CHAPTER- 1

INTRODUCTION
1.1 STATEMENT OF THE PROBLEM:

Working capital management is a significant part of business decisions and is of major concern to the financial manager in as much as accomplishment of value maximization goal depends essentially on prudent of working capital decision. Working capital management policies have a great effect on firm’s profitability, liquidity and its structural health. A financial manager should, therefore, chalk out appropriate working capital as a whole, so as to ensure higher profitability and sound structural health of the organization. To achieve this objective, it is necessary that working capital should be managed in a manner that its availability in right quantity at right time and from right source is granted.

Sugar industry occupies an important place among organized industries in India. So is true at regional level also particularly in Kumaon region of Uttarakhand State. In Kumaon region of the newly formed state about ten units of sugar mills are operating of which six are in co-operative sector and the rest are in corporate sector, with a total capital investment of about Rs. 2000/- crore and total annual production of about 60 lakh quintals. The industry provides employment to about 7000-8000 workers. In spite of this, on the basis of first hand information gathered by the researcher the industry is running into significant losses. These losses could be attributed to various factors of which inefficient management of working capital might be one important reason because the success of a business concern depends largely upon effective working capital management, the reason being only effective management of working capital can optimally utilize current assets and current liabilities in order to maximize profitability. Investment of working capital in various
current assets at optimum level helps in maximization of profitability which is the ultimate goal of any business concern.

In the light of the above the present study is an attempt to study and analyze working capital management practices and problems prevalent in the sugar industry of Kumaon region of Uttarakhand.

1.2 IMPORTANCE OF THE PROBLEM:

The important of the present study is emphasized by the fact that the success or failure of a business largely depends upon the management of current assets and current liabilities. Many times inadequate working capital has been cited as the main reason for the failure of a business unit. Mismanagement of working capital of the business can converts a successful business into an unsuccessful one and vice-versa. So, effective and efficient management of working capital is of great importance for the success of a business firm.

The business firms therefore try to optimize the use of available re-sources through efficient and effective management of current assets and current liabilities. This enables enhancement of the profitability of the concern and the firm could be able to meet its current obligations well in time.

As the sugar industry of Kumaon region of Uttarakhand is already running into losses, the study of working capital management becomes quite relevant the important to both internal and external analyst to judge the current position of the industry.

Investment in fixed assets only is not sufficient to run the business. Working capital or investment in current assets, howsoever small it is, is a must for purchase of raw materials, and for meeting the day-to-day expenditure on salaries, wages, rents, advertising etc., and for maintaining the fixed assets. “The fate of large scale
investment in fixed capital is often determined by a relatively small amount of current assets.” Working capital is just like a heart of industry if it is weak; the business cannot prosper and survive, although there is a large body (investment) of fixed assets. Moreover, not only the existence of working capital is a must for the industry, but it must be adequate also. Adequacy of the working capital is the lifeblood and controlling nerve center of a business. Inadequate as well as redundant working capital is dangerous for the health of industry. It is said, ‘Inadequate working capital is disastrous; whereas redundant working capital is a criminal waste’. Both situations are not warranted in a sound organization.

The advantages of working capital or adequate working capital may be enumerated as below:

**Cash Discount:**

If a proper cash balance is maintained, the business can avail the advantage of cash discount by paying cash for the purchase of raw materials and merchandise. It will result in reducing the cost of production.

**It creates a Feeling of Security and Confidence:**

The proprietor or officials or management of a concern are quite carefree, if they have proper working capital arrangements because they need not worry for the payment of business expenditure or creditors. Adequate working capital creates a sense of security, confidence and loyalty, not only throughout the business itself, but also among its customers, creditors and business associates.
‘Must’ for Maintaining Solvency and Continuing Production:

In order to maintain the solvency of the business, it is but essential that the sufficient amount of fund is available to make all the payments in time as and when they are due. Without ample working capital, production will suffer, particularly in the era of cutthroat competition, and a business can never flourish in the absence of adequate working capital.

Sound Goodwill and Debt Capacity:

It is common experience of all prudent businessmen that promptness of payment in business creates goodwill and increases the debt of the capacity of the business. A firm can raise funds from the market, purchase goods on credit and borrow short-term funds from bank, etc. If the investor and borrowers are confident that they will get their due interest and payment of principal in time.

Easy Loans from the Banks:

An adequate working capital i.e. excess of current assets over current liabilities helps the company to borrow unsecured loans from the bank because the excess provides a good security to the unsecured loans, Banks favor in granting seasonal loans, if business has a good credit standing and trade reputation.

Distribution of Dividend:

If company is short of working capital, it cannot distribute the good dividend to its shareholders inspite of sufficient profits. Profits are to be retained in the business to make up the deficiency of working capital. On the other contrary, if working capital is sufficient,
ample dividend can be declared and distributed. It increases the market value of shares.

