Chapter–2

Review of Literature
Chapter–II

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Working capital is an important ingredient in the smooth running of business enterprises. It has not attracted much attention of scholars. Different authors have conducted research work to analyze working capital management in different ways. The purpose of review of literature is to know the present status of research in the said field. The findings of the prior research help in identifying the gaps' and highlight the areas where further research can be undertaken. Therefore, the present chapter deals with the review of literature available in area of working capital management and its components.

2.1 REVIEW OF RELATED STUDIES:

Baumal (1952) emphasized that the total cost of the cash balance to be held by the firm should be minimum. He attempted to apply the inventory model to determine the level of cash to be held by the business firm. He stated that the total cost is the sum of interest opportunity cost and broker's fees. The model, which he has applied in his study, is as follows:

\[ C = \sqrt{\frac{2bT}{i}} \]

Where, C= the cash balance to be held by business firm, b is the broker's fees or transaction cost, T is the total cash needed, and i is the interest opportunity cost. He opined that the transactions demand for cash would vary approximately in proportion with the money value of transactions.

Baumal assumptions about the behaviour of cash inflow and outflows are probably more application to an individual than to a business firm. It is because
inflows are likely to be less lumpy and outflows are likely to be less smooth for the firm.

Sagan (1955), perhaps presenter of the first theoretical paper on the theory of working capital management, emphasized the need for management of working capital accounts and warned that it could vitally affect the health of the company. He realized the need to build up a theory of working capital management. He discussed mainly on the role and function of the money, and the manager who is directly concerned with the management of the cash that has been generated in the course of business operation. However money manager must be familiar with what is being done with the control of inventories, receivables and payable because each of these accounts affects company's cash position. Sagan pointed out that responsibility of money manager is to provide funds when needed to invest by examining liquidity and profitability of, various investment opportunities. He suggested that the money manager should take his decisions on the basis of cash budget and total current assets position rather than on the basis of traditional working capital ratios. This is important because efficient money manager can avoid borrowing from outside even when his net working capital position is low. The study pointed out that there was a need to improve the collection of funds but it remained silent about the method of doing it. Finally, he concluded that the money manager should be a combination of credit analyst, a commodity specialist, a money market expert, a bit of a horse trader, and a banker. Moreover, this study is descriptive without any empirical support. Therefore, the validity of facts is found low.

Tobin (1956) studied on the interest elasticity of transaction demand for cash. He indicated that there are important economies of scale in cash holding and an inverse relationship between interest rates and the demand for money. His study is different
from Baumal's study to the extent that the individual's interest earnings not of transaction costs were maximized. He himself recognized that his result is similar to Baumal's equation.

In the study of Friedman (1959), he explained the behavior of aggregate cash balances and velocity and included time deposits in the definition of money. According to Friedman, the determinants of the demand for money are bond's yields, equity, the rate of change of the price level, the ratio of non-human to human wealth, the level of real income per capital tastes and preference of wealth owning units and all other factors. His empirical results indicated that the permanent income elasticity was 1.8 and the effect of interest rates on the demand for money was too small to be statistically significant. He concluded that the demand for money is not statistically sensitive to changes in the rate of interest. In fact, his estimates apply to individuals, but he believed his model could be applied to the business firms as well.

Meltzer (1963) investigated the demand for money by business firms. The study of Meltzer was based on 14 industries for nine years with assets-class observation. In his study, he specified the following function as a first approximation to the theory:

\[ M = f(r, w) \]

Where, \( M \) is money, the sum of currency and demand deposit of the public, \( r \) is a market rate of interest and \( w \) is the net wealth of the public. He used sales as a proxy for the firm's wealth. In order to reach conclusion, he tested three function forms:

\[
\log C = a + \beta \log S \quad C = KS
\]

\[
C = a + b S^{1/2} + dS
\]

He found that by applying above equation (the log form) does better than the non-log on the average. Finally, he concluded that the demand for money by business firm is a function of sales, linear in logarithms and unit elastic to first approximation. He,
further noted that the result supported the evidence from his time series analysis based on quite different data for a sixty year period. His study is one of the important contributions towards the theory of the demand for money by business firm.

Walker (1964) in his study, "towards a theory of working capital" made a pioneering effort to develop a theory of working capital management. Based on observation, he developed three propositions that would serve as the foundation of a theory of working capital, which in turn might be used in the formulation of sound policies and procedures. First proposition; if the amount of working capital varies relative to fixed capital, the amount of risk that a firm assumes is also varied and the opportunity for gain or loss is increased. To illustrate it, the effect of the change in the working capital in the rate of return was studied for nine different industries. He found that a decrease in the working capital resulted in a larger gain than the loss resulted from increase in working capital. He found negative relationship between the levels of working capital and rate of return of the firm. Second proposition; the type of capital used to finance working capital directly affects the amount of risk that a firm assumes as well as the opportunity for gain or loss.

In connection with the second proposition, Walker stated that if a firm wished to reduce its risk to the minimum. It should employ only equity capital for financing of working capital; however doing so, the firm should reduce its opportunity for higher gains in equity capital. Since, it would not be taking advantages of leverage. He stressed that he problem was not whether to use debt capital but how much debt capital to be used, which would depend on attitude of the management towards risk. Regarding the third proposition, walker again suggested that the maturity of the debt contract was one of the most important and would be considered when developing a theory of working capital. The longer the maturity period of debt, the lower be the
risk further, the management would have adequate opportunity to acquire funds from operations to satisfy the debt. At the same time, long-term debt is costlier. On the other land, the shorter the maturity the greater the risk since the firm will have less time to accumulate sufficient funds to liquidate the debt. Thus, Walker tried to build up a theory of working capital management by developing three propositions. However, Walker tested empirically the first proposition only. Walker's study would have been more useful, had he attempted to test all the three propositions.

Frazer (1964) conducted a study, "the financial structure of manufacturing corporations and the demand for money". In his study, he used quarterly cross section data for the period 1956 to 1961 to achieve the objective. According to Frazer, the corporate liquidity is the ratio of cash and government security to current liabilities that rises with the size of the firm, while the percentage of assets held in cash is inversely related to firm size. In addition, he observed that as firms increase in size, a decline in the demand for cash to satisfy the precautionary motive. He concluded that the larger-sized firms have smaller cash balances, larger non-cash liquid assets holdings and less bank indebtedness, all relative to total assets than smaller sized firms. However, his results are difficult to interpret clearly.

Whalen (1965), in his study attempted to determine empirically whether the presumption of traditional monetary theory or the inference of the Boumal- Tobin analysis provides a better description of cash management behavior. In addition, he tried to test whether the transaction and precautionary cash balance of non-financial business corporations vary proportionately or less than in proportion to changes in the volume of their sales. He employed the cross section analysis of non-financial business corporations to relate cash balance of firms of different size to the volume of their sales.
All the firms selected for the study were divided into eight major industry groups and the firms in each industry are classified into fourteen size categories on the basis of the amount of their total assets. The result of his study shows that the transactions cash management economies suggested by the Boumel-Tobin approach are not present. In all the industries, cash was approximately unit elastic with respect to sales when equation was used to present the demand function for money. On the other hand, when another equation was used; the regression coefficient relating cash and sales was less than one except in the retail trade and service industries. Thus, using an alternative approach adjusted for differences among firms in the same industry; cash and sales commonly varied less than in proportion suggesting a relationship between transaction and precautionary cash balance and the volume of sales. It corresponds to the Boumal-Tobin approach. All these indicate that Whalen's conclusions are ambiguous and not conclusive. His function also has the serious defect of including the dependent variable within an independent variable.

Alessi (1966) studied the demand for money for British business firms by applying a methodology very much similar to Meltzer. He tried to find out the additional evidence concerning the predictive content of the wealth adjustment model and the validity of Meltzer's argument. He applied cross sections analysis to pursue both objectives by taking two samples one consisting of 59 firms another consisting of 147 firms of British firms on December 31 of each year from 1948 to 1957. He used the market value of each firm's common stock instead of sales as a proxy for wealth as mentioned below:

\[ \ln M_t = a_1 + b_1 \ln W_t + U_1, \]

Where, \( a, \) is the intercept, \( b, \) is the elasticity of cash balance, \( M \) is the cash balance, wealth (W), and \( U_1 \) is the error term. The nominal wealth (W) of each firm at
time t (each December 31 from 1948 to 1957) was estimated by multiplying the number of ordinary share outstanding (N) by their market price (P); \( W_t = N_t P_t \)

The study revealed that the quantity of money viz. currency and demand deposit held by a firm is positively related to its wealth and the wealth elasticity of money appears to be about one, supporting the results of Meltzer's time series and cross section studies. Finally, he inferred that the result of the cross sectional analysis of the two British samples is similar with the Meltzer findings in the United States.

