CHAPTER - 3
Review of Literature

Chapter Contents

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REVIEW OF LITERATURE

This chapter describes the theoretical development in the area of working capital management over a period and presents review of empirical work on working capital management to account for the work already undertaken by earlier researchers along with the findings of their study. Hence, this chapter is divided in two parts. The first part accounts for the theoretical developments in the short term financial management and the second part reviews the empirical studies on working capital management in India as well as outside India. The review comprises of work undertaken in working capital management, (*i.e.*, theoretical and empirical) for a period of 146 years, *i.e.* from 1867 to 2012.

SECTION- I

Theoretical Construct

This section gives an account of theoretical work undertaken in the arena of working capital management by various researchers, academicians and practitioners. The objective is to account for the developments in the working capital theory and concepts over time and understand how the theory of short term financial management has evolved.

3.1 Introduction

The concept of "working capital" recorded in the literature on working capital management was, perhaps, first evolved by the great philosopher, socialist and economist, Karl Marx, who termed it as *variable capital* in a manner slightly different from present day's connotations. Marx explained the meaning of *variable capital* in context with the labour. Marx[1] noted, "That part of capital, represented by labour-power, does, in the process of production, undergo an alteration of value. It both reproduces the equivalent of its own value, and also produces an excess, a surplus value, which may itself vary, may be more or less according to circumstances. This part of capital is continually being transformed from a constant into a variable magnitude. I therefore call it the variable part of capital, or, shortly, *variable capital.*" He explained that the wages is paid to the laborer only after the labour power is expended and that the laborer provides funds to meet a part of private consumption of the capitalist[2]. Thus, the present day concept of working capital is rooted in the concept of *variable capital* proposed by Marx.

Further, Sir Adam Smith denoted working capital as the circulating capital. He explained, "The goods of the merchant yield him no revenue or profit till he sells them for money and the money yields him as little till it is again exchanged for goods. His capital is continuously going from him in one shape and returning to him in another and it is only by means of such circulation, or successive exchanges that it can yield him any profit. Such capital, therefore, may very properly be called circulating capital[3]." Mueller[4], on the basis of its functional role has referred working capital as revolving capital. The working capital represents that portion of the total resources which is put to variable operative use. The facilities represented by the investment in fixed assets which is imperative for carrying out the routine business activity of producing goods or services is made functional by the working capital in absence of which, it becomes meaningless. Thus, working capital is the *oil* which keeps the *engine* of fixed asset investments working efficiently. In essence it refers to the capital required for running day to day business operations. Working capital thus results to creation of short term assets and obligations for a firm, *i.e.,* assets and liabilities with maturities of less than or equal to twelve months which are termed as current assets and current liabilities. In the said context, the meaning and components of current assets and current liabilities are discussed below:

Current Assets refer to cash and other assets which are expected to be converted in to cash in the ordinary course of business within one year or within such longer period as constitute the normal operating cycle of a business[5] and includes cash and bank balance, marketable securities, inventories, one year fixed deposits with banks, prepaid expenses, debtors (account receivables)

The important characteristics of current assets are, *(i)* Short life span, generally a period of twelve months; *(ii)* Swift transformation into other form of assets, *i.e.,* cash is utilized to replenish inventories, which further gets converted into either cash or receivables (in case of credit sales) which when collected increases cash balance; *(iii)* Their life span depends on the extent of synchronization of three basic activities *viz,* production, distribution and collection[6].

Current Liabilities are those claims of outsider which are expected to mature for payment within one accounting year and include creditors (account payables), bills payable, bank over-draft, short term borrowings and outstanding expenses.

However, most important short term sources of financing current assets are: *(a)* Trade Credit, *(b)* Deferred income and accrued expenses and *(c)* bank finance. The first two sources are available in the normal course of business, and therefore, they are called

spontaneous sources of working capital finance as they do not involve explicit costs. Bank finances have to be negotiated and involve explicit costs and so they are called non spontaneous sources of working capital finance. Besides, two alternative ways of raising short term finances in India are: factoring and commercial paper[7]. Hence, it can be inferred that all those current liabilities that arise in normal course of business without explicit costs are spontaneous sources of working capital finance and *vice-versa.*

With the passage of time and more and more research in short term financial management, various concepts of working capital have emerged which are discussed in the following section.

3.2 Working Capital: Various Concepts

a) Based on variability

Working capital has been classified based on the time period for which the investment in working capital is required. Permanent working capital is the amount of working capital that persists over time regardless of fluctuations in sales[8] which is also referred to as *fixed working capital*[9]. The level of current assets required over and above the permanent working capital, depending on the changes in production and sales levels is termed as temporary / variable / seasonal working capital or fluctuating working capital.

b) Conceptual classification

The conceptual classification splits the meaning of working capital into two, *viz,* quantitative concept and qualitative concept, commonly known as gross working capital and net working capital respectively. Both these concepts are also termed as Balance Sheet concept of working capital and are discussed as follows:

◈ *Quantitative concept*

Baker and Malott[10], Mueller[4], Smith[11], Mehta[6], Mead[12], Field[13] have advocated the quantitative approach to define working capital. They suggested that the whole of the current assets help to earn profits and prudent financial management calls for efficient utilization of total current assets and their contribution in fixed assets to device desired profits. They have suggested that working capital should be considered as current assets only because,

i) Both fixed and current assets help an enterprise to make profits. While fixed assets are means to produce, current assets are means to operate fixed assets and generate profits. While theoretically fixed assets are termed as fixed capital investment, current assets therefore should be termed as working capital, and

ii) The management is generally concerned with the total amount of funds available in terms of current assets for meeting the operational requirements. The sources of funds for such current assets are treated as a different aspect.

Bogen[14] noted that working capital is the total of current assets of an enterprise which circulates from one form to another, for instance, from cash to inventories, from inventories to receivables and from receivables to back in cash. Thus, the capital that circulates equals the total current assets of an enterprise. Dewing[15] and Gestenberg[16] also considered Working capital and current assets as synonymous terms. Husband and Dockery[17] supported the quantitative definition of working capital on the grounds that, "despite the uncertainty of quantitative concept of working capital, it provides more objective basis of determining the type and the amount of financing".

Thus, the total current assets which is also recognized by the term, *Gross Working Capital*, is referred to as quantitative concept, as it deals with the quantum of investment with respect to current assets.

◈ *Qualitative concept*

Under this approach, working capital has been defined as the excess of current assets over current liabilities and is also known as net working capital (NWC). Saliers[18] and Lincon[19] have argued that – *(a)* In the long run what matters is the surplus of current assets over current liabilities; *(b)* It is this concept which helps creditors and investors to judge the financial soundness of an enterprise; *(c)* What can always be relied upon to meet the contingencies is the excess of current assets over the current liabilities since the amount is not to be refunded and *(d)* This definition helps to find out the current financial position of companies having the same amount of current assets. Stevens[20], Guthmann and Dougall[21], Gole[22], Park and Gladson[23], Kennedy and Mcullen[24], Walker[25] have also favored the concept of NWC. NWC thus, indicates the long term funds used for financing the current assets which provides cushion to short term creditors. NWC is referred to as *qualitative concept* as it signifies the short term financial solvency of an enterprise which is of special interest to the short term creditors of the business.

However, both, Gross and Net concepts of working capital have their own relevance and importance which depends on the purpose of analysis. The gross concept, *i.e.*, the Quantitative concept may be adopted to ascertain the level of investment required for day to day functioning and whether the level of current assets is optimal and the net concept may be adopted to gauge the financial strength of an entity as well as the nature of working capital financing policy adopted by the concern.

◈ *Working Capital Deficit*

It has been observed in some well established companies, a situation where current liabilities exceed current assets, also termed as "negative working capital".

◈ *Working Capital Requirements and Net Liquid Balance*

Shulman and Cox[26] refined the concept of NWC as a liquidity measure by adding new interpretations to various working capital relationships. They observed that the traditional definition of NWC was not reflective of real impact on liquidity and therefore offered an alternative interpretation which equated NWC to the difference between permanent capital and net fixed assets. From this view point, the amount of positive NWC measures that portion of current assets which is financed by permanent funds and negative NWC indicates the portion of short term funds used to finance net fixed assets. To further expand their analysis, they created two definitions. First, they defined working capital requirements, WCR as the difference between current operating assets consisting of prepaids, inventory and receivables and current operating liabilities defined as accounts payable and accruals. These accounts represent spontaneous uses and sources of funds over the firm's operating cycle. They then defined net liquid balance, NLB as the difference between current financial assets such as cash and marketable securities and current discretionary or non spontaneous financial liabilities such as notes payables and current maturing debt and the relationship between WCR, NLB and NWC, was defined as NWC = NLB + WCR.

NLB, if found negative, is indicative of dependence on outside financing and reduced level of financial flexibility. WCR divided by sales was ratio was suggested which, if statistically found different across industry categories, indicates different working capital needs amongst industries and *ceteris paribus* a greater ratio indicates the greater reliance of company on external funds for given change in level of sales. In cases, where WCR is found to be negative, the firm's operating cycle becomes permanent source of finance and the positive impact on liquidity would be significant.

◈ *Operating Cycle*

The first, comprehensive and coherent explanation of Operating Cycle (OC) concept was offered by Park and Gladson[23]. They started with defining the current assets and current liabilities, the two determinants of working capital and argued that current assets and liabilities cannot be defined in terms of twelve months period and that "currentness" period of a business is a function of the nature of its business activity as dictated by the technological requirements and the trading conventions. The operating cycle thus consists of four primary activities: purchasing resources, producing the

product, distributing (selling) the product and collecting money when sales are on account. Chakraborty[27] defined operating cycle as the sum of the length of inventory conversion period and receivables conversion periods. Precisely, it is the time taken to convert the raw material into cash. The operating cycle concept thus penetrates to the heart of the working capital management in a more dynamic form.

◈ *Cash Conversion Cycle*

The conceptual model was developed by Gitman[28] in 1974 which was refined and operationalized by Gitman and Sachdeva[29] in 1982. This model was also found in the work of Laughlin and Richards[30]. Also known as *Net Operating Cycle*, it can be computed by reducing the length of Average Payment Period (APP) from the length of OC[31]. Cash conversion cycle (CCC) represents the net time interval between collection of cash receipts from product sales and cash payments for the company's various purchases. Thus, it reflects the time interval for which additional non spontaneous sources of working capital financing must be obtained to carry out the firm's activities. An increase in the length of operating cycle without any corresponding increase in payables deferral period will lengthen the cash conversion cycle and would further increase the need of working capital financing.

◈ *Weighted Cash Conversion Cycle*

Gentry, Vaidyanathan and Lee[32] developed a modified version of the CCC called the Weighted Cash Conversion Cycle (WCCC), which scales the timing by the amount of funds in each step of the cycle. The weights are calculated by dividing the amount of cash tied up in each component by the final value of the component. Therefore, the WCCC includes both the number of days and the amount of funds that is tied up at each stage of the cash cycle.

◈ *Net Trade Cycle*

Although the WCCC provides a better appreciation of the complexities of the cash cycle, it's drawback is the difficulty of getting information on break-up of inventories into its three main components, *i.e.,* raw materials, work-in-progress, and finished goods. Further, the CCC is an additive concept, but unfortunately the denominators for the three components (*i.e.,* ACP, IHP and APP) are all different, making addition not really useful. In contrast, the Net Trade Cycle (NTC) is basically equal to the CCC whereby all three components are expressed as a percentage of sales. The NTC actually indicates the number of "days sales" the company has to finance its working capital

under *ceteris paribus* conditions. The NTC is calculated using the formula: (Inventory + Accounts receivable - Accounts payable) *365/ Sales.

◈ *Determinants of Working Capital*

The requirement of working capital in any concern is affected by its business environment and is a function of various factors such as, Nature and Size of Business; Length of production cycle; Volume and terms of purchase and sales; Seasonal Variations; Availability of Credit; Degree of Specialization; Location of Business; Phase of Business Cycle; Production Policy; Firm's Credit Policy; Growth Opportunities; Efficiency of Operations; Inflation; Profit Margin and Appropriation. These factors are known as determinants of working capital as they determine the working capital needs of business concerns.

3.3 Working Capital Management

Van Horne[33] defined working capital management as "an aspect of financial activity which is concerned with the safeguarding and controlling of the firm's current assets and the planning for sufficient funds to pay current bills".

As already discussed, current assets assume different forms, *i.e.,* Cash is converted into inventories which when sold gets converted into cash or receivables which further gets converted into cash which is considered as an operating cycle of an entity. Similarly, cash is also utilized for making prepaid expenses and Advance payments of tax. However, these do not get converted into cash but provide benefits and ensures uninterrupted flow of operations. This operating cycle is continuous with very swift transformation of one form of current assets to another, and hence, management of current assets is distinct from the management of fixed assets of a firm. And in order to finance these different forms of current assets, there is a continuous need of funds which is funded by either long term debts or through frequent creation and discharge of current liabilities. And due to this, the finance manager of an entity has to constantly monitor the process flows in order to ensure smooth operations thereby eliminating the risk of deteriorating the reputation as well as the net worth. Working capital management (WCM) thus, involves managing of the dynamic relationship between current assets (CA) and current liabilities (CL) which are ever changing and volatile.

The maintenance of reasonable level of working capital and the interaction between current assets and current liabilities is therefore the main theme of theory of working capital management. Thus efficient management of working capital is imperative for the success of each and every business. "WCM aims at protecting the purchasing power

of assets and maximizing the return on investment[34]". In practice, WCM has become one of the most important issues in the organizations where many financial executives are struggling to identify the basic working capital drivers and the appropriate level of working capital.[35] Thus, the *goal of working capital management* is ensuring that a firm is able to continue its operations with sufficient capability in order to satisfy both maturing short-term obligations as well as upcoming operational expenses and plays a decisive role in the success or failure of a business entity.

3.4 WCM: Liquidity versus Profitability

WCM decisions are synonymous to decisions relating to management of short term assets and liabilities. There always has to be a balance between the two. A firm is expected to maintain sufficient levels of current assets not only to support the sales but also to provide cushion to its short term creditors. Thus, an important aspect of WCM is *liquidity*. In the said context, liquidity in terms of current assets is a pyramid with cash – the most liquid yet unproductive asset being on the top whereas inventory – the most illiquid yet revenue generating asset occupying the bottom of the pyramid. The goal is to manage these components in a way to provide enough liquidity without endangering the revenue generating capability of a firm. Hence, the finance manager should strike an optimum mix of working capital components. Thus, WCM decisions are synonymous with the liquidity as well as operational profitability decisions which affect not only the short term solvency position but also the earning capability of an entity.

3.5 Important Aspects of Working Capital Management

Management of working capital can be summarized to be involving four broad aspects, *i.e.,* determination of the level of current assets, which involves management of inventory, receivables, payables and cash; deciding the mix of long-term and short term capital to finance current assets; evolving suitable policies, procedures and reporting systems for controlling the individual components of current assets; and determining the various sources of working capital. These aspects are discussed in the following paras.

3.5.1 Cash and its Management: Cash is said to be one of the most liquid and unproductive asset. Components of cash includes, cash balances with the company and in its bank accounts and marketable securities. It is an important current asset for any firm to keep the operations rolling. However, cash should be kept in right proportions as cash deficiency will interrupt the operations while excessive cash, being idle would

contribute least to the firm's profitability. Thus, one of the pivotal functions of a finance manager is to maintain sound cash position. Generally, idle cash is invested in marketable securities also known as short term investments or near cash assets as they can be readily converted into cash as and when the need arises and at the same time earning returns on money invested.

Keynes[36] identified three reasons for holding cash: (i) Transaction motive – to conduct its business smoothly; (ii) Precautionary Motive – to meet contingencies and (iii) Speculative motive – for investing in profit making prospects as and when they arise. However, with developments in banking and finance, a fourth motive of holding cash was identified to be Compensating motive – to maintain minimum balance in the bank accounts as per agreement[37].

The already-present concern over managing cash blossomed in the 1970s for several reasons[38]. Gentry[39] cited the reasons as: *First*, there was a rapid increase in inflation and interest rates that focused management attention on the need to invest idle cash balances and simultaneously, computer technology emerged that provided commercial banks the tools to offer cash management services to corporate customers; *Second*, Microcomputers arrived in the 1980s and provided easy access to daily cash receipt and disbursement information, resulting in a better understanding of the short-run cash flow process.

Since 1970 the cash management (CM) literature has experienced phenomenal growth that has been enhanced by the successful introduction of the Journal of Cash Management[39]. According to Scherr[40], cash management deals with determining the optimal level of cash, the appropriate types and amounts of short-term investments in cash as well as the efficient methods and controls of cash collections and disbursements.

In 1986, Srinivasan and Kim[41] presented the state of the art in cash management and categorized the major cash management tasks that had evolved during the preceding fifteen years into five major conceptual areas: *(i)* cash balance management which encompasses short-term borrowing and investing, cash forecasting, and cash position management; *(ii)* cash forecasting, *(iii)* cash gathering, mobilization, and concentration, *(iv)* cash disbursement, and *(v)* the designing of bank systems for credit services.

Robichek, Teichroew, and Jones[42] focused on short-term borrowing while Orgler, 1970[43] and 1974[44] presented cash management as a multi-period linear programming model which was designed so as to minimize the net cost from a cash budget through the planning horizon. Mao[45], Gitman, Forrester and Forrester[46]; Maier and Vander

Weide[47] have used linear programming to formulate the cash management process. Maier and Vander Weide[48] developed a leading user friendly L.P. model and Stone[49] created a financial statement simulator to determine a firm's line of credit and/or short-term investment needs.

A finance manager is always interested to know the funds that will be required and excesses if any, so that it can be invested. However, seasonal fluctuations and cyclical requirements make it difficult to find out these amounts accurately. In order to address the problems of cash management, models were developed which can be used by finance managers to help them maintain enough cash to cover all the three motives as given by J. M. Keynes. Baumol's model[50] of cash management provided a formal approach for determining a firm's optimum cash balance under certainty and considered cash management problem to be similar to inventory management problems. His model hypothesized that cash inflows of a firm were periodic and the outflows were continuous. The two costs considered were holding costs and transaction costs. Beranek's Model[51] also being a model under certainty, hypothesized that cash inflows in a firm were steady and outflows were periodic which was mirror image of time pattern of cash flows in the Baumol model. However, both the models ruled out the possibilities of fluctuations in cash flows which became its limitations as in practice firms do not utilize their cash balances uniformly and nor are they able to predict daily cash inflows and outflows. The Miller and Orr model[52] overcomes this limitation and allows for daily cash flow variation and is also termed as model under uncertainty. Stone model[49] also took the control limits approach but when cash balances fell outside the control limits, the firm is signaled to evaluate whether investment or disinvestment depending upon the future estimates of cash inflows rather than taking an action.

There are plentiful statistically based cash forecasting models of which the important models were created by Stone and Wood[53], Stone and Miller – 1981[54] and 1987[55], Miller and Stone[56], Boyd and Mabert[57], Kallberg and Parkinson[58] and Homonoff and Mullins[59]. The cash gathering process collects customer payments and deposits them into the banking system, commonly known as lockbox and lockbox collection models were created by several authors, a few of which are, Maier and Vander Weide[60]; Stone[61]; Levy[62]; Corneujols, Fisher and Nemhauser[63]; Nauss and Markland – 1974[64] and 1979[65]; Fielitz and White – 1981[66] and 1982[67].

Cash mobilization and concentration emphasizes the moving of funds through a concentration system to desired locations, where the company can then efficiently utilize its resources. The principal focus is on selecting concentration banks and

transferring funds among banks. Stone and Hill[68] introduced the concentration system concept and analyzed its influence on cash management.

The objective of the cash disbursement process is to select optimal disbursement sites. Maier and Vander Weide[69] developed a unified model that locates lockboxes and disbursement banks. Their model recognized that a firm may use one bank for both collecting customer payments and disbursing its cheques. In surveying the research on the lockbox location problem, they divided the literature into (i) formulation and economic analysis and (ii) mathematical optimization techniques. Ferguson and Maier[70] used the efficient frontier concept from portfolio theory to show a firm can design a disbursement system that delays the availability of funds to its suppliers.

Several studies have analyzed the problem of designing an optimal banking system for credit and non-credit services, for example, Stone – 1974[71], 1983[72]; Emery[73] and Pogue, Faucett, and Bussard[74]. A principal concern was determining how much in balances or cash to reimburse a bank for services it provided. When designing a company's banking system, Stone[75] stressed the importance of taking into account the interrelationships existing among a company's cash budget, credit requirement needs, and the bank system design. The cash flow timeline was based on the principle of present value and it showed that a firm's value is determined by the amount and the timing of its cash inflows and outflows[76]. In another context, cash flow information in the form of funds flow components was used in a probit or logit model to classify and predict financial failure (Gentry, Newbold, and Whitford – 1984[77]; 1985a[78]; 1985b[79]). Three separate studies by Casey and Bartczak – 1984[80], 1985[81], Gentry, Newbold, and Whitford[78]; and Gombola, Haskins, Ketz, and Williams[82] found that net operating cash flows (operating inflows minus operating outflows) are not significant in predicting corporate bankruptcy. Opler, Pinkowitz, Stulz and Williamson[83] examined the determinants of holdings of cash and marketable securities by publicly traded firms. They found evidence that firms behave according to the static trade-off consistent with the industry.

Thus, over a period of time, there has been much development on the theories and methods for the efficient management of the most unproductive asset, Cash.

3.5.2 Inventory and its Management: Inventories are a stock of the product a company is manufacturing for sale and components that make up the product and comprises a significant portion of current assets of large majority of companies in India[84]. The different types of inventories are used to satisfy different purposes (Scherr[40] and Stevenson[85]). They exist in four forms in any manufacturing concern, *i.e.,*

raw materials – which are inputs for making final product; work in process which refers to semi processed inputs; finished goods are the final products; and stores and spares which do not directly enter the production process but are necessary for production process.

The literature related to inventories is ample. Arrow, Karlin and Scarf[86] classified the motives for holding inventories into three classes based on Keynesian theory applicable to cash, *i.e.,* Transaction Motive, Precautionary Motive and Speculative Motive and was explained by Starr, Martin and Miller[87] whereas Bhalla[88] discussed the fourth motive for holding inventories as contractual requirements.

Since inventories represent investment of an enterprise's funds, the objective of inventory management should be to maximize the value of firm. Thus, factors to be considered in establishing policy would comprise of costs, return and risks involved.

Costs associated with inventories can be classified into ordering costs and carrying costs. Ordering costs relate to purchasing raw materials and include requisition, placing of order, transportation, receiving, inspecting, storing and clerical and staff services. The peculiarity of this cost is that it is fixed per order and so they decline with increase in order size. Carrying costs consist of warehousing, handling, clerical and staff services, insurance and taxes which vary with inventory holding and increases with increase in size of order. Carrying costs are generally about 20% of the value of inventories held[89]. Thus these two costs behave opposite to each other and so there has to be a trade-off between the two. The behaviour of these two costs to optimize the level of inventory holding is captured through the basic Economic Order Quantity (EOQ) model which is based on certain assumptions and is one of the simplest inventory models. Yet another cost associated with inventory management is shortage costs which arise when inventories are short of requirement for meeting the production or demand of customers.

In general, the inventory literature is located in three separate areas. Topics related to inventory valuation are in the accounting related literature; inventory planning and control models are in the management science literature, while the effect that inventories have on the aggregate economy is found in the economics literature[90]. From a financial viewpoint Hall's[91] concept of a stockless production strategy stands in sharp contrast to the traditional view of an optimal level of inventory and has profound implications on cash flow performance. Stockless production reduces work in process inventory and space needed for production and also eliminates problems related to quality, production bottlenecks, coordination, obsolescence, shrinkage, and supplier

unreliability[92]. The financial benefit of stockless production is an increase in profitability and liquidity with a decrease in financial leverage.

Lambrix and Singhvi[93] 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. Neglecting management of inventories jeopardizes a firm's short-term as well as long-term profitability "as they are the least liquid of all current assets and therefore should provide the highest yield to justify investment"[94].

The development of these theories thus, highlights the contribution that inventory management has on the total value of the firm as well as its relevance.

3.5.3 Receivables and its Management: Credit sales give rise to trade credit. A credit sale has three characteristics[95]: *First,* it involves default risk, as the payment is yet to be received. *Second,* it is based on economic value of goods and services which has already been transferred to buyer at the time of sale, while the seller expects the equivalent value to be received at some future date. *Third,* it implies futurity as the payment is expected to be received in future.

Trade credit is granted to facilitate movement of goods through production and distribution; to protect sales of the firm from its competitors and to attract potential customers to buy its product at favourable terms thereby creates accounts receivable, also known as trade debtors / book debts which are expected to be collected in the near future.

Debtors occupy an important position in the short term asset management of any enterprise as granting credit and creating debtors results into blocking of firm's funds representing investment. The size of investment in accounts receivables is determined by the volume of credit sales and the collection period. The collection period depends on the economic conditions as well as on credit policy variables which include (i) credit standards – the maximum riskiness of acceptable credit accounts; (ii) credit terms which includes, credit period allowed as well as cash discounts given for early payments; and (iii) collection policy of a firm.

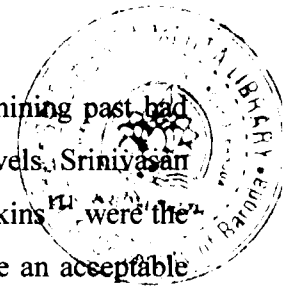
The credit policy followed may be either lenient or stringent. While the former has liberal terms and standards with credit granted for longer periods and without bothering much about the creditworthiness of the customer, the latter policy is highly selective based on the creditworthiness of the customer and shorter credit periods. Thus, financial managers can influence the volume of credit sales and collection period through the credit policy.

The decision to grant credit may either be part of marketing strategy or pure finance strategy but mostly it is a trade-off between both these strategies[96]. Thus the goal of receivables policy is to promote the sales and increase the profits such that there is a trade-off between benefits and costs through rigorous monitoring of receivables and efficient collection system. The costs associated with receivables can be understood to be collection costs, cost of capital, delinquency costs and default costs. Thus major risk in granting credit is the default risk also known as credit risk which is evaluated by the credit managers based on five C's of credit, which are, character, capacity, capital, collateral and conditions. The optimum trade credit policy is the one which maximizes the value of the firm.

A firm has to continuously monitor its receivables to ensure success of collection efforts. Broadly three methods of monitoring receivables are, *(i)* Average collection period; *(ii)* Aging schedule (Both being traditional methods) and *(iii)* Collection experience matrix – a new and better approach to receivables monitoring[97].

The literature related to the management of receivables is quite extensive. The receivables literature is subdivided into seven categories: *(i)* Monitoring performance, *(ii)* Measuring stability of the payment patterns, *(iii)* Credit policy effects, *(iv)* Inter-relationships among working capital accounts, *(v)* Investing in accounts receivable, *(vi)* Trade credit theories, and *(vii)* Financing accounts receivable[98]. Monitoring the performance of receivables is the area that has received the greatest attention by researchers (Freitas[99], Lewellen and Edmister[100], Stone[101]). Stone[101] showed that a payment pattern effect was responsible for changes in receivables in a very lucid way. Lewellen and Johnson[102] exemplified the collection experience matrix construction and showed how it is advantageous and better approach for monitoring receivables. Carpenter and Miller[103] (CM) developed an algorithm that measured the changes in receivables caused by sales and collection effects. Gentry and De La Garza[104] refined the CM algorithm, added a joint effect, and used the trend in sales and collection patterns to measure the receivable strategy employed by management.

Gallinger and Ifflander[105] suggested using the difference between actual and budgeted receivables in a single time period as a technique to measure the factors that cause receivables to change. Halloran and Lanser[106] showed that credit policy adjustments in response to anticipated inflation affected the value of the firm. Hill and Riener[107] used a discounted cash flow model to measure the cost/benefit tradeoffs related to a cash discount decision. Weston and Tuan[108] verified the optimizing methodology of Hill and Riener and found it produced the same results as a generalized approximation method.



Mehta[109] derived operating decision rules for credit extension by examining past bad debt levels, credit period length, collection activities, and lost sales levels. Srinivasan and Kim[110] focused on credit granting classification model. Kim and Atkins[111] were the first to use the NPV approach to determine if accounts receivable were an acceptable investment alternative for a firm and their NPV approach was a forerunner of the more expansive models that integrate short term financial management variables into the value creation process of the firm. Bierman and Hausman[112] offered a set of credit granting models which quantified the expected value of future credit extension opportunities and captured an important dimension concerning why firms extend credit. Credit scoring model based on financial ratios was first presented systematically by Beaver[113]. However, Bhattacharya[114] based on his review of various credit scoring models concluded that no credit-scoring model is universal in application as it is specific to similar population from which the sample is drawn and therefore every firm should develop its own credit scoring model and update it periodically. Also, Markov analysis was proposed to predict the behavior of accounts receivables.

