CHAPTER II
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2.1 SUMMARY OF VARIOUS STUDIES

With the industrialization, the importance of the finance has increased and working capital management emerged as one of the vital area in the financial management. Research is not complete unless the previous references are not taken into consideration and studied. The previous studies help in planning structure of the present study and take into account area, if any, left out in previous studies, and helps in identifying the problems, the size, the scope and development of present study structure. In this Chapter, an attempt is made to present in a very precise manner the summary of the studies carried out by the previous researchers. The study is further arranged into four parts *viz* Working Capital general, Inventory, Receivables and Cash & Bank. An attempt is also made to arrange the same in chronological order within each group to understand the development over a period.

Bose S.K.[1] "Management of Working Capital", studied the two Cable manufacturing companies, and discussed the concept of working capital and found that the working capital needs depends on certain elements like volume of investment in fixed assets, volume of projected sales, rate of turnover of current assets and credit terms of purchases.

Venugopalan B.[2] in the study of "Working Capital Management and Control" discussed Two Hypothetical Companies. For the period of two years, 1970 and 1971 explain the significance of working capital management. According to him, the needs of working capital can be ascertained by three methods *viz* Traditional method, Engineering technique and Operational analysis. There are two integrated factors in operating cycle i.e. Time cycle and Physical Targets. Time cycle includes each components of working capital On the other hand Physical targets include management's definition of policies, plan, budgets *etc.* According to him, the comprehensive test of comparative liquidity is working capital to current assets, Inventories to current assets, Liquid resources to current assets. Ranking method helps in arriving at optimum degree of liquidity by help of efficiency tests

Banarjee B.[3] "The Management of Working Capital Derivation- a case study" observed that only current ratio is not sufficient to judge the financing activities but required to be compared with sales. The working capital output ratio may be calculated for each component of working capital i.e. stock, debtors, cash and creditors. Further stock may be raw material, work-in-progress, finished goods. Other important aspects indicated by author are turnover ratio, the credit and collection policy by average debtors to net and credit sales, aging of debtors, cash holding from past experiences, and creditors turnover. However the creditor turnover ratio is not significant as decrease in the accounts payable may be off set by increase in overdraft and vice-versa.

Bhattacharya K.K.[4] In the study of "Working Capital Management and Inflation" defined the concept of gross and net working capital. Negative concept is also used when current liabilities are in excess of current assets. Internal sources like retained earnings and depreciation and external sources like bank credit, creditors and public deposit are used for financing working capital. Certain cost control measures suggested are: substitution of raw material without affecting quality, monitoring cost under inflation, sales, collection and discount policy, proper care for slow moving and, obsolete stocks by senior management, forming guidelines to convert such blocked fund into current working capital, scheduling of payments to creditors etc.

Mishra N [5] In the study of "Problems of Working Capital Management during Inflation", discussed the crucial facets of working capital like amount of working capital, composition of current assets and liabilities and ways of financing it. Working capital is needed more with increase in operations and overstatement of profits leads to the distribution of dividends out of capital and tax payment on capital leads to increase in working capital requirements and fund gets exhausted. The internal and external sources are not freely available or are available with some restrictions. Again a trade off between risk and profitability is required to be maintained. Some measures are required to be taken by financial manager for price changes, controlling costs, managing inventories, controlling new investments, improving turnover, managing credit, creditors and collection. The study concluded that the whole organization is required to take effective measures to control the demand of funds and scarce resources.

Mehta Bharat J.[6] In the study "Working Capital Management under Inflationary Conditions", observes that the additional working capital is required due to inflation and the gap of such additional working capital can be financed by alternative long term sources like loans from financial institutions, floating of debentures, accepting public deposit, issue of equity shares by operational results. The profits can be estimated to meet interest charges, dividend to shareholders and plough back of profit for financing additional working capital. Some other measures of cost control and reduction like reducing cash operating cycle, rationalizing the inventory stocks by proper planning of purchases, production and selling and using depreciation funds to finance the gaps are suggested in the study.

Chowdhuri C.D.[7] in the study of "Managing Working Capital" observes that in the industry dealing with long gestation products the ideal current ratio of 2:1 is not observed but 3:1 is observed. Trading companies having quick turnover do not face the cash shortages.

Yadav R.A. [8] in the study of "Working Capital Management a Parametric Approach" examined 39 sick and 39 non- sick manufacturing companies. Financial and statistical tools are used and a Discriminant Model is developed i.e.

$Y= V_1+V_2+V_3+V_4$

Where: V_1 = Cash flow from operations/ Total Tangible Assets

V_2 = Current Assets/ Current Liabilities

V_3 = Net Sales/ Total Tangible Assets

V_4 = Defensive Assets/ Total Operating Expenditure

According to him three variables are to be given weightage in appraising the effectiveness of working capital management. They are (i) Cash flow to total tangible assets, (ii) Net sales to total tangible assets: and (iii) Defensive assets to total operating expenditures.

According to him above variables are to be incorporated with traditional ratio of current assets to current liabilities.

Sastry V.L .N.[9] in the study of "Management of Working Capital" expressed working capital in specific number of month turnover and represents revenue nature on debit side and various types of income and sales on credit side. Cost reduction is possible if working capital management is efficient.