**Exploitation of Good Opportunity:**

In case of adequacy of capital in a concern, good opportunities can be exploited e.g., company may make off-season purchases resulting in substantial savings or it can fetch big supply orders resulting in good profits.

**Meeting Unseen Contingency:**

Depression shoots the demand of working capital because sock piling of finished goods become necessary. Certain other unseen contingencies e.g., financial crisis due to heavy losses, business oscillations, etc. can easily be overcome, if company maintains adequate working capital.

**High Morale:**

The provision of adequate working capital improves the morale of the executive because they have an environment of certainty, security and confidence, which is a great psychological, factor in improving the overall efficiency of the business and of the person who is at the hell of fairs in the company.

**Increased Production Efficiency:**

A continuous supply of raw material, research programme, innovations and technical development and expansion programmes can successfully be carried out if adequate working capital is maintained in the business. It will increase the production efficiency, which will, in turn increases the efficiency and morale of the employees and lower costs and create image among the community.
Sometime, if creditors demands their money from company, at this time company's high working capital saves company from this situation. You know that selling of current assets is easy in small period of time but company cannot sell their fixed assets with in small period of time. So, if company have sufficient working capital, company can easily pay off the creditors and create his reputation in market. But if a company have zero working capital and then company can not pay creditors in emergency time and either company becomes bankrupt or takes loan at higher rate of Interest. In both condition, it is very dangerous and always company's account manager tries to keep some amount of working capital for creating goodwill in market.

Positive working capital enables also to pay day to day expenses like wages, salaries, overheads and other operating expenses. Because sufficient working capital can not only pay maturity liabilities but also outstanding liabilities without any more delay. One of advantages of positive working capital that company can do every risky work without any tension of self security.

1.3 OBJECTIVE OF THE STUDY:

The present study proceeds with the following objectives:-

(i) To find out the size of working capital in sugar industry of Kumaon region of Uttarakhand. The study aims at finding out the answer to the question whether the amount of working capital is adequate, excessive or insufficient.

(ii) The literature available on sugar industry reveals that the industry is suffering from mounting losses. Behind this, inefficient management of working capital could be one significant reason. Hence, the proposed study aims at
evaluating the efficiency of sugar industry in the management of working capital.

(iii) The study aims at the following questions to be studied and answered in connection with the analysis of working capital.

Is the sugar industry able to pay its current debts promptly?
Does the industry have favorable credit rating?
Is the current financial position improving?
Does the industry have a balanced inventory position?

(iv) To make suggestions for improvement in working capital management on the basis of conclusions drawn.

1.4 REVIEW OF LITERATURE:

The existing literature available in the area of working capital management reveals that a number of researchers have conducted researches on working capital management. To quote a few, Sagan in his paper (1955)\(^1\), perhaps 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 the role and functions of money manager inefficient working capital management. Sagan pointed out the money manager’s operations were primarily in the area of cash flows generated in the course of business transactions. However, money manager must be familiar with what is being done with the control of inventories, receivables and payables because all these accounts affect cash position. Thus, Sagan concentrated mainly on cash component of working capital. Sagan indicated that the task of money manager was to provide funds as and when needed and to invest temporarily surplus funds as profitably as
possible in view of his particular requirements of safety and liquidity of funds by examining the risk and return of various investment opportunities. He suggested that 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. Moreover, this study is descriptive without any empirical support. Realising the dearth of pertinent literature on working capital management, Walker in his study (1964) made a pioneering effort to develop a theory of working capital management by empirically testing, though partially, three propositions based on risk-return trade-off of working capital management. Walker studied the effect of the change in the level of working capital on the rate of return in nine industries for the year 1961 and found the relationship between the level of working capital and the rate of return to be negative. On the basis of this observation, Walker formulated three following propositions:

**Proposition I—**

If the amount of working capital is to fixed capital, the amount of risk the firm assumes is also varied and the opportunities for gain or loss are increased.

Walker further 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 by doing so, the firm reduced its opportunities for higher gains on equity capital as it would not be taking advantage of leverage. In fact, the problem is not whether to use debt capital but how much debt capital to use, which would
depend on management attitude towards risk and return. On the basis of this, he developed his second proposition.

**Proposition II—**

The type of capital (debt or equity) used to finance working capital directly affects the amount of risk that a firm assumes as well as the opportunities for gain or loss. Walker again suggested that not only the debt-equity ratio, but also the maturity period of debt would affect the risk-return trade-off. The longer the period of debt, the lower be the risk. For, management would have enough opportunity to acquire funds from operations to meet the debt obligations. But at the same time, long-term debt is costlier. On the basis of this, he developed his third proposition:

**Proposition III—**

The greater the disparity between the maturities of a firm’s debt instruments and its flow of internally generated funds, the greater the risk and *vice-versa*.