Schwartz[115] concluded that a seller with easy access to capital markets may benefit by extending trade credit to customers who do not have easy access to capital. Lewellen, McConnell and Scott[116] showed that trade credit cannot be used to increase firm value when financial markets are perfect. Copeland and Khoury[117] argued that receivables should be treated as an investment rather than the passive consequence of sales. The investment motive becomes particularly important if the seller can charge a higher price by offering credit terms, generating an implicit interest income for delayed rather than immediate payment. Emery[118] developed a positive theory of trade credit based on its use as a financial response to deterministic variations in demand. The operating alternatives to demand were modeled using results from the peak-load pricing literature. Emery[119] focused on several financial market imperfections in explaining why firms extend trade credit; how they establish the terms of sale, *i.e.*, a pure financial explanation, a pure operating flexibility motive, and a pure financial intermediary motive and showed that a trade credit lender is familiar with the payment behaviour of its customers and can economize on lending transaction costs, when extending trade credit. Additionally, the trade credit lender has an advantage over financial intermediaries as related to collection costs. Cheng and Pike[120] found strong empirical support for seven propositions linked to competitiveness, pricing, investment and financing, and weaker support for a number of other theoretically derived motives for trade credit extension. Factor analysis suggested a more insightful approach to

classifying trade credit motives, covering investment in customers, customer's operating and financial benefits, supplier's marketing/operational benefits and market pressure to conform. In addition, two factors, *i.e.,* customer relations and pricing flexibility were extracted as motives for varying credit terms.

Mian and Smith[121] analyzed the implications of the choice of accounts receivable financing policy that ranged from internal management to subcontracted financing through a factor. They presented seven alternate trade credit administration policies that are used to finance receivables which are: *i)* financing through general corporate credit, *(ii)* establishing a captive finance subsidiary, *(iii)* financing through accounts receivable, *(iv)* secured debt using a credit reporting agency or *(v)* using a credit collection agency, or *(vi)* a credit insurance company or *(vii)* using a factoring. They found that the larger, more credit worthy firms established captives, while the smaller, riskier firms issued debt secured by accounts receivable.

Since, credit management is a specialized as well as a time consuming activity, Factoring has evolved over a period of time which has become popular mechanism of managing, financing and collecting receivables in developed countries and is a unique financial innovation which provides liquidity to book debts. Factoring facilities are available worldwide and can be classified into four major groups, *(i)* Full service non recourse; *(ii)* Full service recourse factoring; *(iii)* Bulk/ agency factoring and *(iv)* Non-notification factoring[122] which is gaining more and more focus in the field of receivables management.

Thus, accounts receivable, despite being short term in nature, the policy decisions relating to them have long term implications for the organization as well as its financial structure. This is so because once the policy is decided, it is difficult to revert it except at the cost of adverse market reactions which also affects the value of firms and therefore receivables management decisions needs proper caution and care.

3.5.4 Payables and its Management: Accounts payables includes trade credit and outstanding expenses which together provide finance to the day to day business operations on a continuous basis and are therefore referred to as, spontaneous – self adjusting sources of finance. They are exactly opposite face of accounts receivables and exist due to the existence of latter[123]. In many countries like the United States, trade credit is the single most important source of short term finance[124], but in India, large firms are found to implicitly enjoy the cheaper institutional credits available to small suppliers. Bhattacharya[125] notes that, the accounts payables policy of the firm depends greatly on the receivables policies of the supplier. The goal of accounts payable

management is to provide as much spontaneous financing as possible at zero cost. However, at the same time, a firm has to consider the given terms of purchase which determines its cost of trade credit. Terms of purchase generally consist of a credit period and a cash discount for early payments whereas penalty for delayed payments. Firms may stretch the credit period to enjoy the additional float but it involves cost in the form of loss of goodwill as well as penalties, if any and therefore these costs should well be considered. Further, considering these factors, a model has been developed to determine the effective costs of trade credit.

A good information system for accounts payable is desirable for every firm as it serves two purposes, *(i)* to protect the firm from overtrading and missed out discount opportunities and *(ii)* aids in cash forecasting and cash budgeting.

Accounts payable period (APP) is an important variable to determine the CCC and the higher the APP, the lower is the CCC. Robichek *et al*[42] developed the importance of accounts payable as a primary source of short-run financing in a linear programming model. Gentry and De La Garza[126] have developed algorithms for monitoring payables and receivables. Their model showed that payables change because of purchasing, payment, and joint effects. Gentry, Vaidyanathan and Lee[34] introduced payables effect that takes into account the relative financing contribution provided by payables in the cash conversion cycle and termed it as weighted cash conversion cycle (WCCC) which caused WCCC to be longer than original CCC. Thus, payables management is an equally important part of working capital management.

3.5.5 Working Capital Policy: Working capital policy can be best described as a strategy which provides the guideline to manage the current assets and current liabilities in such a way that it reduces the risk of default[127]. The working capital policy decisions can further be segregated to the current asset investment policy and current asset financing policy of the firm. Investing decisions relate to decisions on funds required to maintain current assets (cash, receivables, inventories) and the selection of investment mix depends on its effect on the cash flows from operations. The current asset financing decisions refer to the decisions relating to sources of financing to be used, which includes debt (short or long-term), equity or retained earnings.

Aspects of WCM which makes it an important policy decision[128] are: *(i)* The amount of time consumed, *(ii)* Representing large amount of investment; *(iii)* Its criticality for large and small firms and *(iv)* Its need to support the growth of the firm.

The two important objectives of WCM are profitability and solvency. Solvency refers to the firm's continuous capability to meet maturing obligations and so a firm has to

maintain enough liquidity to avoid risk of insolvency. Thus, the firm's decision about the level of investment in current assets involves a trade-off between risk and return, *i.e.,* cost of liquidity and cost of illiquidity. This is because as more and more is invested in current assets, the liquidity increases, whereas it affects the profitability as opportunity to earn from excess investment in current assets is lost. However, with lower level of current assets the risk of solvency is high. Profitability is related to the goal of shareholder wealth maximization, so investment in current assets should be made only if an acceptable return is obtained. Similarly, for financing the current assets a firm has a choice between short term and long term sources of finance. Short term financing is less expensive than long term financing but at the same time it involves greater risk as compared to the latter. Thus, the current asset financing policy also involves a risk-return trade-off.

Walker[129] in his study made a pioneering effort to develop a theory of WCM by empirically testing, though partially, three propositions based on risk-return trade-off of WCM. 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 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. He advocated that 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 which stated that 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, which stated that 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 WCM by developing three prepositions.

Thus while taking decisions the manager is faced with the alternative of pursuing either a conservative working capital policy characterized with lower risk and higher liquidity or an aggressive policy characterized with higher risk and lower liquidity which largely depends on the nature of business activity of an enterprise. The high risk – high return working capital investment and financing strategies are referred as aggressive whereas lower risk and return strategies are called moderate or matching and still lower risk and return is called conservative working capital policy. A firm may adopt an aggressive WCM policy with a low level of current assets as percentage of total assets or high level of current liabilities as percentage of total liabilities. Nevertheless, excessive levels of current assets may have a negative effect on the firm's profitability whereas a low level of current assets may lead to lower level of liquidity and stock-outs resulting in difficulties in maintaining smooth operations[130]. Similarly use of current liabilities to finance the current assets as well as portion of fixed assets is risky to the company as the current obligations are to be honored every 12 months. Higher the use of current funds to total assets, the higher is the risk but such a policy gives higher return in the context that it saves the cost of long term funds used (since the cost of long term funds are greater than the short term funds[131]). However if more of long term funds are used to finance current assets, the risk is less but the returns are also less. Thus every management strives hard to adopt such working capital policy which ensures risk–return tradeoffs.

Lambrix and Singhvi[93] suggested that working capital investment could be optimized *(a)* by improving the terms on which goods are sold, *(b)* by improving the terms on which firms bought goods i.e. creditors and payment of cash *(c)* 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.

Risk in working capital management is therefore, an outcome of aggressive working capital investment and financing policy. Thus, before deciding on an appropriate level of working capital investment, the management has to evaluate the trade-off between expected profitability and the risk of being unable to meet its current obligations.

The key policy areas relate to the level of investment in working capital for a given level of operations and the extent to which working capital is financed from short-term funds such as a bank overdraft. Working capital policies need to consider the nature of the company's business since different businesses will have different working capital requirements. A manufacturing company will need to invest heavily in spare parts and components and might be owed large amounts of money by its customers. A food

retailer will have large inventories of goods for resale but will have very few trade receivables. The manufacturing company clearly has a need for a carefully thought out policy on receivables management, whereas the food retailer may not grant any credit at all. Working capital policies will also need to reflect the credit policies of a company's close competitors to avoid any possible losses due to unfavorable comparison of terms of trade. Therefore, in shaping its working capital policy the firm should keep in mind the relative asset liquidity (in terms of level of current assets) and the relative financing liquidity (in terms of level of short term financing) of WCM[132].

3.5.5.1 Working Capital Leverage: Walker[132] noted, "If the amount of working capital is varied relative to sales, the amount of risk that a firm assumes is also varied and the opportunity for gain or loss is increased and this can be technically termed as working capital leverage". According to him risk means risk of not maintaining sufficient investment in current assets to meet all the maturing financial obligations to support a given sales level and pioneered the concept of working capital leverage (WCL). Thus, WCL analyzes the impact of a firms' current asset investment policy on ROTA. "WCL reflects the sensitivity of returns on investment (earning power) to changes in the level of current assets" Chandra[133]. According to Hyderabad[134], WCL indicates a firm's responsiveness to its working capital investment policies. It shows the extent to which return on capital employed (ROCE) varies for one percent change in the amount of working capital. The quotient of WCL may be more than 1, equal to 1 or less than 1. The higher the WCL, the higher would be the sensitivity of ROCE to changes in working capital. But at the same time it increases the risk also.

The formula for computing the WCL is as follows:

$$\text{WCL} = \frac{\text{Percentage Change in ROTA}}{\text{Percentage Change in Current Assets (CA)}}$$

If the change in current assets is denoted by $\triangle CA$ without impairing in any way the earning capacity of the firm, then the percentage change in ROTA can be expressed as:

$$\text{Percentage Change in ROTA} = \frac{\frac{EBIT}{TA-\triangle CA} - \frac{EBIT}{TA}}{\frac{EBIT}{TA}}$$

This equation when simplified results to, $\frac{\triangle CA}{TA-\triangle CA}$

Similarly the percentage change in current assets can be written as, $\frac{\triangle CA}{CA}$

$$\text{Thus, WCL} = \frac{\triangle CA}{TA - \triangle CA} \div \frac{\triangle CA}{CA} = \frac{\triangle CA}{TA - \triangle CA} \times \frac{CA}{\triangle CA}$$

$$= \frac{CA}{TA \pm \triangle CA}$$

An analysis of this relationship is must for any firm to optimize its investments in current assets. A high degree of WCL indicates that the firm is highly vulnerable to variations in the amount of working capital, whereby a small decrease in working capital would lead to increase in ROI by a higher percentage.

In this context Hyderabad[134] notes, "a conservative management maintains a high level of investment, thus depressing the ROCE. On the other hand, a relatively aggressive management maintains a lower level of investment earnings and thereby a higher ROCE. Hence, the management's attitude towards risk is predominant factor influencing the level of working capital. WCL is not uniform for all firms, *i.e.*, all firms are not equally responsive to the WCL. Firms having a low ratio of fixed assets to working capital are more responsive than those having a high ratio of fixed assets to working capital. Thus, the asset structure is the basic determinant of WCL".

From the review of theoretical work, it is observed that various academicians, researchers and economists have put in their intellectual efforts to develop the theory of short term financial management, *i.e.*, WCM. The major developments in the theory of WCM are presented in the summary form in Table 3.1.

TABLE 3.1

Development of Theory on Working Capital Management

Sr. No.	Name of Concept/Theory	Name of Pioneer	Year
1	The concept of Working Capital as Variable Capital	Sir Karl Marx	1867
2	Current Ratio	Cited by A. R. Foulke in his book, "Analysis of Financial Decisions"	1890's
3	Qualitative Concept of Working Capital: Net Working Capital	Saliers	1927
4	Three Motives for Holding Cash	Sir John Maynard Keynes	1936
5	The Concept of Working Capital as the Circulating capital	Sir Adam Smith	1937
6	Working capital as Revolving Capital	F. W. Mueller	1953
7	Operating Cycle	Park and Gladson	1951

TABLE 3.1			
Development of Theory on Working Capital Management			
Sr. No.	Name of Concept/Theory	Name of Pioneer	Year
8	Cash Management Model for Optimal Cash Balances under certainty	Baumol and Beranek	1952 & 1963
9	Motives for Holding Inventories	Arrow, Karlin and Scarf	1958
10	Fourth Motive for Holding Cash	O Maurice Joy in his book "Introduction to Financial Management"	1962
11	Cash Management Model for Optimal Cash Balances under Uncertainty	Miller and Orr	1966
12	Lockbox and Lockbox Collection Models	Maier and Vander Weide; Stone; Levy; Corneujols, Fisher and Nemhauser; Nauss and Markland – 1974 and 1979; Fielitz and White – 1981 & 1982.	1966 to 1982
13	Credit Scoring Model	Beaver	1967
14	Use of linear programming in formulating the cash management process.	Mao	1968
15	Cash Management as multi-period linear programming model	Orgler	1970 & 1974
16	Cash Management Model for Optimal Cash Balances under Uncertainty with signaling to evaluate investment or disinvestment	Stone	1973
17	Cash Conversion Cycle	Gitman, Gitman and Sachdeva and Laughlin and Richards	1974
18	Working Capital Leverage	E. W. Walker	1974
19	Cash Forecasting Models	Stone and Wood, Stone and Miller – 1981 & 1987, Miller and Stone, Boyd and Mabert, Beehler, Kallberg and Parkinson, Homonoff and Mullins	1975 to 1981.
20	NPV Approach to evaluate receivables	Kim and Atkinson	1978
21	Important characteristics of current assets	Dileep R. Mehta	1979
22	Introduction of Concentration Banking and its influence on Cash Management	Stone and Hill	1980
23	Working Capital Requirements and Net Liquid Balance	Shulman and Cox	1985
24	Weighted Cash Conversion Cycle	Gentry, Vaidyanathan and Lee	1990

TABLE 3.1			
Development of Theory on Working Capital Management			
Sr. No.	Name of Concept/Theory	Name of Pioneer	Year
25	Fourth Motive for holding inventory	V. K. Bhalla	1997
26	Net Trade Cycle	Shin and Soenen	1998

Having discussed the theoretical development over a period of time, the next section presents the empirical work undertaken on the various aspects of working capital management.

SECTION II

Review of Related Literature

In this section, a review of empirical work on various aspects of working capital management is presented. As already observed from the theoretical construct, the short term financial management is the key to the success of any and every business enterprise and is multi faceted having various aspects which are interlinked. Hence, for an efficient management all the aspects have to be simultaneously managed. In the said context, the studies are conducted across the world on various aspects of WCM. Hence, these studies are grouped in six broad categories according to the aspect of WCM examined. This classification helps to understand different aspects of WCM concentrated upon by various researchers over the years. It also helps to know the progress of empirical work in WCM. The classification is presented as follows:

a. Studies on inventory management

b. Studies on receivables management

c. Studies on cash management

d. Studies on general working capital management

e. Studies examining impact of liquidity on profitability

f. Studies on Working Capital Policy and Working Capital Leverage

Further, the studies have been again segregated into those carried undertaken outside India and within India to understand if differences exist between countries with respect to the WCM and if the country specific factors have an impact on the same. Thus, in all the 6 broad groups stated above, first the review of *Studies conducted abroad* and then the review of *Studies conducted in India* is presented.

The review of studies is presented in summary form in the following paragraphs which follows the chronological order in each group classified as above.

3.6 Studies on Inventory Management

In this para a review of studies conducted with special reference to Inventory Management is presented in the chronological order.

3.6.1 Inventory Management Studies Abroad

Gaur, Fisher and Raman[1] (2005) developed an empirical model using financial data for 311 publicly listed retail firms for the years 1987–2000 to investigate the correlation of ITR with GPM, capital intensity (Gross Fixed Assets[GFA]/GFA+CA) and sales surprise (ratio of actual sales to expected sales) through log linear model. They found that ITR in retail services had a high correlation with GPM, capital intensity and sales surprise and so they suggested that it should not be used in performance analysis. Instead, an empirical metric derived from the model was proposed taking adjusted ITR which empirically adjusts ITR for changes in GPM, capital intensity and sales surprise can be applied in performance analysis and managerial decision making. The analysis of time trends in ITR and adjusted ITR revealed that both have declined in retailing service sector over the study period.

Boute, Lambrecht, Lambrechts and Sterckx[2] (2007) investigated the level of inventories held by Belgian companies in May 2004 by examining differences in inventory ratios between manufacturing industry sectors as well as between wholesale and retail using ANOVA. They found empirical evidence that the type of production process was the most important driver for work in process inventory. The finished goods inventory ratio also differed significantly among industry sectors, but the reasons for the difference were harder to distinguish. Also the inventory ratio was found to be significantly higher in retail than in wholesale sector. Further, on examining the financial impact of inventories (Raw material, Work-in-process, Finished Goods) in the manufacturing industry on ROTA, it was found that companies with very high inventory ratios were more likely to be bad financial performers. Regression analyses partially supported the hypothesis of a negative relationship between inventory ratios and financial performance but significant results could not be obtained for all the sectors.

3.6.2 Inventory Management Studies in India

Chowdury[3] (1971) in his article suggested various inventory control techniques for efficient inventory control that is, Minimum Stock Level, Economic Ordering Quantity, Standard Costing, Budgetary Control and Material as a limiting factor which helps in betterment of profit. Standardisation and variety reduction, to the extent possible, was

suggested for effective control of inventories, which unearths many areas of hidden profit and aids in making operations more efficient. Also, ITR, Work-in-Progress Turnover Ratio, Finished Goods Turnover Ratio and ITCAR were suggested for efficient control of inventories through ratio analysis.

Shah[4] (1974) in his study analyzed investment in inventories and costs associated with inventory in two textile mills for two years, *i.e.* 1966 and 1971. It was found that there was accumulation of inventories which resulted into greater investment in inventories and that cost of materials accounted for nearly 55% to 60% of total cost of production.

Kumar[5] (1996) in his case study on Punjab State Electricity Board conducted a detailed analysis of inventory management functions by administering a questionnaire and found that stores control was carried out strictly and inventory control techniques like EOQ, ITR, ABC Analysis were used for inventory management.

Rabiul Alam and Hossain[6] (2001) examined and evaluated the performance and practice of inventory management of Khulna Shipyards Limited (KSL) through ratio and correlation analysis for a period of ten years from 1987-88 to 1996-97. A high degree of statistically significant positive association existed between inventory and current assets as well as total assets. Inventory was found to have occupied highest share in current as well as total assets. The work in progress conversion period was very high and the financial data analysis revealed poor inventory management at KSL.

Parmar[7] (2003) attempted to evaluate the performance of inventory management of GSFC and GNFC for a period of seven years from 1994-95 to 2000-01. The overall performance regarding inventory management at GNFC was better in terms of efficient utilization of inventories whereas GSFC was not able to do so as it had larger amount invested in inventories in relation to total current assets which was further confirmed by a statistically significant relationship between sales and inventory in case of GNFC and insignificant relationship for GSFC. It was concluded that overall performance of GNFC was encouraging and that of GSFC was alarming.

Singh[8] (2008) in his comparative study in Indian Farmers Fertilizer Cooperative Limited (IFFCO) and National Fertilizer Ltd. (NFL), two fertilizer companies, evaluated the effect of the size of inventory and its impact on working capital through inventory ratios and trends in inventory and working capital. Inventory ratios of both the companies have improved over the study period but NFL's position was better than IFFCO. Trend of inventory and working capital followed the same pattern in both the companies. However in NFL, the portion of inventory in gross working capital regularly decreased specially in the last six years, which positively affected the

liquidity position of the company during the study period. It was found that the size of inventory directly affects working capital and its management. Overall a need for improvement in inventory in case of IFFCO was suggested as it was not found to be properly utilized and maintained.

Soni[9] (2012) examined the inventory management practices of Engineering Goods Industry in Punjab taking a sample of 150 companies over the period 2004 to 2009 through primary data collection as well as ratio analysis. The study revealed that size of inventory has increased marginally over the study period with half of the GWC being used for meeting out inventory requirements which has resulted to high IHP and lower ITR. Major part of inventory was found in the form of raw material followed by work-in-process, stores and spare parts and semi finished goods. Moreover, a significant impact of sales on inventory was found through regression analysis.

Concluding Remarks

- Inventory was found to occupy the major share in current assets structure of US Retail sector[2], Indian Textile Sector[4], Shipping[6] and Fertilizer[9] Industry.
- Companies with high ITCAR in retail sectors were observed to be bad financial performers[2].
- Sales was observed to have a significant positive relationship with inventory[7, 9] and size of inventory also affected the net working capital.

3.7 Studies on Receivables Management

In this para a review of studies conducted with special reference to Receivables Management is presented in the chronological order.

3.7.1 Receivables Management Studies Abroad

Gama and Mateus[10] (2010) focussed on signalling role of trade credit and assessed the existence of credit rationing by examining if trade credit was a substitute and/or a complement to bank credit by taking a data set of 468 Portuguese and 7017 Spanish SMEs for a period of eight years from 1998-2006 and controlling for endogeneity problems by using GMM estimators. The variable age was found to be positively and significantly related to trade credit for young firms which was opposite for older firms, which reinforces the result that the small, young firms are credit rationed whereas older firms may have lower financial needs because of their sufficient level of retained earnings due to which they may prefer internal financing. This result was strengthened by the variable size and since large firms are less opaque, it is reasonable to assume that suppliers offer more credit to firms of higher quality. Thus, the results confirmed the

existence of credit rationing. Results also confirmed that firms that maintain an exclusive relationship with one bank report a higher degree of substitution between both bank and trade credit as sources of financing, which indicates the greater severity of adverse selection problem in those companies. In line with the theories that emphasize the informational role of trade credit, due to the informative advantage of suppliers, empirical results confirmed that trade credit allowed the younger and smaller firms to improve their reputation.

3.7.2 Receivables Management Studies in India

Suryanarayanana[11] **(1975)** in his study of 1501 non government Indian public limited company for the year 1969-70, analyzed the sundry debtors. It was found that Trade Debtors formed the major part of Shareholders' Funds (34%) and were also found to be a major constituent of current asset at 37%. For control of Debtors, Ageing schedule of debtors and Debtors as a percentage of sales was suggested.

Reddy, Reddy and Reddy[12] **(2003)** evaluated the performance of debtors' management of selected six paper mills of Andhra Pradesh for a period of ten years (1990-1999) using ratio and trend analysis. The study revealed that sample mills adopted a liberal credit policy which had a favourable impact on sales except one unit. The size of debtors as a percentage of current assets showed a declining trend. However, the ACP had increased over the study period indicating slackness of collection efforts.

Shukla[13] **(2007)** analyzed the efficiency of receivables management of selected eight pharmaceutical companies using ratio analysis and ANOVA for a period of ten years from 1997-98 to 2005-06. They found that receivables of selected sample formed the highest component of current assets, but receivables as a percentage of sales were only 3.37 percent. Also ACP was found to be much higher than the norms prescribed by the Tandon Committee. Moreover, significant differences were observed between companies for all the receivables management ratios.

Kannadhasan[14] **(2008)** assessed the receivables management of a public limited undertaking for a period of five years (1999 to 2003) through CR, QR, WCTR, Credit Sales to Total Sales ratio, RTR, ACP, CTR, APP, RTCAR, ITCAR, CBBTCAR and LATCAR using descriptive statistics and correlation analysis. They found that the liquidity position as well as receivables management of the company was satisfactory.

Nageswari, Bennet and Selvam[15] **(2011)** analyzed the efficiency of receivables management of a eleven sample automobile companies for a period of ten years from 1999 to 2009 taking RTCAR, ACP, RTR, Receivables to Payables Ratio, Receivables to TA and Receivables to Sales Ratio and ANOVA. It was found that receivables

formed 42.11% of the CA on an average with ACP of 41 days. They found significant differences between companies for RTCAR and concluded that Indian Automobile Industry efficiently managed their Receivables with a scope of further improvement.

Velmathi and Ganesan[16] (2011) examined the credit management of selected five companies of Indian commercial vehicle industry over a period of ten years using ratios, descriptive statistics and ANOVA. The study revealed that debtors' management was good in selected sample whereas the application of one-way ANOVA revealed that the mean ratios of all the selected units differed significantly.

Concluding Remarks

- Receivables was observed to be major share of current assets in Indian Public Limited Companies[11] and Pharmaceutical Companies[13].
- Significant differences were observed between selected firms with respect to the receivables management ratios[13, 15, 16].
- The signalling role of Trade Credit was empirically proved and the results confirmed the existence of credit rationing with *older firms* having easy access to trade credit and *vice-versa*[10].

3.8 Studies on Cash Management

In this para a review of studies conducted with special reference to Cash Management is presented in the chronological order.

3.8.1 Cash Management Studies Abroad

Sathyamoorthi[17] (1999) examined the cash flows of selected medium scale enterprises of Botswana for three year period from 1994-1996 using cash flow statement analysis. The analysis revealed that the selected sample spent the same amount on investing activities over the study period. Also, operating cash flows was the major source to finance the business operations and that the sample firms were in process of expansion.

3.8.2 Cash Management Studies in India

Acharya[18] (1973) discussed aspects pertaining to symptoms of bad cash management; the critical areas needing constant attention being credit control, inventory control, production cycle and suppliers; the planned programme of sound cash management in a going concern and suggested remedies to tide over temporary as well as long term cash deficits. It was concluded that sound cash management is the outcome of sound working capital management.

Khatik and Jain[19] (2009) made an in-depth study of MPSEB in respect of its performance and cash management for a period of ten years from 1995-96 to 2005-06 through ratio analysis. They found a high volatility in total cash payment and cash ratio. The cash management position was found to be unsatisfactory as it had not maintained adequate amount of cash in hand and cash at bank.

Ghosh[20] (2011) evaluated cash management performance of two leading companies in Indian Steel industry namely, SAIL and TSL during the period of 2003-04 to 2009-10 using cash flow based measures *viz,* CBTR, Operating Cash Flows to Sales as well as Total Assets. Linear regression was applied to examine the impact of cash balances on profitability. The empirical findings revealed that TSL had utilized its cash more efficiently as compared to SAIL and had better capacity to convert its sales into cash.

Kaur[21] (2012) studied the cash management of two dairy cooperatives of Punjab and Haryana, *viz,* MILKFED and HDDCF for a period of five years from 2005-06 to 2009-10 using ratio analysis. It was found that liquidity position measured in terms of CR, QR and CBBTCAR as well as operational efficiency measured in terms of net cash flows coverage ratio, of MILKFED is better than HDDCF. It was concluded that both the companies have shown improvement but the performance of MILKFED was better than that of HDDCF.

Concluding Remarks

- It was found that operating cash-flows was the major source of financing the business operations[17].
- Cash management was concluded to be the outcome of sound WCM[18].
- Cash management was found to be unsatisfactory for MP State Electricity Board[19] whereas it had improved for Steel Industry[20] and Dairy Cooperatives[21].

3.9 Studies on Overall Working Capital Management

In this para a review of studies conducted with special reference to overall Working Capital Management, *i.e.,* covering multiple aspects of WCM *viz,* inventory, receivables, cash management as well as working capital structure, trends *etc.* is presented in the chronological order.

3.9.1 General Working Capital Management Studies Abroad

Sagan[22] (1955) emphasized on the need for management of working capital accounts and concluded that it could vitally affect the health of the company. He indicated that the task of money manager is to provide funds as and when needed and to invest temporarily surplus funds as profitably as possible in view of particular requisites of

safety and liquidity of funds by examining the risk and return of various investment opportunities.

Smith[23] (1997) investigated the cross sectional influences in working capital of 135 industrial firms listed in Johannesburg Stock Exchange for a period of ten years from 1984 to 1993. It was found that the significant sector differences existed with respect to six out of thirteen selected measures of working capital which were, ITR, RTR, CTR; accounts receivables to accounts payable ratio, CCC and NTC.