Basu S.N.[10] In the study of "Working Capital Management in Tyre Companies" carried out the study for the period from 1987-88 to 1989-90 based on the annual reports and various publications of Automotive Tyre Manufacturers Association (ATMA) He analyzed the various aspect of working capital and its impact on profitability. and concluded that the main emphasis is on success of short-term solvency and profitability of the company. To have higher profitability the companies may have to sacrifice solvency and maintain a relatively low level of current assets

Banerjee Debasis and Hazra Manashkumar [11] "carried out the study on "Working Capital Management in The Grasim India Ltd.", for the period of 1985-86 to 1989-90. They observed that the company adopted middle approach for working capital financing which was neither aggressive nor conservative They suggested careful application of funds for increase in trade investments for long-term financial health, efficient trading activities to refrain from unusual and risky practice of using long-term funds for working capital.

Das P.K[12] carried out the study of "Working Capital Management in the Public Sector Undertakings in India – a case study", for National Jute Manufacturers Corporation Ltd. (NJMC) Govt. U/T for the period from 1981-82 to 1990-91. The findings were:

- Major part of current assets is invested in inventory.

- WC/SALES ratio observed negative might retard the future progress.
- Credit management is not effective.
- Quick assets were not sufficient to meet current maturing obligations and large part of cash was invested in inventory.

The suggestion was to give appropriate attention to reduce lock up of funds in the current assets.

Das Siddharth G.[13] carried out an analysis of "Working Capital Turnover in Pharmaceutical Companies" for 15 Large Public Ltd. Companies for the period from 1981 to 1990. They found that selected firms were doing very well in terms of efficient use of working capital funds, higher turnover and greater efficiency.

Verma H.L. and Garg M.C.[14] carried out the study of "Emerging Guidelines for Working Capital" discussed the case study of Iron and Steel Industry, with an objective of evaluating and analyzing the performance of management with regards to working capital, and its various components, and compare with public and private sectors. The period of study was eight years for three Companies *viz* Steel Authority of India (SAIL), Indian Iron and Steel Companies (IISCO) and Tata Iron and Steel Companies (TISCO). The findings of the study are, the current assets constitutes large portion to total assets, utilization of working capital was better in terms of number of days in TISCO, liquidity position was at the top in IISCO, a trade-off between liquidity and profitability was achieved in TISCO, low in IISCO and poor in SAIL, huge investment of funds in inventory and receivables, financing is done from internal and external sources, bank borrowings are excess as compared to Tandon committee norms.

Joshi Vijay Prakash [15] carried out the study of "Working Capital Management under Inflation" on certain capital intensive industries like Cement, Chemical and Engineering with an object of examining the efficient management of each component of working capital for the period of 1976-77 to 1985-86 based on the data collected through questionnaire and Annual Survey of Industries 1984-85. The summary and conclusions are:

- The production of cement decreased in the year 1979-80 and 1982 and always lesser than targeted. The reasons identified are strikes, inefficient working capital management and inflation. The same position is of Engineering Industry and in Chemical industry production increased during inflation except Organic Chemicals during 1982 to 1986.
- The inflation affected working capital requirements and in turn to profitability.
- Over investment in inventory results in excess working capital.
- The Cement industry is having greater liquidity.
- Control over debtors was inefficient and ineffective.

The Suggestions under the study are the trade-off between liquidity and profitability during inflation, efficient co-ordination between different departments of the industry, effective information system and control on debtors and effective collection system to avoid losses, due weightage to sources of finance with an object of profitability, use of cash flow and fund flow to evaluate and plan future, proper management of all components of current assets.

Vijaykumar A and Dr. Venkatachalam A.[16] carried out the study for "Working Capital and Profitability An Empirical Analysis" in the State of Tamil Nadu based on 13 Sugar Companies for the period from 1982-83 to 1991-92. The tools used are ratio analysis, correlation and regression, to study the association of profitability with working capital ratios and influence of working capital on profitability. For the study the linear multiple regression model was used. They concluded that the liquid ratio, inventory, receivables and cash turnover ratio influence the profitability of the selected sugar companies.

Datta Sukamal [17] carried out the study of "Working Capital Management through Financial Statements", for 13 Paper Industries of West Bengal for a period from 1983-84 to 1985-86 based on an annual reports and accounts personally collected and the financial statement used is fund flow and ratio analysis and concluded that overall financial position of 40% firms is precarious and suggested to keep constant watch over working capital position to avoid shortages of it.

Rao Nchhina and Rao K.V.[18] in the study entitled "Working Capital Management-A Perception of Chief Executives" of selected manufacturing Public Sector Enterprises of the State of Karnataka observed that

- Trade off between profitability and liquidity, was desired by all the executives.
- Working capital is of great importance and other factors like technology, economic and business influences the need for working capital.
- Inventory and receivables were not managed efficiently and
- The debt collection, pile of goods and uncertain cash flows are major working capital problems of state public enterprises.

Dr. Reddy P. Indrasena and Rao K. Someshwar[19] carried out the study of "Working capital management – a case study" of the Hindustan Cables Ltd. (HCL), for the period from 1989-90 to 1993-94 and concluded that the inventory management was systematic, debtors to current assets ratio was not satisfactory, short term finance was used for purchase of fixed assets leading to decrease in working capital, working capital ratio shows sound liquidity position and short term solvency, the advantage of efficient management of inventory was off set by increasing share of debtors to total assets and there should be improvement in working capital management by effective utilization and control on current assets.