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. Weston and Brigham (1972) further extended the second proposition suggested by Walker by dividing debt into long-term debt and short-term debt. They suggested that short-term debt should be used in place of long-term debt whenever their use would lower the average cost of capital to the firm. They suggested that a business would hold short-term marketable securities only if there were excess funds after meeting short-term debt obligations. They
further suggested that current assets holding should be expanded to the point where marginal returns on increase in these assets would just equal the cost of capital required to finance such increases.

Vanhorne in his study (1969)\(^4\), recognizing working capital management as an area largely lacking in theoretical perspective, attempted to develop a framework in terms of probabilistic cash budget for evaluating decisions concerning the level of liquid assets and the maturity composition of debt involving risk-return trade-off. He proposed calculation of different forecasted liquid asset requirements along with their subjective probabilities under different possible assumptions of sales, receivables, payables and other related receipts and disbursements. He suggested preparing a schedule showing, under each alternative of debt maturity, probability distributions of liquid asset balances for future periods, opportunity cost, maximum probability of running out of cash and number of future periods in which there was a chance of cash stock-out. Once the risk and opportunity cost for different alternatives were estimated, the form could determine the best alternative by balancing the risk of running out of cash against the cost of providing a solution to avoid such a possibility depending on management’s risk tolerance limits. Thus, Vanhorne study presented a risk-return trade-off of working capital management in entirely new perspective by considering some of the variables probabilistically. However, the usefulness of the framework suggested by Vanhorne is limited because of the difficulties in obtaining information about the probability distributions of liquid-asset balances, the opportunity cost and the probability of running out of cash for different alternative of debt maturities.
Welter, in his study (1970)$^5$, stated that working capital originated because of the global delay between the moment expenditure for purchase of raw material was made and the moment when payment were received for the sale of finished product. Delay centres are located throughout the production and marketing functions. The study requires specifying the delay centres and working capital tied up in each delay centre with the help of information regarding average delay and added value. He recognized that by more rapid and precise information through computers and improved professional ability of management, saving through reduction of working capital could be possible by reducing the length of global delay by rescuing and/or favourable redistribution of this global delay among the different delay centres. However, better information and improved staff involve cost. Therefore, savings through reduction of working capital should be tried till these saving are greater or equal to the cost of these savings. Thus, this study is concerned only with return aspect of working capital management ignoring risk. Enterprises, following this approach, can adversely affect its short-term liquidity position in an attempt to achieve saving through reduction of working capital. Thus, firms should be conscious of the effect of law current assets on its ability to pay-off current liabilities. Moreover, this approach concentrated only on total amount of current assets ignoring the interactions between current assets and current liabilities. Lambrix and Singhvi (1979)$^6$ adopting the working capital cycle approach to the working capital management, also suggested that investment in working capital could be optimized and cash flows could be improved by reducing the time frame of the physical flow from receipt of raw material to shipment of finished goods, i.e. inventory management, and by improving the
terms on which firm sells goods as well as receipt of cash. However, the further suggested that working capital investment could be optimized also (1) by improving the terms on which firms bought goods i.e. creditors and payment of cash, and (2) by eliminating the administrative delays i.e. the deficiencies of paper-work flow which tended to extend the time-frame of the movement of goods and cash.

Warren and Shelton (1971)\(^7\) applied financial simulation\(^8\) to simulate future financial statements of a firm, based on a set of simultaneous equations. Financial simulation approach makes it possible to incorporate both the uncertainty of the future and the many interrelationships between current assets, current liabilities and other balance sheet accounts. The strength of simulation as a tool of analysis is that it permits the financial manager to incorporate in his planning both the most likely value of an activity and the margin of error associated with this estimate. Warren and Shelton presented a model in which twenty simultaneous equations were used to forecast future balance sheet of the firm including forecasted current assets and forecasted current liabilities. Current assets and current liabilities were forecasted in aggregate by directly relating to firm sales. However, individual working capital accounts can also be forecasted in a larger simulation system. Moreover, future financial statements can be simulated over a range of different assumptions to portray inherent uncertainty of the future. Cohn and Pringle in their study (1973)\(^9\) illustrated the extension of Capital Asset Pricing Model (CAPM)\(^10\) for working capital management decisions. They tried to interrelate long-term investment and financing decisions and working capital management decisions through CAPM. They emphasized that an active working capital management policy based on CAPM could be employed to keep the firm’s shares in a given risk class. By risk,
he meant unsystematic risk, the only risk deemed relevant by CAPM. Owing to the lumpy nature for long-term financial decisions, the firm is continually subject to shifts in the risk of its equity. The fluid nature of working capital, on the other hand, can be exploited so as to offset or moderate such swings. For example they suggested that a policy using CAPM could be adopted for the management of marketable securities portfolio such that the appropriate risk level at any point in time was that which maintains the risk of the company’s common stock at a constant level. Similarly, Copeland and Khoury (1980) applied CAPM to develop a theory of credit expansion. They argued that credit should be extended only if the expected rate of return on credit is greater than or equal to market determined required rate of return. They used CAPM to determine the required rate of return for the firm with its new risk, arising from uncertainty regarding collection due to the extension of credit. Thus, these studies show how CAPM can be used for decisions involved in working capital management. One more approach, used mainly in empirical studies, towards working capital management has been to apply regression analysis to determine the factors influencing investment in working capital. Different studies in the past have considered different explanatory variables to explain the investment in inventory. A brief review of these studies is important as regression equation of investment in working capital, in the present study, would be formulated on the basis of works on investment in inventory.