National Council of Applied Economic Research (NCAER) (1966) studied on the structure of working capital with reference to three industries namely fertilizer, cement and sugar: eight companies from fertilizer, nine from cement and fifteen from sugar industries were taken as sample. The study was mainly devoted to the ratio analysis of composition, utilization and financing of working capital for the period 1959 to 1963. The study classified these three industries into private and public sector for comparing their performance as regards the working capital management. The study pointed out that the inventory constituted a major proportion of working capital. The study absorbed that the control of inventory had not received proper attention. As far, the utilization is concerned cement and fertilizer industry had a more efficient utilization of working capital. The sugar industry had inefficient utilization of working capital largely due to the accumulation of stock with the factories. As regards financing of working capital, the study showed that internal sources had contributed very little towards the financing or working capital. However, NCAER failed to put into sharp focus the various problems involved in the management of different components of working capital.

Vogle and Maddala (1967) studied on cross-section estimation of liquid assets demand by Manufacturing Corporation. They examined the possible usefulness of
cross-section estimates for analyzing the determinants of the demand for cash and liquid assets of manufacturing companies. They assumed that the demand for cash, government securities and liquid assets are the function of wealth or transaction. They applied individual regression for 16 industries (each based on 14 size class observation) as well as, for pooled data 224 observation) and 14 years (each based on 10 size class observation) total all 140 observations with and without both industry and assets size dummy variables. They found that the government securities rise more than proportionately with sales while cash is approximately unit elastic and liquid assets has a sales elasticity, which is an average of the two in the individual industry. Similarly, the sales elasticity for the pooled regressions both with and without industry dummy variables was well within the range given by the individual industries. They indicated that as manufacturing corporation increase in size they appear to substitute government securities for cash. Furthermore, they stated that during the post-war period there has been a downward trend in relative money balance caused by the rising interest rates and innovations in financial management.

Van Horn (1969) examined separately the level of a firm's liquid assets and the maturity composition of its debt in order to illustrate the respective trade-off between risk and return. He emphasized, lower the level of liquid assets the greater the risk of unable to meet current obligation. In his study, the risk is defined as the probability of technical solvency. The risk of running out of cash can be reduced or even eliminated by maintaining a high proportion of liquid assets. However, cost is involved on the one hand and on the other, it reduces the return on investment. He proposed that the calculation of different forecasted liquid assets requirement along with their subjective probabilities under different possible assumptions of sales, receivables, payables and other related receipts and disbursements. Generally, the longer the
maturity schedule of debt, the less risky would be the debt financing of the firm. He further suggested preparing a schedule showing each alternative of debt maturity, probability distribution of debt running out of cash, opportunity cost. Thus, this study presents a risk return trade off in working capital management in entirely new perspective different from Walker study. However, the usefulness of the framework suggested by Van Horn is limited because of the difficulties in obtaining reliable information about the probability distribution of liquid assets balance, he opportunity cost, and the probabilities of running out of cash for all alternatives.

Nadiri (1969) studied on the determinants of real cash balances in the U.S. total manufacturing sector. The first objective of his study was to develop a theory of demand or cash balances of the business sector and to estimate it, using the quarterly data for the U.S. total manufacturing sector in the post war period. Second objective of his study was to estimate the demand function for real cash balances of the corporate sector using quarterly data on total manufacturing for the period 1948-1 to 1964 IV. By using regression equation, Nadiri found that the demand for real cash balances was determined by output (wealth), the interest rate, and the expected rate of change in the general price level and factor prices. The level of the long-term interest rate and the change in the interest rate are significant determinants of real cash holdings of the manufacturing sector. Further, indicated that real cash balances are sensitive to movements of factor prices. The cross-elasticity of real cash balances seems to be lower than their elasticity with respect to the opportunity cost of money. Lastly, Nadiri concluded that the question of whether the short or long term interest rate is a better proxy of the relevant interest rate required further investigation.

Walter (1970), in his study, stated that the working capital was the result of a delay between the moment expenditure for the purchase of raw material was made...
and the moment in which payments were received for the sale of finished goods. He further stated that the working capital originated in delay centres located through production and marketing function. The study requires specifying the delay centres along with cost borne by them and working capital tied up in each delay centre with the help of information regarding average delay and added value. The Walter study pointed out that the working out of the possibility of reducing the various delays occurring in delay centres to examine whether saving is possible through reduction of working capital or not. He suggested if the firm could change the distribution of average delays favourably then the firm could reduce the average delay; as a result it is possible to generate saving through reduction of working capital. He further stated that a better decision might be the result of improved professional ability of the administrative staff and more rapid and precise data processing, through computers but it involves more cost. Therefore, the attention must be paid on the point at which savings from a reduction of working capital equals the cost, which made this saving possible. This study is concerned only with return aspect of working capital management and ignored on the risk aspect of working capital management. Therefore, the firm might have to face the problem of liquidity in the business. Moreover, it ignored the significance of the net concept of working capital.

**Warren and Shelton (1971);** applied financial simulation to simulate future financial statements of a firm based on set of simultaneous equations. The paper describes a mathematical model that could be aid financial decision making in a number of ways and makes it possible to incorporate both the uncertainty of the future and the many interrelationships between current assets and current liabilities and other balance sheet accounts. They suggested that the management could determine how operation decisions would affect financial requirements and the effect of financial
decisions on operating performance by using this model. They presented a model in which twenty simultaneous equations were used to forecast future balance sheet of the firm including forecasted current assets and liabilities. Current assets and liabilities were forecasted in aggregate by directly relation to sales. By applying that model, individual working capital accounts can also be forecasted. Further, the model demonstrated how potential environmental changes can affect the performance of the firm. Thus, management is aided in develop policies that can increase earnings per share and share price.

Appandhanulu (1971) recognized that more attention being paid to invest in fixed capital rather than working capital while discussing the problem of choosing among alternative techniques for producing a given output. He stated that each technique of producing a particular product might have a different amount of working capital. Consequently, a change in technique of production may lead to a change in the length of production period, rate of out-put flow per unit time, time pattern of value addition and ultimately in the amount of working capital. In addition, he also stressed that the different techniques would also affect the stock of raw material, work in progress, finished goods, the length of lead-time, optimum lot size and marketing lag of output disposals. He, therefore, hypothesized that choice of production technique could reduce the ratio of various component of working capital in textile weaving, done during (1960). The results of the study are based on detailed discussion with the producers and not on balance sheets. Which may include speculative figures? However, his study could not show significant relationship between choice of technique and working capital. He pointed out that choosing appropriate ratios in some other industries that would measure the production technique correctly could test the idea.
Marvill and Tavis (1973) in their study indicated that the credit terms offered, inventory decisions and short term borrowing each affects the optional policies of the others because of the linkage among their associated cash flows. They pointed out that the current assets and liabilities of a firm are the stock reflection of closely interrelated operational and financial cash flows. They suggested that the net effect of these combined flows must be recognized in searching for the optimal credit inventory or short term borrowing policies. Most of the earlier studies for short-term investment and borrowing decision do not allow for the interrelationships of this system. This study presents a model where optimal credit inventory and borrowing decisions are selected as part of a short term funds' subsystem. In their study, they outlined that the critical credit inventory linkage is followed by the borrowing component. They formulated a model in a chance constrained programming format. They mentioned clearly in their paper that the credit term of a firm would influence demand for its product and influence its investment inventory. In this way, the credit policies become determinants of inventory policy. Then, these stocks of inventories and receivables would define a financing requirement. As pointed out their study with these relationships, optimal working capital policies can be determined only in systems context. Thus, the Merville and Tavis study is first attempt of its kind.

Chakraborty (1973); viewed that working capital as a component of capital employed in business operation. He emphasized that the working capital was the fund that meets all the operating expenses of running business. Therefore, the amount of operating expenses in a financial year would be a function of the volume of activity in terms of production and or sales. As per his study, the return on capital employed is an aggregate measure of the overall efficiency in running a business firm. Accordingly, excessive working capital would lower the capital turnover ratio and so
bring down the overall return on capital employed. Similarly, too little amount of working capital, though it yields an immediate higher return on capital employed; may reduce the earning capacity of fixed capital employed over the succeeding periods. In his study, he applied operating cycle concept of working capital for better management of working capital. Furthermore, he has illustrated the use of the operating cycle concept by calculating the operating cycle period of two companies namely Union Carbide and Madura Textile. In addition, the operating cycle concept is useful to determine the future cash requirement based on sales/production and operating cycle period.

Chon and Pringle (1973) conducted research in an attempt to apply the capital assets pricing model (CAPM) to working capital management. They tried to integrate long-term investment and financing decision and working capital management decision through capital asset pricing model. In their study, they emphasized that an active working capital management policy based on CAPM could be employed to keep the firm's share in a given risk class. Owing to the lumpy nature of long-term investment and financing decision, the firm is continually subject to shifts in the risk of its equity. The fluid nature of working capital can be exploited to offset or moderate such swings. They clarified that a policy using CAPM could be adopted for the management for marketable securities portfolio, such that the appropriate risk level at any point in time is that which maintains the risk of the company's common stock at a constant level. He further suggested that the same result could be obtained by manipulating other short-term assets and liabilities. In the study, there is not empirical test.