Vijaykumar A and Dr. Venkatachalam A[20] in the case study of "Responsiveness of Working Capital Management – a case study, of Tamil Nadu Sugar Corporation", for a period of 1985-86 to 1993-94, examined the various aspects of components of current assets, financing trends, and impact of working capital on profitablity. They concluded that, the investment in working capital is on moderate approach. For galloping increase in working capital, inventory and loans & advances are major contributor. Long-term funds are to be used for investment in fixed assets. Excess working capital in all the years. Liquidity position was sound as current ratio and liquidity ratio remained same. Regression model proves that excess of current assets adversely affects the profitability.

Subramanyan Uma [21] carried out the study entitled "Working Capital Analysis of State Road Transport Undertakings in Tamilnadu", when the Govt. of Tamilnadu adopted a policy of decentralization and to ensure viability in operation and with an object of velocity of policy of decentralization in financial terms. The objective of the study was to review financial performance of Road Transport Corporation before and after decentralization, working capital position and utilization before and after decentralization of factors influencing working capital management. They concluded that the major working capital problems of the Undertaking are pile of goods, non-availability of working funds and uncertain cash flow. The study recommended that the physical performance could be improved by fuel efficiency, and to improve liquidity position, improvement in occupancy ratio, reducing loans and advances and avoiding the fund diversion from short term to long term.

Sur Debasis [22] in the study of "Working Capital Management in Colgate Palmolive (India) Ltd – a case study", for the period from 1980 to 1991, carried out item wise analysis of components of working capital and identified the items responsible for changes in working capital. He suggested improvement in efficiency of working capital with the use of ratio analysis. They concluded that short-term funds are blocked up in inventories. For investment, conservative approach is used. The current asset to sales ratio indicates efficient use of the funds and an adequate attention should be given for inventory management.

Bose D.Chandra and Dr. Shankarnarayan K.C. [23] carried out the study entitled "Working Capital and Inventory" focused on the effect of inventory on the profitability and liquidity. Operating cycle is a measurement of time gap between investments of cash realization of sales revenue. The credit received from suppliers and payment deferral period reduces the time length of operating cycle. Operating cycle is also affected by external factors such as business conditions; Govt. policies *etc.*, and conclude that the better inventory control is possible by internal management of raw material work-in-progress, finished goods and book debts conversion period. Working capital turned in a year is frequent than liquidity of the undertaking. The short-term health of the organization can be examined current ratio and acid test ratio and the profitability depends upon return on investment.

Mallick Amit and Sur Debasis [24] carried out the study entitled "Working Capital and Profitability:- a case study in interrelation" of the AFT Industries Ltd., a tea producing company for the period of 1986-87 to 1995-96. They examined the impact of working capital on profitability by simple, multiple correlations and multiple regression analysis. They concluded that the QR, CA/TA, ITR and DTR had negative correlation with ROI, and significant positive correlation coefficient between WCR and ROI, ATR and ROI, CTSR and ROI at 5 percent level of significance. The correlation between ITR and DTR to ROI was found to be insignificant..

Sarma M.S. & Thiruvengala C.[25] carried out the study entitled "Working Capital Management in VST- An Appraisal", for the period from 1989-1996. They observed that there is a disproportionate increase in current assets in relation to sales resulting in sharp decline.in working capital turnover. There is no consistent policy of inventory management and inventory turnover declined in five years out of eight years of study. The credit policy is highly volatile with increase in bad debts up to 100%. and from the study of fund flow it was found that benefits of trading on equity for long term financing.

Mohd Aamirkhan [26] carried out study entitled "Working Capital Management at Escorts". He examined the four important components of working capital i.e. management of cash, inventory, receivable, loans & advances and financing of working capital. The study revealed that working capital is partly centralized and partly decentralized and excess or surplus or deficit are taken/ sent to the head office. They observed that more emphasis is put on liquidity by preparing long term and short term cash budget and it is reviewed with sales and production budget

Hydrabad R.L.[27] in the study of "Working Capital Leverage Management: Case Analysis" studied three Companies *viz* Essar Steels, Raymond Ltd. and BPL Ltd. for the period of 1997-98 for Essar Steels and 1996-97 for BPL and Raymond Ltd. They defined the leverage "as power, influence or force used for lifting heavy objects and incase of business it indicates ability or capacity to earn rate of return on assets leading to increase in profits." It is a measure of sensitivity of a firm's rate of return on capital employed. It is rate of return on capital employed measured by percentage change of ROCE to percentage change in working capital. Leverages helps in avoiding inadequate or excessive investment in working capital. It is also related to sales, output and relationship between amount of working capital return and risk. If amount increases the risk decreases and ROCE also decreases. They concluded that the object of working capital management is to minimize or reduce the requirements of working capital for a given sales than to increase it for same sales and the working capital leverage calculated for decrease in working capital for all the three Companies exceeds the degree of working capital leverage.

Malick A.K. and Sur D.[28] carried out study of "Working Capital Management A Case Study of Hindustan Lever Ltd", for the period from 1987-1996. They carried out comprehensive analysis of liquidity and profitability of working capital, variation of working capital, financing pattern, various component of working capital and its joint effects on profitability, leverages, closeness of association between the liquidity and the profitability. They concluded that the position of working capital management was encouraging. The proportion of investment in inventory is reduced leading to overall efficiency. The conservative policy of investment was not adopted. The dependency on the long-term fund decreased. The sales association with working capital was significant amounting to 94.94%. High degree of positive relationship between liquidity and profitability, justifying efficiency of working capital management. The regression model indicate the variations in the profitability to the tune of 83.61% with two independent variables *viz* ITR and DTR.

