of an engineering company, covering a period of ten years from 1993-94 to 2002-03 by collecting necessary data from published annual reports as well as from primary data obtained through personal interview and discussions with the concerned executives. Their analysis revealed that the company had been suffering from acute crisis of working capital. Short-term liquidity and solvency of the firm were in an alarming position owing to inefficient use of Current assets.

Narware and Vivek Sharma (2004) carried out a study to analyse the efficiency in the liquidity management of Hindustan Petroleum Corporation Limited covering a period of six years from 1995-96 to 2000-01 by collecting necessary data from annual reports of the company. The study revealed that the short-term liquidity was not at all satisfactory. Liquid assets were insufficient to meet current obligations and major part of funds was locked up in inventories causing poor liquidity.

Singh (2004) examined the working capital management of Lupin Lab Ltd. for the period from 1995-96 to 2001-02. Necessary data had been collected from the published annual reports of the company. The study revealed that the short-term liquidity was very much satisfactory though there was higher investment in current assets. Satisfactory liquidity position had been achieved due to the fact of effective utilization of inventory, as well as reducing the operating
cycle period. There seemed to be a fluctuation in the liquidity position over the period of study which might have been a point for investigation by the Lupin Lab Ltd.

**Ghosh and Maji (2004)** undertook a study to assess the efficiency of working capital management of Indian cement companies during the period from 1992-93 to 2001-2002 covering a period of 10 years. It was observed from the analysis that cement industry had not performed well. Industrial average for efficiency index was greater than one in six years out of the 10 years’ study period. Though some of the sample firms had been successful in improving efficiency during these years, there existed a very high degree of inconsistency in improving efficiency. In the matter of achieving the targeted level of efficiency only two firms were most successful.

**Khatik and P.K. Singh (2004)** analysed the working capital management of Indian Farmers Fertilizer Cooperative Ltd., (IFFCO) during the period from 1990-91 to 2001-02. The analysis showed that, the overall position of the working capital was satisfactory but there was a need for improvement in inventory since a major portion of current assets was in the form of inventory. However, the remaining components of current assets were efficiently utilized.

**Patel (2005)** examined the working capital of Colour-Chem Limited for the period from 1981 to 1998 by collecting required data from Bombay Stock Exchange Official Directory. The analysis revealed that the company’s liquidity position was satisfactory and the company efficiently utilized its current assets and the revenue generation was progressive. Altman’s model suggested that the company would never become sick in subsequent years, if it ran in the same trend that prevailed then.

**Amir Jafar and Debasish Sur (2006)** assessed the efficiency of working capital management in Indian Public Enterprises through a case study of National Thermal Power Corporation (NTPC). The study covered a period of 20 years from 1983-84 to 2002-03 which was bifurcated into pre-liberalization and post-liberalization. Required data had been collected from the annual reports of NTPC. Value Added to Capital Employed (VACE) was taken as the total performance indicator instead of the conventional measures of earnings based ratios, for measuring the influence of working capital management on the over all performance of NTPC. The study revealed that, NTPC had improved its liquidity position significantly in post-liberalization period when compared to pre-liberalization period. The efficiency in working capital management of the company on the whole indicated a considerable improvement during the post-
liberalization period. Inventory management had been found to be better in pre-liberalization period. The contribution made by the inventory management of the company towards improvements of its total performance (VACE) was remarkable in post-liberalization era. Another notable outcome of this study was that the regression of VACE on current ratio, age of inventory, debtors to sales ratio was highly significant only during post-liberalization period which also justified the efficiency in working capital management of the company during the period.

**Bardia (2006)** carried out a comparative study to investigate the comparative liquidity trends in SAIL and TISCO. Data had been culled from the annual reports of the two companies for the period from 1997-98 to 2003-04. Analysis revealed a lack of steadiness in liquidity trends of SAIL. Relationship between working capital and sales was poor and the Cash Conversion Cycle was slow. SAIL had used relatively larger liquid funds to attain sales in comparison to TISCO. Liquidity management of TISCO was far better than that of SAIL.