Sarawat and Agrawal[24] (2004) carried out a comparative study of WCM in two Nepal Cement Industry firms for a period of eight years (1993-94 to 2000-2001). The size of working capital was higher in HCIL coupled with more variations as compared to UCIL. Also, the rate of increase of working capital per year as well as the average compound progressive growth rate was higher in HCIL as compared to UCIL. A statistically significant difference between sizes of working capital of both the samples was found. There was no significant correlation between working capital and sales in both the sample. Exponential Trend was found to be best fit in case of HCIL and Quadratic Trend was found to be best fit in case of UCIL for working capital trend. A positive relationship between profit and sales was found for both the companies; however the increase in profit was double in HCIL as compared to UCIL. A negative relationship was found between current assets and profit indicating lower profitability with higher liquidity. CA and Sales accounted for 88% of variation in profit. The study pointed out that important reason for the losses or low level of profits of public enterprises in Nepal was ineffective and inefficient utilization of working capital.

Sayaduzzaman[25] (2006) analyzed WCM efficiency of British American Tobacco Bangladesh Company Ltd. for a period of five years (1999-00 to 2002-03) using correlation analysis. The study found that the WCM efficiency was highly satisfactory due to the positive cash inflows and planned approach in managing the major elements of working capital.

Padachi, Narsimham and Howorth[26] (2008) in their study examined the structural differences in working capital and the financing pattern of 58 Mauritian small manufacturing firms, operating in five industry groups for the period 1998-2003. An analysis of working capital components and funding pattern showed significant structural changes. While the stocks level and trade debtors had not experienced any major variations, yet they accounted for 80% of the short-term resources tied up in working capital. Thus, the working capital position of the sample firms revealed disproportionate increase in current asset investment in relation to sales resulting in a

sharp decline in the WCTR. The mean value was three times, indicating a lower operational efficiency. The study also showed an increasing trend in the short-term component of working capital financing. While the short-term funds, in particular trade credit and other payables, have financed the major part of the working capital, the percentage of long-term funds used to finance the working capital has declined consistently during the same period.

Sathyamoorthi and Wally-Dima[27] (2008) in their study analyzed the WCM of four listed retail domestic companies in Botswana for a period of three years, *i.e.* 2004 to 2006. The findings revealed that ACP had reduced indicating efficient credit policy of the sample selected. APP had increased which indicated that creditors were not made prompt payment which needed to be addressed by sample units to save it from damage of confidence of the suppliers. Also, the selected sample were found to be most liquid in the year 2006, followed by 2005 and 2004 as indicated by Comprehensive Liquidity ranking indicating improvement in liquidity position over the period under study. The analysis of distribution of components of current assets showed that cash and other assets had the tendency to vary over the study period. The research findings also revealed that the listed companies adopted conservative approach in the management of their working capital.

Ojeka[28] (2011) examined the effect of credit policy on the liquidity of four manufacturing companies in Nigeria over a period of five years from 2003-07 taking primary data and secondary data of selected sample and using ratio analysis and regression analysis. The findings revealed that credit policy did not have a negative effect on liquidity of selected sample which implies that a favorable credit policy would result in favorable liquidity position. It was suggested that companies should ensure the monitoring and regular review of their credit policy and the allowance of cash discounts should be minimized as much as possible.

3.9.2 General Working Capital Management Studies in India

Agrawal[29] (1976) examined the industry practice related to WCM by collecting primary information through questionnaire and evaluated its efficiency through ratio analysis and descriptive statistics for 34 companies belonging to ten industry groups over a period of 8 years from 1966-67 to 1973-74. It was found that working capital per rupee of sales varied from industry to industry and it registered a downward trend during the study period except in cement industry. Also, majority of the industries were not able to utilize their total current assets effectively with unsatisfactory liquidity position. However, positive net cash flows and CL Turnover rate enabled firms to carry

out activities smoothly. Cash, Receivables and Inventory Management was also inefficient. The study revealed that over the study period, there was an upward trend in the share of Long term funds in financing working capital in all industries and the importance of internal short term funds for financing the working capital increased in six out of ten industries. The proportion of short term bank borrowings declined over the study period whereas the proportion of trade credit showed an upward trend.

Ansari[30] (1985) studied the WCM of selected 100 SSIs belonging to eleven industry groups over a period of five years from 1977-78 to 1981-82 through secondary data analysis. Of the eleven industry groups, CR and QR were found to be above the thumb rule for five industries, whereas for other industries it was lower than thumb rule which was highest for Repairs of Motor Vehicle Industry and lowest for Fabricated Items Industry. Also, the OC had narrowed down for five and widened for six industry groups. Further, it was observed that industry groups have been suffering from underutilization of working capital. About 50 percent of the total assets were current assets in Food, Leather & Plastic Goods, Chemical, structured Items, Fabricated Items, Tools & Appliances & Repair of Motor Vehicle Industry whereas share was two-thirds in Power loom, Furniture & Tobacco Industry and three fourths in Printing and Publishing Industry. Industries conducted their business with very low proportion of cash at hand & Bank except Food & Repair of Motor Vehicle Industry where share of cash to CA was in double digit. Current assets were found to be financed majorly through CL followed by Retained Earnings and then other Non Current Liabilities.

Khandelwal[31] (1985) studied the WCM of selected 40 SSI units of Jodhpur over a period of five years from 1975-76 to 1979-80. CAME was found to be lower as compared to the industry average. There was an overall decline in the coverage of CL over the study period and the liquidity position was below the standard norms. Inventory formed the major part of CA with raw materials having major share of inventory and size of inventory holdings showed rising trend. Receivables management was found to be inefficient. CBBTCAR showed a declining trend. Size of working capital finance was found to be positively correlated to the size of the unit. The growth rate of working capital finance was found to be higher than growth rate of output and sales during the study period. It was found that the share of Bank credit in financing the working capital was one third with marginally declining trend, which however exceeded own funds in all industry groups under study suggesting that institutional finance continued to be the mainstay of financing working capital.

Sarkar and Saha[32] **(1987)** analyzed WCM efficiency of CCI Ltd and its financing for a period of ten years from 1973-74 to 1982-83. They found that CBBTCAR always remained at the lowest ebb. Ineffective inventory management was observed from the fluctuating trend in ITCAR. RTCAR have been moderate indicating that firm was prompt in the collection of its dues. But the advantage accruing to the company from the declining share of debtors had been offset by increase in the share of loans and advances. Also, company followed a conservative working capital financing policy due to which WCM was found to be risk free.

Basu[33] **(1992)** analyzed the WCM of selected eight tyre companies for a period of three years from 1987-88 to 1989-90 using ratio analysis. The industry pattern showed a steady trend during the period under study with respect to components of working capital with inventory being the highest component followed by debtors, other current assets and cash and bank balances. The inventory management was found to be satisfactory. Of the eight firms, one firm had good collection policy, four had liberal credit policy and two followed balanced credit policy. The short term solvency position of all the sample firms was found to be unsatisfactory as per the standard norms throughout the study period.

Banerjee and Hazra[34] **(1992)** in their case study of Grasim Industries Limited, attempted to study and evaluate the WCM, its financing and examined the reasons for variation in working capital over the period of five years from 1985-86 to 1989-90 through ratio analysis, fund flow analysis and simple regression analysis. They found that the moderate approach was followed in working capital investment whereas working capital financing policy was found to be more conservative. Loans and advances formed major part of current assets and its share increased whereas that of receivables and inventories declined over the study period. An increasing trend was observed in both sales and working capital but the rate of growth in working capital was much higher than the growth rate of sales. There was no co-ordination in the growth rates of working capital and sales, which bespeaks of the inefficacy in WCM of company which was partly due to major portion of current assets being invested outside the business.

Das[35] **(1993)** studied the WCM of a government sector public undertaking for a period of ten years from 1981-82 to 1990-91 through ratio analysis. The analysis revealed that inventory constituted highest share of current assets followed by receivables and cash and bank balances. Current assets to sales ratio had declined over the study period but had been exceptionally high indicating inefficient utilization of funds. Working capital

to sales ratio indicated that the undertaking was functioning with negative working capital. Analysis of debtors revealed moderate credit and collection policy followed by firm. The APP was very high indicating delayed payments to creditors. Inventory management was found to be ineffective and liquidity position of the firm was also not satisfactory.

Datta[36] (1995) analyzed WCM of five paper mills of paper industry in West Bengal over a period of four years from 1982-83 to 1985-86 using fund flow analysis. The analysis revealed that overall there was working capital shortage in the sample firms and alarming situation existed in three of five firms under study.

Reddy and Rao[37] (1996) analyzed the working capital of public sector undertaking HCL and measured its efficiency for a period of five years from 1989-90 to 1993-94 through ratio analysis. Component analysis revealed that the share of debtors was highest on an average followed by inventory, loans and advances and cash and bank balances. The analysis also revealed good short term solvency and liquidity position. Poor credit management coupled with liberal collection policy was also found. It was concluded that overall WCM is not up to the expectations which needed to be improved by effective utilization and control of current assets.

Reddy[38] (1997) examined the efficiency of liquidity management of Bharat Heavy Electricals Limited (BHEL) for a period of eight years from 1987-88 to 1994-95 through ratio analysis. The liquidity ratios improved over the study period and the liquidity position was found to be satisfactory. However, initiation of measures for further improvements was suggested.

Sur[39] (1997) analyzed the WCM of Colgate Palmolive Ltd for a period of twelve years from 1980 to 1991 through ratio analysis. The element wise analysis indicated that, inventory constituted highest share in working capital followed by Debtors, Cash and Bank Balance and Other Current Assets including loans and advances. The mean proportion of current assets to total assets had declined considerably indicating a change in approach of the firm regarding current asset investment policy. Current assets to sales ratio and inventory to sales ratio indicated fluctuating trend. Debtors' management was found to be encouraging. However, the liquidity position of the sample was not satisfactory.

Vijayakumar[40] (1998) made a comparative study of WCM performances of five co-operatives and five private sector companies in the sugar industry of Tamil Nadu taking financial data for a period of ten years from 1982-83 to 1992-93 using ratio analysis, trend analysis, correlation and regression analysis. The liquidity position was found to

be sounder in private sector as compared to co-operatives. The inventory management was found to be poor. A significant negative correlation was observed between WCL and CATAR indicating that changes in net working capital had low impact on return on investment. The pooled regression results of the study contradicted less than unitary sales elasticity hypotheses of Baumol, Tobin and Frazer with respect to demand for cash by sugar industries in Tamil Nadu. Overall, it was concluded that the WCM had a great scope for improvement in sugar industry in Tamil Nadu.

Sarma and Chary[41] (1999) in their case study of VST Limited examined the trends in current asset investments, its financing and evaluated the effectiveness of its WCM over a period of eight years from 1989-1996 using ratio and fund flow analysis. The study revealed disproportionate increase in current asset investment in relation to sales which resulted in sharp decline in working capital turnover. Also, it was observed that changes in inventory investment did not reflect any consistent policy and its turnover declined in five of eight years. Credit policy of VST was found to be highly volatile with increasing risk of bad debts. The fund flow analysis revealed that VST could not make use of the benefits of trading on equity for long term financing and hedging approach for short term financing. Hence an ample scope for reengineering the financing mission of VST in light of profitability was suggested.

Chundawat and Bhanawat[42] (2000) analysed the WCM practices in IDBI assisted tube and tyre companies for the period 1994- 1998. Using ratios and Shrivastav and Yadav model they concluded that the WCM of IDBI assisted companies was more effective than the industry as a whole.

Rajeswari[43] (2000) analyzed the liquidity management of Tamilnadu Cement Corporation of India Ltd, Alangulam for a period of five years from 1993-94 to 1997-98 using ratios. The study revealed that all the liquidity ratios *viz,* CR, QR and ALR were below the standard norms throughout the study period and it was concluded that the liquidity management of the selected sample was not satisfactory.

Prasad[44] (2000) stressed on structure of current assets, its management and financing of 21 paper companies for a period of ten years. The study revealed that the working capital formed 47.2% of the total net assets during the study period. The data on the adequacy of working capital showed a negative turn indicating inadequacy of working capital in all the selected units as also evident from negative working capital indicating divergence of funds for long term requirement which was validated by the Chief Executives' Survey, thereby leading to sub optimum utilization of working capital. Inventory, Cash and Receivables management was found to be poor. Moreover,

financing through public deposits emerged as a potential source of working capital. A transcendental change was observed, whereby the loans and borrowings from bank showed a decline while dealer advances and term lending surfaced substantially. The survey revealed that collection of debts, availability of working funds and uncertain cash flows were major working capital problems encountered by sample selected.

Reddy[45] (2001) examined working capital structure; evaluated cash management procedures, trade credit policies, efficiency of inventory management and probed into financial pattern of current assets of 20 SSIs for a period of 6 years (1989-90 to 1994-95). The study revealed that fifty percent of sample very closely watched working capital and one third of sample units controlled working capital by preparing production and sales budget. Liquidity position of the sample was discouraging both in technical and actual terms which was attributed to inefficient cash management, excess investment in debtors and overstocking of inventories. A conservative approach was followed for financing working capital. The overall profitability was found to be satisfactory which could be enhanced by adopting effective working capital management practices envisaged in the study.

Sur[46] (2001) made a comparative study of liquidity management in four Indian power sector companies and measured the association between liquidity and profitability for the period of ten years (1987-88 to 1996-97). He found that liquidity position of all the sample units was not satisfactory as evidenced by the CR and QR which were below the standard norms throughout the study period. The ITR for all the companies was higher than the norms prescribed for the industry indicating efficient management of inventory in all the companies during the study period. Debtors' management was found to be stable for one unit, showed increasing trend for one unit and declining trend for two units reflecting deterioration in the efficiency of their debt management. The association between profitability and liquidity was found to be statistically significant for three out of four sample units indicating favourable impact of liquidity on profitability.

Anand and Gupta[47] (2002) estimated three quantitative working capital benchmarks (OC, CCC and Cash Conversion Efficiency) in order to help Corporate India to manage working capital more efficiently and create firm value by taking data of 427 manufacturing companies over a period of three years. They found that cash conversion efficiency was highest for Coal and Lignite industry followed by Telephone Services. OC was found to be lowest for Liquor Industry and Health Services whereas CCC was

found to be lowest for Tourism industry and highest for Computer hardware industry and Telephone Services.

Khatik and Singh[48] (2003a) in their case study attempted to examine the liquidity position as well as identify factors affecting liquidity position of selected firm for a period of five years from 1994-95 to 1998-99 with the help of ratio analysis. They found that the overall liquidity position of the company was not satisfactory.

Khatik and Singh[49] (2003b) in their case study analyzed WCM for a period of eight years from 1992-93 to 1999-2000 through ratio analysis and Motaal's Comprehensive test of liquidity. It was found that lower percentage of funds was invested in total current assets. Debtors and other current assets formed the highest portion of total current assets. The short term liquidity was found to be satisfactory as indicated by the CR; QR and ALR. However, age of inventory increased throughout the study period indicating working capital being blocked for longer time. Also, credit and collection policies were found to be liberal from the analysis of debtors.

Ghosh and Maji[50] (2004) examined the WCM efficiency of selected 20 Indian cement companies for a period of ten years from 1992-93 to 2001 -2002. Using industry norm as target efficiency level of the individual firms, they also tested the speed of achieving the target level of efficiency by an individual firm during the period of study. For measuring the WCM efficiency three index values -performance index, utilisation index and overall efficiency index were calculated. The performance index indicated efficient management however utilization index indicated inefficient utilization of current assets for generating sales. Efficiency index indicated firm's inefficiencies in adopting a sound WCM policy. Overall, findings of the study indicated that the Indian Cement Industry as a whole did not perform remarkably well during the period with the scope for improvement.

Bardia[51] (2004) in his case study on Steel Authority India Limited studied the liquidity maintained by the Steel giant, its year-to-year change and relationship with profitability for a period of eleven years (1991-92 to 2001-2002). It was found that, of the six different parameters of liquidity management, the CATAR was most consistent and stable followed by CR, ITR, QR, CPR and DTR respectively. The DTR in SAIL was highly variable and inconsistent which signified slackness of credit and collection policy pursued by SAIL. A statistically significant positive correlation was found between liquidity and profitability indicating the favourable impact of liquidity on profitability of SAIL.

Mukhopadhyay[52] **(2004)** conducted case study of a company belonging to heavy engineering industry for a period of ten years (1993-94 to 2002-03) with an objective to examine the effectiveness of working capital practices of firms and to assess the short term liquidity and solvency as also to find out if adequacy or otherwise of working capital affects the commercial operations. It was found that NWC of the firm was negative throughout the study period indicating aggressive working capital policy of the firm as also indicating bad liquidity position and an alarming situation as the mean CR and QR were below standard norms which jeopardized the interests of short term creditors. Inventory and receivables management was also found inefficient. On the basis of overall analysis, it was stated that the company had been suffering from acute crises of working capital.

Singh[53] **(2004)** in his case study of Lupin Laboratories Limited attempted to assess the significance of working capital through ratio analysis as well as analyzed each component of working capital to identify the components responsible for changes in working capital and studied the liquidity position of the firm for a period of seven years from 1995-96 to 2001-02. The mean CATAR indicated higher investment in current assets. The short-term liquidity was found to be very satisfactory. Age of inventory declined, which is very positive for liquidity point of view. Position of debtors, as compared to sales was found to be very good. Operating cycle (in days) decreased consistently from 158 days to 96 days indicating proper utilization of working capital. Debtors and loans and advances formed the major share of current assets followed by inventory and cash and bank balances throughout the study period. The overall position of the working capital was satisfactory but a need of improvement in debtors was observed as liberal credit policy was followed.

Bardia[54] **(2006)** carried out a comparative study of liquidity trends of SAIL and TISCO belonging to Indian Iron and Steel Sector for a period of seven years (1997-98 to 2003-04) to provide a basis to judge whether the liquidity policies pursued by the companies were satisfactory or any improvement was needed in the sphere of financial management. The study revealed that there was lack of steadiness in liquidity trends of SAIL. Also, the relationship between sales and working capital was poor in SAIL. The rotation of working capital was slow in SAIL which indicated that it used relatively larger funds to attain sales as compared to TISCO. Overall, it was found that liquidity management of TISCO was efficient and far better than SAIL for the study period.

Rajendran and Ramesh[55] **(2006)** in their case study on Tamil Nadu Tourism Development Corporation Limited examined and evaluated its liquidity position and

assessed efficiency of its liquidity management over a period of ten years from 1994-95 to 2003-04. They found that absolute liquid ratio; QR and CR were always below the standard norms and concluded that the liquidity management of the sample firm was very poor and not satisfactory.

Jafar and Sur[56] (2006) in their case study on NTPC Ltd evaluated the WCM efficiency by segregating the twenty year study period into pre liberalization and post liberalization and made a comparison of overall performance of efficiency for both the study periods. The study revealed that the company achieved a higher level of efficiency in managing its working capital during the post – liberalization era by adapting itself to the new environment emanated from liberalization, globalization and competitiveness.

Bhunia[57] (2007) in his study made an assessment of WCM, examined the adequacy or otherwise of the working capital, observed the liquidity position and areas of weakness of 2 steel companies, Steel Authority of India Limited (SAIL) and Indian Iron and Steel Co. (IISCO) for a period of twelve years from 1991-92 to 2002-03. The analysis revealed inadequate level of working capital for both the firms which was attributed to low raw materials inventory in the case of SAIL and to low level of receivables in the case of IISCO. Poor liquidity position was found in case of both SAIL and IISCO. Receivables management was inefficient in IISCO whereas in case of SAIL inventory management was inefficient. However, an efficient management of payable policy was found in case of both the enterprises.

Das[58] (2008) in his case study on Ranbaxy Laboratories studied and evaluated the liquidity position of the company and ranked the liquidity position from year to year for a period of nine years. They also examined the relationship between liquidity and profitability. The study revealed that the quick NWC was positive throughout the study period thereby representing sound liquidity position of the selected company. The overall liquidity position was satisfactory from the view point of standard norms and industry norms except the Cash Position which needed to be improved. IHP had declined in the study period giving positive indication for liquidity position. Consistency and stability in current asset investment policy of the company was found. A statistically insignificant association was found between liquidity and profitability.

Ghosh[59] (2008) in his case study on TISCO Limited examined the liquidity management through ratio analysis and Motaal's Comprehensive test, and measured the association between liquidity and profitability through Rank Correlation over a period of five years. The study revealed that the company was capable to meet the instant cash

needs of the firm only during the first two years of study. The results indicated efficient management of inventory during the study period. The debtors management improved during the study period however further efforts were required to tighten the debt policy. The liquidity ranking analysis found that liquidity position of firm fluctuated throughout the study period. The association between profitability and liquidity was found to be insignificant.

Shrotiya[60] (2009) in his case study on Dabur India Limited discussed the association between working capital and sales for the period of ten years (1997-98 to 2006-07). A strong positive association was found between working capital and sales. However, Trend values of working capital based on sales indicated that actual working capital was less than estimated working capital in the first four years but in the last six years it was more than the requirement indicating an under trading situation and inefficient management of funds. Also, trend values of sales based on working capital indicated that actual sales were less than estimated sales in the first six years of the study whereas it was more than estimated sales in the last four years indicating an overtrading situation and that the operations were expanded beyond the funds availability.

Goel[61] (2009) in his study on WCM in Reliance Industries Limited for a period of two years analyzed the liquidity trend and the utilization of current assets. The study disclosed that efficiency in utilization of current assets was really good as the current asset turnover ratio had increased at the rate of 45.53 percent during the period under study. The level of investment in working capital had registered a decreasing trend during the period under study which is an indication of the pursuance of an aggressive policy by the management. Also, the level of liquidity has been low which is prone to considerable degree of risk as indicated by the decline in CR and QR.

Verma[62] (2009) in his study attempted to identify whether the liquidity management and the financing of working capital of Gujarat Cooperative Milk Marketing Federation have undergone change or not in the second phase of liberalization (1998-2004) vis-à-vis the first phase (1991-97) of liberalization. The study revealed that liquidity management policies and practices followed by the sample firm continued to be same in both the phases under study with respect to current assets and quick assets. However, the proportion of current liabilities and provisions and accruals to finance current assets has declined in the second phase. The study indicated that bank borrowings, which were not used in the first phase, have been used in the second phase. The study did not find any significant change in two phases with respect to ACP and APP.

Joshi, Joshi and Gairola[63] **(2010)** made a comparative study of TISCO and RINL to examine the differences if any among public sector unit and private sector unit with respect to their WCM over a period of four years from 2004-05 to 2007-08. The analysis revealed that RINL was more conservative about the liquidity relatively to TISCO. Also, it followed conservative credit policy as compared to TISCO. Cash generating capacity through operating activities declined for RINL. Composition of materials in stores to total inventory was found to be higher in RINL than TISCO thereby indicating a more efficient materials handling in TISCO. It was concluded that WCM of public sector enterprises is different from the private sector.

Janakiramudu[64] **(2010)** attempted to study the working capital structure, liquidity position and working capital turnover position of selected sample of five companies of Indian Commercial Vehicles Industry for a period of ten years from 1998 to 2007. The study revealed that, of all the current assets inventories formed highest percentage in two firms and trade receivables formed the highest percentage in the three firms. The study also revealed that variation between current asset turnover ratio and WCTR was very high indicating that the sample firms achieved higher level of sales with less working capital.

Bhunia[65] **(2010)** analyzed the liquidity management and also examined its impact on profitability for selected four private sector steel sector companies of India for a period of nine years from 1997-98 to 2005-06 using ratio, correlation and regression analysis. The results revealed inefficient liquidity management due to inefficient inventory and credit policy. The short term liquidity position was found to be unsatisfactory. There existed a significant relationship between selected measures of liquidity and profitability.

Baig[66] **(2010)** conducted a study on selected cooperative, private and MNC firms engaged in Agribusiness in India with an objective to analyze and interpret the WCM practices of selected sample for a period of ten years from 1998 to 2007. It was found that the level of inventory was highest and that of cash was the lowest as a component of working capital. Also, the WCM was found to be inefficient in Private and MNC firms.

Bardia and Kastiya[67] **(2010)** empirically analyzed the liquidity management of Torrent Pharma and Cipla Limited for a period of nine years from 2000-01 to 2008-09. The study found that Cipla was more consistent than Torrent in Liquidity Management on the five parameters, *viz*, QR, ITR, RTR, CATR and WCTR whereas it was less consistent in case of CR. No significant differences were observed in liquidity

measured in terms of CR, QR, ITR, CATR and WCTR whereas significant variation were observed for RTR indicating that the debtors' management of two companies are different. Moreover, the credit and collection policy of Torrent was more efficient than that of Cipla as evidenced by higher RTR of the former.

Bhunia[68] (2010) examined the trends in working capital of selected two private sector steel enterprises for a period of nine years from 1997-98 to 2005-06. They found that NWC was less than the estimated values whereas current liabilities and current assets were more than the estimated values for majority of the years under study.

Jaiswal, Nigam and Pandey[69] (2010) examined the efficiency of WCM of Ranbaxy Laboratory Ltd. during 2002 to 2006 using ratio analysis as well as liquidity ranking. They found that, on an average 62% of the total asset was invested in current asset which was remarked to be a higher investment. Moreover, inventory with 32% was observed to be the major component of current asset. They found that liquidity position measured in terms of QR and ALR was satisfactory but debtors and inventory management were found to be inefficient.

Kantawala and Joshi[70] (2010) analyzed the components of current assets of 52 steel companies of Indian Steel Industry taking sixteen WCM ratios over a period of ten years from 1998-99 to 2007-08 through time series analysis. The analysis of structural ratios revealed that the fixed assets base in steel industry was high. Further, 68 percent of current assets were financed by current liabilities. The liquidity position of the industry was very good as it was above the standard norms throughout the study period. Time series analysis revealed that on the whole, WCM of steel industry has improved over the study period.

Rao, Rao and Azhagaiah[71] (2010) analyzed the trends and patterns of working capital utilization efficiency in respect of size of 53 firms of cotton textile sector in India through application of three indices *viz.*, Performance Index (PI), Utilization Index (UI), and Efficiency Index (EI) over a period of ten years from 1997-98 to 2007-08. For the purpose of analysis the selected firms were classified into three size categories *viz* "Small", "Medium" and "Large" based on average assets size over the study period. The study revealed that Linear Growth Rate (LGR) of PI, UI and EI in respect of working capital efficiency for small size firms was significant while in case of medium size firms, the trend of UI alone was significant. The trend of PI, UI and EI for large size firms was insignificant.

Patidar[72] (2011) analyzed WCM of Nahar Spinning Mills over a period of five years from 2003-04 to 2007-08 using ratio analysis, correlation analysis and t-test. It was

found that the CR was highly satisfactory with significant positive correlation between current assets and current liabilities. Further, debtors formed the major share of current assets and the proportion of cash was very less indicating liberal credit policy which had affected the liquidity position of firm. The condition of loans and advances was also found to be unsatisfactory. The inventory management was also found to be inefficient.

Khatik and Varghese[73] (2011) examined the solvency position of Power Financial Corporation Limited for a period of ten years from 2000-01 to 2009-10 using ratio analysis technique and correlation analysis. It was found that the short and long term solvency position of PFCL was not satisfactory.

Untwal[74] (2011) analyzed WCM of Indian Tools Limited for a period of nine years *w.e.f.* 2000-01 using ratio analysis. The study revealed unsatisfactory liquidity position of selected sample and also inefficient credit policy. However, inventory management was found to be satisfactory.

Ramanaiah[75] (2011) examined the liquidity management at MAA Fruits Pvt Limited, for a period of four years from 2002-03 to 2005-06 using ratio analysis, Motaals' comprehensive liquidity test and correlation analysis. The study results showed that the company enjoyed sound liquidity during the study period excepting 2002-03. However the cash management was found to be poor. It was also found that firms invested almost 70% of funds in current assets. The company followed a liberal credit policy. Inventory management improved and relationship between liquidity and profitability was found to be statistically insignificant.

Bhunia[76] (2011) examined the overall efficiency of liquidity management of selected 4 private sector companies of steel industry in India for a period of ten years (1997 to 2006) using ratio analysis, multiple correlations and regression analysis. The analysis revealed that the liquidity position of all firms except Kalyani Steels Limited was unsatisfactory whereas receivables management was unsatisfactory for the entire sample. The regression analysis revealed a negative significant relationship between profitability and IHP, ACP and APP, QR, ALR and financial leverage whereas it was positively related to CR.

Chandrabai and Rao[77] (2011) conducted a comparative study of WCM in Indian Electrical Equipment Manufacturing industry for two companies, *viz,* BHEL and ABB Ltd representing PSU and Private sector respectively over a period of 2005-06 to 2009-10 through ratio analysis. The liquidity position was found to be satisfactory in the sample units. They also found that the receivables and loans and advances formed the

major share of current assets in both the companies and suggested improvement in debt collection policy.