Prasad R.S. [29] carried out the study entitled "Working Capital Management in Paper Industry", for the period from 1983-84 to 1992-93 of 21 Paper companies. They observed an irrational ratio between sales and inventory, low turnover of receivables, poor cash management, financing from internal sources leading to fall in reserve and surplus, inefficient collection system resulting into huge block of funds in receivables.

Dutta Joginder Singh [30] carried out the study entitled, "Working Capital Management of Horticulture Industry in H. P. - A Case Study of HPMC" for the period from 1990-91 to 1997-98. He observed that the variation in the ratio of current assets to current liabilities rose more than proportionately as compared to current assets, where current assets proportion is higher as compared to total assets and fix assets for the reason of huge share of accumulated losses. Short-term liquidity is satisfactory; two third portions were for inventory and bills receivables and one third as cash and bank. Investment in cash and bank decreases. The Corporation failed to achieve trade off between liquidity and profitability. Turnover ratios like receivables, cash, net working capital, and inventory registered upward trend except inventory. The working capital increased at slower rate compared to faster rate of sales. Regression analysis shows no significant impact on the working capital of sales. Uses of all sources of finance i.e. short term and long term and the receivables management was not systematic. The aging schedule indicated portion of debts over six months. The average period in transferring credit sales to cash was fixed to one month, however longer period is taken when actually computed. Huge amount is locked in litigation and arbitration, cash management was examine through ratios, cash to sales, cash to current assets and cash to current liabilities. These ratios indicate sound position for meeting current obligations but indicate excessive idle cash. The normal period is one month for holding cash, the general concept of using long term fund for long term purchases and short term fund for short term purchases are not used.

Reddy S. Harimatha [31] carried out the study of "Working Capital Management in Small Scale Industries- A Study of Cuddapah District ,Andhra Pradesh" for the period of 1989-90 to 1994-95. For the purpose of examining the impact of radical changes in Govt. policies, liberalization, delicensing *etc.* on working capital structure, cash management policies, trade credit policies, inventory management, financial pattern *etc.* He observed that for control of working capital, cash and bank balance reports, production, sales budget, and some periodical working capital reports are prepared. He further observed the excess investment in debtors, indicating slackness in collections and existence of large inventory resulting in to slow transmutation of working capital

Agrawal H.L.[32] in the study of "Working capital policy- Developing an Analytical Model" attempted to develop a model for examining the working capital policy of a firm and to relate the model developed with profitability of firm's working capital policy index. The policy may be aggressive or conservative both are having advantages and disadvantages. Hence, a trade-off is required between the two. The policy is also affected by current assets structure. The model is developed as under:

CA/TA (FA) X L.A. /C.A.XC.A./C.L. OR LTF/TF

Where CA= current assets TA= total assets FA= fixed assets

LA= long- term assets CL= current liabilities LTF= long term finance and: TF = total finance

Risk Return Tangle - The cost trade-off. The WCP (working capital policy) index is viewed in terms of overall liquidity measurers. The categories are cost of liquidity means holding of high level of current assets and relatively more emphasis on long term financing than short-term financing. Another category is holding low level of current assets and relatively more emphasis on short-term sources of finance. He concluded that the WCP index and profitability has positive correlation. The reduction in cost can be achieved if aggressive policy is adopted and negative correlation if conservative policy is adopted and moderate if firm follows moderate policy.

Chakravarty A.M. [33] in the study of "Inventory Stabilization" gave meaning of inventory in commercial usage as detailed schedule of goods held at a particular point time, expressed in quantities and values. He concluded that with fluctuating sales both high inventory turnover and low labour turnover are not simultaneously attainable. Compromise can be reached by way of careful preparation of budgets of production inventory.

Paul N.K.[34] carried out the study of "Inventory Control" in which, one question is raised that whether rate of return is crucial in deciding whether firm is profitable or not? They observed that reduction in inventory raises rate of return and inventory control is necessary.

Shah B.R [35] in the study of "Investment in Inventory- a critical review" observed that an upward trend in investment in inventory affected profitability. Hence, management of inventory is equally important for reduction of investment and improvement in profitability. He suggested for reducing inventory without disturbing present production activities which will release some capital which can be used alternatively. If the components of inventory carry costs are managed efficiently, then cost of production will reduce and fund will be available for investment and this in turn will lead to improved profitability.

Ganesha M.K.[36] in the study of "Control and Management of Surplus Inventory" observed that level of stock has direct impact on demand, supply and price level. If inventory is efficiently managed it results in reduction of costs. Achievement of full utilization of capacity in turn leads to reduction in working capital requirements. However due to dynamic nature of business there may be obsolescence, design improvement, change in customer's taste it is difficult to predict the demand which may lead to excess inventory.

Agrawal N.K.[37] carried out the study of "Inventory Management in Indian Industries" based on large firms in selected Indian industries of 34 companies. Large companies are defined as whose tangible assets were Rs. 5 crores and more in 1969-70. They observed that inventory investment is very high consisting 56% of total current assets and 30% of total assets of industries taken together which requires efficient inventory management. They concluded that use of ABC techniques for inventory control and Min-Max level of inventory is determined by lead-time and safety margin. Primary considerations are production, planning, supply conditions of goods, expected price rise in determining maximum level of inventory attributed to uncertainty of essential inputs availability. The review of the inventory is not done regularly. They suggested to reduce administrative lead-time and planning of ordering schedule, review of inventory periodically, preparation of monthly report of inventories for ordering system to adopt single order and scheduled part deliveries for uninterrupted flow of materials.