In inventory investment literature, there is basically one school of thought according to which firms aim at an optimum or desired stock of inventories in relation to a given level of output/sales. This is known as acceleration principle. Pioneering work in this field has been done by Metzler (1941). However, his work was mainly on
simple acceleration principle which postulated that firms liked to maintain inventories in proportions to output/sales and they succeeded in achieving the desired level of inventories in a unit time-period. That is to say, any discrepancy between the actual level and desired level of inventories is adjusted within the same time-period. Needless to say, that such an instantaneous adjustment is not a realistic assumption to make. Modifications, therefore, have been introduced in the literature to provide for partial adjustment. Goodwin (1948)\(^{14}\) assumed that firms attempted only a partial adjustment of the discrepancy between the desired stocks as determined by the level of output and the existing stock. Similarly, Darling and Lovell (1965)\(^{15}\) modified Metzler’s formulation based on simple acceleration principle and obtained, the relationship based on flexible accelerator principle. There are several reasons physical, financial and technical those motivate partial adjustment. Among the physical factors, mention may be made of procurement lags between orders and deliveries. The length of such lags is connected with the source of supply, foreign or domestic availability. Import licensing procedures on account of foreign exchange scarcity could cause further delays in adjustment. Among the financial factors, cost advantages associated with bulk buying and higher procurement costs for speedy delivery are also mentioned. Uncertainties in the market for raw materials and in the demand for final product also play a role in influencing the speed of adjustment. Technically, firms like to make sure that changes in demand are of a permanent character before making full adjustment. The acceleration principle has great relevance in inventory analysis than in the analysis of fixed investment, as there are limits to liquidate fixed capital in the face of declining demand.
Other variables influencing inventories have been introduced in the literature in the context of accelerator model. Rate of interest is used as a proxy for the opportunity cost of carrying stocks or as a measure of the cost of funds needed to hold inventories. It has been found significant in the studies of Hilton (1976)\textsuperscript{16} and Irwin (1981)\textsuperscript{17}. Time-trend is expected to be important because inventories generally accumulate with the expansion of economic activities of the company. Anticipated price changes, measured by changes in wholesale price index of inventories, are taken as an explanatory variable to capture speculative element in inventory. This suggests a positive relationship between price changes and inventory. An increase in sales is expected to increase the demand for stocks to meet orders regularly. An increase in capacity utilization is also expected to increase the demand for stock by increasing the demand for raw materials and increasing the inventories of finished goods. Thus, the variable, capacity utilization, is postulated to have a positive coefficient in the equation.

Abramowitz (1950)\textsuperscript{18} and Modigliani (1957)\textsuperscript{19} highlighted the impact of capacity utilization on inventory investment. Existing stock of inventories is expected to take account of adjustment process to the desired levels. Thus the variable, existing stock of inventories, is postulated to be negatively related with the desired stock. The ratio of inventory to sales may affect inventory investment positively because a high ratio of stocks to sales in the past suggests the maintenance of high levels of inventories in the past and thus also calling for high investment in inventories in the current period. The studies of Metzler (1941)\textsuperscript{20} and Hilton (1976)\textsuperscript{21} have found this variable, inventory-sales ratio, to be statistically significant. Fixed investment is generally expected to affect inventory investment inversely because of
competing demand for the limited funds. However, in case of an expanding firm, the two components may be complementary. Besides, availability of funds from retained earnings and external sources, may affect investment decision by providing funds for financing inventory investment. Therefore, retained earnings and flow of debt are postulated to have positive coefficients.

The studies described so far, are the important studies conducted abroad. A number of studies on working capital management have been conducted in India also. The following discussion describes Indian studies.

**Studies on Working Capital Management in India**

This part briefly reviews the studies conducted in India in respect of working capital management in Indian industries. The first, small but fine piece of work is the study\(^{22}\) conducted by National Council of Applied Economic Research (NCAER) in 1966 with reference to working capital management in three industries namely cement, fertilizer and sugar. This was the first study on nature and norms of working capital management in countries with ‘scarcity of investible resources’. This study was mainly devoted to the ratio analysis of composition, utilization and financing of working capital for the period 1959 to 1963. This study classified these three industries into private and public sector for comparing their performance as regards the working capital management. The study revealed that inventory constituted a major portion of working capital *i.e.* 74.06 per cent in the sugar industry followed by cement industry (63.1%) and fertilizer industry (59.58%). The study observed that the control of inventory had not received proper attention. The inventory control was mainly confirmed to materials management leading to the neglect of stores and spares. So far as the utilization of working
capital was 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 of working capital. It was 11.87 per cent in the cement industry, 15.03 per cent in sugar and 31.25 per cent in fertilizer industry, 17.78 per cent being the average. However, this study failed to put into sharp focus the various problems involved in the management of specific working capital accounts.