**Rajendran and Ramesh (2006)** analysed the efficiency in the liquidity management of Tamil Nadu Tourism Development Corporation Ltd. (TTDC) spanning over a period of ten years from 1994-95 to 2003-04. Data had been taken from the published annual reports. It was found that liquidity management of TTDC was either not satisfactory or inefficient.

**Ramesh Bhat and Nishant Jain (2006)** undertook a study to investigate the financial performance of private sector hospitals in India. Data for this study had been obtained from “First source” data base. The study covered a period of six years from 1999 to 2004. It was found that the liquidity position was satisfactory.

**Sushma Vishnani and Bupesh Kumar Shah (2006)** examined the inter-relationship between liquidity and profitability in 23 listed companies of the Indian consumer electronics industry. Required data had been taken from CMIE database covering a period of 11 years from 1994-95 to 2004-05. Nine companies depicted insignificant negative association between liquidity and profitability while the remaining companies showed positive association. Further, correlation analysis of pooled data of all the companies revealed a weak positive relationship between liquidity and profitability. Simple regression analysis revealed inverse relationship in ten companies out of which in four companies it was significantly related. Positive association was found in remaining companies but was significant only in three companies. The result of
regression analysis for pooled data indicated a positive association between liquidity and profitability.

**Azhagaiah and Gejalakshmi (2007)** assessed working capital efficiency of Indian Textile Companies during the period from 1995-96 to 2005-2006. A sample of 30 textile companies listed in National Stock Exchange had been taken. Required data had been collected from CMIE ‘Prowess’ package. The analysis revealed that textile companies had strong liquidity position. Performance and utilization of current assets were satisfactory.

**Nandkishore Sharma (2007)** has examined the current assets in Indian Textile Industry. A sample of fifty textile companies was selected. Data had been collected for a period of five years from 2002 to 2006. The result showed that differences between the actual and trend values of current assets as well as current liabilities were significant in all the textile companies. A fluctuating trend in cash flow was observed. A low liquidity position was prevailing due to fluctuating trend of inventory as well as receivables. Further, the study revealed that for financing current assets, the textile companies resorted to both long-term and short-term funds.

**Das (2007)** examined the various methods of financing working capital in the Associated Cement Companies Limited (ACC). The data had been collected from the annual reports covering 13 years from 1992-93 to 2004-05. The result showed that ACC used more short-term funds for financing working capital and adopted aggressive policy with mixed pattern of various sources. Miscellaneous current liabilities were found to be the major source of financing. Further internal source alone was preferred by the company.

**Kannadhasan (2007)** examined the working capital management of Titan – a Public Limited Company manufacturing watches, clocks and Jewellery. The study was based on secondary data and covered a period of seven years from 1998-99 to 2004-05. On an average, investment in current assets was sixty-eight per cent indicating greater emphasis to working capital. The company depended on internal funds to meet working capital needs. The company’s inventory management was remarkably satisfactory though investment in stock was forty seven per cent. Debtor’s collection period signified liberal credit policy of the company. It was also found that liquidity and profitability were inversely related.

**Amalendu Bhuria (2007)** undertook a study on the various aspects of liquidity management of Sponge Iron India Ltd (SIIL). This study was based on the secondary data
collected from the annual reports for the period from 1991-92 to 2002-03. The result revealed that excess liquidity was observed when compared to the industrial average and more variation in liquidity position was found which was not desirable for the company.

**Debasish Sur, Chakraborthy and Das (2007)** have analysed the operational efficiency of asset management of Colgate-Palmolive (India) Ltd. during the period from 1980-81 to 2003-04. Required data had been collected from the annual reports of the company and ‘Capitaline’ corporate database. The period of study was divided into two – 1980-81 to 1991-92 as pre-liberalization and from 1992-93 to 2003-04 as post-liberalization. The result showed that, Inventory management influences profitability significantly and has a negative impact during the post-liberalization era. Poor efficiency of receivable management was observed in both the periods which had affected the profitability. Further, analysis of profitability ratios confirmed the deterioration in the overall efficiency of the concern.