Bandyopadhyay J.[38] in the study of "Inventory Reduction" opined that the management of inventory is crucial part and if stock is maintained at optimum level, it reduces several botherations of production flow and finance blocking. The pattern of investment in inventory is 60% in moving 30% in slow moving and 10% in non-moving items of inventory.

Jain Arvind and Jain Nisha [39] in the study of "An Integrated Approach to Inventory Management" defined the inventory "as a schedule of goods held at a particular point of time." The objectives of inventory management are minimum blocking of capital, replenishment of material, protection of inventories against damages, trade off between production and inventory, control information of stocks *etc.* The integrated approach to inventory management consist essentially the priority, quality, quantity, production, accounts, sales, purchasing and marketing of inventory. The three phases of integrated approach of inventory management systems are planning, execution and control. The inventory management cell can meet its goals and justify its existence only by the establishment and integration of an optimum information system.

Munish[40] discussed the "Selective Inventory Control Techniques" with an object of inventory control and their impact on inventory control and reporting policies in selected Indian enterprise, the enterprises selected are Engineering, Chemicals, Cotton Textile and Miscellaneous. According to him, there are two objectives of inventory control, the matching supply of inventory with expected demand and maintaining the investment in inventories within the prescribed limits set up by the top management. These two objectives are conflicting. He concluded that the ABC analysis was the most popular technique for inventory control used by three fourth firms but not with full vigor and A items are not strictly controlled for the reason of changes in production programmes and lack of information to materials department.

Khan Mohd. Akbar Ali [41] examined "Management of Accounts Receivable" the case study of Cement Corporation of India for a period of 1978-79 to 1982-83. He observed that the receivables are not increased in tune with sales; the investment in receivables was 54% to 57%. Receivables are not utilized to boost up the sales. Turnover of book debts was higher indicating quick collection of book debts and the ratio bad debts to book debts is very low indicating an effective collection policy.

Mukharjee Bimalendu [42] carried out the study entitled "Signals from Receivables- a Methodological Inquest." The ratios computed are: Average Collection Period and Receivable Turnover. Another method discussed is: Aging of receivables, which can be done after receiving billing terms and then cluster the receivables on a date in accordance with the proportions billed in the respective proceeding months. This method provides more information with lesser space dimension.

Jain R.K. [43] in the study of "Cash Planning and Budgeting in State Trading Corporation of India" observed that Corporation followed the receipts and payments, weekly credit utilization statement, monthly forecast with a weekly credit utilization, daily cash balance *etc.* for cash planning. They concluded that the comparison between actual and forecast cash flow division wise is not made. The division wise deviations are not real as one favorable inflow of particular division is counter balanced by unfavorable outflow of some other division. The daily cash flow statement was great achievement as it helped management in accurate borrowings and switchover of surplus funds from one office to another. They suggested to implement the decentralization in accounting system for optimum utilization of available resources for organization development.

Acharya S.R. [44] in the study entitled "Practical Approach to Cash Management" observed the symptoms of cash deficit. The study also proposed the remedies for short term and long-term cash deficits, like discounting of cheques and bills. Enhanced accommodation request with bankers, liberal terms from creditors and prompt payment from debtors. Reductions in inventory without hampering inter firm loans, issue of equity or preference shares or debentures, long- term loans from financial institutions and use of appropriate mix of various sources of finance.

Saxena V.M. [45] in the study of "EOQ an aid to Cash disbursement" observes that the objective of business is to generate more and more cash and reinvest it at the highest possible rate. Cash management is very crucial; otherwise it may lead to bankruptcy. The prudent planning and vigilant execution of cash disbursement is important under certain conditions.

Goel and Nagar [46] in the study of "Financing Working Capital" discussed the Hedging approach and Conservative approach and Cost of financing with Hedging plan v/s Conservative plan and trade-off approach. Cost consideration is discussed for trade-off approach by funding the average of the short run and long run funds required and multiplying these amounts by interest rates.

Mahato K.N. [47] in the study of "Financing of Working Capital- a case study approach" gave the definition of working capital, and explained the two aspects of working capital management, (i) The optimum rate of growth in the volume of working capital, in relation to an increase in the volume of output and: (ii) The optimum allocations of the available volume of working capital, into different items of current assets. Operating cycle approach is used for determining working capital requirements and Balance Sheet approach can be used but it fails to give exact requirements as it includes certain non-cash items.

Majmudar Chabbi [48] carried out the study of "Borrowing as a source of Financing Working Capital Management in the Corporate Sector in India", for the period from 1981 to 1990 of 20 Companies, consisting 10 Private and 10 Public Ltd. Companies. They observed that the bank borrowing was major source of finance. Public deposit is cheaper source as compared to other source. Long-term borrowings were 2% to 5% in case of Public Ltd companies and 0.05% to 0.16% incase of Govt. companies The trade credit is one of the sources considered as formality free, security free, and interest free source of finance. They concluded that the effect of cost on selection of sources of finance is not at all significant.