Appavadhanulu (1971)\textsuperscript{23} recognizing the lack of attention being given to investment in working capital, analysed working capital management by examining the impact of method of production on investment in working capital. He emphasized that different production techniques require different amount of working capital by affecting goods-in-process because different techniques have differences in the length of production period, the rate of output flow per unit of time and time pattern of value addition. Different techniques would also affect the stock of raw materials and finished goods, by affecting lead-time, optimum lot size and marketing lag of output disposals. He, therefore, hypothesised that choice of production technique could reduce the working capital needs. He estimated the ratio of work-in-progress and working capital to gross output and net output in textile weaving done during 1960, on the basis of detailed discussions with the producers and not on the basis of balance sheets which might include speculative figures. His study could not show significant relationship between choice of technique and working capital. However, he pointed out that the idea could be
tested in some other industries like machine tools, ship building etc. by taking more appropriate ratios representing production technique correctly.

Chakraborty (1973)\textsuperscript{24} approached working capital as a segment of capital employed rather than a mere cover for creditors. He emphasized that working capital is the fund to pay all the operating expenses of running a business. He pointed out that return on capital employed, an aggregate measure of overall efficiency in running a business, would be adversely affected by excessive working capital. Similarly, too little working capital might reduce the earning capacity of the fixed capital employed over the succeeding periods. For knowing the appropriateness of working capital amount, he applied Operating Cycle (OC) Concept. He calculated required cash working capital by applying OC concept and compared it with cash from balance sheet data to find out the adequacy of working capital in Union Carbide Ltd. and Madura Mills Co. Ltd. for the years 1970 and 1971. He extended the analysis to four companies over the period 1965-69 in 1974\textsuperscript{25} study. The study revealed that cash working capital requirement were less than average working capital as per balance sheet for Hindustan Lever Ltd. and Guest, Keen and Williams Ltd. indicating the need for effective management of current assets. Cash working capital requirements of Dunlop and Madura Mills were more than average balance sheet working capital for all years efficient employment of resources. For Union Carbide Ltd., cash working capital requirements were more in beginning years and then started reducing in the later years as compared to conventional working capital indicating the attempts to better manage the working capital. Chakraborty emphasized the usefulness of OC concept in the determination of future cash requirements on the basis of estimated
sales and costs by internal staff of the firm. OC concept can also be successfully employed by banks to assess the working capital needs of the borrowers.

Misra (1975)\textsuperscript{26} studied the problems of working capital with special reference to six selected public sector undertakings in India over the period 1960-61 to 1967-68. Analysis of financial ratios and responses to a questionnaire revealed somewhat the same results as those of NCAER study with respect to composition and utilization of working capital. In all the selected enterprises, inventory constituted the more important element of working capital. The study further revealed the overstocking of inventory in regard to its each component, very low receivables turnover and more cash than warranted by operational requirements and thus total mismanagement of working capital in public sector undertakings.

Agarwal (1983)\textsuperscript{27} also studied working capital management on the basis of sample of 34 large manufacturing and trading public limited companies in ten industries in private sector for the period 1966-67 to 1976-77. Applying the same techniques of ratio analysis, responses to questionnaire and interview, the study concluded the although the working capital per rupee of sales showed a declining trend over the years but still there appeared a sufficient scope for reduction in investment in almost all the segments of working capital. An upward trend in cash to current assets ratio and a downward trend in cash turnover showed the accumulation of idle cash in these industries. Almost all the industries had overstocking of raw materials shown by increase in the share of raw material to total inventory while share of semi-finished and finished goods came down. It also revealed that long-term funds as a percentage of total working capital
registered an upward trend, which was mainly due to restricted flow of bank credit to the industries.

Kamta Prasad Singh, Anil Kumar Sinha and Subas Chandra Singh (1986)\textsuperscript{28} examined various aspects of working capital management in fertilizer industry in India during the period 1978-79 to 1982-93. Sample included public sector unit, Fertilizer Corporation of India Ltd. (FCI) and its daughter units namely Hindustan Fertilizers Corporation Ltd., the National Fertilizer Ltd., Rashtriya Chemicals and Fertilizers Ltd. and Fertilizer (Projects and Development) India Ltd. and comparing their working capital management results with Gujarat State Fertilizer Company Limited in joint sector. On the basis of ratio-analysis and responses to a questionnaire, study revealed that inefficient management of working capital was to a great extent responsible for the losses incurred by the FCI and its daughter units, as turnover of its current assets had been low. FCI and its daughter units had high overstocking of inventory in respect of each of its components particularly stores and spares. Similarly, quantum of receivables had been excessive and their turnover very low. However, cash and liquid resources held by FCI and its daughter units had been much lower in relation to operation requirements. So far as financing of working capital was concerned, long-term funds had been financing a low proportion of current assets due to rapid increase of current liabilities. The profitability providing an internal base for financing of working capital, had been very low in these undertakings.