Smith (1974), in his first study, explained dual goals of profitability and liquidity and advised that the job of financial manager was to achieve a trade-off between the
liquidity and profitability. He suggested that the rate of return on equity investment was used to measure the profitability and the net working capital and current ratios were used to measure the risk of the firm. By giving the example of three approaches he clearly stated that higher the liquidity lower the profitability and vice versa. First approach; having lowest rate of return on equity but at the same time ignored the liquidity. Third approach has highest rate of return on equity and lowest the liquidity. Second approach shows the moderate level of profitability, which lies between the two approaches, mentioned above. His study also indicated simulating future financial statements of a firm based on a set of simultaneous equation. The model, which was presented in his study, the current assets and current liabilities were directly related with sales.

The second study of Smith (1974) relates to profitability versus liquidity trade off in working capital management. The study suggested that parallel monthly forecasts of liquidity and profitability could be useful in evaluating trade-off between these two goals. He briefed that such forecast could also be useful in estimating the impact of certain working capital policies on these goals and in reflecting the uncertainty to the future. He further discussed individual and collective effects of accounts receivables, inventories, accounts payables and other accruals on profitability and liquidity. The study of smith does not employ any kind of new methodology and it is simply elaboration and illustration of procedures suggested by other studies concerning working capital management.

Mishra (1975) studied the problems of working capital with special reference to six selected public sector undertakings in India over the period of 1960/61 to 1967/68. By analysis of financial ratios and responses to a questionnaire, the study revealed that in all the 4 selected enterprises, inventory constituted the most important of
working capital. The study focused that the efficiency of working capital funds employed in receivable was awfully low in the selected enterprises. The size of cash was on the high side in terms of operational requirements. Its main reason was stated to be the lack of proper planning on control of cash. For the reduction of overstocking, the study suggested installing an integrated inventory management department from the very inception of the enterprises. He concluded that the selected enterprises have not been able to utilize working capital efficiently. He revealed somewhat the same results as those of NCEAR study with respect to composition and utilization of working capital.

Campbell and Brendsel (1977) empirically examined the impact of compensation balance requirements of the cash holdings of US firms for the period 1953-1963. By employing the Miller and Orr's OLS regression of the target cash balances over the cash holdings by the firms, they find that compensating balance requirements are not binding. These results are further verified by applying Cochran-Orcutt technique.

Varden (1978) researched on the application of the portfolio balance framework of the portfolio behavior with special focus on management of working capital of nonfinancial corporation. Further, he hoped that this study would yield some insight into the short-term decision making process of corporate portfolio managers. In his study, he assumed that non-current assets and non-current liabilities as well as equity were treated as exogenous variables while current assets and liabilities were treated as endogenous.

This study indicates that it is often required to determine the optimal composition of the portfolio of current assets and current liabilities. After computing the short term and long-term coefficient of the model, the study pointed out that the short run
changes in independent variables as sales, new orders, and interest rates do influence current assets and current liabilities significantly.

Lieberman (1980) studied on "Inventory demand and cost of Capital effects". As earlier studies, he also included the opportunity cost of inventories as a key explanatory variable along with sales in his study. Lieberman, in his study, examined the size and significance of the theoretically important cost of capital effect on inventory investment by utilizing firm specific cost of capital measures in a pooled cross section econometric analysis of inventory behaviour. He used a firm specific cost of capital measure instead of a market interest rate, which avoided the measurement errors introduced into the analysis by the later procedures. The econometric analysis was conducted using two samples of firms. The first sample, which includes heavy machinery producing companies, attempted to explain inventory investment behaviour for companies that produce output in response to orders. The second samples consisted of textiles companies that produce output predominantly to stock in anticipation of orders. He explained that the desired level of inventory was the function of sales, the opportunity cost of holding inventories and in the case of goods produced to order, order back logs.

In addition to average cost of capital, another set of cost of capital measures employed was only the estimated cost of capital as a proxy for the firm's total marginal cost of capital. The wholesale price index for machinery and equipment was used to deflate the inventory associated with the machinery industry while the wholesale price index for textile product and apparel was used for the textile industry. The results of the study supported the theoretical proposition of Lieberman. Its result showed that cost of capital coefficients was statistically significant with the theoretically expected signs. Surprisingly, the sales coefficients were on the high side.
These equations were also re-estimated employing 4-6 months-time. Instead of specific cost of capital, however none of the equations yielded a statistically significant result. Therefore, the result that the significant cost of capital effects obtained by the study may be attributed to the use of theoretically more appropriate cost of capital measure. A modest attempt was also to test for capacity constraints that might affect inventory holdings. When capacity utilization was included in the above equation to test for inventory changes due to capacity constraints, it turned out to be statistically insignificant in all these case. Lastly, it is clear that the Lieberman study supported the findings of Liu and Kuznets with respect to cost of capital effects.

Copeland and Khoury (1980) applied the capital assets pricing model to develop a theory of credit extended. They suggested that before investing in receivables, the enterprises should evaluate the impact of such an action upon its overall financial position. They argued that credit should be extended up to point where the expected rate of return just equals the market determined required rate of return for the firm with its new risk arising from uncertainty regarding collection due to the extension of credit. They used capital assets pricing model to determine the required rate of return for the firm. Thus, their study showed how capital assets pricing model could be used for decision involved in working capital management.

Saradhi (1980) made an attempt to highlight the problems of working capital management based on the study of aggregate financial data of public enterprises and as revealed by a few case studies of individual units. After analyzing the aggregate data in a period of seven years from 1971 to 1977, the study observed that the share of inventories in the total current investment was the highest and enhanced. The inventory planning did not appear to be efficient. He further pointed out that it appeared, though credit function was given the objective of quicker collection and not
maximization of sales. Besides, from the point of view of profitability there appeared to be no unity of purpose between sales function and credit function. Receivable management appeared to be in the direction of reducing the receivables investment and providing greater liquidity to current assets investment in 1974. Cash inflows were affected by delay in realization of bills receivables. In the event of shortage of cash, payment to suppliers was delayed. In the study, the current liabilities as important part of working capital did not take into account.

These findings clearly show that the study was concerned more with a fact finding process rather than applying techniques. The validity and reliabilities of most of the findings are not known, as the author did not present the data necessary to support them.

Irvine (1981) devoted his study towards finding out whether or not the level of inventory depends significantly on the cost associate with holding inventory. The study estimated time-series equations over a 1958-74 period explaining the monthly inventory levels held by the total retail sector and the non-durable and durable sub sectors. He found that expected future sales are the major, determinants of retail inventory levels. Furthermore, he observed that the estimated coefficients on the capital cost measures are negatively signed but they are statistically significant. He pointed out that the target durable inventories seem to be much more sensitive to fluctuations in capital cost than nondurable inventories. The Irvine study demonstrated that the fluctuations in capital cost causes change in target levels of retail inventory, which are both statistically and economically significant.

Akhtar (1983) studied on effects of interest rate and inflation on aggregate inventory investment in the United States. The expected price inflation and capacity utilization were included as additional explanatory variables in his model. In this
study, quarterly data for the sample period 1965-81 and for the sub period 1972-1981 were used. He indicated that all explanatory variables except capacity utilization were statistically significant for both, entire sample period and the sub period. Finally, he concluded that fluctuations in carrying cost, interest rates and inflation had very significant effects on inventory investment.

Agrawal (1983) studied on working capital management by taking sample of thirty four large manufacturing and trading public limited companies in ten different industries in private sector for the period of eleven years starting from 1966/67 to 1976/77. An attempt was made to examine the industry practice in working capital management and to evaluate the management performance in this regard. By applying the ratio analysis as financial tools, responses to questionnaire and interview, it has been found that a wide variation prevails in the size of working capital in relation to sales in different industries. In the majority of industries, working capital per rupee of sales showed a declining trend over the years. The majority of industries failed to plan their working capital requirements properly and to control liquid resources effectively. An upward trend in cash to current assets ratio and a downward trend in cash turnover showed the accumulation of idle cash in most of the industries. A low proportion of marketable securities in total liquid funds and total current assets showed that firms have not been able to make profitable utilization of surplus cash. The overall picture of receivables management was not satisfactory in most of the industries. Almost all the industries had overstocking of raw materials caused by increase in the share of raw materials out of total inventory and decrease in the share of semi finished goods and finished goods. In addition, he revealed that short-term borrowing showed a declining trend over the years mainly due to reduction in the flow of bank credit to industries.
Singh, Sinha and Singh (1986) examined various aspects of working capital management in fertilizer industry in India covering a period of five years starting from 1978/79 to 1982/82 by taking sample of Fertilizer Corporation of India limited (FCI) and its daughter units. Based on the ratio analysis and responses to a questionnaire, they found that the current assets turnover was low in the FCI and its daughter units during the period of study. There was excess investment in inventory in respect of each of its components particularly stores and spares. Similarly, the study pointed out that the receivable turnover was also low. The cash liquid sources held by units were inadequate to meet the operational requirement. Regarding the financing of working capital, short-term funds had a high proportion of current assets. They concluded that inefficient management of working capital was to a great extent responsible for the losses incurred by the Fertilizer Corporation of India Ltd and its daughter units.