Hydrabad R.L.[49] carried out the study on "Evaluation of Working Capital Investment and Financing Policies of Large Public Ltd. Companies in India" based their studies for 756 Companies. Public Ltd. Companies Non-Govt. and Non-Financial in India for the period from 1994-95 to 1996-97. They observed that the majority of the companies have higher investment in current assets than fixed assets like engineering, motor vehicles, constructions etc., out of 756 companies 59 companies followed aggressive policy like tea, cement, electricity etc., and majority companies practiced excessive use of short term funds/ current liabilities.

They suggested that in formulating working capital policy the firm should keep in mind the level of current assets and level of short term financing of working capital management. For better working capital position, the firm should have liquid resource on assets side and less liquid sources on liabilities side. Any imbalance, between these two sides would influence overall risk and profitability of firm. Further, they suggested to employ more long term funds to improve working capital policy, and to reduce risk of illiquidity. The continuous monitoring of current assets to avoid excessive investment in current assets.

Sur Debasish [50] carried out study of "Liquidity management: an overview of four companies in Indian Power Sector", for the period from 1987-88 to 1996-97 for electricity generation and distribution industries. They carried out comparison of liquidity of all four enterprises with the parameters of CR, QR CTTR, ITR and DTR with the help of ratio analysis and Mottal's comprehensive test and also liquidity and profitability by rank correlation. They concluded that CESC Ltd. and SEC Ltd. should try to maintain adequate short term funds for improving working capital. AEC Ltd. to improve slow movements inventory and take effective control on the inventory management. The debtors' management in all the companies was required to be improved. The overall liquidity in the AEC Ltd. should be managed in such a way that it should not hamper the profitability.

Rej Debasis and Sur Debasis [51] carried out study of "Profitability analysis of Indian food products industry: a case study of Cadbury India Ltd". for the period of 1987-88 to 1996-97 with an objective of measuring profitability through profitability ratios. They assessed degree of relation of profitability ratios with important parameters ROIR, with the help of multiple correlations and multiple regressions, for these nine ratios were selected. They are GPR, NPR, ROIR, CR, QR, CA/TA, TATR, CETR and FTTR. They concluded that GPR, NPR and ROIR were not stable. The interrelation between the CR, QR and CA/TA registered negative correlation with selected profitability ratio ROIR and the ratio of FTTR witnessed positive significant relationship with profitability ratio. The slope of ROIR with TATR witnessed positive influences, and QR and CETR showed negative influence on profitability.

Jafar and Sur [52] carried out the study of "Efficiency of Working Capital Management in Indian Public Enterprises during the Post-liberalization Era- A Case Study of the NTPC", for the period of 1983-84 to 2002-03. They evaluated working capital management by ratio analysis and by Pearson's simple correlation and rank correlation between selected performance indicators VACE (Value Added to Capital Employed) with each of measure of working capital management. They carried out multiple correlations and multiple regressions between VACE and ratios of working capital management. They examined deviations from actual performance. The ratios used are CR, WCTR, age of inventory (AOI), DTSR and concluded that NTPC. Ltd. improved its liquidity status significantly in post-liberalization compared to pre-liberalization period. The average working capital turnover is slightly higher. The efficiency in working capital management has improved. Inventory management has improved in remarkable manner. The regression of total performance on CR, AOI and DTSR was highly positively significant, indicates greater efficiency in managing working capital.

Kannadhasan M [53] in the study entitled "Working Capital Management in a Public Limited Company - A Case Study" took a case of Titan Industries Ltd., for the period of 1998-99 to 2004-05, to examine relationship between profitability and liquidity with the help of ratio analysis. The ratios selected are CR, QR, CATA, DTR, CAFA, and WCTR. The parameters, which are used to examine the relationship between profitability and liquidity, are Return on Investment and Current Assets to Total Assets. The study concluded that company maintains good liquidity position. The quick ratio is also found satisfactory. Working capital management is efficient and inventory management was remarkably satisfactory. The collection efforts are efficient leading to good debtors management. The company follows the conservative policy for current assets. They suggested that current ratio is more than standard leading to idle funds in the current assets which should be kept at optimum level.

Das P.K. [54] carried out the study entitled "A Study on Liquidity Management in Ranbaxy Laboratories Ltd.", for the period of 1996-97 to 2004-05. The objective of the study was to workout overall quantum of liquidity and evaluate it by Motaal's Comprehensive Rank Test, to study liquidity position, with important parameters such as inventory to current assets, debtors to current assets, cash and bank to current assets and loans and advances (other current assets) to current assets, with the help of Spearman's Rank correlation and test of significance of such correlation.

The major findings are that current assets growth is steady, liquidity position is more flexible, the net working capital position is positive throughout the period leading to greater liquidity. The company has not maintained the sufficient cash and bank balance. The ratios, which used are CA, QA, Super QA, INV/SA, AOI, DTO. AOD, WCTR, CA/SA and CA/TA.

The rank correlation between liquidity and profitability is mildly or lightly related. This means it reflects lower degree of positive association between the liquidity and profitability. They suggested to reduce investment in current assets and to improve debtor's collection policy.