Verma (1989)\textsuperscript{29} evaluated working capital management in iron and steel industry by taking a sample of selected units in both private and public sectors over the period 1978-79 to 1985-86. Sample included Tata Iron and Steel Company Ltd. (TISCO) in private sector
and Steel Authority of India Ltd. (SAIL) and Indian Iron and Steel Company, a wholly owned subsidiary of SAIL, in public sector. By using the techniques of ratio analysis, growth rates and simple linear regression analysis, the study revealed that private sector had certainly an edge over public sector in respect of working capital management. Simple regression results revealed that working capital and sales were functionally related concepts. 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-à-vis* the norms suggested by Tandon Committee.

Vijaykumar and Venkatachalam (1995)\(^3\) studied the impact of working capital on profitability in sugar industry in Tamil Nadu by selecting a sample of 13 companies: 6 companies in co-operative sector and 7 companies in private sector over the period 1982-83 to 1991-92. They applied simple correlation and multiple regression analysis on working capital and profitability ratios. They concluded through correlation and regression analysis that liquid ratio inventory turnover ratio, receivables turnover ratio and cash turnover ratio influenced the profitability of sugar industry in Tamil Nadu. They also estimated the demand functions of working capital and its components *i.e.* cash, receivables, inventory, gross working capital and net working capital, by applying regression analysis. They showed the impact of sales and interest rate on working capital and its components. When only sales was taken as independent variable, coefficient of sales was more than unity in all the equations of working capital and its components showing more than unity sales elasticity and diseconomies of scale. When sales and interest rate were taken as independent variable, sales elasticity was again more than unity in demand functions of working capital and its components.
except cash. So far as capital costs were concerned, these had negative signs in all the equations but significant only in inventory, gross working capital and net working capital showing negative impact of interest rates on investment in working capital and its components. Thus study showed that demand for working capital and its components was a function of both sales and carrying costs.

**Studies on Determinants of Inventory Investment**

Inventory, in most industries, accounts for largest proportion of gross working capital. A number of studies, therefore, have been conducted to find the determinants of investment in inventories. The following discussion provides a brief review of studies, dealing with factors influencing investments in inventory in India.

Econometric studies to analyse the factors that influence inventory accumulation in India, are based on time series and pooling of cross section of time series date pertaining to manufacturers’ inventories. Krishnamurty’s study (1964)\(^{31}\) was aggregative and dealt with inventories in the private sector of the Indian Economy as a whole for the period 1948-61. This study used sales to represent demand for the product and suggested the importance of accelerator. Short-term rate of interest had also been found to be significant.

Sastry’s study (1966)\(^{32}\) was a cross section analysis of total inventories of companies across several heterogeneous industries for the period 1955-60 using balance sheet data of public limited companies in the private sector. The study brought out the importance of accelerator represented by change in sales. It also showed negative influence of fixed inventory investment.
Krishnamurty and Sastry’s study in 1970\textsuperscript{33} was perhaps the most comprehensive study on manufacturers inventories. They used CMI data and the consolidated balance sheet data of public limited companies published by RBI, to analyse each of the major components \textit{i.e.} raw material, goods-in-process and finished goods for 21 industries over the period 1946-62. It was a time series study but some inter-industry cross section analysis had also been done. Accelerator represented by change in sales, bank finance and short-term interest rate were found to be important determinants. Utilisation of productive capacity and price anticipations had been found to be of some relevance. Another study conducted by them in 1975 analysed inventory investment in the context of flexible accelerator with financial variables. Both RBI and Stock Exchange, Official Directory, Mumbai data for seven important industries had been taken for the period of 1956-69. Their study of pooled cross section was in current prices whereas time series analysis based on RBI data was a constant prices. OLS results showed the important influence of accelerator, internal and external funds flow and fixed investment on inventory investment.

The study by Vinod Prakash (1970)\textsuperscript{34} was a time series analysis with mostly undeflated data taken from CMI and Annual Survey of Industries (ASI) for the period 1946-63. It examined the influence of structural changes in manufacturing activity on the relative size and composition of inventory in the large scale-manufacturing sector in India. Three different models for industry groups and for six important individual industries had been tried. Output/sales, capacity utilization, short-term rate of interest, money supply, foreign exchange availability, price index, size and time trend were taken as explanatory variable. The simple accelerator model with output gave
better results for industrial groups, whereas the ratio model seemed to perform better in the analysis of individual industry. The flexible accelerator models were found to be inferior. The impact of price index was found to be generally insignificant, while the impact of foreign exchange and money supply was absent. The rate of interest showed a perverse impact. Time trend appeared to be important than the size of establishment. The role of availability of funds was completely ignored in this study.