Pradhan (1986) studied on management of working capital of selected Nepalese Public Enterprises covering ten years' period starting from 1973 to 1982. The main objective of the study was to examine the various aspects of working capital management in Nepalese manufacturing Public enterprises. In his study, he used a variety of financial ratios to achieve the objectives. He employed the discriminate analysis to examine the short-term liquidity position and regression analysis to estimate the transaction demand functions of working capital and its various components. In his study, the demand for working capital has been viewed in a way similar to the demand for cash and inventories.

By using the econometric models, he found that the level of working capital and its components depend not only on sales but also on holding cost. However, the inclusion of, capacity utilization in the models does not seem to have contributed
much to the demand function of working capital and its various components. It was revealed that most of the selected enterprises have been achieving a trade-off between risk and return: Almost all enterprises had a positive net working capital. The negative net working capital was observed in a few cases. Most of the enterprises have current ratio of greater than two. However, current ratios have declined slowly and steadily over a period of time in the majority of selected enterprises. The study of turnover ratios computed over a period showed the improvement in utilization of current assets by the majority manufacturing public enterprises but that was not the case with net working capital utilization.

Singh (1987) studied on working capital management in public enterprises in India, with reference to Scooters India Ltd. The study intended to assess the stock and flow, determinants and constituents of the working capital in the Scooters India Limited during the period 1974/75 to 1985/86. The collected data were processed through ratios, percentages, proportions, sources, and uses of funds. Based on analysis, he pointed out that the company followed a conservative policy as it endeavours to maintain sufficient current assets. Regarding the inventory management, the study stated that the growth rate of inventory was higher than the growth rate of sales and out-put during the study period. Further, the study revealed that SIL had tightened gradually its credit belt as the accounts receivables turnover ranged 0.20 times to 9.22 with a rising tendency during the period under the study. The company was able to manage credit and collection as per his study. The study showed that the size of cash and working capital held by the company was far less as compared to the total requirements during the period under the study. The study observed that the working capital in SIL was always financed through cash credit arrangement, only from state bank of India and Indian overseas bank. He concluded
that the total operations of the SIL under the study were highly uneconomic and it had to suffer cash losses in each of the year of its working and always over-burdened the working capital funds at the disposal of SIL.

Agrawal (1988) in his paper, an attempt was made to develop and suggest a multi objective criteria to the problem of working capital decisions by making- use of the: potential of goal programming which allows an simultaneous solution of complementary and conflicting objectives rather than a single objective only. The goal-programming model may be used for different profit targets with varying levels of current assets, in order to obtain a satisfying level of the various components of working capital and the profitability and liquidity goals. He stated that it might be concluded that the goal programming formulated for the management of working capital serves to illustrate the need for a solution where conflicting objectives were defined. In addition, ordinal ranking of objectives has prevented the need of stating exactly how important an objective is, compared to others.

Mishra (1988) studied on inventory management and control in central public enterprises in India. The purpose of the study was to analyze and evaluate the inventory position in the various industrial groups of the central public enterprises in India over a period of ten years from 1976/77 to 1986/87. For the comparative analysis, all the central public enterprises were divided into 12 industrial groups and 8 service group. The collected data were analyzed by using traditional techniques like ratio analysis and different statistical techniques like correlation coefficient and trend analysis. After analyzing the data, the study revealed that the value of inventory varied not only from year to year but also from industry to industry over the period under the study. The value of inventory and its trend in public enterprises of the different industrial group exhibited positive trend. There was huge investment in
inventory. He concluded that the overall inventory management of central public enterprises was unsatisfactory. The study further noted that the inventory had a high degree of positive correlation with sales in public enterprise in India.

Verma (1989) made study on the management of working capital in respect of "Iron and Steel Industry" in India by taking the sample of both the public and private sector over the period of 1978/79 to 1985/86. By using ratio, growth rate and simple regression, he absorbed in the course of the study that the private sector unit had shown better performance on all-the - fronts than ’any of the public sector unit. Simple linear regression showed that working capital and sales were functionally related concept. A significant correlation had been found in these two variables in all the units. Verma also absorbed that the problem of working capital in this industry was related to surplus investments than to inadequacies in the inventory and receivables. But as far as cash was concerned, almost all the unit have experienced inadequacies during the period of the study. The study further showed that all the firms in the industry had made excessive use of bank borrowings to meet their working capital requirement vis-avis the norms suggested by Tondon committee, he found that the management of working capital had great scope for improvement in the iron and steel industry in India. He suggested that this could be tackled through improved coordination in the functioning of some strategic departments such as purchase, production, marketing and finance.

Kim and Rowland (1992) conducted research on working capital practices of Japanese manufacturers in the United States. The purpose of the study was to discover objectives of working capital management by Japanese manufacturers in the United States and to identify major portions of short term funds. To achieve the objectives of the study, they collected the data by distributing, questionnaires to financial managers
of ninety four Japanese manufacturing companies in the United States. On the basis of the responses to a questionnaire, they discovered that the most important objectives of working capital management by Japanese investors was to provide various current assets and short term credit necessary to support anticipated sales. In addition, they identified that the Japanese investors obtained most of their short-term funds from Japanese sources.

Roychowdhury (1992) studied on the management of working capital of Indian Tobacco Corporation over a period of ten years starting from 1981 to 1990. The main objective of the study was to determine the efficiency and effectiveness of management of Indian Tobacco Corporation in each segment of working capital. To analyze the data, he used different techniques such as ratio analysis, common size statement, trend analysis and rank correlation coefficient. In his study, he observed that the obsolete liquid assets were insufficient to liquidate the maturing obligation of the Indian Tobacco Corporation. The management to cash during the period of study was not satisfactory in the company. He pointed out that the management of receivables and inventory was satisfactory. Regarding the working capital, he further pointed out that there was declining trends in the first half while a rising trend in the second half. The size of net working capital maintained by the company was far short to its requirement during period except during the year 1987 and 89 where it had excessive. More than half of current assets were financed by short-term sources and remaining from long-term sources. The study pointed out that the efficient management of inventory and credit and collection policy of the unit had led to the efficiency in operating cycle of the unit. Finally, he observed receivable and inventory of ITC Ltd. was managed efficiently and effectively.
Rao (1993) conducted a study on working capital management in selected state enterprises of Karnataka. The primary objective of the study was to evaluate the efficiency of working capital management in selected state enterprises. Using ratio, operating cycle and statistical tools, the study showed the excess amount of working capital maintained by the selected enterprises. The study pointed out the significant extent of money locked up in inventories. The enterprises were also found to be deficient in controlling effectively the cash inflows and cash out flows. An analysis on the financing pattern among the selected enterprises revealed the dominance of short-term sources compared to long-term sources. For the efficient management of inventory, the study suggested to modify thoroughly the existing structure of the organization. Further, he advised to fix minimum level of cash and determine the appropriate size of cash balance to reduce the opportunity and carrying cost.

Jain (1993) threw some light on working capital management in selected Indian enterprises. Altogether, seven companies were included in the study. Out of them seven companies, two belong to the public sector and five companies in private sector. The study was based on primary as well as secondary data, the study covered seven years period starting from 1981/82 to 1987/88. In order to analyze the problem of working capital management various techniques of financial management such as ratio analysis, funds flow analysis, and cash flow analysis and several statistical techniques have been used. The major findings of the study may be stated as follows:

- In the majority of companies, the current ratio showed a satisfactory current financial position.
- The quick ratio showed an unsatisfactory liquid position - in most of the selected paper companies.
- The majority of companies held excessive inventories.
• The receivable management was no so effective in most of the selected paper companies and the average collection period was very high.

• All the selected paper companies had kept their excessive cash funds either in short-term deposit or in current accounts with bank.

• The major portion of current assets was financed by short-term sources.

Singh (1993) worked on working capital management in the Fertilizer Industry by taking a case of Indo Gulf Fertilizer and Chemicals Corporation Limited in Sultanpur over a period of six years starting from 1985/86 to 1991/92. As per his study, the current ratio of the company was satisfactory whereas there was no proper utilization of quick assets. He also pointed out that the size of inventory throughout the period of study marked an increasing trend in the company except in 1991/92 and the proportion of inventory to current assets in the unit was fluctuated from year to year. The receivable management of the unit during the study period was not good because of too liberal and inefficient credit collection performance and increasing trend of average collection period throughout study period. The study noted that no adequate efforts were made by company to control cash flow. The study suggested that there was an urgent need to bring change in the attitude of the managements towards working capital. The management should consider not only liquidity but also profitability.

Singh (1994) studied on inventory management of steel industry in India with special reference to four selected public sector undertakings. The objective of the study was to examine all the aspects of inventory management during the period of 1980/81 to 1988/89. By using conventional techniques, he found that the working capital locked up in inventory was excessive. The inventory had dominant position in the structure of working capital. Not only was the entire working capital but also
long-term capital to some extent employed in maintaining inventory in the public sector industry in India. He further pointed out that the purchasing management and store management were not satisfactory. The industry is still using traditional techniques of inventory control. The management of inventory was done mainly on the basis of rule of thumb. The modern scientific control techniques were not used in the industry. The study concluded that the existing system of inventory management in public sector steel industry in India was not satisfactory and needed improvements in all directions without delay.