Aljroub, Alrabei, Saleh and Alrawashdeh[78] (2012) examined if differences existed between the WCM practices of selected 4 cement units of Rajhasthan over the period of 5 years from 2006-2010 through ANOVA taking Size of Inventory and Receivables, Inventory to NWC, ITCAR, RTCAR and ITR. They found that there exist significant differences between companies with respect to the size of inventories, size of receivables as well as RTCAR whereas no significant differences were observed for ITCAR and ITR. They concluded that the companies significantly differed in size of inventory as well as receivables and maintained different proportion of receivables in the current asset structure.

Concluding Remarks

On reviewing the studies on Overall WCM it was found that,

- In few studies, Inventory formed major share of current assets of sample[31,35,39,69] whereas in others Receivables[37,49,53,72,77], Loans and Advances[34,53,77] formed the major share of current assets of sample under study.
- Cash management was inefficient[29,44,75]; Inventory Management was inefficient[29,32,35,40,44,52,57,69,72]; Receivables Management was inefficient[29,37,44,52,57,69,74,76] and liquidity management was also unsatisfactory[29,33,35,43,45,46,48,53,55,57,60,65,73,74,76]. However few studies found that the liquidity management was sound and satisfactory[37,38,49,58,69,70,75,77]. Further, few studies observed improvement and efficient inventory management[59,74] as well as efficient receivables management[59,27]
- In few studies sample units pursued conservative working capital financing policy[30,32,34,45] whereas in others an aggressive working capital financing policy[52].

Thus it can be submitted that in majority of the cases the WCM was not found to be sound and satisfactory. Some or the other inefficiencies were present making the overall WCM sub optimal.

3.10 Studies Examining Impact of WCM on Profitability

In this para a review of studies examining the impact of WCM, Liquidity and WCM efficiency *etc.* on profitability is presented in the chronological order.

3.10.1 Studies Abroad

Jose, Lancaster and Stevens[79] (1996) examined the relationship between profitability measures and management of on-going liquidity needs of 2718 firms taken from

Compustat Database belonging to seven industrial sectors over a twenty year period (1974 to 1993) in order to determine if aggressive liquidity management is associated with higher returns. Controlling industry and size differences they have concluded that more aggressive liquidity management is associated with higher profitability for several industries including natural resources, manufacturing, service, retail/wholesale and professional services for which statistically significant inverse relationship existed between CCC and profitability which is not driven by size.

Shin and Soenen[80] (1998) investigated the relationship between the NTC as a measure of WCM efficiency and profitability of U.S firms for a period of twenty years (1975 to 1994) using sample of 58985 firm years through correlation and panel data regression analysis. The coefficient of NTC was significant and negative in all eight regressions. Increases in the CR and debt ratios were negatively associated with profitability and risk-adjusted return. Evidence showed that both an increase in NTC and CR lowered the profitability. The results further implied that an increase in leverage is associated with a decline in profitability even if EBIT is used as a measure of profitability. Sales growth remained positively related to change in the accounting measure of profitability and the results also showed that past sales growth added significantly to the explanation of stock returns. They concluded that reducing the level of current assets to a reasonable extent increases a firm's profitability and shorter NTCs were associated with higher risk adjusted stock returns. Furthermore, this inverse relationship between NTC and ROTA was found different across industries depending on the type of industry.

Lyroudi and Lazaridis[81] (2000) examined the relationship of CCC with the traditional measures of liquidity (CR, QR), leverage (DER, ICR), profitability (ROTA, NPM), firm size and its component variables for 82 firms of Greek food industry for the year 1997 through regression analysis. The results indicated a significant positive relationship between the CCC and CR, QR. Similarly it had significant positive relationship with ACP & IHP whereas negative relationship with APP. The CCC was positively related to ROTA and the NPM but had no relationship with leverage ratios. On the other hand, CR and QR had negative relationship with the DER whereas a positive one with the ICR. Finally, there was no difference between the liquidity ratios of large and small firms.

Wang[82] (2002) examined the relationship of liquidity management with operating performance and corporate value for 1,555 firms in Japan and 379 firms in Taiwan by taking data for a period of eleven years from January 1985 to December 1996. It was observed that the CCC-ROTA and CCC–RONW relationships were commonly

negative and sensitive to industry factors. Both Japanese and Taiwanese firms with *Tobin's q*>1 had significantly lower CCC than firms with Tobin's *q*<=1. Japanese firms with Tobin's *q*>1 had significantly higher ROTA and RONW than firms with Tobin's *q*<=1. Overall, it was noted that aggressive liquidity management enhances operating performance and is usually associated with higher corporate values for both countries in spite of differences in structural characteristics or in financial system of a firm.

Yucel and Kurt[83] (2002) investigated the relationship of CCC with profitability (NPM, RONW and ROTA), liquidity (CR and QR) and debt structure (TDTAR) of 167 firms listed on the Istanbul Stock Exchange (ISE) for the period of 1995-2000. CCC, profitability, liquidity and debt structure were examined comparatively in this study on the basis of period, industry and firm size using descriptive statistics, correlation and regression analysis. The results showed that CCC is positively related to liquidity ratios and negatively related to ROTA and RONW. High leverage ratio affected the liquidity and profitability of the firms adversely. No significant relationship was observed between the CCC and the leverage ratio. Also, there was no significant difference in the CCC on the basis of period, but it differed on the basis of sector and firm size.

Deloof[84] (2003) analyzed a sample of 1009 Belgian firms for the period of five years from 1992-1996 to investigate the relationship between WCM and the profitability of firms. A significant negative relation of GOI with ACP indicated that customers would take more time to assess the quality of products they buy from firms with declining profitability; with IHP indicated that lower inventory would result into declining sales leading to lower profits and again lower profitability and APP indicated that less profitable firms waited longer to pay their bills. The results thus confirmed that managers can create values for their shareholders by reducing IHP and ACP to the minimum extent.

Eljelly[85] (2004) empirically examined the relation between liquidity as measured by the CR and cash gap and profitability of a sample of twenty nine listed Saudi Arabian companies belonging to the main business sectors except power generation and banking sector for a period of five years from 1996 to 2000. Through correlation and panel data regression analysis, the study found a significant inverse relationship between firm profitability and liquidity as measured by CR. Such relationship was more evident in firms with high CRs and longer CCCs. CR was found to be most important liquidity measure affecting profitability but within sectors the CCC was found to be more important as compared to CR that affected the profitability. The size variable also had significant effect on the profitability and the results were found to be stable over the

study period. However, size and CCC variables were found to lose its importance within the labour intensive sectors such as service.

Lazaridis and Tryfonidis[86] (2006) investigated the relationship of corporate profitability (GOI) and WCM for 131 firms listed at Athens Stock Exchange for a period of four years from 2001-2004 using regression analysis. The regression results found a positive impact of size and fixed financial assets whereas negative impact of debt on profitability. Further, a negative relationship between GOI and CCC, ACP, APP and IHP was found and suggested that managers can create profit by correctly handling the individual components of working capital to an optimal level.

Zainuddin[87] (2006) in his study on 145 small and medium enterprises (SMEs) in fourteen different manufacturing sectors of Malaysia empirically examined the relationship between liquidity and profitability for period of 1999 to 2004. Using the non parametric Spearman rank correlation coefficient analysis, the results revealed that there was a statistically significant moderate positive association between liquidity and profitability which suggested that profitable firms tend to maintain higher liquidity levels. However a significant association was found between liquidity and size of firms, signifying that larger small firms tend to maintain higher liquidity levels. In order to investigate whether or not different industry sectors had different levels of liquidity, Kruskal-Wallis test statistic was applied which confirmed that different industry sectors had different degrees of liquidity.

Padachi[88] (2006) in his study on 50 small Mauritian manufacturing enterprises belonging to 5 industry groups examined the impact of ACP, IHP, APP and CCC on ROTA, analyzed the trend in working capital needs of firms and also examined the causes for any significant differences between the industries for a period of 6 years using correlation and regression analysis along with separate analysis of components of working capital. The firms' profitability increased with firms' size, CATR and with a lesser aggressiveness of asset management. The regression results showed that high investment in inventories and receivables was associated with lower profitability. A negative impact of APP on ROTA was found confirming negative relationship between profitability and number of days APP. An analysis of the liquidity, profitability and operational efficiency of the five industries showed significant changes and the contribution of the best practices in the paper industry to performance. The findings also revealed an increasing trend in the short-term component of working capital financing.

Shah and Sana[89] (2006) investigated the relationship between working capital and the profitability of seven listed companies of oil and gas sector of Pakistan for the period 2001-2005. Applying correlation and OLS method using Fixed Effect Estimation model, results showed a negative impact of ACP, IHP, CCC and sales growth whereas positive impact of APP on GPM. Results also showed the existence of firm effect, *i.e.*, the effect of different management style and working capital needs of the companies.

Teruel and Solano[90] (2007) studied the effects of WCM on the profitability of a sample of 38,464 observations of small and medium-sized Spanish firms belonging to eight different industrial sectors for a period 1996 to 2002 using panel data methodology. They concluded that managers can create value by reducing their IHP and ACP. Moreover, shortening the CCC also improved the firm's profitability.

Raheman & Nasr[91] (2007) in their study of sample of 94 Pakistani firms listed on Karachi Stock Exchange for a period of six years from 1999 – 2004, examined the effect of different WCM variables (IHP, ACP, APP and CCC) along with Debt ratio, Firm Size (LnS) and financial assets to total assets ratio on profitability (NOP) of Pakistani firms using Pearson's correlation and regression analysis. The results indicated that increase in CCC leads to decrease in profitability of the firm, and concluded that managers can create a positive value for the shareholders by reducing the CCC to a possible minimum level. They also found a negative impact of liquidity and debt whereas a positive impact of Firm Size on the profitability.

Ganesan[92] (2007) in his study analyzed the WCM efficiency taking a sample of 349 telecommunication equipment companies covering the period 2001-2007 using correlation, regression analyses and ANOVA. The study found that CCC of the sample firms is higher than the industry average whereas ACP and APP are in line with their industry averages. CCC had insignificant impact on ROTA and NPM and same was the case observed for ACP which is attributed to heavy fixed assets requirements in telecommunication industry. Receivables and Payables management was found to be poor and it was concluded that the overall WCM efficiency in telecommunication industry for the study period was poor.

Samiloglu and Demirgunes[93] (2008) analyzed the impact of WCM (ACP, IHP, APP, CCC) along with Firm Size, Fixed Financial Assets Ratio, Leverage and Sales Growth on profitability (ROTA) of 5483 listed firms of Turkey for a period of ten years from 1998 to 2007 using multiple regression analysis. They found that ACP, IHP and leverage had negative effect whereas growth had positive effect on profitability. However, firm size, CCC and fixed financial assets ratio had no statistically significant

effect on the firm profitability. They suggested that shortening of ACP and IHP would increase the profitability of firms.

Toby[94] (2008) in his study on 87 quoted Nigerian manufacturing firms for a period of twelve years aimed at determining the empirical relationships between company's liquidity measures and selected profitability, efficiency and leverage ratios through multiple regression and significance was tested through F-test. A statistically significant relationship was found between return on fixed assets and CR, inventory to net working capital and acid test ratios. Also the relationship between NPM and CR, inventory to net working capital was found to be statistically significant. The relationship of tangible assets turnover ratio with CR and cash flow ratio was also found to be statistically significant. Also, the relationship of fixed assets to net worth ratio with CR and acid test ratio was statistically significant and similar relationship existed between current debt to net worth and inventory to net working capital ratio. The F-ratio revealed a statistically significant relationship between efficiency and liquidity as well as leverage and liquidity.

Uyar[95] (2009) aimed to investigate the relationship among length of CCC with size of firm and profitability for 166 listed corporations of Turkey for a period of one year. It was found that CCC of retail/wholesale industry was shortest whereas that of textile industry was longest. A significant negative correlation between the CCC and firm size in terms of both net sales and total assets was found indicating that smaller firms have longer cash cycle and larger firms have shorter cycles. Also a significant negative relationship was found with the profitability indicating that firms with longer cycles were less profitable.

Nobanee and Al-Hajjar[96] (2009a) investigated the relationship between WCM and firm profitability for a sample of 2123 Japanese non-financial firms listed in the Tokyo Stock Exchange for the period 1990-2004 using multiple regression analysis. The results suggested that managers can increase profitability of their firms by shortening the CCC, ACP, IHP and by lengthening the APP. However, managers should be careful when lengthening the APP because this could damage the firm's credit reputation and harm its profitability in the long run.

Falope and Ajilore[97] (2009) examined sample of 50 Nigerian listed non-financial firms for the period of ten years from 1996 -2005 to provide empirical evidence about the effects of WCM on profitability performance by utilizing panel data analysis in a pooled regression, where time-series and cross-sectional observations were combined and estimated. They found a significant negative impact of ACP, IHP and CCC

whereas a positive impact of Sales growth, leverage, GDP growth rate and APP on NOP. The authors indicated that more profitable firms waited longer to pay their bills. Furthermore, the study found no significant variations in the impact of WCM between large and small firms.

Nobanee[98] (2009b) examined the relationship between company's performance and length of CCC and its components using dynamic panel data analysis based on a sample of 5802 U.S. non-financial firms listed in the New York Stock Exchange, American Stock Exchange, NASDAQ Stock Market and the Over The Counter Market for the period 1990-2004 (87030 firm-year observations). The results showed that the length of the CCC, ACP and IHP had positive rather than negative impact on the company's performance measured using the operating income to sales thereby indicating that shortening the CCC, ACP and IHP by reducing the time that cash is tied up in working capital and by speeding up collections results on low operating income to sales. The results also showed that the APP had significant negative impact on performance. The lagged operating income to sales indicated that the company's performance in the previous period had a strong positive effect on the company's performance in the current period. The results also showed that increase in QR was negatively associated with firm's performance, thus certifying the traditional trade off between profitability and liquidity. Sales growth was found to be positively related to the firm's performance whereas total debt to equity as a measure of capital structure was not significantly related to profitability. The results of the empirical analysis suggested that shortening the CCC reduces rather than increases firm's profitability.

Nobanee and Al-Hajjar[99] (2009c) examined the relationship between working capital management, corporate performance and operating cash flow using dynamic panel data analysis based on a sample of 5802 U.S. non-financial firms listed in the NYSE, AMEX, NASDAQ Stock Market and the OTC Market for the period 1990-2004 (87030 firm-year observations). The results suggested that managers can increase profitability and operating cash flow of their firms by shortening the CCC and by shortening the ACP. The results also suggested that shortening the IHP and lengthening the APP reduces profitability and operating cash flow of firms instead of increasing them which indicates that when shortening the IHPs, managers should avoid the increase of shortage costs and while lengthening the APP, the bankruptcy costs that could harm the company's performance and cash flow.

Sen and Oruc[100] (2009) aimed to determine the relationship between efficiency level of WCM and their ROTA for 49 production firms belonging to white goods and

electronic, cement, food, textile and chemistry sector, being traded in ISE (Istanbul Stock Exchange) taking quarterly data of fifteen years from 1993 to 2007 using panel data regression analysis through two models. According to the results in terms of both all firms involved in the study and sectors, a significant negative impact of CCC, CR, ACP and IHP on ROTA was found. The fact that ROTA has a negative relationship with CR and positive relationship with NWC indicates that if firms minimize resource allocation for NWC, their ROTA increases accordingly which emphasizes the positive relationship between liquidity risk and profitability in terms of relative highness of short term liabilities, thus confirming traditional risk relationship.

Zariyawati, Annuar, Taufiq and Abdul Rahim[101] (2009) examined the relationship between WCM and firm profitability using panel data of 148 firms for the period of eleven years from 1996-2006 that consist of six different economic sectors *viz*, construction, consumer products, industrial product, trade/services, plantation and property, listed in Bursa Malaysia. The fixed effect panel data regression results provided a strong evidence of negative relationship between CCC and firm profitability indicating that reducing CCC results to profitability increase. Thus, to create shareholder value, firm managers should shorten the CCC till optimal level is achieved.

Nobanee and Al-Hajjar[102] (2009d) examined the relationship between the length of CCC, NTC, OC and the firm's profitability for different periods of time. They also examined the relationship between the lengths of ACP, ICP, PDP and firm's profitability using dynamic panel data analysis based on a sample of 5802 U.S. non-financial firms listed in the NYSE, AMEX, NASDAQ Stock Market and the OTC Market for the period 1990-2004 (87030 firm-year observations). The results indicated that shorter CCC, NTC and OC are not always associated with an increase in firm's profitability, thus signifying the importance of achieving an optimal lengths of the CCC, NTC and the OC that minimizes both carrying cost and opportunity cost of inventory, receivable, and payable and maximizes profitability and market value of firms.

Danuletiu[103] (2010) examined the relationship between profitability and efficiency of WCM of 29 financial large companies of Alba County for a period of four years from 2004 to 2008 using correlation analysis. The author concluded that there was a weak negative linear correlation between working capital management indicators and profitability measures.

Gill, Biger and Mathur[104] (2010) investigated the relationship between the WCM and the firms' profitability (GOI) for a sample of 88 American manufacturing companies

listed on the New York Stock Exchange for the period of three years from 2005 to 2007 using correlation and multiple regression analysis. They found a positive impact of CCC whereas a negative impact of ACP on GOI. The results suggest that less profitable firms will pursue a decrease of their ACP in an attempt to reduce their cash gap in the CCC. They concluded that managers can create profits for their companies by correctly managing the CCC and by keeping accounts receivables at an optimal level.

Mathuva[105] (2010) examined the influence of WCM components on corporate profitability taking a sample of 30 firms listed on the Nairobi Stock Exchange (NSE) for the period 1993 to 2008 by using Pearson and Spearman's correlations, the pooled ordinary least square (OLS), and the fixed effects regression models to conduct data analysis. The key findings of the study stated that ACP and CCC had negative impact whereas IHP and APP had positive impact on profitability. Also, firm size, fixed financial assets ratio and age of firm had positive influence whereas leverage had negative influence on profitability.

Karaduman, Akbas, Ozsozgun and Durer[106] (2010) mainly aimed to provide some empirical evidence on the effects of WCM on the profitability of selected 140 companies listed in the Istanbul Stock Exchange for the period of 2005-2008 using panel data methods to analyze the mentioned effects. They found that a ROTA is increased by shortening ACP, IHP, APP and CCC. Also, company's size had positive effect whereas debt ratio had negative effect on profitability. Moreover, the high values of the coefficients of the real GDP growth rate in Turkey highlighted the importance of economic growth regarding companies' profitability.

Hayat and Bhatti[107] (2010) investigated the relative importance of different factors that result in profit heterogeneity at firm level using ANOVA random effect model for panel data of 330 listed firms of Pakistan belonging to nine different industry sectors for a period of twenty years from 1987 to 2006. Leverage was found to be the dominant factor explaining more than half of the total explained variation in profitability and adversely affecting it. However, its impact became positive in foreign owned firms. Size had a positive whereas liquidity had negative impact on profitability. Age, growth and market share had a very minor contribution in explaining profitability while that of capital intensity was insignificant. Furthermore, transient industry effect was observed significant but its explanation in the profitability was very low while stable industry and year effect were insignificant.

Nobanee, Abdullatif and Alhajjar[108] (2010) investigated the relation between the firm's CCC and its profitability using dynamic panel data analysis for the sample of

34771 firm years covering the period 1990-2004, by industry and by size. They found a strong negative impact of firm's CCC on its profitability for all study samples except for consumer goods companies and services companies. The results also showed that the company's performance in the previous period had a strong positive effect on the company's performance in the current period for all the study samples except for small companies where the positive coefficient was insignificant, and for basic industries and information companies where the coefficients were significantly negative.

Dong and Su[109] (2010) attempted to investigate the relationship existing between profitability, the CCC and its components for 130 listed firms in Vietnam stock market for a three year period of 2006 to 2008. The analysis of regression found a positive impact of leverage on GOI which indicates that an increase in debt ratio will lead to increase in profitability of firm. The result also indicated a positive impact of size, fixed financial assets to total assets and GOI. Further, a strong negative impact of CCC on profitability was observed and they concluded that managers can create a positive value for the shareholders by handling the adequate CCC and keeping each different component to an optimum level.

Morawakage and Lakshan[110] (2010) examined the relationship of WCM (ACP, IHP, APP, CCC) and Cost Structure (Administrative, Selling and Finance cost each to sales ratio) with profitability (GOP, PBT, NOP) taking a sample of 65 Sri Lankan companies listed on Colombo Stock Exchange for a period of 5 years from 2003-2007 through correlation and regression analysis. The results suggest that managers can increase corporate profitability by reducing IHP and increasing APP in order to minimize the length of CCC. Further, increase in APP would give opportunities to the company for further investments. Moreover, the results also suggest that the spending on selling and distribution would not increase the profitability and more finance cost would hinder the profits of the companies.

Nassirzadeh and Rostami[111] (2010) studied the relationship between traditional (CR, QR) and modern (CCC, WCR, NLB) indices of liquidity along with Leverage and Firm Size with profitability (ROTA, RONW and NPM) of 108 companies listed on Tehran Stock Exchange for a nine year period from 2002-2010 using correlation and regression analysis The research findings showed that traditional and modern liquidity indices measure liquidity differently Further, CR, CCC and Leverage had a significant negative impact whereas WCR, NLB, QR and Size had positive impact on all the measures of profitability.

Raheman, Afza, Qayyum and Bodla[112] (2010a) analyzed the impact of WCM on firm's performance of 204 listed manufacturing firms in Pakistan for the period of ten years from 1998 to 2007. The results indicated that the CCC, NTC and IHP significantly affected the performance of the firms. The manufacturing firms in general faced problems with their collection and payment policies. Moreover, the financial leverage, sales growth and firm size also had significant effect on profitability. The study also concluded that firms in Pakistan were following conservative working capital management policy. It was suggested that efficient management and financing of working capital can increase the operating profitability of manufacturing firms.

Telmoudi, Jameleddine and Noubbigh[113] (2010) determined the explanatory power of the operating cycle components on the behaviour of the operating cash-flows for 25 Tunisian commercial companies over the period of 1996 to 2002. The results of the study proved that operating cash-flow is significantly given by the means of four factors dependent on the operating cycle, *i.e.*, the timely debt collection, the timely debt payment, the timely flow of stock and the gross commercial margin. However, operating earnings and variation of sales turnover did not significantly affect the operating cash flows.

Zubairi and Baig[114] (2010) examined empirically, using pooled data analysis, whether profitability of selected seven firms in the automobile sector of Pakistan is influenced by WCM (CR) and capital structure (Degree of Financial Leverage-DFL) for a period of nine years from 2000 to 2008 by taking CR being representative of the result of Supplementary analysis was also undertaken to assess the impact of operating leverage and firm size on profitability. It was found that financial leverage and firm size had a positive impact whereas operating leverage had negative influence on profitability of the firms. Also, it was found that an increase in CR lead to an increase in firm profitability which was in contrast to earlier findings.

Mohamad and Saad[115] (2010) explored the effects of working capital component on the firm's performance by looking at firm's value *i.e.* Tobin's Q and two profitability measures by taking a sample of 172 listed Malaysian firms over a period of five year from 2003 to 2007 and applying correlations and multiple regression analysis. The result shows that there are significant negative associations between working capital variables with firm's performance thereby emphasizing the importance of proper management of working capital as it affects firm's market value and profitability. They suggested that working capital management should be part of the company's strategic and operational processes in order to be effective and efficient.

Raheman, Afza, Qayyum and Bodla[116] (2010b) empirically estimated and compared sector-wise impact of WCM on performance of manufacturing firms in terms of collection policy, inventory policy, payment policy, CCC and NTC using financial data for 204 firms listed on Karachi Stock Exchange classified in 9 sectors for a period of ten years from 1998-2007. The results indicate that there were variations in sectoral performance in terms of different WCM measures with no consistent behavior of any of the measure in all of the sectors. In some sectors, some of the measures played vital role in predicting the profitability while not in others. In case of Leather and Synthetic sector, ACP, whereas in case of Sugar, Cement, Automobile and Textile, IHP had significant negative coefficients. The analysis of APP on sectoral basis revealed a significant positive coefficient only in case of Chemical & Fertilizer sector. The comparative sectoral coefficients for CCC and NTC showed significant negative impact in case of Automobile & Engineering, Chemical & Fertilizer, Sugar, Cement and Textile sectors. The results also revealed that NOP increased with increase in CATR and CATAR for almost all sectors. While in some sectors Sales growth and Size had significant positive impact on profitability whereas in some sectors profitability decreased with increase in CLTAR, CR and financial debt ratio. The study also found that both, CCC and NTC measured liquidity differently from conventional CR.

Alipour[117] (2011) examined the relationship between WCM and profitability of 1063 companies listed on Teheran Stock Exchange for a period starting from 2001 to 2006 using regression analysis. The results of the research showed that in the studied companies, WCM had a significant effect on the profitability of the companies and the managers can create value for shareholders by means of decreasing receivables and inventory.

Karaduman, Akbas, Caliskan and Durer[118] (2011) investigated the empirical relationship between corporate profitability (ROTA) and WCME using panel data analysis of 127 sample companies listed on the Istanbul Stock Exchange for the period of 2005- 2009. The findings indicated that ROTA increased by shortening number ACP, IHP, APP and CCC. Further in Size and sales growth had positive effect whereas debt ratio had a negative impact on profitability.

Enqvist, Graham and Nikkinen[119] (2011) examined the impact of business cycles on the working capital-profitability relationship using a sample of Finnish listed companies from years 1990 to 2008. A negative relationship was found between profitability and CCC, APP, ACP, IHP, economic downturns and leverage whereas a positive relationship existed between profitability and firm size, growth, liquidity

measure by CR and operating income. They found that the impact of business cycle on the working capital-profitability relationship was more pronounced in economic downturns relative to the economic boom state suggesting that WCM is relatively more important in low economic states than in high economic states which in turn increased the significance of efficient inventory management and ACP on corporate profitability during periods of economic downturns. The results demonstrated that active WCM should therefore be included in firms' financial planning.

Alam, Ali, Rehman and Akram[120] (2011) examined the impact of WCM on the profitability and explored the impact of efficient WCM, proxy for financial performance, on market value of 65 companies randomly selected from Karachi Stock Exchange taking panel data for a period of five years from 2005-09 applying correlation and multiple regression technique using SPSS. The analysis revealed that significant correlations existed between working capital components with market value and firm's profitability. CCC and CLTAR had a significant negative impact whereas CATAR had significant positive influence on ROI, ROTA and Tobin's Q. CR had a significant negative impact on ROI and ROTA. Leverage had a positive influence on Tobin's Q whereas negative influence on ROTA. The findings confirmed that the market valuation and ROTA were dependent on good WCM and the changes in ROTA and Tobin's Q can be explained by change in leverage.

Hayajneh and Yassine[121] (2011) investigated the relationship between WCME and profitability of 53 Jordanian manufacturing firms listed in Amman Exchange Market for the period of six years from 2000-06 using descriptive statistics, Correlation and Regression (OLS & 2SLS) analysis. Correlation and regression analysis revealed a negative relation between profitability and ACP, IHP, APP, CCC and financial leverage whereas a positive relation with CR, Sales growth and LnS.

Bieniasz and Golas[122] (2011) examined the impact of WCME (IHP, ACP, APP and CCC), Liquidity (CR, QR) along with Size (LnTA) and Leverage on profitability (ROTA) of food industry in Poland, Germany, Belgium, Spain, France, Italy, Austria and Portugal. The research was conducted on the basis of the unpublished data by the Polish CSO for the period 2005-2009. It was observed that WCM was efficiently managed in Poland, Germany, Austria and Belgium. It was concluded that Leverage and prolonging of IHP, ACP, APP as well as CCC had a negative influence on the ROTA in the small, medium as well as large-sized food industry enterprises. However, Size had negative impact on profitability of small enterprises which indicated that with increased investment in assets there is a possibility of decline in efficiency of asset

management. Moreover, CR and QR had positive influence on profitability of small enterprises. However, no significant relationship existed for ROTA with size and liquidity of large and medium sized food enterprises of the selected countries.

Haq, Sohail, Zaman and Alam[123] (2011) examined the relationship between WCM (CR, QR, CATAR ratio, CA to Sales, CBTR, ITR, RTR, CTR) and profitability (ROI) taking 14 cement firms of Pakistan for the period of six years from 2004-2009 using the correlation and multiple regression analysis. The results revealed that the CR, LR, CATAR, DTR and CTR have a significant positive impact on ROI whereas CBTR had a negative impact on ROI.

Quayyum[124] (2011) investigated effect of WCM efficiency as well as liquidity (QR, ALR, Cash to Sales Ratio, CCC, ACP, APP, IHP) along with Leverage (ICR) on the profitability (EAT/TA, NPM) of 4 cement firms listed on Dhaka Stock Exchange for the period 2005 to 2009 using correlation and simple regression analysis. All the WCM variables as well as ICR except CCC were observed to have significant positive impact on both EAT/TA and NPM. They concluded that WCME and liquidity have positive impact on the Bangladeshi firms' profitability.