**Arindam Ghosh (2007)** made a study with reference to various facets of working capital management in textile industry, pharmaceutical industry, cement industry and fertilizer industry. He has examined the efficiency of working capital by using the efficiency index, developed by Bhattachariya. The study revealed that many firms were inefficient in managing working capital. He has also assessed the impact of working capital on profitability of National Fertilizer Ltd. (NFL). The result showed both positive and negative impacts.

**Das (2008)** examined the different aspects of liquidity management through a case study of Ranbaxy Laboratories Ltd. – a pharmaceutical company. He collected secondary data from the annual reports of the company for nine years from 1996-97 to 2004-05. His study revealed that the short-term liquidity position of the company was satisfactory though there was a sixty per cent investment of funds in current assets. This was mainly due to the fact of efficient management of working capital, reduction in age of inventories, and average debt collection period. Sundry debtors constituted nearly forty per cent of total current assets indicating improvement in credit policy. Motaal’s test of liquidity showed that the year 1997-98 registered most sound liquidity position whereas it had fluctuated in the remaining years which warranted investigation into the financial affairs of the company. The rank correlation analysis showed a positive association between liquidity and profitability.
**Sudipta Ghosh (2008)** has made an attempt to analyse the liquidity management of TISCO Ltd., for the period from 1996-97 to 2000-01. Necessary data had been collected from the published annual reports of the company. The result revealed that the liquidity position was not satisfactory. Approximately one-third of the total assets were in the form of current assets. Inventory was effectively managed to avoid stock-out cost, which has a bearing on profit. Further, it was observed that efforts were required to tighten the debt collection policy of the company. Liquidity had low as well as significant positive association with profitability.

**Pradeep Singh (2008)** has made an attempt to investigate inventory and its impact on working capital in Indian Farmers Fertilizer Cooperative Limited (IFFCO) and National Fertilizers Limited (NFL), covering a period of 12 years from 1994-95 to 2005-06. The required data had been collected from the published annual reports of the two companies. The study revealed that the overall position of the working capital of IFFCO and NFL was satisfactory. However, inventory was not efficiently utilized and maintained by IFFCO during the study period. In both the companies, a major portion of the current assets were in the form of inventory, whereas other current assets were properly utilized and maintained.

The study of **Chakraborty.P.K and Uday Chand Das (2009)** have examined the efficiency of the working capital management in managing debtors and inventories through turnover ratios and short term liquidity through current ratio and liquid ratio and also studied the impact of all factors on the profitability of Aventis Pharma Ltd. over a period of 10 years from 1991-1992 to 2000-2001. ‘T’ test and ‘F’ test have been applied to test the significance of correlation co-efficient and regression co-efficient. The study revealed that the company was in a better position in inventory turnover ratio and fluctuation trend in debtor’s turnover ratio. The short term liquidity position of the company was not satisfactory.

**Khatik and Rashmi Jain (2009)** made a study on working capital analysis of Madhya Pradesh State Electricity Board for a period of 10 years from 1995-96 to 2004-05. For assessing the behaviour of liquidity position, ratios were computed. The study revealed that the positions of current ratio, quick ratio, acid test ratio and inventory turnover ratio were not satisfactory. The result of working capital position of MPSEB was negative during the period.
Kushwah, Garima Mathur and Shivani Bali (2009) conducted a study to evaluate working capital management and liquidity position of few major cement companies (ACC, Grasim, Ambuja, Prism and Ultra-tech) for a period of two years from 2007-08 to 2008-09. Liquidity ratios and Activity ratios were used for data analysis. The study revealed that ACC was ranked first for managing their working capital in the most efficient manner followed by Ambuja. Grasim, Ultra-tech and Prism ranked third, fourth and the last.

Sandeep Goel (2009) has carried out a study to analyse the working capital management of Reliance Industries Ltd. for two years on a comparative basis, viz. 2004-05 to 2005-06. The data collected has been analysed by comparative statement analysis and ratio analysis. The study revealed that working capital of the firm had registered a decreasing trend during the period of study. Short term liabilities and liquidity had also exhibited decreasing trend.