Joshi (1995) worked on working capital management under inflation. The study was intended to examine the industry practice in the working capital management and to evaluate management performance in certain capital intensive industries such as cement, chemicals and engineering over a period of ten years starting from 1976/77 to 1985/86. Nine companies from cement industries, twenty-five companies from chemical industries and thirty companies from engineering industry were taken for the purpose of the study. By the analysis of financial data, he observed that the chief financial executive in most of the companies was responsible for the management of working capital. In most of the companies, there was no problem of inadequacy of working capital. The companies which faced inadequacy was due to cash shortage whereas some companies has excess working capital due to over investment in inventory. He opined that the majority of industries had ‘ailed to plan their working capital requirements properly and majority of the industries lad not been able to control their liquid resources. The companies in all the three industries have failed to maintain the proper level of inventory. The debtor management in ill the three industries were observed to be ineffective and inefficient. During the period of study, he found that no proper system of planning, supervision and control of current assets
had been developed. The growth of current assets was higher than the growth of sales in some years, which was reflected that there was no efficient management of current assets. He also found out that entire industries could not take the advantage of inflation to increase profitability. The industries have attempted to deal with the inflationary conditions even inflation on working capital management.

**Rao and Rao (1995)** attempted to examine the perceptions of chief executives selected enterprises as to the various aspects of working capital. The study a biased of the data collected through questionnaires developed covering objective, size, policy, financing and control of working capital in respect ten public enterprises belonging to public manufacturing sector of Karnataka. The study revealed that the majority of executives of selected enterprises recognized efficient use of resources as primary objective of working capital policy and followed by liquidity and profitability. The study showed that inventory occupied an important place followed by receivable in the total working capital structure of the stated enterprises. They also found out that the majority of the executives used overall budgeting method in planning for the working capital requirement. Similarly, executives of these enterprises used the budgetary control technique to control working capital. They also noted that the major goal of cash management was avoidances of shortages and surpluses of cash. The study revealed that collection of debts, accumulation of finished goods, availability of working funds and uncertain cash flows were some of the major problems of working capital management encountered by the state enterprises.

**Vijay kumar and Venkat chalam (1996)** studied the demand for working capital in private sector industries of Tamil Nadu by selecting sample of seven companies. The objective of the study was to determine empirically whether transaction working capital balances including cash and inventories vary
proportionately or less than in proportion to change in the volume of sales and capital cost. For the purpose, they estimated the demand function of working capital and its components i.e. cash, receivables, inventories, gross working capital and net working capital. When only sales were taken as independent variable, coefficient of sales was more than unity in all the equations of working capital and its components. So far as capital costs were concerned, these had negative signs in all the equations but significant only in inventories, gross working capital and net working capital showing negative impact of interest rates on investment in working capital and its component. Thus, the regression results strongly suggested that the sales and capital cost affect the demand for working capital and its component determined.

Hossain (1996) studied on receivable management in public sector textile industry of Bangladesh. The objective of the study was to attempt to analyze and evaluate the receivable management in the public sector textile industry of Bangladesh by taking forty textile units working under the administrative control of Bangladesh Textile Mills Corporation (BTMC) covering a period often years starting from 1982/83 to 1991/92. On the basis of analysis, he found that the total receivables constituted more than one third of the total current assets and the turnover of total receivables was low and unsatisfactory. Receivable management has been found to be in poor shape in BTMC. BTMC was adopted the policy not to sell goods on credit basis except to the government organization and other public sector organization. He suggested that the BTMC management should try to impose strict control over receivables to keep it within normal limit. In addition, to increase the sales and profits of the corporation, the corporation should start extending credit sales facilities to private parties also on favourable terms.
Sur (1997) in his article, made a modest effort to analyze the working capital management of Colgate Palmolive (India) Ltd. during the period of 1980 to 1991. For assessing the performances of the working capital, in the study, the technique of ratio analysis was used. Based on quick ratio, he pointed out that the liquidity position of the company was not satisfactory. Major portion of the total investment of the company was made in working capital. He found that the share of inventories in the total current assets was the highest and there was no effective control over inventory. The management of debtors of the company was encouraging.

Hossain and Akon (1997) examined the various facets of financing working capital in public sector textile industry of Bangladesh over a period of twelve years starting from 1982/83 to 1993/94 by taking forty public sector textile units working under the ownership and administrative control of Bangladesh Textile Mills Corporation (BTMC) as sample. They observed that the BTMC had followed an aggressive working capital financing policy taking the risk of liquidity. There was uninterrupted increasing trend in negative net working capital throughout the period of the study, which suggested that BTMC had exploited the entire short-term sources available to it without considering the actual needs. Among the various components of current liabilities bank loan accounted for a predominant share of total current liabilities were found to be 1.2 to 2.7 times larger than current assets showing that a large amount of short-term finance was used in financing fixed assets in addition to financing current assets to the extent of 100 percent. Such an approach had aggravated the problem of poor profitability of the corporation besides increasing the risk of financial solvency. They concluded that unsound working capital financing policy was at the heart of the liquidity problem of BTMC. It was suggested that BTMC should review its present aggressive working capital financing policy to avoid
excessive reliance on short term funds specially bank credit, which were costlier in Bangladesh than long-term funds. In addition, BTMC needs to increase the generation to long-term funds in financing a part of its working capital requirement, which may be in the form of equity or long-term debts.

Smith (1997) studied on modelling associations between working capital and operating profit. The purpose of the study was to report on results of research undertaken to model associations between traditional and alternative working capital measures and operating profit in 135 industrial firms listed on the Johannesburg Stock Exchange over a period of ten years starting from 1984 to 1993. In the study, stepwise forward regression analysis was undertaken to model the underlying relationship between the independent variables and dependent variables. In his study, total current liabilities divided by gross funds flow, accounts receivable turnover, accounts payable turnover, net trade cycle, long term loan capital divided by net working capital, cash conversion cycle and current ratios were used as independent variables, and operating profit was used as dependent variables. After analyzing the data, the study found the traditional working capital leverage ratio of current liabilities divided by gross funds flow displayed the greatest associations with operating profit. As per the findings, a decrease in total current liabilities divided by gross funds flow could indicate an improvement in operating profit and vice versa.

Shin and Soenen (1998) studied on efficiency of working capital management and corporate profitability. They investigated the relation between the firm's net trade cycle and its profitability. The relation was examined using correlation and regression analysis. They found that in all cases, a strong negative relation between the length of the firm's net trade cycle and its profitability. In addition, shorter net trade cycles are associated with higher risk adjusted stock returns.
Vijaya Kumar (1998) studied on a comparative study of working capital management in cooperatives and private sector companies in the sugar industry of Tamil Nadu by taking the sample of ten companies over the period ten years from 1982/83 to 1991/92. In the course of analysis, various statistical techniques, financial ratios, and econometric models were used. After analyzing the size of working capital, he found that the private units had enjoyed comparatively sound liquidity position and efficient utilization of working capital funds and it seems to have achieved a trade off in its liquidity and profitability. Besides, a significant negative correlation was observed between return on investment and working capital. It was also revealed that the demand for working capital and its components was a function of both sales and their holding costs. The problem of working capital management in the industry was surplus investments than inadequacies. Surplus investment had found mainly in inventory and receivables component. Further, he stated that the private sector units had shown better performances on all the fronts than any of the cooperative sector units. Finally, he suggested that the management of working capital had a great scope for improvement in the sugar industry in Tamil Nadu.

Akan (1998) studied on working capital management in public sector textile industry in Bangladesh. The objective of the study was to analyze the strengths and weakness of working capital management in Bangladesh Textiles Mills Corporation (BTMC) and suggest accordingly. The study period covered eleven years ranging from 1982/83 to 1992/93. After analyzing the various ratios, he observed that the BTMC had followed an aggressive working capital financing policy which would have adversely affected the profitability because of the short term finance specially bank credit was costlier than long term finance in Bangladesh. Besides, it would have also increased the risk of financial insolvency. The short-term solvency and liquidity
of BTMC had been worsening year after year because of rising negative net working capital. The productivity or utilization of current assets in BTMC was very low and inefficient. He further pointed out that the BTMC would have gone into liquidation for long back if the government had not supported it.

Hosain and Islam (1998) examined the liquidity management of sugar and food Industries Corporation in Bangladesh over a period of ten year ranging from 1984/85 to 1993/94. By using different financial ratios and statistical techniques, they pointed out that the short-term solvency and liquidity of the BSFIC has been worsening year after year because of continuous rise in the negative working capital and very low current and quick ratios. The corporation kept excessive stock of slow moving inventory during the whole period of the study. Cash from operation could not provide even the marginal coverage to the currently maturing obligation of BSFIC because of poor or negative profit margin. They further found that the BSFIC's liquidity position had deteriorated mainly because the corporation increasingly followed by an aggressive financing policy including financing of current assets by using more and more short-term funds as against long-term funds. The aggressive financing policy would have adverse impact on BSFIC's profitability in the form of increasing interest burden because short-term funds in the form of cash credit are generally costlier than long-term funds in Bangladesh. They inferred that the liquidity management in BSFIC is a very poor shape because of mounting current liabilities on the one hand and persisted losses on the other. In fact, the corporation would have gone into liquidation long back if the government had not-supported it. Finally, they suggested that the management of BSFIC should consider both the financial risk and the cost of financing before choosing any particular sources of working capital. There
was ample scope for increasing cash inflows by increasing sales, reducing overstocking of different components of inventories.