Al-Debi'e[125] (2011) examined the impact of WCM (ACP, APP, IHP and ACP) along with Size (LnTA), GDP growth rate and Leverage (TDTAR) on profitability (GOI) of 77 Jordanian Industrial firms listed on Amman Stock Exchange for the period 2001-2010 through regression analysis. They found negative relationship between WCM and GOI and concluded that less profitable companies wait longer to sell their products, to collect credit sales and to pay their supplies of goods. Moreover, regardless of the level of profitability industrial companies in Jordan paid their suppliers before collecting credit sales. Also, profitability was found to increase with Size and GDP growth and decrease with increase in leverage.

Saleem and Rehman[126] (2011) investigated the relationship between liquidity (CR, QR, ALR) and profitability (EBT/TA, EBT/NW, ROI) of 26 Pakistani Oil and Gas companies listed on Karachi Stock Exchange for the period 2004 to 2009 using simple and multiple regression. They found a significant positive impact of QR on EBT/TA whereas of QR and ALR on ROI. CR had a negative impact on both EBT/TA and ROI. No significant impact of liquidity was observed on EBT/NW.

Ali[127] (2011) examined the association between WCM Efficiency (CCE, OC, CCC) and the profitability (ROTA) of 160 Textile firms in Pakistan for the period 2000–05 using correlation analysis, OLS and FEM. CATAR, CATR, Firm Size (LnS) and TDTAR were also taken as explanatory variable. The results of OLS model indicated negative

impact of ACP and APP whereas positive impact of IHP on ROTA. In FEM, APP had no significant impact on ROTA. Also, firm size was observed to have significant positive impact on ROTA in both OLS and FEM. TDTAR had a significant negative impact on ROTA in FEM only.

Lingesiya and Nalini[128] (2011) investigated the relationship between WCM (CATAR, CLTAR, CR, QR, ITCAR, CATR, CCC) and profitability (ROTA) along with Size (LnS) and Debt Ratio (TDTAR) using regression analysis taking a sample of 30 manufacturing firms of Sri-Lanka listed on Colombo Stock Exchange for the period 2006–2010. They found that high investment in inventories and receivables lead to lower profitability whereas high CATAR lead to higher profitability. Moreover, CR, QR, CATR and Size had positive impact whereas CCC and TDTAR had negative impact on firm performance.

Garcia, Martins and Brandao[129] (2011) studied the impact of WCM (CCC, ACP, IHP, APP) along with CR, Firm Size, Leverage upon the profitability (GOP) of 2,974 non - financial European companies listed in 11 European Stock Exchanges for a period of 12 years from 1998 – 2009. The results of GLS and OLS regression analysis found that ACP, IHP, APP and CCC had negative impact on profitability and it was concluded that companies can improve their profitability by reducing the time span during which working capital is tied up within the company. A negative impact of CR on profitability was also found and an additional analysis revealed that different levels of liquidity lead to differentiated impacts of the CCC upon operating profitability.

Khan, Akash, Hamid and Hussain[130] (2011) investigated the impact of WCM (ACP, IHP, APP, CCC) on profitability (NPM) along Leverage (TDTAR), Firm Size (LnS) and Fixed Financial Assets to TA Ratio taking a sample of 92 Textile Sector Pakistani firms for the period 2001- 2008 through correlation and regression analysis. They found that ACP, IHP, FFA/TA had negative impact whereas APP, CR and TDTAR had positive impact on NOP and concluded that sample firms can create value for shareholders by reducing the ACP and IHP and increasing APP.

Mojtahedzadeh, Tabari and Mosayebi[131] (2011) studied the relationship between WCM (ACP, IHP, APP, CCC) and profitability (GOI) along with Size (LnS), Debt Ratio (TDTAR) and Fixed Financial Asset to TA Ratio of 101 Iranian firms listed on Tehran Stock Exchange during the period of 2004-2008. They found a significant negative impact of CCC, ACP, APP and TDTAR on GOI whereas Size had significant positive impact.

Afeef[132] **(2011)** investigated the effect of WCM on profitability (ROTA and OPM) of 40 Pakistani SME's listed in Karachi Stock Exchange for a period of six years from 2003 to 2008. The results indicated negative impact of IHP and ACP on OPM. However, APP, CCC, CR, Leverage and Sales growth had no significant impact on OPM. Size measured in terms of LnS had a positive impact on OPM. However, no significant impact of explanatory variables was observed when ROTA was taken.

Raheman, Qayyum and Afza[133] **(2011)** analyzed WCM (IHP, ACP, APP, CCC) as well as Profitability (ROTA) performance of 204 manufacturing and trading firms listed at Karachi Stock Exchange, classified in 24 sectors for 10 years from 1998-2007. Sector-wise WCM performance reveals that both CCC and NTC provide almost similar results. Oil & Gas Exploration and Refinery, Cement, Fertilizer and Oil and Gas Marketing sectors are on top based on IHP, CCC and NTC. Similarly sectors which are laggard in terms of CCC and NTC are mainly due to inefficient inventory and receivables management. Cement, Sugar and Vanaspati & Allied sectors were efficient sectors in terms of WCM but laggard in terms of profitability. WCM of all Textile sectors was inefficient in terms. Moreover, dominant and laggard sectors in terms of WCM performance is mainly attributed to their inventory policy represented by IHP.

Saghir, Hashmi and Hussain[134] **(2011)** investigated the relationship between WCM (ACP, IHP, APP and CCC) and profitability (ROTA) of 60 Pakistani Textile firms listed on Karachi Stock Exchange for the period of 2001-2006 using correlation and regression analysis. They found a negative relationship between WCM and ROTA and concluded that managers can create profits for their companies by handling correctly the CCC and keeping ACP, APP and IHP to an optimum level.

Abbasi and Bosra[135] **(2012)** investigated the effect of the CCC and its components on the GOI of 112 Iranian firms belonging to 8 industries listed on Tehran Stock Exchange for the period of 1998 -2009 using regression analysis taking, CCC, ACP, IHP and APP along with 12 control variables comprising of 8 industry dummies, Firm Size, Fixed Financial Assets Ratio, Financial Debt Ratio and Sales Growth. They found that ACP, CCC, IHP and APP had negative impact on GOI and concluded that managers can increase profitability by reducing IHP, ACP, APP and CCC. Moreover, Size measured in terms of LnS had no significant impact; Financial Debt Ratio had significant negative impact whereas Sales Growth had positive impact on profitability.

Quayyum[136] **(2012)** investigated the relationship between WCM (ACP, IHP, APP, CCC, CR, QR) and profitability (NPM and ROTA) of 28 Bangladeshi firms belonging to Food, Pharmaceuticals, Cement and Engineering industry listed on Dhaka Stock

Exchange for the period 2005-2009 using simple linear regression. They found that profitability-liquidity relationship varied from industry to industry with different WCM variables affecting Profitability in different industry at different significance levels.

Farzinfar and Arani[137] (2012) examined the impact of WCM (IHP, APP, ACP and CCC) on profitability (GOI) for 22 Iranian pharmaceutical firms listed on Tehran Stock Exchange over the period 2005 to 2009 using correlation and multiple regression analysis. It was found that GOI can be increased by reducing ACP, APP, CCC and increasing IHP. It was concluded that although granting more credit and longer deadline to customers may increase sales volume, but limiting the ACP improves the performance of Iranian firms. Moreover, firms with low profitability tend to delay the payment of their liabilities. Also, an unusual finding that the profitability of Iranian firms increase by the increase in IHP was attributed to the special character of the products of pharmaceutical industry, and suggests that those companies keeping sufficient amount of pharmaceutical inventory can supply them at the time they are needed based on ethical principles to increase their profitability. Moreover, increase in firm size and decrease in Financial Debt Ratio and Fixed Financial Assets ratio increased the profitability of Iranian firms indicating that the companies did not use the long term debt and investments optimally too improve their profitability.

Khan, Jawaid, Arif and Khan[138] (2012) investigated the effect of WCM (ACP, IHP, APP, CR) on profitability (ROTA) of 262 Pakistan firms belonging to Textile, Chemical, Engineering and Sugar and allied industries through regression analysis and the robustness of results were carried out through sensitivity analysis. Moreover, Size (LnS) and Debt Ratio were also taken. ACP was found to be significantly positively affecting ROTA in sugar and allied sector, whereas Debt ratio had a significant negative impact on ROTA of engineering sector. Furthermore, APP had a significant positive impact on all industries except sugar and allied sector. IHP, CR and LnS had a positive impact on ROTA of all sectors. Sensitivity analysis confirmed that the results are robust.

Ahmed[139] (2012) investigated the relationship between WCM (CATAR, CA to Sales Ratio, ITR, RTR, CR) and firm performance (ROTA, RONW) taking 984 firm year observations of Pakistani firms listed on Karachi Stock Exchange over the period 2004-2009 using the Logistic Regression, OLS Regression and Pearson Correlation techniques. The result suggests that out of the selected WCM measures only current asset to sales ratio showed significant negative relationship with both the proxies of performance *i.e.* ROTA and RONW whereas, CR, ITR, DTR and CATAR had positive

impact on ROTA and RONW. Logistic regression results suggested that probability of firms being in profit is highly determined by CATAR, CR and CA to Sales Ratio.

Kaddumi and Ramadan[140] (2012) assessed the impact of WCM (ACP, IHP, APP, CCC, NTC,CATR, CATAR, CLTAR and CR) on Profitability (GOI, ROTA) of 49 Jordanian Industrial firms listed at Amman Stock Exchange over the period 2005-2009 using OLS and Fixed Effects Model. It was concluded that shortening ACP, IHP, CCC and NTC whereas increasing APP will increase the profitability of sample firms. Moreover, a conservative working capital investment policy had a positive impact whereas an aggressive working capital financing policy had a negative impact on profitability.

Pouraghajan and Emamgholipourarchi[141] (2012) analyzed the impact of WCM (CCC, CR, CATAR, CLTAR) along with Leverage (TDTAR) on profitability (ROTA, RONW) and Market returns (Tobin's q) of the 80 Iranian firms listed on Tehran Stock Exchange for the period 2006 to 2010. They found that CCC, TDTAR had negative impact whereas CR had positive impact on ROTA and RONW. CLTAR was observed to have significant negative impact only on ROTA. However WCM had no significant relationship with Tobin's q. They concluded that Iranian firms can increase the profitability of company by reducing CCC and TDTAR.

Napompech[142] (2012) examined the effect of WCM (CCC, IHP, ACP, APP) along with Firm Size, Debt Ratio and Fixed Financial Asset Ratio and Industry dummies. on profitability (GOI) taking a panel sample of 255 companies listed on the Thailand Stock Exchange from 2007 to 2009 through regression analysis. The results revealed a negative impact of WCM measures on GOI indicating that managers can increase the profitability of their firms by shortening the CCC, IHP and ACP. However, they cannot increase profitability by lengthening the APP. The findings also demonstrated that larger the firm size, larger is the profitability whereas negative impact of debt ratio on profitability was observed.

Ahmadi, Arasi and Garajafary[143] (2012) investigated the relationship between WCM (ACP, IHP, APP and CCC) and profitability (NOP) of 33 firms of Iranian food industry listed at Tehran Stock Exchange for a period of five years from 2006-2011 using correlation analysis. They found a negative relationship between WCM and NOP and concluded that managers can create a positive value for stockholders by decreasing ACP, IHP, APP and CCC to the lowest possible level.

Ogundipe, Idowu and Ogundipe[144] (2012) examined the impact of WCM (CLTAR, CATAR, CCC, CR) along with Leverage (TDTAR) on firms' performance (ROTA,

RONW) and market value (Tobin's q) of 54 Nigerian firms listed on Nigeria Stock Exchange for the period 1995-2009 using correlation and regression analysis. The results showed a significant negative impact of CCC on Tobin's q as well as ROTA. TDTAR had a positive impact on Tobin's q whereas negative impact on firm's performance (ROTA). Also CLTAR had a positive impact on ROTA. No significant impact was observed when ROTW is taken.

Owolabi and Alayemi[145] (2012) examined the impact of WCM on profitability of Nestle Nigeria Plc. over a five year period from 2004-2009 using correlation analysis. The results showed a negative relation of CR and ACP with profitability indicating that as CR and ACP reduces ROCE of the firm will increase. It was concluded that the firm should be aggressive in the management of its working capital to improve profitability.

Azam and Haider[146] (2012) investigated the impact of WCM (IHP, ACP, APP, CCC, NTC, CATR, CATAR, CLTAR and CR) on firm's performance (ROTA and RONW) of 21 non-financial institutions listed in Karachi Stock Exchange (KSE-30) Index for the period 2001 to 2010 using Canonical Correlation Analysis. The results revealed a significant negative relationship between IHP and ROTA whereas a positive relationship between CR, CATAR and ROTA. However, IHP, ACP, CCC and NTC were significantly negatively correlated with RONW but APP was positively correlated and it was concluded that managers can increase value of share holder and return on asset by reducing their inventory size, CCC and NTC. Moreover, increase in liquidity APP will also improve firms' performances.

Sial and Chaudhry[147] (2012) examined the impact of WCM (CR, ACP, IHP, APP and CCC) along with Size (LnS) and debt ratio on profitability (ROTA) of 100 Pakistani manufacturing firms belonging to 5 industry groups for a period of 1999-2008 using ratio, correlation, OLS and FEM. The results of the study found positive relationship between size and ROTA signifying that larger firms are more profitable as compared to smaller firms. Debt ratio showed negative relationship with ROTA. CR also showed negative relationship with ROTA which confirmed the hypothesis that liquidity and profitability has inverse relationship. ACP, IHP, APP and CCC also had negative relationship with ROTA. Coefficients of chemical, sugar, fuel & energy were different from cement sector. Study also reported that behavior of the ROTA was different with the passage of time.

Uwuigbe, Uwalomwa and Egbide[148] (2012) investigated the impact of cash management (CR, CCC) along with Sales Growth and TDTAR on profitability (operating income) of 15 listed manufacturing firms in Nigeria for the period 2005-

2009 using Pearson's correlation and regression analysis. The study revealed a significant negative impact of CCC and TDTAR on profitability. It was concluded that managers can create a positive value for the shareholders by reducing the CCC to a possible minimum level.

Khan and Sajjad[149] (2012) examined the linkages of liquidity (CR, QR, ALR) and profitability (ROI, ROTA, RONW) in the Fertilizer Sector of Pakistan taking 4 companies for a period of 2005-2011 using regression analysis. They found a negative impact of CR and QR on ROTA and RONW whereas no significant impact was observed for ROI and concluded that liquidity had a negative influence on profitability.

3.10.2 Studies in India

Panigrahi[150] (1990) analyzed working capital and examined the impact of working capital on profitability of selected large scale public limited companies for a period of seventeen years from 1970-71 to 1986-87 using ratio analysis, correlation and regression analysis. They found that the liquidity position of sample was unsatisfactory as the three liquidity ratios were below the standard norms throughout the study period indicating lack of liquidity and risky WCM of selected sample. Inventory had the highest share of current assets followed by debtors, other current assets and cash and bank balances. The regression analysis found that QR, ACP, ITR negatively affected profit and DTR positively affected profit.

Vijayakumar and Venkatachalam[151] (1996) analyzed the working capital of Tamil Nadu Sugar Corporation as also examined the relationship between liquidity and profitability using ratio, correlation and multiple regression analysis by taking the financial data for a period of nine years from 1985-86 to 1993-94. The analysis revealed that the company followed moderate approach in investing in current assets. Inventory followed by loans and advances constituted major component of current assets. A decreasing trend was observed in use of long term funds for financing working capital. The company had experienced excess of working capital throughout the years under study. Liquidity position was found to be satisfactory. A significant positive relationship between profitability and ITR was found. A significant negative relationship was found between profitability and working capital to total assets ratio, DTR and QR.

Mallick and Sur[152] (1998) empirically examined the impact of working capital on the profitability of AFT Industries Limited belonging to tea industry for a period of ten years from 1986-87 to 1995-96 through correlation, regression and WCL analysis. The

analysis revealed that CATAR and DTR had positive impact on ROI. The WCL recorded a fluctuating trend during the study period and further analysis revealed that increase in profitability was less than proportion to decrease in working capital.

Mallick and Sur[153] (1999) examined the liquidity position as well as the impact of WCM on profitability with the help of WCL analysis and also the joint effect of various components of working capital on the profitability through ratio, correlation and regression analysis, by taking data of ten years from 1987 to 1996 of Hindustan Lever Limited. The correlation analysis revealed a significant positive relationship between liquidity and profitability implying favourable impact of liquidity of selected firm on its profitability. The outcomes of regression analysis indicated that profitability of HLL was highly influenced by the efficient management of inventory and debtors. The company followed a conservative working capital policy and working capital of the company was found to be significantly related to sales. The overall analysis revealed that WCM of the company had been remarkably encouraging over the last ten years.

Bhayani[154] (2004) assessed the impact of WCM on the profitability of Gujarat Ambuja Cements Limited taking data for the period of ten years from 1992-93 to 2002-03 using ratio analysis, simple correlation, multiple correlation and regression analysis and t-test. The analysis revealed that CR, QR, CATAR, CTSR and WCTR had negative correlation with ROI whereas ITR witnessed positive association with ROI. Regression analysis revealed that CATAR, CTR and MCTR had negative influence on profitability whereas ITR and DTR had positive influence on profitability. The WCL of the company recorded a fluctuating trend and was found to be always less than unity which indicated that the increase in profitability was less than proportionate to decrease in working capital.

Narware[155] (2004) examined the interrelationship between working capital and profitability of National Fertilizers Limited for a period of ten years from 1990-91 to 1999-2000 through ratio, correlation and regression analysis. Of the nine selected WCM ratios, Current assets to sales ratio, WCTR and DTR were found to be negatively associated with ROI. All the partial regression coefficients were found to be significant at fifty percent level. WCL analysis indicated that increase in profitability of the business was less than proportionate to decrease in working capital.

Vishnani and Shah[156] (2006) examined the interrelationship between profitability and liquidity of twenty three listed companies of Indian Consumer Electronics Industry for a period of eleven years from 1994-95 to 2004-05 using correlation and regression analysis. It was concluded that no established relationship between liquidity and

profitability existed for the industry as a whole which varied from company to company, although majority of them revealed positive association between liquidity and profitability.

Kannadhasan[157] **(2007)** in his case study examined WCM and relationship between liquidity and profitability of selected firm by using the data available in annual reports for the period of seven years (1998-99 to 2004-05). The rank correlation of liquidity and profitability was observed to be inversely related to each other which implied that as the liquidity increased, the profitability decreased. The study concluded that liquidity position of the company was good and managed effectively and the working capital management efficiency had increased every year during the study period.

Luther[158] **(2007)** in his case study attempted to measure and evaluate the liquidity position, correlation between liquidity and profitability as well as to assess the trade-off between profitability and risk of Madras Cements Limited for a period of eight years from 1997-98 to 2004-05 through use of ratio analysis, correlation analysis and tests of significance. A significant positive correlation was found between liquidity and profitability. Risk analysis indicated that conservative approach was followed in the first four years whereas an aggressive approach in financing the working capital in the later four years. A negative correlation was found between profitability and risk. Further, hypotheses testing proved that the aggressive policy adopted by MCL had a negative impact on its profitability.

Singh and Pandey[159] **(2008)** in examined the working capital components and impact of WCM on the profitability of Hindalco Industries Limited for a period of eighteen years from 1990 to 2007. It was found that current assets of sample witnessed a steady growth since 1990 which was over forty times of the base year and was mainly supported by inventory and loans and advances. The contribution of the long term sources in working capital was found to be below thirty percent throughout the study period. Regression results showed that CR, QR, DTR and working capital to total assets ratio had statistically significant impact on the profitability of sample.

Azhagaiah and Janakiraman[160] **(2009)** carried out a study for analyzing the relationship between WCM Efficiency (WCME) and EBIT of the 30 BSE Listed Paper Companies belonging to Paper Industry in India for a period of ten years. A negative relationship was observed between EBIT and CCC which indicated that operational EBIT dictates how to manage the working capital of the firm. The APP had a negative relationship with EBIT, which indicates that by deploying payment to suppliers they improve the EBIT. The positive relationship between ACP and EBIT suggests that less

profitable firms will pursue a decrease of their ACP in an attempt to reduce their cash gap in the CCC. The UI revealed that utilization of working capital for the industry as a whole was mostly efficient during the period of study. The PI revealed that performance of the industry as whole in WCM was mostly efficient during the period of study. And the overall WCM was also found to be efficient indicated by EI. Thus the study revealed that the Paper Industry has managed the working capital satisfactorily.

Arunkumar and Jayakumar[161] (2010) examined the impact of WCM (ACP, APP, IHP, CCC, CR) along with size, leverage and sales growth on profitability of two major public sector undertaking in the electrical industry of Kerala for a period of nine years from 1997-98 to 2005-06 through correlation and regression analysis. It was found that only ACP had significant negative impact on NPM.

Sofat[162] (2010) examined the relationship of profitability with liquidity and risk of selected seven Indian Cement companies of for a period of five years from 2003-04 to 2007-08. The study revealed a direct and significant relationship between degree of operating risk and profitability. A negative correlation was found between CR and profitability.

Mandal and Goswami[163] (2010) assessed the impact of WCM on liquidity, profitability and non-insurable risk of ONGC, a leading public sector enterprise in India over a nine year period from 1998-99 to 2006-07 through ratio, correlation and multiple regression analysis. Ratio Analysis revealed that the short term solvency position was very good and has improved over the study period which was further corroborated by Motaal's Comprehensive Liquidity Test. Correlation analysis revealed a positive relationship between liquidity and profitability as well as risk and profitability. Multiple Regression results found that selected liquidity ratios taken as explanatory variables had statistically significant influence on the profitability of business such that 96.1 percent variation was contributed by these variables.

Saini and Saini[164] (2010) conducted a study with an objective to measure and evaluate the efficiency of liquidity management of Infosys Technologies Limited, to assess the association between liquidity and profitability as well as the trade-off between profitability and risk for a period of ten years (1999-2000 to 2008-09). The analysis of structural determinants of the working capital revealed that on average cash and bank balance constituted the highest of GWC followed by loans and advances and debtors indicating that company maintained excess liquid funds during the study period. The company adopted a liberal credit policy and performance in respect of CATR and WCTR was not encouraging. Moreover, CATAR was also very high. The study thus

revealed that overall performance regarding liquidity management of selected company was very good from creditor's point of view but to the management's point of view, it reflects bad financial planning and inefficient tie up of liquid funds. The negative correlation between liquidity and profitability was observed. Further, positive association between risk and profitability indicated that high degree of conservative policy adopted by the company has made a negative impact on its profitability.

Chawla, Harkawat and Khairnar[165] (2010) studied the effect of CCC, NWC and CR on the GOI of the selected three Indian petrochemicals firms for a period of five years from 2004 to 2009 using correlation and regression analysis and t-test. The results showed a significant negative relationship of profitability with CCC, CR and NWC which indicated that increase in length of CCC, CR and NWC negatively affected the profitability of the selected firms.

Rajesh and Reddy[166] (2011) studied the working capital components and the impact of WCM on profitability of Amararaja Batteries Limited for ten year period from 2000 to 2009 by using ratio analysis, correlation and multiple regression analysis and found that of the eight selected ratios, CR, ITR, DTR and WCTR significantly positively affected the profitability of the firms.

Nandi[167] (2011) in his study examined the influence of WCM (CR, QR, CATAR, CASR, WCTR, ITR, DTR, CTR) on corporate profitability (ROI) of National Thermal Power Corporation Ltd. during the period of ten years (1999-2000 to 2008–09) using Pearson's coefficient of correlation and multiple regression analysis. The results of multiple regression analysis revealed a negative impact of CR and WCTR whereas a positive impact of ITR on ROI. Moreover, WCL indicated a fluctuating trend over the study period. Hence, it was concluded that the increase in the profitability of the company is less than the proportionate to decrease in working capital throughout the study period.

Bhattacharjee[168] (2011) examined the determinants of financial performance and also investigated the existence of any relationship between the determinant factors taking 151 companies covering 13 industrial groups through correlation analysis and tests of significance. The empirical result found that the financial performance varied from industry to industry and company to company. In some cases size was positively related to growth & profitability whereas in other cases it was reverse. It was found that no particular factor lead to improvements in financial performance of companies.

Bhunia[169] **(2011)** examined the overall efficiency of short term liquidity management as well as the liquidity profitability relationship of selected two firms of Indian steel industry for the period 2002-2010 using ratio and multiple regression analysis. The liquidity and solvency position in TATA Steel was found to be satisfactory whereas that of JSW Steel was unsatisfactory. The overall WCM of TATA Steel Limited was better than JSW Steel Limited. Further it was found that of the selected seven ratios, six had negative impact on ROCE whereas CR had positive impact on ROCE for the sample companies.

Goswami and Sarkar[170] **(2011)** assessed the liquidity and profitability position of four airways company for a period of six years from 2000-01 to 2005-06 using correlation analysis and t-test. The study found negative correlation between ROCE and CR for three of four selected companies implying that higher the CR, the better is the short term debt paying capacity and the lower is the overall profitability and *vice-versa.* Receivables management was found to be significantly contributing to the profitability for two of four firms.

Bhunia and Brahma[171] **(2011)** examined the overall efficiency of liquidity management of selected four private sector companies of steel industry in India for a period of ten years from 1997 to 2006 using ratio analysis, multiple correlations and regression analysis. The analysis revealed that the liquidity position of all firms except Kalyani Steels Limited was unsatisfactory whereas receivables management was unsatisfactory for the entire sample. It was found that liquidity had significant impact on profitability whereas solvency position had no significant impact on profitability. The regression analysis revealed a negative impact of IHP, ACP, APP, QR ALR and financial leverage whereas positive impact of CR on profitability.

Vijayakumar[172] **(2011)** examined the impact of CCC along with Size (LnS), Sales Growth, Leverage (DER) and GDP Growth on the profitability (ROTA) taking 20 firms in Indian Automobile Industry for the period 1996-2009 using correlation and multiple regression analysis. The results of the study demonstrate that managers can create value by reducing ACP, IHP and CCC and increasing APP. The study also found that Size, Sales Growth and GDP growth had positive impact whereas leverage had negative impact on firms' profitability.

Kumar, Azash and Ramana[173] **(2011)** investigated the impact of WCM (CR, QR, CATAR, CA to Sales Ratio, WCTR, ITR, RTR, CTR, MCTR) on profitability (ROI) for Dr. Reddy's Laboratories for the period from 2001 to 2010 applying correlations and multiple regression analysis. However, none of the WCM variables had significant

impact on profitability of the sample. They had also measured the WCL of the sample and found that it was less than 1 in all the years of the study period signifying that increase in rate of return on investment was less than proportionate to decline working capital investment.

Bagchi and Khamrui[174] (2012) investigated the relationship of WCM (IHP, ACP, APP and CCC) along with Leverage (ICR, DER) with profitability (ROTA) of 10 Indian FMCG firms for a period of 10 years from 2000–01 to 2009–10 using Pearson's correlation, pooled ordinary least squares regression analysis and stepwise regression analysis. The study results confirmed a strong negative impact of CCC and ACP on ROTA and it was concluded that managers can create a positive value for the shareholders by reducing the CCC to a possible minimum level. A negative impact of debt used by the firm on profitability was also found.

Nandi[175] (2012) assessed the trends in liquidity management taking trend values of CL and CA, liquidity position (CR, QR) and financing of current assets (ratio of long term and short term funds each to CA) as well as impact of liquidity (CR, QR, ITR, RTR, CTR, WCTR, WC/TA) along with DER on profitability (ROCE) of Bharat Heavy Electrical Ltd. (BHEL) for a period of 11 years 1999-2000 to 2009-10 using correlation and multiple regression analysis. It was found that the selected company always tried to maintain adequate amount of net working capital in relation to current liabilities so as to keep a good amount of liquidity throughout the study period and the liquidity position was satisfactory. Further, the sample utilized about 50% and more of long term funds to finance the working capital. WC/TA, ITR, CTR and WCTR had positive impact whereas CR, QR, RTR and DER had a negative impact on ROCE. However, the beta coefficients for all the variables were found to be insignificant at 1% and 5% significance level.

Sabunwala[176] (2012) studied the impact of WCM (CLTAR, CATR, IHP, ACP, APP and CCC) along with Size (LnS), Leverage (DER) on profitability (ROTA) of 60 Indian Cement firms for a period of 5 years from 2007-2011. Through the results of multiple regression it was concluded that CCC, IHP, ACP and APP significantly negatively influenced the ROTA of the cement firms. Also, it was found that firm size had positive influence whereas CLTAR and DER had negative influence on profitability of cement firms. Also ROTA had positive relationship with CATR which indicated that the higher the efficiency in the usage of current assets in generating sales, higher is the ROTA.