Velmathi.N and Ganesan.R (2009) made an empirical study on liquidity Management of Neyveli Lignite Corporation Limited for a period of nine years from 1998-99 to 2006-07. For assessing the liquidity position, ratio analysis, Mean, Standard Deviation and Coefficient of Variance were used. The study found that current ratio, quick ratio, cash ratio and ratio of inventory to working capital were good. The NLC Limited was maintaining current assets in optimum level. Therefore liquidity position of the NLC Limited was very good.

Amalendu Bhunia (2010) undertook a research on the liquidity trend analysis of selected private sector steel companies in India. The study was carried out for a period of nine years from 1997-98 to 2005-06 by selecting two private sector steel companies, i.e. Tata Steel Ltd. and Lloyds Steel Industries Ltd. Accounting techniques such as ratio analysis and statistical techniques like test of significance trend indices and time series analysis have been used to examine and evaluate the management of short-term liquidity trends of the private sector companies.

Jasmine Kaur (2010) analysed the trends in working capital management of selected companies of Indian Tyre industry for a period of seven years from 2000-01 to 2006-07. The collected data had been analysed with the help of cash flow analysis, common size analysis and
trend analysis. The results revealed that there was a standoff between liquidity and profitability. The selected companies had been achieving a trade off between risk and return. Efficient management of working capital and its components had a direct effect on the profitability levels of tyre industry.

**Karmajert Singh and Firew Chekol Asress (2010)** determined the working capital solvency level and its effect on profitability of 250 Indian manufacturing firms listed in the database of 'Prowess' for a period of ten years from 1999-2000 to 2008-09. Natural logarithm of total current liabilities and relative solvency ratio had been taken as dependent variables; independent variables taken were sales, return on sales, current ratio and cash conversion cycles. Regression analysis and Student t-test had been used to analyse the data. The regression result indicated that the sales and cash conversion cycle had highly positive significant effect to determine required current liabilities. Whereas return on assets and current ratio had highly negative significant effect to determine required current liabilities. The result of negative association between profitability and liquidity was statistically insignificant. The Student t-test result revealed that firms with adequate working capital achieved better performance than those firms, which had lesser working capital in relation to their operational sizes.

**Niranjan Mandal, Dutta Smriti Mahavidyalaya and Burdwan Suvarun Goswami (2010)** analysed the impact of working capital management on liquidity, profitability and non-insurable risk of Oil and Natural Gas Commission, India over a period of nine years from 1998-99 to 2006-07. Correlation, Multiple Regression, t-test, f-test and Durbin and Watson test had been applied to test the relationship and significance of the study. The result showed that the overall financial health of an enterprise is not only depending on the profitability of the concern but also is depending on the liquidity position of the firm. Moreover, the risk dimension of liquidity cannot be ignored in the measurement of overall performance of the firm.

**Prakash Chawla, Sandhya Harkawat and Ilas Khairnar (2010)** have studied the effect of working capital management on profitability of the firms. In this research, they had selected a sample of three firms from Petrochemical industry for a period of six years from 2004 to 2009. They have studied the effect of different variables of working capital management including the average collection period, inventory period, inventory turnover in days, average payment period, cash conversion cycle and current ratio on the gross operating profitability of the firms. Pearson’s Correlation, Linear Regression and t-test had been used for the analysis. The
results showed that there was a strong negative relationship between variables of the working capital management and profitability of the firms. It meant that as the cash conversion cycle increases profitability of the firm decreases; and management can create a positive value for the shareholders by reducing the cash conversion cycle to a possible minimum level. The results found that there was a significant negative relationship between liquidity and profitability. They also found that there was a negative relationship between net working capital of the firm and its profitability.

Amalendu Bhunia and Islam Uddin Khan (2011) have examined the liquidity management efficiency of Indian steel companies. Association between the liquidity management and profitability of 230 Indian private sector steel companies were analysed over a period from 2002 to 2010. Linear regression model in multiple correlation and regression analysis were applied. A descriptive statistics disclosed that liquidity and solvency position were very satisfactory and relatively efficient liquidity management was found. Multiple regression tests confirmed a lower degree of association between liquidity management and profitability.