Wenrauband Visscher (1998) conducted research on industry practice relating to aggressive/conservative working capital policies. The primary objective of the study was to determine if significant industry differences exist in working capital policies. The next objective of the study was whether a tendency exists for industries, following aggressive investment policies to follow aggressive financing policies. In addition, the stability of working capital policies over time was also investigated. For the analysis, data were collected from two hundred sixteen companies’ often different industry groups over a period of ten year starting from 1984 to 1993. Use of different statistical techniques showed that the industries have significantly different current assets management policies. Further, the relative nature of the assets policies between industries exhibited remarkable stability over the ten years study period. They, further, pointed out that industry policies concerning the relative degree of aggressive liabilities management also were significantly different but not to the same extent or with the same stability. The study showed a high and significant negative correlation between industry assets and liabilities, and relatively aggressive working capital assets management seems balanced by conservative working capital financing policies.

Kim, Mauer and Sherman (1998) worked on the determinants of corporate liquidity. The purpose of the paper was to provide a theoretical and empirical investigation of the firm's decision to invest in liquid assets. Nine hundred fifteen industrial firms as sample, during the period of twenty years starting from 1975 to 1994 were taken. In the paper, they developed a model of optimal corporate investment in liquid assets based on a cost benefit trade-off between the holding cost
of liquid assets and the benefit of minimizing the need to fund profitable future investment opportunities with costly external financing: They found that the firms with larger market to book ratio had significantly larger position in liquid assets. In addition, the size of the firm tends to be negatively related to liquidity. They also found that firms with more volatile earnings and lower returns on physical assets relative to those on liquid assets tend to have significantly larger positions in liquid assets. Finally, concluded a positive and significant relation between liquidity and measures of future economic conditions that supports the models prediction that firms build liquidity in anticipation of promising future investment opportunities.

Hyderabad (1999) in his paper, an attempt has been made to evaluate the working capital investment and financing policies by taking 756 nongovernment and non-financial large public limited companies as sample for three years period from 1994/95 to 1996/97. By using different ratios, he found that a large majority of Indian public limited companies had adopted a conservative policy towards the current assets investment. Similarly, he revealed that the large companies in India had followed a relatively aggressive approach in financing their working capital requirements. Further, he suggested employing more long-term funds to improve their overall working capital policy.

Malik and Sur (1999) attempted to examine the working capital management of Hindustan Lever Limited, one of the largest corporate units in the consumer goods sector. The study covered ten years period from 1987 to1996. The objective of the study was to make a comprehensive analysis of working capital management of the company. For analyzing data, the techniques of ratio analysis, statistical techniques like spearmen's rank correlation analysis, Kendall's coefficient of concordance, multiple correlations and multiple regression analysis were used. The study revealed
that the major portion of total investment of the company was made for working capital purpose. The company was doing very well in terms of efficient employment of working capital funds. The short-term fund had played dominant role for the financing of working capital. They pointed out the remarkable feature of study that there was a very high degree of positive relationship between liquidity and profitability; which signifies a favourable influence of liquidity on the profitability of the company. They concluded that the working capital management of the company, component wise as well as over all had been remarkably encouraging over the study period.

**Opler et al. (1999)** examined the determinants and implications of holding cash and cash equivalents by 1048 publicly traded US firms during the period 1971-1994. Their results show that cash holdings are negatively related to size, net working capital, leverage, dividend payment, and government regulation while they are positively related to the cash flow to assets ratio, the capital expenditures to assets ratio, industry volatility and the Rand D to sales ratio. They concluded that firms with better growth opportunities and riskier cash flows had higher levels of cash, while large firms having better access to capital markets hold less cash. Similar results were reported by Faulkender (2002) for a sample of small US firms and Ozkan and Ozkan (2002) for a sample of UK firms.

**Cudawat and Bhanwat (2000)** studied on working capital management practices in tube and tyre companies assisted by Industrial development Bank of India. Five years data of post liberalization period from 1993/94 to 1997/98 have been considered for the purpose to the study. Ratio analysis technique and Srivastava and Yadav model were used to analyze the sample data. After analyzing the data, they found that the short-term liquidity position of the IDBI assisted companies in terms of current
ratio and quick ratio could be considered good as compared to tube and tyre industry as a whole. The overall working capital management of the IDIB assisted companies could be considered effective as cleared from the calculated 'Y' score which has been more than cut off point throughout the study period.

Rajeswary (2000) evaluated the efficiency of liquidity management in Tamilnadu Cement Corporation. To analyze the liquidity position, data were collected for a period of five years starting from 1993/94 to 1997/98. By using traditional ratio, the study revealed that there was too much of liquidity during the year 1995/96 and 1996/97. Besides, there was an unstable position in maintaining liquidity. The study concluded that the liquidity management of Tamilnadu Cement Corporation was poor and unsatisfactory.

Ricci and Vito (2000) conducted research on international working capital practices in the U.K. The purpose of the survey was to obtain information on some international aspects of working capital management in major British firms. They collected data by mailing questionnaires to the treasurers of the top 200 companies in the U.K. Based on responses, the study found that most of the firms tend to take a more centralized approach to international working capital management decision making. Regarding international cash management operation, the finding out was that wire transfers were used most widely, followed by electronic funds transfers, payments netting and cash pooling. With reference to foreign exchange activities, they indicated that the spot markets were used most followed by the forward market. Regarding the influence of international sales level on the use of working capital management vehicles, the number of foreign banks and overseas demand deposit amounts were significantly related to international sales level. Finally, they concluded that the level at which working capital decisions were made, was not dependent of
international sales levels perhaps indicating that corporate culture concerning decision making played larger role than international sales level.

Singh (2000) studied on management of working capital in Steel Authority of India Limited over a period of ten years beginning from 1989 to 1998 using ratio analysis, common size statement, Trend analysis, and rank correlation coefficient as techniques of analysis. The main objective of the study was to make an appraisal of the different aspects of working capital in SAIL. Based on analysis of data, the study revealed the inefficient and poor management of inventory because of low inventory turnover during the whole period of study. Similarly, the study showed that the management of receivables was also unsatisfactory due to the declining trend of receivable turnover ratio and increasing trend of average collection period in the SAIL. The size of net working capital maintained by the company was far short from the level of its requirements. The working capital turnover ratio was very low. The study found out that there was inadequacy of working capital and unsatisfactory liquidity position. More than 50 percent of total current assets in the company were financed by short-term funds and remaining by long-term fund. The study concluded that the management of SAIL was not successful in managing working capital and its components efficiently and effectively during the period under the study.

Saravanan (2001) presented the various facets of working capital management and their impact on the liquidity, short-term solvency and profitability of the ten nonbanking companies covering a period of ten years from 1987/88 to 1996/97. For the purpose of meaningful and comparative analysis of their policies in relation to working capital management, the selected non-banking finance companies have been classified into two groups namely medium and large sized non-banking finance companies, based on the paid up capital. To accomplish the objectives, the collected
data were analyzed by using conventional tools like descriptive tables, percentage, diagrams, graphs, different ratios and statistical tools like correlation, multiple linear regression and analysis of variance. After analysis the data, he pointed out that both the medium and large sized nonbanking finance companies had good short-term solvency and they had effectively used their debt. During the period of the study, their stock had turned over in an effective and efficient manner and they were making good returns on the funds of their shareholders. He further noted that the importance has been given to the liquidity aspect, leaving behind the profitability of funds employed in the form of working capital resulting in over investment in various current assets. He suggested that the attitude of the management towards working capital needed an urgent change. Further, it was suggested to the management to consider both the facets of working capital as equally significant and only proper balancing of liquidity and profitability would ensure effective and efficient working capital management.

Yadav, Jain and Rastogi (2001) examined and compared efficiency of working capital resources in three integrated refining and marketing oil industry firms; namely Bharat Petroleum Corporation Limited (BPCL), Hindustan Petroleum Corporation Limited (HPCL) and Indian Oil Corporation Limited (IOCL). Using the traditional technique of ratio analysis to analyze the collected data, they found that the liquidity position of BPCL and HPCL was not satisfactory whereas of IOCL was satisfactory during the period under the study. BPCL had the highest average working capital turnover ratio followed by HPCL and IOCL during the ten-year period. The study showed that BPCL was making more use of current liabilities to fund its current assets as compared to IOCL and HPCL. In addition, they noted BPCL and HPCL had better managed their inventory days in comparison with industry average and IOCL had performed poorer than industry average. Regarding the average debtor days, HPCL
had the best performance followed by BPCL then IOCL. They concluded that the performance in the area of working capital management of BPCL was not good whereas the performance of HPCL was good. Similarly, the performance in the area of working capital management of IOCL was not satisfactory.