Concluding Remarks:

From the review on studies on impact of WCM on profitability the following observations are made:

- Different authors have taken different measures of profitability to examine the impact of WCM on profitability and as a result there are differences in results obtained.
- Some studies found positive impact of aggressive liquidity management on profitability[79,82]. Some studies found negative impact of CR[80,85,98,100,111,145,162,165,170] on profitability whereas others found positive impact of CR[114,119,121,138,141,146,169,171] on profitability.
- Only two studies examined the impact of NTC on profitability which were taken up abroad in manufacturing sector and found negative impact of NTC on Profitability[80,146].
- Further studies suggested that managers can create value by reducing IHP, ACP and CCC[84,86,88-90,93,96,97,99,100,104,105,106,117,118,119,121,122,125,129,130-132,134,135,138,140,142,143,145-147,161,171,172,174,176].
- Studies also suggested that managers can increase profitability by increasing APP[89,97,105,110,130,140,146] whereas other studies found that increasing APP would lead to decline in profitability[84,86,88,96,98,106,118,119,121,122,125,129,130,131,134,135,137,143,147,171,176].

From the above studies, it is concluded that the efficiency of liquidity management is key to profitability of an enterprise. Inefficient liquidity management and thereby WCM leads negative impact on profitability whereas *vice-versa* is the case when WCM is efficient.

3.11 Studies Examining Working Capital Policy

In this para a review of studies on working capital policy is presented in the chronological order.

3.11.1 Working Capital Policy Studies Abroad

Gardner, Mills and Pope[177] (1986) explored the relationship between hedging behaviour and operating risk of 139 firms for the period 1980 to 1984. It was found that the measures of operating risk were neither significantly nor positively related to the hedging ratio in the five years. Thus, more aggressive working capital policies are associated with higher return and higher risk while conservative working capital policies are concerned with the lower risk and return.

Belt[178] **(1991)** attempted to place working capital policy in perspective with other policies of the small business. According to him, working capital policy should be expressed in terms of asset liquidity, deferability of current liabilities, predictability of sales, and composition of financing (particularly debt), rather than in terms of net working capital magnitude (CA minus CL). The distinction is critical for the small business because: (1) initial liquidity is generally poor; (2) postponability of current liabilities is both an unknown and risky element; (3) sales predictability —when attempted—is low; and (4) long-term capital is difficult to obtain.

Hossain and Akon[179] **(1997)** studied the financing pattern of working capital in 40 public sector textile mills of Bangladesh over the period of 12 years from 1982-83 to 1993-94 using ratio analysis, trend analysis and correlation between components of current liabilities. They found a consistently rising trend in negative NWC over the study period and concluded that the BTMC (Bangladesh Textile Mill Corporations) were pursuing a highly aggressive working capital financing policy taking risk of illiquidity as short term funds were diverted for fixed assets investments. The current liabilities structure analysis revealed that STBB was the most preferred source followed by Trade Credit to finance the working capital.

Weinraub and Visscher[180] **(1998)** examined the relative relationship between the aggressive/conservative working capital policies of 206 US firms belonging to ten diverse industry groups by using quarterly data for the period 1984 -1993. Their study concluded that the industries had distinctive and significantly different aggressive current asset management policies. Moreover, the relative nature of the current asset management policies between industries exhibited remarkable stability over the ten year study period. Also, there existed a high correlation between the working capital investment policies among the ten industry groups excepting steel and petroleum industry, which appears to suggest a possible relationship between the policies and some external macroeconomic factor such as the business cycle. Industry policies concerning the relative degree of aggressive liability management also were significantly different, but not to the same extent or with the same stability. The lack of correlation between the working capital financing policies of these industries appeared to suggest that the policies are independent of any external factors and the changes over time may depend more on industry factors than investment policy changes. In general it appeared to the authors that when relatively aggressive working capital asset policies are followed, they are balanced by relatively conservative working capital financial policies.

Cote and Latham[181] (1999) explored the limitations of the traditional measures of WCM and presented an alternative measure based on earlier work in the finance literature. They also examined the degree of association between the alternative measure and profitability and debt proportion to identify the working capital strategy adopted of selected 37 retail firms for a period of five years from 1990 to 1994. They proposed a new ratio "merchandising ratio" (360/CCC) which measured the net effect of a firm's WCM strategy. They found through correlation analysis that as the merchandising ratio days increases (*i.e.* CCC decreases), ROTA increases indicating that efficient management of the CCC is positively related to the global measure of asset utilization. They also found that those firms with longer CCCs (*i.e.*, smaller merchandising ratios) had higher proportions of debt financing, indicating that successful management of the CCC offers firms an alternative to traditional debt avenues.

Filbeck and Krueger[182] (2005) analyzed the working capital policies of twenty six non-financial industries in USA and examined if differences existed among these industries with respect to their working capital policies during the period 1996 to 2000. Their analysis revealed that significant differences existed between industries in working capital practices over time. Moreover, these working capital practices, themselves, varied significantly within industries over time.

Sathyamoorthi[183] (2002) analyzed the components of current assets and studied the working capital financing policy of selected co-operatives of Botswana over a period of four years from 1994 to 1997. The study showed that the selected co-operatives had low liquidity resulting their weak position to pay short-term debts and that they followed conservative working capital policy.

Salawu[184] (2006) investigated forty two firms in fifteen diverse industrial groups over an extended period to establish the relationship between aggressive and conservative working capital practices during the period 1993 – 2004. Descriptive statistics were used for analyzing the data collected. Empirical results strongly showed that the industries had significantly different current asset management policies. Additionally, the relative industry ranking of the aggressive/conservative asset policies exhibited remarkable stability over time. There existed a significant negative correlation between industry asset and liability policies which indicates that a relatively aggressive working capital asset management seems to be balanced by relatively conservative working capital financial management.

Afza and Nazir[185] (2007a) investigated the relationship between the aggressive and conservative working capital policies of 263 public limited companies listed on Karachi Stock Exchange belonging to seventeen industrial groups using cross-sectional data for the period 1998-2003. Using Analysis of Variance (ANOVA) and Least Significant Difference (LSD) test, the study found significant differences among their working capital investment and financing policies across different industries. Moreover, rank order correlation confirmed that these significant differences were remarkably stable over the six-year study period. The positive and significant correlation between the investment and financing policies for industries indicate that industries which pursue aggressive investment working capital policies also follow aggressive working capital financing policies. Finally, ordinary least regression analysis found a negative relationship between the profitability measures of firms and the degree of aggressiveness of working capital investment and financing policies

Afza and Nazir[186] (2007b) investigated the relative relationship between the aggressive/conservative working capital policies and profitability as well as risk of firms for 208 public limited companies listed at Karachi Stock Exchange for the period of 1998-2005. The impact of aggressive/conservative working capital investment and financing policies has been examined through cross-sectional regression models between working capital policies and profitability as well as risk of the firms. The empirical results found the negative relationship between profitability measures and degree of aggressiveness of working capital investment and financing policies. These results are further validated by examining the impact of aggressive working capital policies on market measures of profitability which was not tested before. The results of Tobin's q were in line of the accounting measures of profitability and produced almost the same results. Moreover, no relationship between the level of current assets and liabilities and risk of the firms was also found.

Chowdhury and Amin[187] (2007) critically evaluated WCM as practiced in the selected 8 Pharmaceutical firms listed on Dhaka Stock Exchange over a period of 2000-2003 using questionnaires and ratio analysis. Moreover, regression analysis was used to examine the impact of overall working capital policy on the profitability of the selected firms. From the analysis of primary data it was concluded that pharmaceutical firms operating in Bangladesh efficiently dealt with their liquidity preferences and investment criteria and which was due to the competitive nature of this industry. Also, it was found that the nature of working capital policy (CASR), financing of working capital (CLTAR), inventory holdings (ITCAR) played significant role in determining ROTA.

Afza and Nazir[188] (2008) in their study investigated the relationship between the aggressive/conservative working capital policies for two hundred sixty three firms belonging to seventeen industrial groups of public limited companies listed at Karachi Stock Exchange for a period of six years from 1998-2003. The ordinary least square regression model has been used to investigate into the relationship of working capital approaches and the returns of firms. The study found significant differences among their working capital investment and financing policies across different industries. Moreover, these significant differences are remarkably stable over the period of six years. The aggressive investment working capital policies are accompanied by aggressive working capital financing policies. Finally, a negative relationship was found between the profitability measures of firms and degree of aggressiveness of working capital investment and financing policies indicating that the firms yield negative returns if they follow an aggressive working capital policy Although, significant results were observed for both the regression, however, regression equation taking Return on Asset as measure of profitability produced more broader and consistent results where F-value and Beta coefficients were highly significant as compared to Return on Equity.

Boisjoly[189] (2009) examined RTR, CTR, ITR, cash flow and working capital per share, and investment ratio for 50 of the largest non-bank corporations belonging to Fortune 500 companies over the period of fifteen years (1990-2004) to determine whether their management practices had an impact on their financial ratios and distributions. Aggressive management of working capital and significant increases in productivity resulted in significant improvements in cash flow per share and reduced corporate reinvestment. Furthermore, it appeared that the distributions have been altered significantly by management practices with cash flow per share becoming more positively skewed and working capital per share becoming less positively skewed during the period under study.

Afza and Nazir[190] (2009) investigated the relationship between the aggressive/ conservative working capital investment and financing polices and its impact on profitability of 204 Pakistani firms divided into sixteen industrial groups by Karachi Stock Exchange for 8 year period (1998-2005) using panel data regression models. The study found that degree of aggressiveness of working capital investment and financing policies had negative impact on the firm's profitability and value. The market value of firms using high level of current liabilities in their financing is more than the book value which indicated that investors were giving more value to those firms that are

more aggressive in managing their current liabilities. However, the authors suggested that there are various other factors like agency problem which may play a pivotal role in such cases, and so these factors may further be explored in future.

Al-Shubiri[191] (2010) analyzed the impact WCM policies on profitability of 59 Jordanian Industrial firms listed on Amman Stock Exchange for the period of 2004 to 2007. The result indicated a negative impact of degree of aggressiveness of working capital investment and financing policy on profitability measures, *i.e.,* ROTA, RONW and Tobin's q. It was concluded that the firms yield negative returns if they follow an aggressive working capital policy.

Shah, Amjad, Hasnu and Shah[192] (2010) examined the type of approach followed by 15 small and medium size industrial companies in Pakistan for financing their current assets for a 3 year period (2002-2004). An important finding of the study is that in the SME sector, lenders do not give weight to the capital structure of the company which was dominantly constituted by equity with some firms even having no long term liabilities. Based on the analysis of financial data, it was concluded that conservative approach of financing the current assets was being followed by selected sample not by choice but because they had no option or lack of options for using any other approach.

Al-Shubiri[193] (2011) analyzed the impact WCM policies on profitability of 59 Jordanian Industrial firms and 14 banks listed on Amman Stock Exchange for the period of 2004 to 2008. The result indicated a negative impact of degree of aggressiveness of working capital investment and financing policy on profitability measures, *i.e.,* ROTA, ROI, RONW and Tobin's q. It was concluded that the firms yield negative returns if they follow an aggressive working capital policy. This similarity in market and accounting returns confirmed the notion that investors do not believe in the aggressive approach of WCM, hence, they don't give any additional value to the firms in Amman Stock Exchange

Magpayo[194] (2011) attempted to determine the effect of WCM policy and financial leverage on financial performance (NPM, RONW, ROTA) of 110 randomly selected Philippine firms using Pearson's rank correlation test, ANOVA F-test, and multiple regression analysis. Results of the study indicated that firm's WCM policy and firm size had positive impact whereas financial leverage had negative impact on NPM However WCM policy had no significant effect on ROTA and RONW.

Al-Mwalla[195] (2012) investigated the impact of WCM policies (CLTAR and CATAR) on the firms' profitability (ROTA) and value (Tobin's q) for 57 Jordanian Industrial firms listed in Amman Stocks Exchange for the period of 2001 to 2009 through

regression analysis. Firm Size (LnS), Growth (Sales Growth), GDP Growth and Leverage were also taken as explanatory variables and the results showed that following a conservative investment policy had a positive impact on a firm's profitability and value. However following the aggressive financing policy had a negative impact on the firm's profitability and value. Moreover, Firm Size, Growth and GDP Growth had a positive impact on the firm's profitability and value whereas, financial leverage had a significant negative effect on firm value only which emphasizes the importance of debt financing on firms' value maximization.

Hussain, Farooq and Khan[196] (2012) empirically investigated the relationship between working capital policy (CLTAR, CATAR) along with Firm Size (LnTA), Sales Growth, Leverage (TDTAR) and GDP growth and profitability (ROTA, RONW) taking 36 firms listed on Karachi Stock Exchange for the period of 2006-2010 using correlation and panel data regression with fixed effect. The results revealed a positive impact of aggressive investment policy whereas negative impact of aggressive financing policy on profitability. Firm size had positive impact on profitability which reveals that as the firm sizes increases in terms of its assets profitability increases whereas leverage had negative impact on profitability indicating that as debt decreases, cost of debt decreases which increases profitability of Pakistani firms. GDP growth had no statistically significant impact on WCM practices of Pakistani firms. The Pakistani firms were suggested to adopt an aggressive investment policy that leads to lower investment in current assets, and a shorter CCC. Moreover, Pakistani firms cannot create value by adopting aggressive financing policy so the managers were advised to use conservative financing policy.

Islam and Mili[197] (2012) examined the relationship between the working capital investment and financing practices of 5 pharmaceutical companies of Bangladesh listed on Dhaka Stock Exchange over a period of five years from 2005 to 2009 using ratio analysis, ANOVA and Rank Correlation. From the results of ANOVA it was found that there is a significant difference in the working capital investment and financing policies among the companies. However, through rank correlation it was found that aggressive working capital investment policy of the companies was balanced by conservative working capital financing.

Vahid, Mohsen and Mohammadreza[198] (2012) investigated the impact of WCM policies (CLTAR, CATAR) along with Size (LnS), Sales Growth and Leverage (DER) on the firms' profitability (ROTA) and value (Tobin's q) of 28 Iranian Companies listed on Tehran Stock Exchange for a period of 5 years from 2005-2009. The results

show that following a conservative investment policy and aggressive financing policy has a negative impact on a firm's profitability and value. It was concluded that using more CL to finance TA would negatively affect the firm profitability and value whereas investing in more CA also negatively affects profitability and value. Moreover, firm Size had a positive impact whereas firm leverage has negative impact on the firm's profitability and value. Firm Growth had significant positive impact on profitability but not on value.

3.11.2 Working Capital Policy Studies in India

Agrawal[199] (1984) developed a model for examining the working capital policy of a firm and related the model developed with profitability of the firm. The model was termed as working capital policy index (WCPI) which was arrived by multiplying CATAR, CR and Liquid Assets to Total Assets Ratio. It was concluded that a higher WCPI indicates conservative working capital management policy which results into high cost of liquidity further resulting into lower profitability and a lower WCPI indicates aggressive working capital policy which decreases cost of liquidity but increases profitability and cost of illiquidity. So, aggressive firms will have positive correlation between WCPI and profitability with *vice-versa* the case for conservative firms. In case of moderate firms, moderately negative or positive correlation can be observed.

Pradhan[200] (1986) attempted to determine the size of short term financing used to finance current assets and the distribution of short term financing amongst its various sources or components in the context of selected 42 Indian companies belonging to six industry groups for two years 1974 and 1983. Overall approach was found to be aggressive to finance gross working capital in both the years, except in case of Tea and Plantations in the year 1983. In the year 1974, the major source of short term finance was found to be loans and advances which was largest for all the selected industries except in paper, pulp and hardboard where the size of sundry creditors was observed to be the largest. However in year 1983, the major source of financing was sundry creditors followed by loans and advances, provision for taxation which indicated a switch in source of financing.

Chitnis[201] (1988) in his book entitled, "Working Capital Management of Large Industrial Units" discussed the banker's approach to working capital assessment of large industrial units in India as well as the CAS proposal and WCTL at length through illustrations and case studies. He mentioned that increase in NWC over a period of years was a positive indication as it strengthened the financial base of the organisation

which may be on account of additional equity, retained profits or raising of additional funds, whereas negative NWC was considered as a sign of industrial sickness.

Majumdar[202] (1996) studied the financing pattern of corporate working capital in India for a period of ten years 1981 to 1990 by analyzing balance sheets of twenty companies, ten each belonging to private sector and public sector (*i.e.* government companies) respectively. It was found that all the companies used multiple short term and long term sources of finance to fund working capital. Trade Credit and Bank borrowings were found to be prominent sources of financing working capital in selected sample. Further, it was found that private sector companies followed aggressive policy whereas government companies adopted conservative policy but with high cost of liquidity.

Babu and Jain[203] (1999) examined the short term and long term debt financing of 527 BSE Listed Indian companies for a period of fifteen years from 1980-1994 through ratio analysis. The study found that there was a shift towards preference for long term debt in lieu of short term debt. Also, due to the debt ascendant capital structure of selected sample the debt servicing capacity was found to be low due to which majority of corporate firms were exposed to high degree of financial risk.

Hyderabad[204] (1999a) analyzed the operation of WCL with the help of case studies of three private sector enterprises by taking data for one year. It was generalized with the help of WCL analysis that a company with higher fixed assets to working capital ratio suffers more than the companies with lower ratio in terms of profitability measure return on capital employed.

Hyderabad[205] (1999b) evaluated the working capital investment and financing policies of 756 non government and non financial large public limited companies in India for a period of three years, (1994-95 to 1996-97). It was found that excepting fifty nine companies, all others followed a conservative working capital investment policy characterized by excessive investment in current assets as compared to fixed assets. Financing approach exhibited by large majority of companies was that of resorting to excessive short term sources to finance working capital. Further, the study revealed that companies with better current assets position had financed it by using excessive short term funds.

Rao[206] (2001) studied the causes of changes in working capital through fund flow analysis of five cement companies over a period of four years from 1990-91 to 1993-94. The study revealed that the selected firms followed a liberal working capital policy and the short term liquidity position was found to be satisfactory.

Luther[207] **(2007)** attempted to measure and evaluate the liquidity, profitability and risk trade-off in his case study on Madras Cements Limited for a period of nine years (1997-98 to 2005-06) which was further sub divided into two parts with Ist period covering first four years and the IInd period covering the last 5 years of the time frame selected. It was found that MCL had adopted a conservative policy in financing working capital for the initial four years and an aggressive policy for the rest five years. In the last five years, the liquidity position was much below the standard levels, resulting in negative NWC indicating an aggressive working capital policy. Positive association between liquidity and profitability existed in the period – I because of the healthy liquid ratios on account of conservative working capital policy, whereas a negative association between liquidity and profitability was found in period – II due to lower liquid ratios which was on account of high risk assumed by MCL in the last five years. Further, the positive association between risk and profitability was substantiated in the Period – I due to conservative working capital policy followed by firm.

Yadav, Kamath and Manjrekar[208] **(2009)** in their study analyzed the WCM of Maharashtra's bulk drugs companies that are listed on the Bombay Stock Exchange for three years period 2004 to 2006. The financial analysis revealed that the companies in the sample adopted a conservative approach in the working capital investment policy in 2005 which was then aggressive in 2006 as evident from low CRs and QRs and financing policy had changed from aggressive to conservative in the recent years of the study as more than 50% long term funds used for financing working capital. The ACP declined over the study period indicating efficiency in management of debtors. The APP increased over the study period indicating deferability of credit payments. The overall conclusion drawn from this study was that working capital policy is not static overtime and it varied with the changes in the state of the economy. Therefore, in times of high business volatility, companies tend to adopt a conservative approach and they tend to adopt an aggressive approach in times of low volatility.

Singh and Chekol[209] **(2009)** investigated the impact of working capital policies on the performance of four hundred sixty four Indian firms belonging to eight different industry groups by taking financial data for the period of ten years, (1999 to 2008) using panel data regression analysis. The findings of the study revealed a negative effect of aggressive working capital management policies on profitability of the firm as a positive relationship was found between current asset to total asset ratio and profitability. Also, among the industry groups the differences in working capital management policies were found to be statistically significant.

Concluding Remarks:

From the review of studies on working capital policy the following results were broadly observed:

- Studies found that the firms following aggressive working capital financing policy balanced it with conservative working capital investment policy[180,184] whereas some studies found that firms following aggressive working capital financing policy also pursue aggressive working capital investment policies[185,188]
- Moreover studies concluded that aggressive working capital financing policy had a negative impact on profitability[141,186,188,190,191,193,195,196,198,209].
- Studies also concluded that conservative working capital investment policy had a positive impact on profitability[146,186,188,190,91,193,195,209].

Conclusions

From the review of empirical studies in India and Abroad it is observed that all the above research studies focused on industries belonging to manufacturing sector. And it was difficult to find a specific study on Service Sector. Also, all the studies focused on different aspects of WCM, but a comprehensive study covering all the all the seven dimensions of WCM, *i.e.*, Working Capital Policy, Current Asset Structure, Current Liabilities Structure, Liquidity, WCM Efficiency, Working Capital Leverage and impact of WCM on Sales and profitability could not be traced even in the manufacturing sector with large samples. In context of the above, the current study bridges this gap in literature by examining all the seven dimensions of WCM over a period of 16 years in the Indian Service Sector due to the growing importance of the sector in the Indian and World economy as discussed in Chapters 1 and 2.

This chapter had accounted the theoretical development in WCM as well as reviewed the academic literature of academicians, practitioners and researcher who have empirically examined various aspects of "Working Capital Management" in India and abroad. This has helped to identify the research gap and in the said context, *following chapter presents the* **"Methodology Adopted"** to carry out the present study.

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REFERENCES FOR SECTION I:

1. Marx, Karl, (1867), *Das Kapital – Volume I*, Progress Publishers, USSR, pp. 143-148.
2. Ibid, p. 395.
3. Smith, Adam (1937), *An Inquiry into the Nature and Causes of Wealth of Nations – Book II*, Pennsylvania State University, New York, Chapter – 1, p. 224.

4. Mueller, F. W. Jr. (1953), Corporate Working Capital and Liquidity, *The Journal of Business of the University of Chicago*, Vol 26 (3), July 1953, pp. 157-172.
5. Gole, V. L. (1966), *Fitzgerald's Analysis and Interpretation of Financial Statement.* Butterworth, Sydney, p. 51.
6. Mehta, D. R. (1979), *Working Capital Management,* Prentice Hall Inc. Englewood Cliffs, New Jersey, pp. 1-3.
7. Pandey, I. M. (2009), *Financial Management,* Ninth Edition, Vikas Publishing House, New Delhi, p. 666.
8. Smith, K. V. (1974), *Management of Working Capital,* West Publishing Company, New York, p.7.
9. Pandey, I. M. (2009), *op cited,* p. 583.
10. Baker J. C. and Mallot D. (1946), *Introduction to Corporate Finance*, New York: Mc Graw Hills Book Co., p. 92.
11. Smith, A. (1966), *The Wealth of Nations*, New York: Modern Library Inc., p. 263
12. Mead, E. S. (1993), *Corporation Finance.* New York: Applation Centring Croft, p. 303.
13. Field, K. (1993), *Corporation Finance.* New York: The Ronald Press Company, p. 303
14. Bogen, J. I. (1948), *Financial Handbook*, Ronald Press, p. 709.
15. Dewing, A. S. (1953), *The Financial Policy of Corporations,* New York: The Ronald Press Company, p. 686.
16. Gesternberg, C. W. (1959), *Financial Organization and Management,* New York: Prentice Hall, p. 282.
17. Husband, W. H. and Dockery, J. C. (1966), *Modern Corporate Finance*, Richard D. Irwin, p. 936.
18. Saliers, E. A. (1927), *Handbook of Corporation Management and Procedure*, New York: Mc Graw Hill, p. 728
19. Lincoln, E. E. (1929), *Applied Business Finance,* New York Mc Graw Hill, p. 312.
20. Stevens ,W. M. (1934), *Financial Organization and Administration,* New York: McGraw Hill, p. 84.
21. Guthmann, H. G. and Dougall,. H. E. (1948), *Corporate Financial Policy,* New Delhi: Prentice Hall, p.282
22. Gole, V. L. (1959). The Management of Working Capital, *Australian Accountant,* Vol XXIX. June 1959, pp. 319-329.
23. Park , C. and Gladson , J. W. (1963). *Working Capital.* New York: The Macmillan.
24. Kennedy, R. D. and Mcullen, S. Y. (1968). *Financial Statements, Forms, Analysis and Interpretation*, Homewood, Illinois: Richard D. Irwin Inc., p. 266.
25. Walker, E. W. (1974), *Essentials of Financial Management,* Prentice Hall of India Pvt. Ltd, New Delhi.
26. Shulman, J. R. and Cox (1985), An Integrative Approach to Working Capital Management, *Journal of Cash Management*, Vol 5 (6), pp. 64-68.
27. Chakraborty, S. K. (1973), Use of Operating Cycle concept for Better Management of Working Capital, *Economic and Political Weekly*, 8(34): August 25, 1973, pp. M69, M71, M73, M75 & M-76.
28. Gitman, L. J. (1974), Estimating Corporate Liquidity Requirements: A Simplified Approach, *The Financial Review*, pp. 79-88.
29. Gitman, L. J. and Sachdeva, K. S. (1982), A Framework for Estimating and Analyzing the Required Working Capital Investment, *Review of Business and Economic Research,* Spring 1982, pp. 35-44.

30. Richards, V. D. and Laughlin, E. J. (1980), A Cash Conversion Cycle Approach to Liquidity Analysis, *Financial Management,* Vol 9 (1), Spring 1980, pp. 32-38.

31. Pandey, I. M. (2009), *op cited,* p. 582.

32. Gentry, J. A., Vaidyanathan, R. and Lee, W. H. (1990), A Weighted Cash Conversion Cycle. *Financial Management,* Spring – 1990, pp. 90-99.

33. Van Horne, J. C. (2004), *Fundamentals of Financial Management,* 12th Edition, New York, Prentice Hall Publishers.

34. Zenoff, D. B. and Zwick, J. (1969), *International Financial Management,* Prentice Hall Inc., Englewood Cliffs, New Jersey, pp. 228.

35. Lamberson, M. (1995), Changes in Working Capital of Small Firms in Relation to Changes in Economic Activity, *Mid-American Journal of Business,* Vol 10 (2), pp. 45-50.

36. Keynes, John Maynard (1936), *General Theory of Employment, Interest and Money,* Harcourt Brace Javonovich, New York, pp. 170-174.

37. Ross, S. A., Westerfield, R.W. and Jaffe, J. F. (2010), *Corporate Finance,* Eigth Edition, IRWIN, Boston, Mass, p. 908.

38. Gitman, L. J., Moses, E. R. and White J. T. (1979), An Assessment of Corporate Cash Management Practices, *Financial Management,* Spring 1979, pp. 32-41.

39. Gentry, J. (1988), The State of the Art of the Short-Run Financial Management, *Financial Management,* Summer 1988, pp. 41-57.

40. Scherr, F. C., (1989), *Modern Working Capital Management, Text and Cases,* Prentice-Hall International Editions, Englewood Cliffs, New Jersey, cited in Gentry, J. A. (1988), State of the Art of Short Run Financial Management, *Financial Management,* Vol 17 (2), Summer 1988, pp. 41-57.

41. Srinivasan V. and Kim, Y.H. (1986), Deterministic Cash Flow Management: State of the Art and Research Direction, *Omega (1986a),* pp. 145-466.

42. Robichek, A.A., Teichroew, D. and Jones, J. M. (1965), Optimal Short- Term Financing Decision, *Management Science,* September 1965, p. 136.

43. Orgler, Y. (1970), *Cash Management: Methods and Models,* Belmont, CA, Wadsworth Publishing Company, Inc. 1970, pp. .

44. Orgler, Y. (1974), An Unequal Period Model for Cash Management Decisions, *Management Science,* pp. 1350-1363.

45. Mao, J.C.T. (1968), Application of Linear Programming to the Short Term Financing Decision, *Engineering Economist,* pp. 221-241.

46. Gitman, L. J., Forrester, D. K. and Forrester, J. R. (1976), Maximizing Cash Disbursement Float, *Financial Management,* Summer 1976, pp. 15-24.

47. Maier, S. F. and Vander, Weide, J. A. (1978), A Practical Approach to Short-Run Financial Planning, *Financial Management,* Winter 1978, pp. 10-16.

48. Maier, S. F. and Vander, Weide, J. A. (1985), *Managing Corporate Liquidity: An Introduction to Working Capital Management,* New York, John Wiley & Sons pp. cited in Gentry, J. A. (1988), State of the Art of Short Run Financial Management, *Financial Management,* Vol 17 (2), Summer 1988, pp. 41-57.