The study by George (1972)\textsuperscript{35} was cross section analysis of balance sheet data of 52 public limited companies for the period 1967-70. Accelerator, internal and external finance variables were considered in the equations for raw materials including goods-in-process and total inventories. However, equations for finished goods inventories considered only output variable. Accelerator and external finance variables were found to be important.

The analysis by Seamy and Rao (1975)\textsuperscript{36} of the flow of funds of public limited companies had an equation for aggregate inventory investment. RBI data for the period 1954-70 had been used. The explanatory variables considered were accelerator, flow of bank borrowings, an index of man-days lost, capacity by the call rate. Accelerator, bank finance and fixed investment were found to be significant.

The study by R.N. Agarwal (1982)\textsuperscript{37} estimated total inventory investment equation for individual firms in automobile manufacturing industry, which was divided into two sectors—car-sector and non car-sector. His study was based on the data for 1959-60 through 1978-79. Official Directory of Mumbai Stock Exchange had been the basic source of data. Analysis of two sector revealed that sales and stock-sales ratio were important explanatory variables. Cost of capital and
trend were important in only car sector while fixed investment and flows of external funds were significant in non-car sector. Existing stock of inventories was statistically significant in both the sector but contrary to expectations, it possessed negative coefficient. Several other variables as dividends, capacity utilization and liquidity ratio were found to be of no importance in explaining inventory investment behaviour.

N.C. Gupta study (1987) examined the determinants of total inventory investment in aluminum and non-ferrous semi firms in private sector. The data had been taken from Stock Exchange, Official Directory, Mumbai for 9 years 1966-67 to 1974-75. variables considered were current sales change, one-lagged sales change, inventory stock at the beginning, gross fixed investment during the year, flow of net debt (external finance) and profits net of dividends and taxes but gross of depreciation provision (retained earnings or internal finance). The equation also provided for firm dummies and year dummies. Analysis was based on pooling of time series of cross section data. Demand factor and external finance turned out to be significant determinants in aluminum. Both retained earnings and external finance were important determinants in case of non-ferrous semis. Competition for investment funds between fixed and inventory investment was suggested both in aluminum and non-ferrous semis.

Adesh Sharma (1994) applied accelerator model with financial variables to determine the factors influencing investment in inventories in pesticides industry in India. Data had been taken form the Stock Exchange Official Directory, Mumbai for the period 1978-1992 in respect of 18 firms in this industry. The coefficients of the accelerator and financial variables were found to be significant and
positive. The coefficient of inventory of inventory stock was significant and negative.

The above shows that working capital management occupies a key place for researchers. Hence, the proposed study on working capital management in sugar industry of Kumaon Region of Uttarakhand.

1.4 HYPOTHESES:

As mentioned earlier sugar industry is suffering from the problem of mounting losses. As the working capital management and profitability of a business concern are directly correlated, the present study has proceeded on the basis of the following assumption- “working capital management in sugar industry of Kumaon region of Uttarakhand is inefficient”.

In view of this assumption the following hypotheses have been formulated and tested

1. Null Hypothesis: There is no significant difference in inventory turnover of firms under study
   Alternative Hypothesis: There is significant difference in inventory turnover of firms under study.

2. Null Hypothesis: There is no significant difference in percentage of inventory in total assets of firms under study.
   Alternative Hypothesis: There is significant difference in percentage of inventory in total assets of firms under study.

3. Null Hypothesis: There is no significant difference in percentage of inventory in current assets of firms under study
   Alternative Hypothesis: There is significant difference in percentage of inventory in current assets of firms under study.
4. **Null Hypothesis:** There is no significant difference in average credit period (in days) of firms under study  
   **Alternative Hypothesis:** There is significant difference in average credit period (in days) of firms under study.

5. **Null Hypothesis:** There is no significant difference in average credit period (in weeks) of firms under study  
   **Alternative Hypothesis:** There is significant difference in average credit period (in weeks) of firms under study.

6. **Null Hypothesis:** There is no significant difference in average credit period (in months) of firms under study  
   **Alternative Hypothesis:** There is significant difference in average credit period (in months) of firms under study.

7. **Null Hypothesis:** There is no significant difference in percentage of debtors to current assets of firms under study  
   **Alternative Hypothesis:** There is significant difference in percentage of debtors to current assets of firms under study.

8. **Null Hypothesis:** There is no significant difference in percentage of debtors to total assets of firms under study  
   **Alternative Hypothesis:** There is significant difference in percentage of debtors to total assets of firms under study.

9. **Null Hypothesis:** There is no significant difference in current ratio of firms under study  
   **Alternative Hypothesis:** There is significant difference in current ratio of firms under study.