Sathyamoorthi C.R. and Wally-Dima L.B.[55] carried out the study entitled "Working Capital Management: The Case of Listed Retail Domestic Companies in Botswana" for a period of three years 2004-2006, for four listed companies. The objectives of the study are to examine the financing of current assets, trends of data and effectiveness of working capital management with the help of ratios like CR, LR, Long term liabilities to Net WC, WCTA, Net sales to WC, Creditors payment period and Debtors collection period. They concluded that the policy adopted by the firm is conservative policy for working capital management in the time of high business volatile and aggressive policy in the time of low business volatile, the liquidity level was acceptable in one year and deteriorated in another year. In year 2004 moderate approach adopted in financing current assets and tend to finance current assets from long- term financing. The working capital policy is not static and varied with the changes in the state of the economy.

Chakraborty Kaushik [56] carried out the study of "Working Capital and Profitability: An Empirical Analysis of Their Relationship with Reference to Selected Companies in the Indian Pharmaceutical Industry" for the period of 1996-97 to 2007-08 with the help of financial tools like ratio analysis. The study intended to examine the influence of working capital on profitability. The ratios used, are CR, ITR, and DTR. They concluded that there is no definite relationship between liquidity and profitability, on individual base, but there are at industry level. Higher liquidity position was associated with higher profitability. The correlation between inventory turnover and PBITM, showed inverse relationship, and when ROCE is taken as profit measure than favorable influence of inventory management on profitability. Same, is observed incase of credit management when PBITM is compared it showed inverse relationship and when ROCE is taken then favorable influence of debtors management on profitability. The partial regression coefficient in multiple equation of PBITM with CR, ITR, and DTR revealed only liquidity management positive but statistically insignificant contribution in corporate profitability. The ROCE with same ratios made positive contribution in improving corporate profitability. The liquidity and credit management was statistically significant at 10 percent level.

Almazari Ahmed Arif Karim[57] in the study of "Analyzing Profitability Ratios of the Jordanian Phosphate Mines Company (2001-2007)" analyzed time series behavior of the profitability ratios, identifies obstacles with relation to profitability ratios. The Cross-sectional analysis is carried to examine different firms' financial ratios. The findings shows a relationship between gross profit margin, operating profit margin, net profit margin and return on equity ratios.

As mentioned in preceding para, review of literature forms a basis for study plan. Hence, before planning the research scheme for the present study, summary is prepared about the measures indicating Working Capital Management. Here, on the one hand the measures of Working Capital Management is taken and on the other hand, authors who have used that measure is indicated. Moreover, there are various turnover ratios, which indicate efficiency of respective component of current assets. Hence, summary is also taken of various turnover ratios. The impact of liquidity on profitability is of high concern to the financial managers. The present study intends to examine this. Taking this into consideration, the various measures of profitability taken in various studies are also summarized.

The summary is presented in the Tabular form, in Table II.1

TABLE II 1
SUMMARY OF VARIOUS MEASURES
TAKEN BY DIFFERENT AUTHORS

No.	Ratios	Authors
1	Current Assets to Total Assets (CA/TA)	Debasis and Manashkumar[11] (1992), Verma and Garg [14](1995) Sur Debasis[22](1997), Mallick and Sur[24](1998) Malick and Sur[28](19 99)Hyderabad R.L.[49](1999) Dutta J Singh[30] (2001), Rej and Sur [51] (2001) Kannadhasan M[53] (2007), Das P.K [54](2008)
2	Inventory to Current Assets (INV/CA)	Sur Debasis[22] (1997), Khan Mohd. Aamir Khan[26] (1999) Dutta Joginder Singh [30](2001)
3	Receivables to Current Assets (REC/CA)	Reddy and Rao[19] (1996), Khan Mohd. Aamir Khan[26] (1999)Dutta J S[30](2001) Reddy S.Harimatha[31] (2001)
4	Cash and Bank to Working Capital (CB/WC)	Khan Mohd. Aamir Khan [26](1999) Prasad [29] (2001), Dutta J S[30] (2001),
5	Working Capital to Total Assets (WC/TA)	Basu [10](1992),Vijaykumar A & Dr. Venkatecalam [16] (1995), Dr.Reddy and Rao[19] (1996)Sur Debasis[22] (1997) Mallick and Sur[24] (1998), Sathyamoorthi C.R. and Wally-Dima K.B [55](2008)
6	Working Capital to Current Assets (WC/CA)	Basu[10] (1992) Vijaykumar A & Dr. Venkatecalam (1995)[16], Dr.Reddy and Rao [19](1996)Sur Debasis[22] (1997), Mallick and Sur[24] (1998)
7	Inventory to Working Capital (INV/WC)	Basu[10](1992), Debasis and Manashkumar[11](1992), Vijaykumar A & Dr. Venkatecalam[20] (1995), Verma and Garg [14] (1995), Joshi Vijay Prakash[15] (1995), Rao and Rao[18](1995) Dr.Reddy and Rao[19] (1996), Sur Debasis[22] (1997), Bose and Dr. Shnkarnarayan[23](1997), Mallick and Sur[24] (1998)
8	Receivables to Working Capital (REC/WC)	Basu [10] (1992), Debasis and Manashkumar[11] (1992), Vijaykumar A & Dr. Venkatecalam[20] (1995), Verma and Garg [14] (1995), Rao and Rao[18](1995) Dr.Reddy and Rao[19](1996), Sur Debasis[22] (1997, Mallick and Sur[24] (1998)
9	Cash and Bank to Working Capital (CB/WC)	Basu[10] (1992), Debasis and Manashkumar[11] (1992), Vijaykumar A & Dr. Venkatecalam[20] (1995), Verma and Garg [14] (1995), Rao and Rao[18](1995) Dr.Reddy and Rao[19](1996), Sur Debasis[22] (1997), Mallick and Sur[24] (1998)