49. Stone, B. K. (1973), Cash Planning and Credit Line Determination with a Financial Statement Simulator: A Cash Report on Short-Term Financial Planning, *Journal of Financial and Quantitative Analysis,* December 1973, pp. 711-729.

50. Baumol, W. J. (1952), The Transaction Demand for Cash: An Inventory Theoretical Approach, *Quarterly Journal of Economics,* No. 66, November 1952, pp. 545-56.

51. Beranek, W. (1963), *Analysis for Financial Decisions,* Homewood, IL, Richard D. Irwin Inc., pp. 345-381.

52. Miller, M. H. and Orr, D. A. (1966), A Model for the Demand for Money by Firms, *Quarterly Journal of Economics,* No. 80, August – 1966, pp. 413-35.

53. Stone, B. K. and Wood, R .A. (1977), Daily Cash Forecasting: A Simple Method for Implementing the Distribution Approach, *Financial Management,* Fall 1977, pp. 40-50.

54. Stone, B. K. and Miller, T. (1981), Daily Cash Forecasting: A Structuring Framework, *Journal of Cash Management,* October 1981, pp. 35-50.

55. Stone, B. K. and Miller, T. (1987), Daily Cash Forecasting with Multiplicative Models of Cash Flow Patterns, *Financial Management,* Winter 1987, pp. 45-54.

56. Miller, T. W. and Stone, B. K. (1985), Daily Cash forecasting and Seasonal Resolution: Alternative Models and Techniques for Using the Distribution Approach, *Journal of Financial and Quantitative Analysis,* September1985, pp. 335-351.

57. Boyd, K. and Mabert, V. A. (1977), A Two Stage Forecasting Approach at Chemical Bank of New York for Check Processing, *Journal of Bank Research,* pp. 101-407.

58. Kallberg, J. G. and Parkinson, K. (1984), *Current Asset Management,* John Wiley and Sons, New York cited in Gentry, J. A. (1988), State of the Art of Short Run Financial Management, *Financial Management,* Vol 17 (2), Summer 1988, pp. 41-57.

59. Homonoff, R. and Mullins, Jr. D.W. (1975), *Cash Management,* Lexington Books, Lexington, MA, cited in Gentry, J. A. (1988), State of the Art of Short Run Financial Management, *Financial Management,* Vol 17 (2), Summer 1988, pp. 41-57.

60. Maier, S.F. and Vander, Weide, J.A. (1976-77), A Unified Location Model for Cash Disbursement and Lockbox Collections, *Journal of Bank Research,* pp. 166-472.

61. Stone, B. K. (1981), Design of a Receivable Collection System, *Management Science,* August 1981, pp. 876-880.

62. Levy, F. K. (1966), An Application of Heuristic Problem Solving to Accounts Receivable Management, *Management Science,* February 1966, pp. B236-B244.

63. Cornuejols, G., Fisher, M. L. and Nemhauser, G. L. (1977), Location of Bank Accounts to Optimize Float: An Analytical Study of Exact and Approximate Algorithms, *Management Science,* pp. 780-810.

64. Nauss, R. M. and Markland, R. E. (1974), Theory and Application of an Optimizing Procedure for Lock Box Location Analysis, *Management Science,* pp. 855-865.

65. Nauss, R. M. and Markland, R. E. (1979), Solving the Lockbox Location Problem, *Financial Management,* Spring 1979, pp. 21—31.

66. Fielitz, B. D. and White, D. L. (1981), A Two Stage Solution Procedure for the Lockbox Problem, *Management Science,* August 1981, pp. 881-886.

67. Fielitz, B. D. and White, D. L. (1982), An Evaluation and Linking of Alternative Solution Procedures for the Lock Box Location Problem, *Journal of Bank Research,* pp. 17-27.

68. Stone, B. K. and Hill, N. C. (1980), Cash Transfer Scheduling for Efficient Cash Concentration, *Financial Management,* Autumn 1980, pp. 35-43.

69. Maier, S. F. and Vander, Weide, J. A. (1983), What Lock Box and Disbursement Models Really Do, *Journal of Finance,* May 1983, pp. 361-371.

70. Ferguson, D. M. and Maier, S. F. (1982), Disbursement Design for the 1980's, *Journal of Cash Management,* November 1982, pp. 56- 69.

71. Stone, B. K. (1974), Allocating Credit Lines, Planned Borrowing and Tangible Services Over a Company's Banking System, *Financial Management,* Summer 1974, pp. 65-78.

72. Stone, B. K. (1983), The Design of a Company's Banking System, *Journal of Finance,* May 1983, pp. 373-385.

73. Emery, G.W. (1983), Discussion: The Design of a Company's Banking System, *Journal of Finance* May 1983, pp. 387-389.

74. Pogue, G.A., Faucett, R.B. and Bussard, R.N. (1977), Cash Management: A Systems Approach, *Industrial Management Review*, pp. 55-74.

75. Stone, B. K. (1983), *op. cited*, p. 374.

76. Ferguson, D. M. and Hill, N. C. (1985), Cash Flow Timeline Management: The Next Frontier of Cash Management, *Journal of Cash Management*, May-June1985, pp. 12-22.

77. Gentry, J. A., Newbold, P. and Whitford, D. T. (1984), Bankruptcy, Working Capital and Funds Flow Components, *Managerial Finance: Key Issues in Working Capital Management*, pp. 26-39.

78. Gentry, J. A., Newbold, P. and Whitford, D. T. (1985a), Classifying Bankrupt Firms with Funds Flow Components, *Journal of Accounting Research*, Spring 1985, pp. 140-460.

79. Gentry, J. A., Newbold, P. and Whitford, D. T. (1985b), Predicting Bankruptcy: If Cash Flow's Not the Bottom Line, What Is?, *Financial Analysts Journal*, September/October 1985, pp. 47-56.

80. Casey, C. J. and Bartczak, N. J. (1984), Cash Flow- It's Not the Bottom Line, *Harvard Business Review*, July-August 1984, pp. 60-66.

81. Casey, C. J. and Bartczak, N. J. (1985), Operating Cash Flow Data and Financial Distress: Some Empirical Evidence, *Journal of Accounting Research*, Spring 1985, pp. 384-401.

82. Gombola, M. J. Haskins, M. E. Ketz, J. E. and Williams, D. D. (1987), Cash Flow in Bankruptcy Prediction, *Financial Management*, Winter 1987, pp. 55-65.

83. Opler, Tim, Pinkowitz, Lee, Stulz, Rene and Williamson, Rohan (1999), The Determinants and Implications of Corporate Cash Holdings, *Journal of Financial Economics*, Vol. 52, April 199, pp.3-46.

84. Pandey, I. M. (2009), *op cited*, p. 624.

85. Stevenson, W. J. (1982), *Production / Operation Management*, Irwin, Homewood, Illionois, cited in Gentry, J. A. (1988), State of the Art of Short Run Financial Management, *Financial Management*, Vol 17 (2), Summer 1988, pp. 41-57.

86. Arrow, Karlin and Scarf (1958), *Studies in the Mathematical Theory of Inventory and Production*, Stanford, California: Stanford University Press cited in Gentry, J. A. (1988), State of the Art of Short Run Financial Management, *Financial Management*, Vol 17 (2), Summer 1988, pp. 41-57.

87. Starr, Martin, K. and Miller D. W. (1962), *Inventory Control: Theory and Practice*, Englewood Cliffs, N. J. Prentice Hall, p. 17.

88. Bhalla, V. K. (1997), *Modern Working Capital Management*, Anmol Publishing Pvt Ltd, New Delhi, p. 254.

89. Chandra, P. (2008), *Financial Management – Theory and Practice*. Tata Mc Graw Hill Publishing Company Limited, New Delhi, p. 722.

90. Gentry, J. A. (1988), *op cited*, p. 47.

91. Hall, R. W. (1983), *Zero Inventories*, Homewood, IL, Dow Jones-Irwin cited in Gentry, J. A. (1988), State of the Art of Short Run Financial Management, *Financial Management*, Vol 17 (2), Summer 1988, pp. 41-57.

92. Johnson, H. T. and Kaplan, R. S. (1987), *Relevance Lost*, Boston MA, Harvard Business School Press, cited in Gentry, J. A. (1988), State of the Art of Short Run Financial Management, *Financial Management*, Vol 17 (2), Summer 1988, pp. 41-57.

93. Lambrix, R. J. and Singhvi, S. S. (1979), Managing the Working Capital Cycle, *Financial Executive*, June 1979, pp.32-41.

94. Block, S. B., Hirt, G. A. and Danielsen, B. R. (2011), *Foundations of Financial Management*, Richard D. Irwin, Inc., Mass, Boston, p. 208.

95. Ramamoorthy, V. E. (1976), *Working Capital Management,* Institute for Financial Management and Research, Chennai, p. 183.

96. Bhattacharya, H. (2010), *Working Capital Management - Strategies and Techniques,* Prentice Hall India Pvt. Ltd, New Delhi, p. 45.

97. Pandey, I. M. op. cited, p. 614.

98. Gentry, J. A. (1988), *op cited,* p. 46.

99. Freitas, L. (1973), Monitoring Accounts Receivable, *Management Accounting,* September 1973: pp. 18-21.

100. Lewellen, W. G. and Edmister, R. O. (1973), A General Model for Accounts Receivable and Control, *Journal of Financial and Quantitative Analysis,* March 1973, pp. 145-206.

101. Stone, B. K. (1976), The Payments Pattern Approach of the Forecasting and Control of Accounts Receivable, *Financial Management,* Autumn 1976, pp. 65-82.

102. Lewellen, W. G. and Johnson, R. W. (1972), Better Way to Monitor Accounts Receivable, *Harvard Business Review,* May-June 1972, pp. 101-109.

103. Carpenter, M. D. and Miller, J. E. (1979), A Reliable Framework for Monitoring Accounts Receivable, *Financial Management,* Winter 1979, pp. 37-40.

104. Gentry J. A. and De La Garza J. M. (1985), A Generalized Model for Monitoring Accounts Receivable, *Financial Management,* Winter 1985, pp. 28-38.

105. Gallinger, G. W. and Ifflander, A. J. (1986), Monitoring Accounts Receivable Using Variance Analysis, *Financial Management,* Winter 1986, pp. 69-76.

106. Halloran, J. A. and Lanser, H. P. (1981), The Credit Policy Decision in an Inflationary Environment, *Financial Management,* Winter 1981, pp. 31-38.

107. Hill, N. C. and Riener, K. D. (1979), Determining the Cash Discount on the Firm's Credit Policy, *Financial Management,* Spring 1979, pp. 68-73.

108. Weston, J. F. and Tuan, P. D. (1980), Comment on the Analysis of Credit Policy Changes, *Financial Management,* Winter1980, pp. 59-63.

109. Mehta, D. R. (1968), The Formulation of Credit Policy Models, *Management Science,* October 1968, pp. B30-B50.

110. Srinivasan V. and Kim Y. H. (1987), Credit Granting: A Comparative Analysis of Classification Procedures, *Journal of Finance,* July 1987. pp. 661-681.

111. Kim, Y. H. and Atkins, J. C. (1978), Evaluating Investments in Accounts Receivable: A Wealth Maximization Framework, *Journal of Finance,* May 1978: pp. 403-412.

112. Bierman, Jr. H. and Hausman, W. H. (1970), The Credit Granting Decision, *Management Science,* April 1970, pp. B519-B532.

113. Beaver, H. W. (1967), Financial Ratios as Predictors of Failure, *Empirical Research in Accounting: Selected Studies,* University of Chicago.

114. Bhattacharya, H. (2010), *op. cited,* p. 117.

115. Schwartz, R. A. (1974), An Economic Model of Trade Credit, *Journal of Financial and Quantitative Analysis,* September 1974, pp. 643-657.

116. Lewellen W. G., McConnell, J. J. and. Scott, J. A. (1980), Capital Market Influences on Trade Credit Policies, *Journal of Financial Research,* Summer 1980, pp. 105-113.

117. Copeland, T. E. and Khoury, N. T. (1980), Analysis of Credit Extensions in a World with Uncertainty, In *Readings on the Management of Working Capital,* Smith, K. V. (ed.). West Publishing: St Paul, 323–330, cited in Cheng, N. S. and Pike, R. (2003), The Trade Credit Decision: Evidence of UK Firms, *Managerial and Decision Economics,* Vol 24, pp. 419-438.

118. Emery, G. W. (1988), Positive Theories of Trade Credit, *Advances in Working Capital Management,* Vol 1, pp. 115–130.

119. Emery, G. W. (1984), A Pure Financial Explanation for Trade Credit, *Journal of Financial and Quantitative and Financial Analysis*, September 1984, pp. 271-285.

120. Cheng, N. S. and Pike, R. (2003), The Trade Credit Decision: Evidence of UK Firms, *Managerial and Decision Economics*, Vol 24, pp. 419-438.

121. Mian, S. L. and Smith, Jr., C.W. (1987), Accounts Receivable Management, *Working Paper* presented at Financial Management Association Meeting, October 14,1987.

122. Phelps, C. W. (1956), *The Role of Factoring*, Commercial Credit Company, 1956, pp. 17-47.

123. Bhattacharya, H. (2001), *op. cited*, p. 375.

124. Peterson, M. A. and Rajan, R. G. (1997), Trade Credit: Theories and Evidence, *The Reviews of Financial Studies*, Fall 1997, pp. 661-691.

125. Bhattacharya, H. (2001), *op. cited*, p. 388.

126. Gentry, J. and De La Garza, J. M. (1987), Monitoring Payables and Receivables, *Faculty Working Paper No. 1358*, College of Commerce and Business Administration, University of Illinois, May 1987.

127. Brian, B. (2009), Working Capital Policy and Liquidity in The Small Business, *Journal of Small Business Management*, Vol 17 (3), pp. 43-51.

128. Weston, J. F. and Brigham, E. F. (1969), *Managerial Finance*, Hart & Winston, New York, Holt Rine, p. 440.

129. Walker, E. W. (1964), Towards a Theory of Working Capital, *Engineering Economist*, Jan – Feb, 1964, pp. 21-35.

130. Pandey, I. M. (2009), op. cited, p. 592.

131. Ibid, p.591.

132. Walker, E. W. (1974), *Essentials of Financial Management*, Prentice Hall of India Pvt. Ltd, New Delhi.

133. Chandra, P. (2011), *op cited*, p. 674.

134. Hyderabad R. L. (1999), Working Capital Leverage Management: Case Analysis, *Journal of Accounting and Finance*, 13(1), March 1999, pp. 96-104.

REFERENCES FOR SECTION II

1 Gaur, V., Fisher, M. L. and Raman, A. (2005), An Econometric Analysis of Inventory Turnover Performance in Retail Services, *Management Science*, Vol 51 (2), February-2005, pp. 181-194.

2 Boute, R. N., Lambrecht, M. R., Lambrechts, O. and Sterckx P. (2007), An Analysis of Inventory Turnover in the Belgian Manufacturing Industry, Wholesale and Retail and the Financial Impact of Inventory Reduction, *Available at SSRN*: http://ssrn.com/abstract=1089005.

3 Chowdhury, A. P. R. (1971), Profit Betterment Through Inventory Management, *The Management Accountant*, October 1971, pp. 567-571.

4 Shah, B.R. (1974), Investment in Inventory – A Critical Review, *The Management Accountant*, September 1974, pp. 652-658.

5 Kumar, P. (1996), Analytical Study of Inventory Management in Punjab State Electricity Board, Abstract of Doctoral Dissertation – *Finance India*, Vol X No.2, June 1996, pp. 412-415.

6 Rabiul, Alam S. M. and Hossain, Dr. S. Z. (2001), Aspects of Inventory Management in Shipbuilding Industry in Bangladesh, *The Management Accountant*, Vol 36 (9), September 2001, pp. 699-706.

7 Parmar, S. J. Dr. (2003), Performance Evaluation through Inventory Management (A Comparative Study of G. S. F. C. and G. N. F. C.), *Indian Journal of Accounting*, Vol. XXXIII, June 2003, pp. 64-68.

8 Singh, P. (2008), Inventory and Working Capital Management: An Empirical Analysis, *The Icfai Journal of Accounting Research*, Vol 7 (2), April 2008, pp 53-73.

9 Soni, Dr. A. (2012), Inventory Management of Engineering Goods Industry in Punjab: An Empirical Analysis, *Zenith International Journal of Multidisciplinary Research,* Vol. 2 (2), February 2012, pp. 247-261.

10 Gama, A. P. M. and Mateus, C. (2010), Does Trade Credit Facilitate Access to Bank Finance? Empirical Evidence from Portuguese and Spanish Small Medium Size Enterprises, *International Research Journal of Finance and Economics*, Issue 45, August 2010, pp. 26-45. ISSN – 1450-2887.

11 Suryanarayanana, S. (1975), Control of Accounts Receivables, *The Management Accountant.* February 1975, pp. 156-159.

12 Reddy, G. S., Reddy, C. S. and Reddy, P. M. (2003), Debtors' Management: A Case study of Andhra Pradesh Paper Industry, *The Management Accountant*, November 2003, pp. 810-815.

13 Shukla, H. (2007), A Study of Receivables Management of Indian Pharmaceutical Industry, *The Management Accountant*, December 2007, pp. 991-997.

14 Kannadhasan, M. (2008), Receivables Management in a Public Limited Company – A Case Study, *Presented at International Symposium on, "Management Research"*, Bharathidasan Institute of Management, Trichy – Tamilnadu – India – February 2008.

15 Nageswari, P., Bennet, E. and Selvam, M. (2011), Receivable Management of Indian Automakers in a Revived Scenario, (March 21, 2011). *Available at SSRN:* http://ssrn.com/abstract=1791942.

16 Velmathi, N. and Ganesan, Dr. R. (2011), Credit Management of Commercial Vehicle Industry, *International Journal of Research in Commerce and Management.* Vol. 2, (11), July 2011, pp. 48-52.

17 Sathyamoorthi, C. R. (1999), Cash Flow of Selected Medium Scale Enterprises in Botswana, an Empirical Study, *Finance India*, Vol XIII (3) – September 1999, pp. 873-886.

18 Acharya, S. R. (1973), A Practical Approach to Cash Management, *The Management Accountant,* June 1973, pp. 402-407.

19 Khatik, S. K. and Jain, R. (2009), Cash Management of Public Sector Undertaking – A Case Study of Madhya Pradesh State Electricity Board (MPSEB), *Delhi Business Review*, Vol. 10 (2), July – December 2009, pp. 73-82.

20 Ghosh, S. (2011), Performance Evaluation through Cash Management, *Indian Journal of Accounting,* XLII(1), December 2011, pp. 48-54.

21 Kaur, M. (2012), Cash Management of Milk Cooperatives: A Comparitive Study of MILKFED and HDDCF, *Zenith International Journal of Multidisciplinary Research,* Vol 2(2), February 2012, pp. 410-421.

22 Sagan, J. (1955), Towards a Theory of Working Capital Management, *The Journal of Finance,* May 1955, pp. 121-129.

23 Sarawat, B. P. and Agrawal, R. S. (2004), Working Capital Trends of Cement Industry in Nepal, *Indian Journal of Accounting*, Vol. XXXV (1), December 2004, pp. 26 – 35.

24 Sayaduzzaman, Md. (2006), Working Capital Management: A Study on British American Tobacco Bangladesh Company Ltd., *The Journal of Nepalese Business Studies*, Vol. III (1), December 2006, pp. 78-84.

25 Padachi, K., Narsimham M.S., Durbarry R. and Howorth C. (2008), An Analysis of Working Capital Structure and Financing Pattern of Mauritian Small Manufacturing Firms, *Icfai Journal of Applied Finance,* Vol 14 (7), pp. 42-61.

26 Sathyamoorthi, C.R. and Wally-Dima, L.B. (2008), Working Capital Management: The Case of Listed Retail Companies in Botswana, *The Icfaian Journal of Management Research*, Vol VII (5), May 2008, pp. 7-24.

27 Ojeka, S. A. (2011), Credit Policy and its Effect on Liquidity: A Study of Selected Manufacturing Companies in Nigeria, *International Journal of Research in Commerce, Economics and Management*, Vol. 2 (6), June 2011, pp. 25-30.

28 Agrawal, N. K. (1976), *Working Capital Management in India,* Unpublished Thesis. Department of Commerce, Delhi School of Economics, University of Delhi – September 1976.

29 Ansari, S. A. (1985), *Working Capital Management of Small Scale Industries – A Comparative Study of Certain Units*, Unpublished Thesis, Department of Commerce and Business Administration, University of Allahabad – January 1985.

30 Khandelwal, N. M. (1985), *Working Capital Management in Small Scale Industries*, Ashish Publishing House, New Delhi.

31 Sarkar, J. B. and Saha, S. N, (1987), Profitability Crisis and Working Capital Management in the Public Sector in India: A Case Study, *The Management Accountant*, May 1987, pp. 328-333.

32 Basu, S.N. (1992), Working Capital Management – Tyre Companies, *The Management Accountant*, May-1992, pp. 331-333.

33 Banerjee, D. and Hazra, M. K. (1992), Working Capital Management in Grasim Industries Limited– A Case Study, *Management Accountant*, May 1992, pp. 336-340.

34 Das, P.K. (1993), Working Capital Management in the Public Sector Undertaking in India - A Case Study, *The Management Accountant*, December-1993, pp. 887-892.

35 Datta, Dr. S. (1995), Working Capital Management through Financial Statements: Analysis of Paper Industry in West Bengal, *The Management Accountant*, November 1995, pp. 826-832 & 849.

36 Reddy, Dr. P.I. and Rao, K. S. (1996), Working Capital Management in Public Sector Undertakings – A Case Study, *The Management Accountant*, September-1996, pp. 643-645

37 Reddy, P. I. (1997), Liquidity Management in Public Enterprises – A Case Study, *Journal of Accounting and Finance*, Vol XI (2), Fall 1997, pp. 28-34.

38 Sur, D. (1997), Working Capital Management in Colgate Palmolive (India) Ltd.—A Case Study, *The Management Accountant*, November-1997, pp. 828-831 & 833.

39 Vijayakumar, A. (1998), A Comparative Study of Working Capital Management in Co-operatives and Private Sector Sugar Companies in the Sugar Industry of Tamil Nadu, Abstract of Doctoral Dissertation, *Finance India*, Vol. XII (4), December 1998, pp. 1119-1125.

40 Sarma, M. S. and Chary, T. (1999), Working Capital Management in VST-An Appraisal, *Finance India*, Vol XII (1), March 1999, pp. 71-79.

41 Chundawat, Dr. D.S. and Bhanawat, Dr. S. S. (2000). Working Capital Management Practices in IDBI Assisted Tyre and Tube Companies, *The Management Accountant*, Vol. 35 (2). February 2000, pp. 99-102.

42 Rajeswari, N. (2000), Liquidity Management of Tamilnadu Cement Corporation Ltd, Alangulam – A Case Study, *The Management Accountant*, Vol 35 (5), May 2000, pp. 377-378.

43 Prasad, R. S. (2000), Working Capital Management in Indian Paper Industry, Abstract of Doctoral Dissertation, *Finance India*, Vol. XIV (2), June 2000, pp. 577-580.

44 Reddy, S. H. (2001), Working Capital Management in Small Scale Industries – A Study of Cuddapah District, Andhra Pradesh, Abstract of Doctoral Dissertation, *Finance India*, Vol XV (2), June 2001, pp-658-664.

45 Sur, D. (2001), Liquidity Management: An Overview of Four Companies In Indian Power Sector, *The Management Accountant*, Vol 36 (6), June 2001, pp. 407-412.

46 Anand, M. and Gupta, C. P. (2002), Working Capital Performance of Corporate India: An Empirical Survey for the Year 2000-2001, *Available at SSRN:* http://ssrn.com/abstract=621103.

47 Khatik, Dr. S. K. and Singh, P. K. (2003), Liquidity Management in EICHER Ltd. A Case Study, *The Management Accountant*, Vol 38(3), March 2003, pp. 217-220.

48 Khatik, S. K. and Singh, P.K. (2003), Working Capital Management in Indo-Gulf Corporation Limited: A Case Study, *International Journal of Management and Systems*, Vol 19 (1), Jan-April 2003, pp. 91-100.

49 Ghosh, Dr. S. and Maji, S. G. (2004), Working Capital Management Efficiency: A Study on The Indian Cement Industry, *The Management Accountant*, Vol. 39 (5), May 2004, pp. 363-372.

50 Bardia, S. C. (2004), Liquidity Management: A Case Study of Steel Authority of India Ltd., *The Management Accountant*, Vol. 39 (6), June 2004, pp. 463-467.

51 Mukhopadhyay, Dr. D. (2004), Working Capital Management in Heavy Engineering Firms – A Case Study, *The Management Accountant*, Vol 39,

52 Singh, Dr. P. K. (2004), Working Capital Management in Lupin Laboratories Ltd. – A Case Study, *The Management Accountant*, Vol. 39.

53 Bardia, S. C. (2006), Liquidity Trends in the Indian Iron and Steel Industry: A Comparative Study of SAIL and TISCO, *The Icfai Journal of Financial Economics*, March-2006, pp. 45-53.

54 Rajendran, Dr. P. and Ramesh, D. (2006), Liquidity Management of Tamil Nadu Tourism Development Corporation Ltd – An Empirical Study, *The Management Accountant*, Vol 41 (3). March 2006 – pp. 205-208.

55 Jafar, A. and Sur, D. (2006), Efficiency of Working Capital Management in Indian Public Enterprises during the Post-Liberalization Era: A Case Study of NTPC, *The Icfaian Journal of Management Research*, Vol V(6) 2006, pp. 70-80.

56 Bhunia, A. (2007), Liquidity Management of Public Sector Iron and Steel Enterprises in India, *Vidyasagar University Journal of Commerce*, Vol. 12, March 2007, pp. 85-98.

57 Das, P. K. (2008), A Study on Liquidity Management in Ranbaxy Laboratories Ltd., *The Journal of Accounting and Finance*, Vol 22 (1), October-March 2008, pp. 145-154.

58 Ghosh, S. (2008), Liquidity Management: A Case study of TISCO Ltd, *The Management Accountant*, Vol 43 (2), February 2008, pp. 77-80 & 85.

59 Shrotiya, V. (2009), Trend Analysis of Working Capital & Sales of Dabur India Limited, *The Accounting World*, February 2009, pp-62-65.

60 Goel, S. (2009), Working Capital Management in Reliance Industries Limited, *JIMS – 8M*, Jan-March 2009, pp. 44-56.

61 Verma, A. (2009), Working Capital Management in Gujarat Cooperative Milk Marketing Federation, *The Accounting World*, April 2009, pp 45-51.

62 Joshi, A., Joshi S. and Gairola V. (2010), Comparison of Working Capital Management of Public and Private Sector Enterprises "Discussion based on Comparative Case Studies of TISCO and RINL", *Global Journal of Finance and Management*, Vol. 2 (2), pp. 173-187.

63 Janakiramudu, Dr. P. (2010), Working Capital Structure and Liquidity Analysis: An Empirical Research of Indian Commercial Vehicles Industry, *Journal of Accounting and Finance*, Vol. 24 (1), October 2009-March 2010, pp. 44-59.

64 Bhunia, Dr. A. (2010). Liquidity Management of Selected Steel Sector Companies in India, *Journal of Business Administration Online*, Vol.9 (1), Spring 2010, pp. 1-23.

65 Baig, V. A. (2010), Working Capital Management of Selected Agribusiness Firms: Study in Indian Context, Abstract of Doctoral Dissertation – *Finance India*, Vol XIIV (2), June 2010, pp. 529-534.

66 Bardia, S. C. and Kastiya, S. (2010), Liquidity Management and Control: A Comparative Study of Torrent Pharma and Cipla, *The IUP Journal of Accounting Research & Audit Practices*, Vol IX (3), July 2010, pp. 81-91.

67 Bhunia, Dr. A. (2010), A Trend Analysis of Liquidity Management Efficiency in Selected Private Sector Indian Steel Industry, *International Journal of Research in Commerce and Management*, Vol-1 (5), September 2010, pp. 48-53. ISSN 0976-2183.

68 Jaiswal, Dr. B., Nigam, N. and Pandey, S. (2010), Liquidity Management (A Case Study of Ranbaxy Laboratories Ltd.), *Available on* http://www.sherwoodindia.in/PDF%20ManagementToday%202010/LIQUIDITY%20MANAGEMENT.pdf.

69 Kantawala, A. S. and Joshi, M. N. (2010), Analysis of Components of Current Assets With Reference to the Steel Industry in India, *Management Trends*, Vol. 7 (2) – September 2010, pp. 65-78.