10. **Null Hypothesis:** There is no significant difference in quick ratio of firms under study  
    **Alternative Hypothesis:** There is significant difference in quick ratio of firms under study.
11. **Null Hypothesis**: There is no significant difference in cash ratio of firms under study  
**Alternative Hypothesis**: There is significant difference in cash ratio of firms under study.

12. **Null Hypothesis**: There is no significant difference in net working capital ratio of firms under study  
**Alternative Hypothesis**: There is significant difference in net working capital ratio of firms under study.

13. **Null Hypothesis**: There is no significant difference in cash profit ratio of firms under study  
**Alternative Hypothesis**: There is significant difference in cash profit ratio of firms under study.

14. **Null Hypothesis**: There is no significant difference in working capital to sales ratio of firms under study  
**Alternative Hypothesis**: There is significant difference in working capital to sales ratio of firms under study.

15. **Null Hypothesis**: There is no significant difference in current assets turnover ratio of firms under study  
**Alternative Hypothesis**: There is significant difference in current assets turnover ratio of firms under study.

16. **Null Hypothesis**: There is no significant difference in current assets to total net assets of firms under study  
**Alternative Hypothesis**: There is significant difference in current assets to total net assets of firms under study.

17. **Null Hypothesis**: There is no significant difference in debtors turnover ratio of firms under study  
**Alternative Hypothesis**: There is significant difference in debtors turnover ratio of firms under study.
18. **Null Hypothesis**: There is no significant difference in creditors turnover period of firms under study

**Alternative Hypothesis**: There is significant difference in creditors turnover period of firms under study.

To test the above hypotheses ANOVA test as been applied

1.5 **RESEARCH METHODOLOGY:**

For conducting the present study the methodology used has been explained below-

**A- Selection of sample**

The first hand information gathered by the researcher reveals that about ten unit of sugar mills are running into the Kumaon region of which six units are in co-operative sector and the rest are in corporate sector. Tentatively a sample of 50% units representing the whole industry was selected.

**B- Collection of data**

For the purpose of the present study, data and other information about the sample units were related to historical background, size and age of the units and various aspects of working capital management.

The present study is extremely based on secondary data collected from annual published financial statement and other documents. The period of study is from 2006 to 2010; hence the data were collected related to this period only.

**C- Tools techniques of analysis**

There are two major tools for measuring and analyzing the working capital management of a business concern, one is the fund
flow analysis and the other one is the ratio analysis. Fund flow analysis helps to analyze the variation in working capital contents between two balance sheet dates whereas the technique of ratio analysis provides guides and clues especially in spotting trends towards better or poorer performance, and in finding out significant deviation from any average relatively applicable standard. In the present study both the techniques could not be used because owing to incomplete and dubious information in annual reports of almost all sample units, fund flow analysis could not be appropriately carried out. Therefore only ratio analysis has been done. Besides, wherever desired and required suitable statistical tools and technique have also been applied. For this purpose the data collected from different sources have been compiled, edited and tabulated in suitable and appropriate formats to facilitate a more meaningful analysis. This analysis is followed by interpretation, conclusion and suggestion.

1.6 SCOPE AND LIMITATION OF THE STUDY:

The present study is confined to five selected units of sugar mills operating in Kumaon region of Uttarakhand i.e. KSCML-G, BCSFL, KSCML-N, KSCML-S and KSCL. In view of the limitation of the time, money and energy of the researcher the study is confined to a period of five years only i.e. from 2006 to 2010. The size of sample is also restricted so the limitation of a small sample applies to this study also. The limitation of techniques used for the present study cannot be avoided and may have their impact on conclusion of the study. Besides the study is mainly based on the information available in annual reports of the sample units.
1.7 CHAPTER PLANNING:

The present study has been divided into the following chapters namely-

1- Introduction
2- Sugar industry of Kumaon region in Uttarakhand.
3- Inventory management and control
4- Receivables management
5- Cash Management
6- Financing of working capital
7- Summary of finding, conclusion and suggestions.

The study report is followed by a select bibliography. The vitae sheet has been placed at the end of the report.
REFERENCES


8. Simulation involves developing a model of some real phenomenon and then performing experiments in the model evolved. In stimulation, a given system is copied and the variables and constants associated such it are manipulated in that artificial environment to examine the behaviour of the system. The benefit of simulation is that the results of taking a particular course of action can be estimated prior to its implementation in the real world.

10. CAPM states that the required rate of return on a security (investment) is equal to the riskless rate plus premium for unsystematic risk of the security. Unsystematic risk, which is specific to the company of the security, can be eliminated by diversification in the portfolio. But systematic risk, which is because of general market fluctuations, cannot be eliminated by diversification.


20. Lloyd Metzler, *op.cit.*


and *Industrialisation and Manufacturers’ Inventories in India*, IBRD, May 1973 (mimeo).