**Sur (2001)** in his paper, comparatively analyzed the various aspects of their liquidity management in electricity generation and distribution industry; namely Ahmedabad Electricity Company Ltd.(AEC Ltd.), Bombay Suburban Electric supply Ltd.(BSES Ltd.), Surat Electricity Company Ltd.(SEC Ltd.), Calcutta Electric supply corporation Ltd.(CESC Ltd.) for the period of 1987/88 to1996/97. For analyzing the performance of the liquidity management of the companies, the techniques of ratio analysis, Metal's comprehensive rank test, and spearman's rank correlation analysis were used in the study. Based on ratio analysis, it was found that the liquidity position of companies was not satisfactory because the current ratio of all companies was far below than the conventional standard of 2: 1 throughout the study period. He pointed out that the liquid assets of the companies were inadequate to meet very short-term debt. The deficiency of the inventory management of all the four companies was quite encouraging during the study period. As per the study, the increasing trend in the debtors turnover ratio of AEC Ltd showed improvement in the efficiency of the company on its credit management whereas the overall declining trend in case of BSES Ltd., and CESC Ltd. reflected deterioration in the efficiency of their debt management Further, he pinpointed that the rank correlation coefficient between current assets to total assets ratio, and return, on total capital employed of BSES Ltd and CESC Ltd was positive and statistically significant. In case of AEC Ltd and SEC Ltd, the rank correlation coefficient was positive and statistically insignificant.
Alam and Hossain (2001) examined and evaluated the practice and performance of inventory management in Khulna Shipyard Ltd (KSL) covering ten years period ranging between 1987/88 to 1996/97 using different financial and statistical tools. After analysis of financial data, the study revealed that the inventory management performance of KSL was in a poor shape. On an average, inventory occupied about two thirds of total current assets and there was significant positive correlation existed between the two variables. Inventory to total assets also corroborates high investment in inventory. Inventory to net sales ratio ranged 4.3 percent to 243 percent against the expected norm of 12 to 20 percent, which showed over investment in inventory. The conversion period of stores and spares was exceptionally high ranging between 183 days to 1303 days with an average 455 days. The conversion period of work in progress also corroborates the same situation as it ranged between 47 days to 328 days. The profitability of KSL was adversely affected by the excess investment in inventories and high conversion period of stores and spares and work in progress during the period of review. He suggested that the company should establish an integrated separate department for inventory management, which could work in liaison with the production, finance and sales department to perform the functions like inventory planning, procurement, storing, inspection, maintenance for effective control over different components of inventories.

Pinkowitz and Willian son (2001) examined the effect of bank power on cash holding patterns of industrial firms for a sample of Japanese firms for the periods 1974-1995, German firms for the periods 1984-1994 and US firms for 1971-1994. The cross-country analysis shows that Japanese firms tend to hold more cash than the American or German counterparts do, while cash holding pattern was similar across German and US firms: The OLS regression analysis reveal that Japanese cash
balances are significantly influenced by the monopoly power of the banks. This is consistent with the fact that high cash holdings mean higher rents extracted by the banks during the periods when they enjoy certain power in the corporate lending system.

Sathyamoorthi (2002) conducted a research on management of working capital in selected cooperatives in Botswana. The objective of the study was to ascertain how the current assets are financed and to discover the relative importance of various current assets components based on four years data 1994-97 of some selected organization. He observed that the liquidity of cooperatives based on current ratios and quick ratios was below the benchmark. In terms of working capital management, the selected cooperatives adopted an aggressive approach in entire study period. Similarly, conservative current assets financing policy was adopted by the selected cooperatives. It was also observed that in most cases, the societies were in the practice of using long term funds to discharge current liabilities. The study showed that the cooperatives had low liquidity position, resulting in their weak position to pay short-term debt.

Shukla (2002) examined various aspects of working capital management of eight cotton textile units of Rajasthan during the period of ten years from 1977-78 to 1986-87. On the basis of ratio analysis, statistical measures and discriminate analysis, the study revealed that the size of inventory and receivables was very large. All the sample units had made excessive use of bank borrowing to meet their working capital requirements. The study pointed out that the major causes of excessive inventory holding of these units were defective organizational set up, purchasing system, in adequate use of inventory control techniques. It was also observed that the collection policy was very liberal in almost all the units. The cash performance of most of these
units was not satisfactory. The liquidity position of selected units had been found poor which was resulted either by their negative quick net working capital or by negative cash flow. The study noted that the profitability, which prepares an internal base for financing of working capital, had been very low or negative in these units. The important causes of low profitability of these units were low capacity utilization; industrial unrest; inefficient-management, defective capital, structure and high cost of production. The empirical study showed that units with high liquidity had shown high profit and vice-versa. Similarly, the study showed the units with consisted moderate approach to risk had registered more profits as compared to those, whose approach to risk was aggressive. The study suggested that the units should have separate inventory management department and credit and collection department to reduce the over investment in inventory and receivables.

_Dwivedi (2002)_ studied on working capital management in the Tata Iron and Steel Company, a fully successful large-scale manufacturer of Steel in India. The main objective of the study was to examine the working capital management and its various components such as cash, inventories, receivables and financial resources of working capital in TISCO over a period of six year started 1994-95 to 1999-2000. To evaluate the performance of different aspects of working capital and its various components separately, financial ratios and statistical techniques such as growth indices, mean, and coefficient of range, linear regression analysis, and chi-square test were used. After the analysis of data, the study revealed that the inventory turnover showed declining trend in TISCO and the low inventory turnover ratio reflected an inefficient and poor inventory management. The proportion of inventory to current assets fluctuated from year to year. The size of inventory throughout the period of the study marked an increasing trend in TISCO except in 1999-2000. He further pointed
out that the declining trend of accounts receivable turnover ratio and the rising trend of average collection period showed poor receivable management. The size of cash balance in company registered a downward trend through the period of the study except in 1999-2000, which had an invariable trend of rise. He pointed out that the adequate efforts were not made by the company to control the cash flow. Regarding the working capital management, the study found that the declining trend of working capital turnover ratio throughout period of study except 1999-2000. The operating cycle in company continuously moved to increase throughout the period of the study except in 1999-2000 because of inefficient management of inventory, credit and collection. The study revealed that the company employed short-term funds and long-term funds to finance current assets; In addition, the study noted that the liquid position was unsatisfactory in TISCO. The study concluded that the overall management of working capital was poor. The study suggested that the management of company should make intensive efforts to improve the management of inventory, receivables and cash for perfect output.

Deloof (2003) investigated the relation between working capital management and corporate profitability for a sample of 1008 large Belgian non-financial firms for the period 1992-1996. Trade credit policy and inventory policy were measured by number of day accounts receivables, accounts payable and inventories and the cash conversion cycle was used as a comprehensive measure of working capital management. By using correlation and regression analysis, he found significant negative relation between gross operating income and the number of days accounts receivable, inventories and accounts payable of Belgian firms. The results suggested that managers could increase corporate profitability and create value for their shareholders
by reducing the number of day accounts receivables and inventories to a reasonable minimum.

**Howorth and Westhead (2003)** examined the working capital management routines of a large random sample of small companies in the UK. Principal components analysis and cluster analysis confirm the identification of four distinct types of companies with regard to pattern of working capital management. The first three types of companies focused upon cash management, stock management or debtor's routines respectively, while the fourth type was less likely to take up any working capital management routines. Influences on the amount and focus of working capital management were discussed. Multinomial logistic regression analysis suggests that the selected independent variables successfully discriminated between the four types of companies. The results suggest that small companies focus only on areas of working capital management where they expect to improve marginal returns.

**Gupta (2003)** studied working capital management on the basis of sample of eighty four companies of Food Processing Industry. For the purpose of analysis, necessary data were collected for the period 1989-90 to 1996-97. The study used financial ratio analysis as a tool for examining size, adequacy, structure, utilization and financing of working capital and multiple linear regression analysis was employed to determine the factor influencing investment in working capital. Based on analysis, the study revealed that the food processing industry in India employed a major portion of its total assets in the form of working capital surpassing the investment in fixed assets. However, the size of working capital did not seem to be adequate to pay-off current liabilities. In addition, it is stated that the industry had not been able to utilize working capital efficiently primarily because of poor management of inventory and receivable. It was found that, all the companies in the industry had
employed both long term and short-term sources of funds to finance working capital requirement and firms had increasingly been relying on short term funds over the years. By the comparative analysis of different categories within food processing industry, revealed that public sector units were less efficient than private sector companies in the management of cash spares and store’s inventory. Analysis of private sector companies, the study indicated that large sized firms were more efficient than the small, which had very poor liquidity. Foreign companies appeared to be more efficient in working capital management than Indian firms were. Among beverage, food product, tea and sugar companies, sugar companies were most inefficient and liquid largely due to poor finished goods inventory management. The study found that accelerator, fixed investment, external finance and internal finance influenced the investment in working capital.