Anusha Agarwal (2011) conducted a comprehensive study on Maruti Suzuki India Limited for assessing its working capital management policy. Various components of working capital like working capital turnover ratio, current ratio, return on capital employed have been calculated and the relationship between liquidity, profitability and risk in MSIL was worked out. The results of the study show that there is a negative relationship between liquidity and profitability and there exists a positive relationship between profitability and risk.

Chandrabai, T. and Venkata Janardhan Rao (2011) have examined the working capital management in ACC limited over a period of 6 years from 2004-05 to 2009-10. The study is based on secondary data, which is collected from the annual reports of the company and various studies. The collected data has been tabulated, analyzed and interpreted with the help of different financial ratios and statistical tool like correlation. The results indicated that the working capital management of ACC limited is satisfactory. The company has no problem in the management of inventory, debtors, cash balances and current liabilities.

Debasish Sur and Kaushik Chakraborty (2011) evaluated the relationship of the working capital management with profitability of ten well-known multi-national private sector companies of Indian Pharmaceutical industry. The data for the study had been collected from the ‘Capitaline’ corporate database for a period of twelve years from 1996-97 to 2007-08. For the
analysis of data, ratio analysis, correlation analysis, multiple regression, partial regression and t-test had been applied. The joint influence of the liquidity management and credit management on corporate profitability was not statistically significant. The result of the analysis of multiple determinations made it clear that only 15.50% and 45.80% of the total variation in the Profit Before Interest and Tax and Return on Capital Employed respectively were accounted for by the joint variation in the efficiency of liquidity management, inventory management and credit management.

Hamendra Kumar Porwal and Swati Agarwal (2011) studied the relationship between working capital management and profitability of 75 selected electronics and engineering companies listed in Bombay Stock Exchange and National Stock Exchange for a period of six years from 2005 to 2010 in India. The study found a significant negative relationship between size of the firms and profitability of the firms. It was also found that there was a negative correlation between the length of the cash conversion cycle and profitability. The results also indicated significant relationship between cash conversion cycle and size, and working capital management was improved by decreasing days of working capital.

Kartik Chandra Nandi (2011) in his study had made an attempt to measure the sensitivity of Return on Investment to changes in the level of working capital. Working capital leverage has been computed and analyzed. His study highlighted that the study of working capital leverage of the company under study registered a fluctuating trend during the study period. The values of working capital leverage in all the 10 years period from 1999-2000 to 2008-09 were always less than one. It signifies that in all these years the increase in the rate of return on investments is less than the proportion to decrease in the level of working capital investment i.e. the level of investment in current assets.

Khatik. S.K. and Titto Varghese (2011) have examined the significance of profitability by selecting a few important parameters such as Gross Profit, Net Profit (EBIT), Return on Investment (ROI), Return On Capital Employed (ROCE) and Earnings per share. The result of the analysis shows that GP Ratio was found to be sound whereas the NP Ratio was not satisfactory. The rate of increase of Net profit ratio to Turnover ratio was less during the last five
years which indicates lesser return on investment and the increase in production cost had a major impact on the Net Profit Ratio of the company.

Nitin J Untwal (2011) made an attempt on the working capital management of Indian Tools Ltd. The data required for the study had been collected from the annual reports and published accounts of the company, and the primary data obtained through personal interview with mangers of the corporate. The period of the study covered seven years from 2000-01 to 2006-2007. Working capital analysis and ratio analysis had been used for the analysis of data. The results of the study revealed that the liquidity position of the company was not satisfactory. Inventory management of Indian Tools Ltd. was satisfactory and sickness of collection effects and inefficient credit policy was followed by the company during the study period.

P.K.Jain, Shveta Singh and Sunny Kapoor (2011) have made a case study to analyse the working capital decisions and practices followed by Reliance Industries Limited for the period from 2001 to 2009 by studying its liquidity ratios and efficiency ratios related to the utilization of current assets and the evaluation of its cash flows. Based on their study, they opine that maintenance of adequate liquidity without impairing the profitability is the foremost requirement of sound and efficient working capital management. It was observed from Current and Acid Test Ratios that the liquidity position appears to be highly satisfactory, implying its ability to meet its short-term maturing obligations in time.