No.	Ratios	Authors
10	Inventory to Gross Fixed Assets (INV/GFA)	Shah B.R [35](1974)
11	Total Liabilities to Net Worth (TL/NW)	Joshi Vijay Prakash[15] (1995)
12	Net Fixed Assets to Total Assets (NFA/TA)	Khan Mohd. Aamir Khan [26](1999)
13	Current Ratio (CR)	Basu[10](1992), Das[12] (1993), Verma and Garg [14] (1995), Joshi Vijay Prakash [15] (1995), Vijaykumar A & Dr. Venkatecalam[20] (1995), Mallick and Sur [24] (1998), Sarma and Chary[25] (1999), Khan Mohd. Aamir Khan [26](1999)Dutta J S[30] (2001), Reddy[31] (2001), Sur Debasis[50] (2001), Sathyamoorthi C.R. and Wally-Dima K.B [55](2008)
14	Quick Ratio (QR)	Basu[10] (1992), Das[12] (1993), Verma and Garg[14] (1995) Joshi Vijay Prakash[15] (1995), Vijaykumar A & Dr. Venkatachalam A[20] (1995)Sur Debasis[22] (1997), Malick.& Sur[24] (1999) Sarma and Chary[25] (1999)Khan Mohd. Aamir Khan[26] (1999), Dutta J S[30] (2001), Reddy[31] (2001), Sur Debasis[50] (2001) Sathyamoorthi C.R. and Wally-Dima K.B[55] (2008)
15	Cash and Bank to Current Liabilities (CB/CL)	Yadav[8] (1986), Khan Mohd. Aamir Khan[26] (1999), Reddy[31] (2001), Das [54] (2008)
16	Total Assets Turnover Ratio (TATR)	Yadav,[8] (1986), Khan Mohd. Aamir Khan[26] (1999) Rej and Sur[51] (2001)
17	Net Fixed Assets Turnover Ratio (NFATR)	Rej and Sur [51] (2001)
18	Current Assets Turnover Ratio (CATR)	Verma. and Garg[14] (1995), Joshi Vijay Prakash[15] (1995), Dr.Reddy and Rao[19] (1996), Vijaykumar A. & Venkatecalam A[20] (1996), Sur [50] (2001), Das[54] (2008)
19	Working Capital Turnover Ratio (WTR)	Joshi Vijay Prakash[15]1995), Dr.Reddy and Rao[19](1996), Vijaykumar A. & Venkatecalam A[20](1996), Sarma and Chary[25] (1999), Dutta J S[30](2001), Reddy[31] (2001), Jafar and Sur[52] (2006), Kannadhasan M[53] (2007), Das[54] (2008). Sathyamoorthi C.R. and Wally-Dima K.B[55] (2008)

No.	Ratios	Authors
20	Inventory Turnover Ratio (IT)	Chakravarty [33] (1970), Basu[10] (1992)Joshi Vijay Prakash[15](1995), Dr.Reddy and Rao[19](1996), Vijaykumar A. & Venkatecalam A[16] (1996), Mallick and Sur[24] (1998), Sarma and Chary[25](1999) Malick.and Sur[28] (1999), Prasad[29] (2001). Dutta J S[0] 2001, Reddy[31] (2001), Sur[50] (2001), Kannadhasan M[53] (2007), Das[54] (2008).Chakraborty K[56] (2008)
21	Debtors Turnover Ratio (DTR)	Yadav.[8] (1986), Khan Mohd. Akbar A[41](1989) Basu[10](1992) Das [12](1993), Dr.Reddy and Rao[19] (1996), Vijaykumar A. & Venkatecalam A[16] (1996), Mallick and Sur[24] (1998), Malick. and Sur[24] (1999), Sarma and Chary [25](1999) Prasad[29] (2001). Dutta J S[30] (2001) Kannadhasan M[53] (2007), Sathyamoorthi C.R. and Wally-Dima K.B [55](2008),Chakraborty K[56] (2008)
22	Cash and Bank Turnover Ratio (CBTR)	Dr.Reddy and Rao [19] (1996). Dutta J S[30] 2001
23	Average Collection Period (ACP)	Joshi Vijay Prakash[15] (1995), Sarma and Chary [25](1999)
24	Creditors Turnover Ratio (CTR)	Vijaykumar A & Dr. Venkatachalam A[16] (1995), Mallick and Sur[24] (1998)
25	Average Payment Period (APP)	Das[12](1993), Prasad[29](2001) Sathyamoorthi C.R. and Wally-Dima K.B [55](2008)
26	Profit after Tax to Total Assets (PAT/TA)	Vijaykumar A & Dr. Venkatachalam A[16] (1995) Reddy[31](2001)
27	Profit before Tax to Total Assets (PBT/TA)	Vijaykumar A & Dr. Venkatachalam A[16] (1995) Reddy [31](2001)
28	Gross Profit Margin (GPM)	Vijaykumar A & Dr. Venkatachalam A[16] (1995) Reddy[31](2001) Rej and Sur[51](2001) Almazari Ahmed Arif Karim[57](2009)
29	Net Profit Margin (NPM)	Vijaykumar A & Dr. Venkatachalam A[16] (1995) Reddy[31](2001)Rej and Sur [51] (2001) Almazari Ahmed Arif Karim[57](2009)

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