**Dittmar et al, (2003)** tested the significance of corporate governance in determining the corporate cash holdings. They collected the data of more than 11000 firms from 45 countries for the year 1998 and employed a shareholders' rights index developed by La Porta et al. (1998). The results reveal that the firms in countries with low shareholder protection hold up to twice as much cash as firms in countries with high shareholder protection. In case of poor shareholder protection, the factors determining corporate cash holding, such as investment opportunities and asymmetric information become less important. Furthermore, they find that with the easier access to funds, firms hold larger cash, which-supports the agency theory.

**Khan, Hijazi and Kamal (2005)** studied on impact of working capital management on the profitability of firms. They took thirty large listed Pakistani nonfinancial companies as sample. The study covered five years period from 1996 to 2000. They examined the relation between working capital management and
corporate profitability. Number of days accounts receivables, inventories and accounts payable were used as measures of trade credit and inventories policies. The cash conversion cycle was used as overall measures of working capital management. By using Pearson correlation coefficient and fixed effect estimation model, they found a significant negative relation between firms' gross profit and the number of day inventories, accounts payable and cash conversion cycle. The results found consistent with the findings of other previous studies. They suggested that manager could generate positive returns for the shareholders by reducing the number of days account receivables and inventories to a reasonable minimum.

Toby (2005) in his paper entitled "Empirical survey of corporate liquidity management practices of Nigerian Quoted Manufacturing Enterprises". studied the capability of corporate finance executives in handling acute liquidity shortage through optimal cash flow management practices within a risk return framework. He took seventy seven Quoted-manufacturing enterprises as sample. Based on questionnaire survey, it was found that there was a insignificant difference between the practices of accounting and finance in the management of corporate liquidity in the responding companies. Most Nigerian accountants were not specially trained in money markets and corporate treasury management. The study also revealed that the companies rely heavily on the internal strategies of increasing efforts to collect receivables, reducing out of pocket expenses and deferring capital expenditure for dealing with cash shortage. Most corporate finance executives in Nigerian quoted manufacturing enterprises were risk averse in matching the sources and uses of funds. He concluded that most respondents were incapable of interacting with the financial markets in managing the cash flow cycle. He suggested that; the finance managers in
manufacturing enterprises needed to redefine their banking relationship regularly as a strategy for managing anticipated and unanticipated gap.

Filbeck and Krueger (2005) studied on an analysis of working capital management results across industries over a period of five years starting from 1996 to 2000 by taking nearly 1000 firms as sample in the survey. In the study, two issues were addressed. One research question was "are firms with in a particular industry clustered together at consistent levels of working capital measures?" and the next was ‘does working capital management performance for firms with in a given industry change from year to year?’ In their study, classical analysis of variance was used to address the issue of industry rank differences with in years. Similarly, assessment of working capital management performance across year was conducted using the Kendall's coefficient of concordance. After analyzing the data, they found significant difference existed between industries across time with respect to measures of working capital. The greatest differences occurred in the day sales outstanding ranking, which is statistically significant. In addition, regarding the consistency of working capital measures within industries through time, found that working capital measures for a given firm were not static and significant differences in the measures occurred across time. Finally, the result of the study suggested that there were significant differences in the industry working capital management rankings and working capital varied across time.

Nguyen (2005) investigated the hypothesis that money balances have a preventive motive and serve to mitigate the volatility of operative earnings that they used as a proxy for risk. Their results showed that money holdings are completely related to firm level risk, however negatively concerning trade risk. In line with past
researches, money holdings were found to be decreasing with the firm’s size and debt ratio and increasing with its gain, growth prospects, and dividend pay-out ratio.

**Teruel and Solano (2006)** studied on effects of working capital management on small and medium sized enterprises' profitability of Spanish firms. For the purpose of study, data were collected from eight thousand eight hundred seventy two small and medium sized enterprises covering the period 1996 to 2002. Use of the multiple regression analysis showed a significant negative relation of profitability with number of day accounts receivables, and number of day inventory. Further, the study pointed out that reducing the cash conversion cycle to a minimum as far as that was reasonable could increase the value of the firm. The result of the study was consistent with previous studies of Shin and Soenen,(1998) and Deloof, (2003)

**Guney et al (2006)** examined the impact of leverage on cash balances of companies. A negative relation between leverage and cash holdings exists to the extent that leverage of the companies acts as a proxy for their ability to issue debt. However, with the rise in leverage, companies could accumulate larger cash reserves in order that the chance of economic distress and costly bankruptcy can be decreased. Therefore, at high levels of leverage, a positive relationship between money holdings and leverage exists. Their results counsel a significant non-linear relationship between cash holding and leverage.

**Drobatz and Gruninger (2006)** investigated the determinants of Swiss no financial firms' cash holdings over the 1995-2004. The results showed that the median of Swiss corporations hold almost doubly the maximum amount cash and cash equivalents because the median of UK or U.S. firm. Moreover, they found a negative relationship between assets palpability and cash holdings and a nonlinear relationship between leverage and cash holdings. Dividend payments were completely relating to money
reserves. However, they could not prove a considerably positive relationship between growth opportunities and cash holdings.

Working Capital is that the total of the amounts invested with in current assets of the corporate. Net assets results from the deduction of current liabilities from current assets; assets Management consists of deciding the degree and composition of sources and uses of assets in such how that might increase the wealth of stockholders. Assets management is that the management of current assets and current liabilities specified would lead to the foremost fascinating level of assets and most company profitableness. Inadequate assets lead the corporate to bankruptcy. On the opposite hand, an excessive amount of assets leads to wasting cash and ultimately the decrease in profitableness (Chakraborty, 2008). Assets methods result from the mixture of current assets and liabilities that play a major role within the existence and growth of the entity. Assets management includes the choice of associate degree applicable strategy in coordination with the entity’s financial needs and in part with increasing the corporate yield (Nazir and Afza, 2007).

The other portion of working capital would be the payable accounts turnover. Delay in settling invoices received from providers of raw material allows the company to evaluate the quality of materials purchased. Moreover it is an inexpensive and flexible source for financing the company (De Loof, 2000). It is remarkable for managers to know that the extension of the payment period may damage the reputation and status of the company and negatively affect company profitability (Nobanee and Alhajjar, 2009).

According to Lazaridis and Tryfonidis (2006), assets management indicates what proportion a corporation shall continue its existence if operations unit aborted. Moreover, it provides indications of the amount progress between functions of
inventory purchase to the purpose of assortment of sales amounts. Retention of inventories at a desirable level and setting credit policies by suppliers of materials and granting credit to customers significantly affects company gain and together they investigated the affiliation between gain and dealing capital management at intervals the stock market Market of Athens throughout 2001-2004. the target of this analysis is to review the affiliation between gain and additionally the cycle of cash transformation and its elements. Results indicate that a significant relationship exists between gross operational profit and additionally the money transformation cycle. What is more managers can generate an honest profit for the company pattern the right management techniques for the cash transformation cycle and its elements.

Nazir and Afza (2009), have investigated the link between gain and dealing capital management policies in 208 corporations listed in Iranian capital exchange throughout the years 1998- 2005. Results have shown that manager’s victimisation conservative ways are ready to increase the worth of their stocks. Findings indicate that in choosing a portfolio, investors opt for corporations that apply short term credit policies and retain an occasional level of current liabilities.

**Pandey (2009)** examined cash management, inventory management, receivables management, working capital management of HINDALCO for the period 1989 to 2008. His findings suggested Company’s investment activities are not able to generate proper cash inflow. The time lag for converting raw materials to finished product has been increasing year after year in the study period. Company should make proper arrangement and policies to make all debts good and to reduce the average collection period. To conclude from the above review of studies, it is clear that factors affecting the level of working capital and its components have differing relationship across different countries and firms' size. Moreover, the behaviour of these variables has
been changing over time. The review of studies shows that no attempt has been made
to analyze working capital management in NALCO. On the basis of previous studies,
the current research tries to fill these gaps.

Zubiri (2010), have investigated that the impact of assets management on
company profitability in an exceedingly research performed on the auto production
business in Islamic Republic of Pakistan from 2000 to 2008. The researcher has used
current magnitude relation as associate degree indicator for assets management
policies and financial leverage because the indicator for capital structure.

Nobani, Abdollatif and Alhajjar (2010), studied the link between the cash
transformation cycle and profitability. To perform this analysis, they used information
gathered from 34771 Japanese firms between the years 1990-2004. Results indicated
that a negative relationship existed between profitability and therefore the cash
transformation cycle. The result was constant all told sample firms except service
suppliers and business firms.

Chatreji (2010) studied the impact of assets management on gain in firms listed in
London securities market throughout the years 2006-2008. The man of science has
used the Pierson correlation to guage the impact of money transformation cycle, the
amount of assortment of assets, inventory retention period, liability settlement period,
this to fast magnitude relation, to net operational profit. Results indicated that a
negative relationship exists between assets management and profitability. this
suggests that a rise in cash transformation cycle would end in a discount in
profitability. Furthermore results have additionally declared that a negative
relationship exists between liquidity and profitability similarly.