Sharma & Satish Kumar (2011) empirically analysed the effect of working capital management on profitability of two hundred and sixty three non-financial Indian firms listed in the Bombay Stock Exchange for a period of nine years from 2000 to 2008. In order to analyse the effects of working capital, return on capital employed had been used as a dependent variable. Number of days of accounts receivable, account payable and inventory had used as the independent variables and had been considered for measuring the working capital. The results revealed that the working capital management and profitability were positively correlated in Indian companies. The study also revealed that the inventory in number of days and number of days’ accounts payable were negatively correlated with a firm’s profitability, whereas number of
days' accounts receivables and cash conversion period exhibited a positive relationship with corporate profitability.

Shishir Pandey and Vikas Kumar Jaiswal (2011) made an attempt on the working capital components and impact of working capital management on profitability of NALCO. The study was based on secondary data collected from the annual reports of NALCO for a period of thirteen years from 1995-96 to 2007-08. Ratio analysis, percentage method, co-efficient of correlation and multiple regressions had been used to analyse the data. The current assets of NALCO had witnessed many fluctuations over the years. The study also showed that the contribution of long-term source to working capital was below 46 percent in all the study period. Regression results showed that the different working capital ratios had statistically insignificant impact on the return on capital employed of NALCO.

Suvarun Goswami and Aniruddha Sarkar (2011) have conducted an analysis of financial performance of Tata Steel to measure and analyse the operating risk, financial risk and total risk by way of computing the degree of various leverages of Tata Steel for the accounting period from 2000-01 to 2009-2010. For assessing the degree of association between the various liquidity ratio with the return on capital employed and various leverage ratios with Return on Equity Pearson’s Simple Correlation co-efficient has been applied and Students ‘t’ has been used for the purpose of testing the results obtained. The study revealed the fact that since the company had high operating and financial leverages, the company was in a very risky position during the first three years of the study period when compared to the entire study period.

Amalendu Bhunia and Amit Das (2012) examined the relationship between the working capital management and profitability of Indian private sector small-medium steel companies for a period of 8 years from 2003-04 to 2010-11. The sample was based on the financial statements of 100 small-medium Indian private sector steel companies. Regression and multiple correlations have been used in the analysis. The study showed a small relationship between working capital cycle and profitability. Multiple regression tests confirmed a lower degree of association between the working capital management and profitability.

Chandra and Selvaraj (2012) have analysed the working capital management in thirty eight select Indian Steel Companies from 2001-02 to 2009-10 by comparing select small, medium and large steel companies with the help of various ratios. To measure the effective
utilization of working capital operating cycle and cash conversion cycle were used. To measure the determinants of cash conversion cycle, the Kiesehwick model had been used. The study concluded that the size of the companies played a vital role in determining the efficiency of the working capital management.

**Pasupathi (2012)** studied the management of working capital in selected seventeen major units in the automobile industry (five in commercial vehicles sector, three in passenger cars and multi utility vehicles sector and nine in two and three wheelers sector) in India for a period of 15 years from 1992-93 to 2006-07. Discriminant analysis had been employed to examine the adequacy of working capital based on the size of working capital in terms of monthly operational requirements and sales requirements. The construction of discriminant function suggested that the size of the net working capital in terms of monthly operational requirements appeared to be stronger than the sales requirements in all the years.

### 2.3 Conclusion

Different authors have approached the study of working capital management in different ways. In many studies it is inferred that inadequate working capital would hamper the smooth day-to-day operations and excessive working capital is undesirable as it ultimately leads to increased cost of funds and profit reduction. Inefficient management of working capital has been identified as one of the important variables causing industrial sickness. Many researchers have analysed working capital efficiency using ratios, liquidity ranking, discriminant analysis and Bhattacharya’s model of efficiency analysis. Also there are many studies focusing on how well the constituents of working capital are efficiently managed.

Related studies on working capital management covering various aspects concerning working capital management like assessing the working capital structure and composition, utilization, financial liquidity position, working capital efficiency, working capital policies, impact of working capital on profitability etc have been reviewed.

The methodology followed for this present study is portrayed in next chapter.
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