70 Rao, Dr. C. V., Rao, Dr. K. C. and Azhagaiah, Dr. R. (2010), Trends and Patterns of Efficiency of WC Utilization: Empirical Results on the Application of Indices, *Journal of Financial Management and Analysis*, Vol. 23 (2), July – December 2010.

71 Patidar, M. (2011), An Analysis of Working Capital Management of Nahar Spinning Mills Ltd., *Shodh Anusandhan Samachar*, February 2011, pp. 12-20.

72 Khatik, Dr. S. K. and Varghese, T. (2011), Solvency Analysis of Public Sector Undertaking: A Case Study of Power Finance Corporation Limited (PFCL), *International Journal of Research in Commerce, Economics and Management*, Vol.1 (1), May 2011, pp. 64-70.

73 Untwal, N. (2011), Working Capital Management of Indian Tools Limited with Special Reference to Tool Industry, *Indian Journal of Commerce and Management Studies*, Vol.2, Issue 4, May 2011, pp. 70-76.

74 Ramanaiah, Dr. G. (2011), Liquidity Management in MAA Fruits Pvt. Ltd., *International Journal of Research in Commerce and Management*, Vol. 2 (6), June 2011, pp. 68-71.

75 Bhunia, Dr. A. (2011), A Study of Managing Liquidity, *Journal of Management Research* (Macrothink Institute), Vol. 3 (2), July – 2011, pp. 1-21. ISSN 1941-899X.

76 Chandrabai, T. and Rao, Dr. K. V. J. (2011), Working Capital Management of Indian Electrical Equipment Manufacturers – A Comparative Study, *Zenith International Journal of Multidisciplinary Research*, 1(8), December 2011, pp. 460-469.

77 Alrjoub, A. M. S., Alrabei, A. M. A., Salesh, M. M. A. and Alrawashdeh, O. A. M. (2012), Working Capital Management in Cement Units in Rajhasthan, *Middle Eastern Finance and Economics*, Issue 16, pp. 110-121.

78 Jose, M. L., Lancaster, C. and Stevens, J. L. (1996), *Corporate Returns and CCC, Journal of Economics and Finance*, Vol 20 (1), pp. 33-46.

79 Smith, M. B. (1997), Significance Testing for Cross Sectional Influences in Working Capital in Industrial Firms Listed on Johannesburg Stock Exchange, *Journal of Financial Management and Analysis*, Vol. 10 (2). July-Dec 1997, pp. 33–36.

80 Shin, H. H. and Soenen, L. (1998), Efficiency of Working Capital and Corporate Profitability, *Financial Practice and Education*, Fall/Winter 1998, pp. 37-45.

81 Lyroudi, K. and Lazaridis, Y. (2000), The CCC and Liquidity Analysis of the Food Industry in Greece (June 2000). EFMA 2000, Athens. *Available at SSRN*: http://ssrn.com/abstract=236175.

82 Wang, Y. J. (2002), Liquidity Management, Operating Performance, and Corporate Value: Evidence from Japan and Taiwan, *Journal of Multinational Financial Management*, Vol. 12 (2002), pp. 159–169.

83 Yucel, Dr. T. and Kurt, G. (2002), Cash Conversion Cycle, Cash Management and Profitability: An Empirical Study on the ISE Traded Companies, *ISE Review*, Vol 6 (22), April – June 2002, pp. 1-15.

84 Deloof, M. (2003), Does Working Capital Management Affect Profitability of Belgian Firms? *Journal of Business, Finance and Accounting*, Vol. 30 (3&4) – April/May, pp. 573-587.

85 Eljelly, A. M. A. (2004), Liquidity-Profitability Tradeoff: An Empirical Investigation in an Emerging Market, *International Journal of Commerce and Management*, Vol. 14 (2), June-2004. pp. 48-61.

86 Lazaridis, I., & Tryfonidis, D. (2006), Relationship between Working Capital Management and Profitability of Listed Companies in the Athens Stock Exchange, *Journal of Financial Management and Analysis*, Vol. 19 (1), pp. 26-35.

87 Zainuddin, N. (2006), Liquidity – Profitability Trade-off: Is it Evident among Malaysian SMEs?, *IJMS*, Vol 13 (2), pp. 107–118.

88 Padachi, K. (2006), Trends in Working Capital Management and Its Impact on Firms' Performance: An Analysis of Mauritian Small Manufacturing Firms, *International Review of Business Research Papers*, Vol 2, October 2006, pp. 45-58.

89 Shah, A. S. M. and Sana, A. (2006), Impact of Working Capital Management on the Profitability of Oil and Gas Sector of Pakistan, *European Journal of Scientific Research*, November 2006, Vol 15 (3), pp. 301-307.

90 Teruel, G. J. and Solano, M. (2007), Effects of Working Capital Management on SME Profitability, *International Journal of Managerial Finance*, Vol 3 (2), pp. 164-177.

91 Raheman, A. & Nasr, M. (2007), Working Capital Management and Profitability – Case of Pakistani Firms, *International Review of Business Research Papers*, Vol 3 (1), March 2007, 279-300.

92 Ganesan, V. (2007), An Analysis of Working Capital Management Efficiency in Telecommunication Equipment Industry, *Rivier Academic Journal*, Vol-3 (2), Fall, pp 1-10.

93 Samiloglu, F. and Demirgunes, K. (2008), The Effect of Working Capital Management on Firm Profitability: Evidence from Turkey, *International Journal of Applied Economics and Finance*, Vol 2 (1), pp. 44-50. ISSN 1991-0886.

94 Toby, A. J. (2008), Liquidity Performance Relationship in Nigerian Manufacturing Companies (1990-2002), *Finance India*, Vol XXII (1), March 2008, pp. 117-131.

95 Uyar, A. (2009), The Relationship between CCC with Firm Size and Profitability: An Empirical Investigation in Turkey, *International Research Journal of Finance and Economics,* Issue 24 – February 2009, pp. 186-193. ISSN 1450-2887.

96 Nobanee, H. and Al-Hajjar, M. (2009a), A Note on Working Capital Management and Corporate Profitability of Japanese Firms (July 13, 2009), *Available at SSRN*: http://ssrn.com/abstract=1433243.

97 Falope, O. I. and Ajilore, O. T. (2009), Working Capital Management and Corporate Profitability: Evidence from Panel Data Analysis of Selected Quoted Companies in Nigeria, *Research Journal of Business Management*, Vol 3 (3), pp. 73-84, ISSN 1819-1932.

98 Nobanee, H. (2009b), Working Capital Management and Firm's Profitability: An Optimal CCC, (September 10, 2009), *Available at SSRN*: http://ssrn.com/abstract=1471230.

99 Nobanee, H. and Al-Hajjar, M. (2009c), Working Capital Management, Operating Cash Flow and Corporate Performance, (September 10, 2009), *Available at SSRN:* http://ssrn.com/abstract=1471236

100 Sen, M. and Oruc, E. (2009), Relationship between Efficiency Level of Working Capital Management and Return on Total Assets in ISE, *International Journal of Business and Management*, Vol.4 (10), October 2009. pp. 109-114.

101 Zariyawati, M. A., Annuar, M. N., Taufiq, H. and Abdul Rahim, A. S. (2009), Working Capital Management and Corporate Performance: Case of Malaysia, *Journal of Modern Accounting and Auditing*, Vol.5 (II) (Serial No. 54), November 2009, pp. 47-54. ISSN 1548-6583, USA.

102 Nobanee, H. and Al-Hajjar, M. (2009d). Optimizing Working Capital Management. December 28, 2009. Available at SSRN: http://ssrn.com/abstract=1528894.

103 Danuletiu, A. E. (2010), Working Capital Management and Profitability: A Case of Alba County Companies, *Annales Universitatis Apulensis Series Oeconomica*, Vol. 12(1), pp. 364-374.

104 Gill, A., Biger, N. and Mathur, N. (2010), The Relationship between Working Capital Management and Profitability: Evidence from the United States, *Business and Economics Journal*, Vol 2010, pp. 1-9.

105 Mathuva, D. (2010), The Influence of Working Capital Management Components on Corporate Profitability: A Survey on Kenyan Listed Firms, *Research Journal of Business Management*, Vol. 4(1), pp. 1-11, ISSN 1819-1932.

106 Karaduman, H. A., Akbas, H. E., Ozsozgun, A. and Durer, S. (2010), Effects of Working Capital Management on Profitability: The Case for Selected Companies in Istanbul Stock Exchange (2005-2008), *International Journal of Economics and Finance Studies*, Vol. 2 (2), pp. 47-54, ISSN: 1309-8055.

107 Hayat, A. and Bhatti, I. (2010), Sources of Variation in Firm Profitability: Evidence from Listed Manufacturing Firms. *Presented at 17th Annual Meeting of the Multinational Finance Society*, Barcelona, Spain – 27th to 30th June 2010.

108 Nobanee, H., Abdullatif, M. and Alhajjar, M. (2010), CCC and Firm's Performance of Japanese Firms, (19th July, 2010), *Available at SSRN*: http://ssrn.com/abstract=1645118.

109 Dong, H. P. and Su, J. T. (2010), The Relationship between Working Capital Management and Profitability: A Vietnam Case, *International Research Journal of Finance and Economics,* Issue 49 (4), September 2010, pp. 62-71. ISSN 1450-2887.

110 Morakawage, P. S. and Lakshan, A. M. I. (2010), Determinants of Profitability Underlining the Working Capital Management and Cost Structure of Sri Lankan Companies, Presented at *International Conference of Business and Information* – 21st October 2010, University of Kelaniya, Sri Lanka.

111 Nassirzadeh, F. and Rostami, M. (2010), Studying the Relationship between Liquidity Indices (traditional and modern) and the Profitability of Companies Listed in Tehran Stock Exchange, *http://www.aea.am/files/papers/w1110.pdf*, accessed during June 2012.

112 Raheman, A., Afza T., Qayyum A. and Bodla M. A. (2010a), Working Capital Management and Corporate Performance of Manufacturing Sector in Pakistan, *International Research Journal of Finance and Economics*, Issue 47, October - 2010, pp. 156-169.

113 Telmoudi, A., Jameleddine, Z. and Noubbigh, H. (2010), Factors determining Operating Cash Flow: Case of the Tunisian Commercial Companies, *International Journal of Business and Management*, Vol. 5 (10), October 2010, pp. 188-200.

114 Zubairi, H. J. and Baig, A. M. (2010), Impact of Working Capital Management and Capital Structure on Profitability: The Case of KSE Quoted Automobile Firms, *Pakistan Business Review*, October 2010, pp. 444-467.

115 Azhar, M. N. E. B. and Saad, N. B. M. (2010), Working Capital Management: The Effect of Market Valuation and Profitability in Malaysia, *International Journal of Business and Management*, Vol. 5 (11), November 2010, pp. 140-147, ISSN 1833-3850.

116 Raheman, A., Afza T., Qayyum A. and Bodla M. A. (2010b), Sector-Wise Analysis of Working Capital Management and Firm Performance of Manufacturing Sector in Pakistan, *Interdisciplinary Journal of Contemporary Research in Business*, Vol. 2 (7), November 2010, pp. 412-437.

117 Alipour, M. (2011), Working Capital Management and Corporate Profitability: Evidence from Iran, *World Applied Sciences Journal*, Vol. 12 (7), pp. 1093-1099, ISSN: 1818-4952.

118 Karaduman, H. A., Akbas, H. E., Caliskan, A. O. and Durer, S. (2011), The Relationship between Working Capital Management and Profitability: Evidence from an Emerging Market, *International Research Journal of Finance and Economics*, Issue 62, January 2011, pp. 61-67, ISSN: 1450-2887.

119 Enqvist, J., Graham, M. and Nikkinen, J. (2011), The Impact of Working Capital Management on Firm Profitability in Different Business Cycles: Evidence from Finland, (March 25, 2011), *Available at SSRN*: http://ssrn.com/abstract=1794802.

120 Alam, H. M., Ali, L., Rehman, A. and Akram, M. (2011), Impact of Working Capital Management on Profitability and Market Valuation of Pakistani Firms, *European Journal of Economics, Finance and Administrative Sciences*, Issue 32, May 2011, pp. 49–54.

121 Hayajneh, O. S. and Yassine, F. L. A. (2011), The Impact of Working Capital Efficiency on Profitability – An Empirical Analysis of Jordanian Manufacturing Firms, *International Research Journal of Finance and Economics*, Issue 66, May 2011, pp. 67-76.

122 Bieniasz, A. and Golas, Z. (2011), The Influence of Working Capital Management on the Food Industry Enterprises Profitability, *Contemporary Economics*, 5(4), pp. 68-81.

123 Haq, I., Sohail, M., Zaman, K. and Alam, Z. (2011), The Relationship between Working Capital Management and Profitability: A Case Study of Cement Industry in Pakistan, *Mediterranean Journal of Social Sciences*, Vol 2 (2), May 2011, pp. 365–372.

124 Quayyum, S. T. (2011), Effects of Working Capital Management and Liquidity: Evidence from the Cement Industry of Bangladesh, *Journal of Business and Technology*, Vol 6 (1), January-June 2011, pp. 37 – 47.

125 Al-Debi'e, M. M. (2011), Working Capital Management and Profitability: The Case of Industrial Firms in Jordan, *European Journal of Economics, Finance And Administrative Sciences*, Issue 36, July 2011, pp. 75-86.

126 Saleem, Q. and Rehman R. (2011), Impacts of Liquidity Ratios on Profitability (Case of Oil and Gas Companies of Pakistan), *Interdisciplinary Journal of Research in Business*, Vol 1 (7), July 2011, pp.95-98.

127 Ali, S. (2011),Working Capital Management and the Profitability of the Manufacturing Sector: A Case Study of Pakistan's Textile Industry, *The Lahore Journal of Economics*, Vol 16 (2), Winter 2011, pp. 141–178.

128 Lingesiya, Y. and Nalini S. (2011), Working Capital Management and Firms' Performance: An Analysis of Sri Lankan Manufacturing Companies, *Presented at International Conference on Business and Information (ICBI)* on 20th October, 2011, University of Kelaniya, SriLanka.

129 Garcia, J. F. L., Da Silva Martins, F. V. and Brandão, E. F. M. (2011), The Impact of Working Capital Management upon Companies' Profitability: Evidence from European Companies, *FEP Working Papers* 438, November – 2011.

130 Khan, M. I., Akash, R. S. I., Hamid K. and Hussain F., (2011), Working Capital Management and Risk- Return Trade off Hypothesis: (Empirical Evidence from Textile Sector of Pakistan), *European Journal of Economics, Finance and Administrative Sciences*, Issue 40, November 2011, pp. 146–152.

131 Mojtahedzadeh, V., Tabari S. H. A. and Mosayebi R. (2011), The Relationship between Working Capital Management and Profitability of the Companies (Case Study: Listed Companies on TSE), *International Research Journal of Finance and Economics*, Issue 76, pp. 158-166.

132 Afeef, M. (2011), Analyzing the Impact of Working Capital Management on the Profitability of SME's in Pakistan, *International Journal of Business and Social Science,* Vol 2 (22), December 2011, pp. 173-183.

133 Raheman, A., Qayyum, Dr. A. and Afza, Dr. T. (2011), Sector-wise Performance of Working Capital Management Measures and Profitability using Ratio Analysis, *Interdisciplinary Journal of Contemporary Research in Business,* Vol 3(8), December 2011, pp. 285-310.

134 Saghir, A., Hashmi, F. M. and Hussain, M. N. (2011), Working Capital Management and Profitability: Evidence From Pakistan Firms, *Interdisciplinary Journal of Contemporary Research in Business*, Vol. 3 (8), December 2011, pp. 1092 – 1105.

135 Abbasi, D. and Bosra, S. A. H. (2012), The Effect of Cash Conversion Cycle on Profitability in Tehran Stock Exchange, *World Research Journal of Financial Economics and Stochastics,* Vol 1 (1), January 2012, pp. 01-07.

136 Quayyum, S. T. (2012), Relationship between Working Capital Management and Profitability in Context of Manufacturing Industries in Bangladesh, *International Journal of Business and Management*, Vol 7 (1), January 2012, pp. 58 – 69.

137 Farzinfar, A. A. and Arani, A. G. (2012), The Assessment of the Effect of Working Capital Management on the Profitability of Pharmaceutical Companies of Tehran Stock Exchange, *American Journal of Scientific Research,* Issue 48, pp. 121-129.

138 Khan, Z., Jawaid, S. T., Arif, I. and Khan, M. N. (2012), Working Capital Management and Firm's Profitability in Pakistan: A Disaggregated Analysis, *African Journal of Business Management*, 6 (9): March 2012, pp. 3253-3261.

139 Ahmed, I. (2012), Impact of Working Capital Management on Performance of Listed Non Financial Companies of Pakistan: Application of OLS and LOGIT Models, *Proceedings of 2nd International Conference on Business Management*, pp. 1-21. ISBN: 978-969-9368-06-6.

140 Kaddumi, T. A. and `an I. Z., (2012), Profitability and Working Capital Management The Jordanian Case, *International Journal of Economics and Finance*, Vol 4 (4), April 2012, pp. 217 – 226.

141 Pouraghajan A. and Emamgholipourarchi M. (2012), Impact of Working Capital Management on Profitability and Market Evaluation: Evidence from Tehran Stock Exchange, *International Journal of Business and Social Science,* Vol 3 (10), May 2012, pp. 311-318.

142 Napompech, K. (2012), Effects of Working Capital Management on the Profitability of Thai Listed Firms, *International Journal of Trade, Economics and Finance,* Vol 3 (3), June 2012, pp. 227-232.

143 Ahmadi, M., Arasi, I.S. and Garajafary, M. (2012), Studying the Relationship between Working Capital Management and Profitability at Tehran Stock Exchange: A Case Study of Food Industry, *Research Journal of Applied Sciences, Engineering and Technology*, Vol 4 (13), July 2012, pp.1868-1874.

144 Ogundipe, S. E., Idowu, A. and Ogundipe, L. O. (2012), Working Capital Management, Firms' Performance and Market Valuation in Nigeria, *International Journal of Social and Human Sciences*, Vol 6, pp. 143 – 147.

145 Owolabi, S. A. and Alayemi, S. A. (2012), The Study of Working Capital Management as a Financial Strategy (A Case Study of Nestle Nigeria Plc), *Asian Journal of Business and Management Sciences,* Vol 2 (2), pp. 19-26.

146 Azam, M. and Haider, S. I. (2011), Impact of Working Capital Management on Firms' Performance: Evidence from Non-Financial Institutions of Kse-30 Index, Vol 3 (5), September 2011, pp. 481 – 492.

147 Sial, M. S. and Chaudhry, A. (2012), Relationship between Working Capital Management and Firm Profitability: Manufacturing Sector of Pakistan (July 13, 2012), *Available at SSRN*: http://ssrn.com/abstract=2105638.

148 Uwuigbe, O., Uwuigbe, U and Egbide, B. C. (2012), Cash Management and Corporate Profitability: A Study of Selected Listed Manufacturing Firms in Nigeria, *AUDOE* – ACTA UNIVERSITATIS DANUBIUS, Vol 8 (1), pp. 49-59,

149 Khan, M. and Sajjad, A. (2012), Linkages of Liquidity and Profitability: Evidence from Fertilizer Sector of Pakistan, *American Journal of Scientific Research,* Issue 72, pp. 142-148.

150 Panigrahi, Dr. J. (1990), Working Capital Management: Case of Large Indian Companies, *The Management Accountant*, October 1990, pp. 653-656.

151 Vijayakumar, A. and Venkatachalam, A. (1996), Responsiveness of Working Capital Management – A Case Study of Tamilnadu Sugar Corporation, *Finance India*, Vol. X (3), September 1996, pp. 647-655.

152 Mallick, A. K. and Sur, D. (1998), Working Capital and Profitability: A Case Study in Interrelation, *The Management Accountant*, November 1998, pp. 805-809.

153 Mallick, A. K. and Sur, D. (1999), Working Capital Management: A Case Study of Hindustan Lever Ltd, *Finance India*, Vol XIII (3), September 1999, pp. 857-871.

154 Bhayani, Dr. S. (2004), Working Capital and Profitability Relationship (A Case Study of Gujarat Ambuja Cements Ltd), *SCMS Journal of Indian Management*, April – June 2004, pp. 98 – 111.

155 Narware, P. C. (2004), Working Capital and Profitability: An Empirical Analysis, *The Management Accountant*, Vol. 39 (6), June 2004, pp. 491-493.

156 Vishnani, S. and Shah, B. K. (2006), Liquidity V/s. Profitability – A Detailed Study in Perspective of Indian Consumer Electronics Industry, *Pranjana*, Vol 9 (2), July – Dec 2006, pp. 13-20.

157 Kannadhasan, M. (2007), Working Capital Management in a Public Limited Company – A Case Study, *The Icfaian Journal of Management Research*, Vol 6 (5), May 2007, pp 20-33.

158 Luther, C. T. Sam (2007), Liquidity, Risk and Profitability Analysis – A Case Study of Madras Cements Ltd, *The Management Accountant*, Vol 42 (10). October 2007, pp. 784-789.

159 Singh, J. P. and Pandey, S. (2008), Impact of Working Capital Management in the Profitability of Hindalco Industries Limited, *The Icfai University Journal of Financial Economics*, Vol 6 (4), December 2008, pp. 62-72.

160 Azhagaiah, R. and Janakiraman, M. (2009), The Relationship Between Working Capital Management Efficiency and EBIT, *Managing Global Transitions*, Vol 7 (1), Spring 2009, pp. 61-74.

161 Arunkumar, O. N. and Jayakumar, S. (2010), Effects of Working Capital Management on the Profitability of Major Public Sector Electrical Industries in Kerala, *Proceedings of International Conference on Materials, Mechanics and Management*, 14th – 16th January, 2010, College of Engineering, Trivandrum, Kerala, pp. 1094-1101.

162 Sofat, R. (2010), A Study of Liquidity, Profitability and Risk Analysis of Cement Industry in India, *International Journal of Research in Commerce and Management*, Vol 1 (4), August 2010, pp. 142-161.

163 Mandal, N. and Goswami, S. (2010), Impact of Working Capital Management on Liquidity, Profitability and Non Insurable Risk and Uncertainty Bearing: A Case Study of Oil and Natural Gas Commission (ONGC), *Great Lakes Herald*, Vol.4 (2), September 2010, pp. 21-42.

164 Saini, A and Saini, R. D. (2010), Analysis of Liquidity Management And Trade-off Between Liquidity, Risk and Profitability: An Empirical Study, *Journal of Accounting and Finance*, Vol 24 (2), April – September 2010, pp. 29-42.

165 Chawla, P., Harkawat, S. and Khairnar, I. (2010), Working Capital Management and Profitability – Case of Indian Petrochemicals Company – RIL, HPCL, GAIL, *International Journal of Research in Commerce and Management*, Vol 1 (6), October 2010, pp. 90-95. ISSN 0976-2183.

166 Rajesh, M. and Reddy, N.R.V. R. (2011), Impact of Working Capital Management on Firm's Profitability, *Global Journal of Finance and Management*, Vol.3 (1), pp. 151-158. ISSN – 0975-6477.

167 Nandi, Dr. K.C. (2011), Impact of Working Capital Management on Profitability (A Case Study of National Thermal Power Corporation Limited), *The Management Accountant*, Vol 46 (1), January 2011, pp. 22-27.

168 Bhattacharjee B. J. (2011), An Empirical Investigation into the Determinants of Financial Performance of Indian Corporate Sector: Size, Growth, Liquidity, Profitability, Dividend, Leverage, *International Journal of Research in Computer Application and Management*, Vol. 1 (2), April 2011, pp. 133-142.

169 Bhunia, Dr. A. (2011), Short Term Liquidity Management – A Study of Indian Steel Companies, *Indian Journal of Commerce & Management Studies*, Vol. 2 (4), May 2011, pp. 151-166.

170 Goswami, S. and Sarkar, A. (2011), Liquidity, Profitability Analysis of Indian Airways Sector – An Empirical Study, *International Journal of Research in Commerce and Management*, Vol. 2 (6), June 2011, pp. 116-122.

171 Bhunia, A. and Brahma, B. (2011), Importance of Liquidity Management of on Profitability, *Asian Journal of Business Management*, Vol 3 (2), March 2011, pp. 108-117.

172 Vijayakumar, Dr. A. (2011), Cash Conversion Cycle and Corporate Profitabiltiy – An Empirical Enquiry in Indian Context, *International Journal of Research in Commerce, IT and Management*, Vol 1 (2), July 2011, pp. 84-91.

173 Kumar, S. M., Azash, S. M. and Ramana, N. V. (2011), Relationship between Working Capital and Profitabiltiy: An Empirical Analysis, *International Journal of Research in Commerce, IT and Management*, Vol 1 (7), December 2011, pp. 77-80.

174 Bagchi, B. and Khamrui, B. (2012), Relationship between Working Capital Management and Profitability: A Study of Selected FMCG Companies in India, *Business and Economics Journal*, Vol. 2012, pp. 1-11.

175 Nandi, K. C. (2012), Trends in Liquidity Management and Their Impact on Profitability: A Case Study, *Great Lakes Herald*, Vol 6 (1), March 2012, pp. 16 – 30.

176 Sabunwala, Z. Z. (2012), A Study of Impact of Working Capital Management on Firm's Performance: Evidence from Cement Industry in India from 2007-2011, *International Journal of Research in Commerce and Management*, Vol 3 (6), June 2012, pp. 115–120.

177 Gardner, M. J., Mills, D. L. and Pope, R.A. (1986), Working Capital Policy and Operating Risk: An Empirical Analysis, *The Financial Review*, Vol 21 (3), pp. 31-31.

178 Belt, B. (1991), Working Capital Policy and Liquidity in the Small Business, *Journal of Small Business Management*, pp. 43-51.

179 Hossain, Dr. S. Z. and Akon, Md. H. R. (1997), Financing of Working Capital: A Case Study of Bangladesh Textile Mills Corporation, *Journal of Financial Management and Analysis*, July – Dec 1997, Vol 10 (2), pp. 37–43.

180 Weinraub, H. J. and Visscher, S. (1998), Industry Practice Relating To Aggressive Conservative Working Capital Policies, *Journal of Financial and Strategic Decision*, Vol 11(2), Fall-1998, pp. 11-18.

181 Cote, J. M. and Latham, C. K. (1999), The Merchandising Ratio: A Comprehensive Measure of Working Capital Strategy, *Issues in Accounting Education*, Vol. 14 (2), May 1999, pp. 254-267.

182 Filbeck, G. & Krueger, T. M. (2005), An Analysis of Working Capital Management Results across Industries, *Mid-American Journal of Business*, Vol 20 (2), pp 10-17.

183 Sathyamoorthi, C. R. (2002), The Management of Working Capital in Selected Co-operatives in Botswana, *Finance India*, Vol XVI (3), September 2002, pp. 1015-1034.

184 Salawu, R. O. (2006), Industry Practice and Aggressive Conservative Working Capital Policies in Nigeria, *European Journal of Scientific Research*, March 2006, Vol. 13 (3), pp. 294-304.

185 Afza, T. and Nazir, M. S. (2007), Working Capital Management Policies of Firms: Empirical Evidence from Pakistan, *Presented at 9th South Asian Management Forum (SAMF)* on February 24-25 2007, North South University, Dhaka, Bangladesh.

186 Afza, T and Nazir, M S (2007), Is it better to be aggressive or Conservative in Managing Working Capital? *Journal of Quality and Technology Management*, Vol 3 (2), pp 11-21.

187 Chowdhury, A. and Mohd., M. A. (2007), Working Capital Management Practiced in Pharmaceutical Companies Listed in Dhaka Stock Exchange, *BRAC University Journal*, Vol. IV (2), 2007, pp. 75-86.

188 Afza, T. and Nazir, M. S. (2008), Working Capital Approaches and Firm's Returns in Pakistan, *Pakistan Journal of Commerce and Social Sciences*, Vol.1, pp 25-36.

189 Boisjoly, R. P. (2009), The Cash Flow Implications of Managing Working Capital and Capital Investment, *Journal of Business and Economic Studies*, Vol 15 (1), Spring 2009, pp. 98-108.

190 Afza, T. and Nazir, M. S. (2009), Impact of Aggressive Working Capital Management Policy on Firms' Profitability, *The IUP Journal of Applied Finance*, Vol 15 (8), August 2009, pp 19-30.

191 Al-Shubiri, F. N. (2010), Analysis the Relationship between Working Capital Policy and Operating Risk: An Empirical Study on Jordanian Industrial Companies, *Investment Management and Financial Innovations*, Vol 7 (2), pp. 167–176.

192 Shah S., Amjad S., Hasnu S. A. F. and Shah S. M. A. (2010), Financing the Current Assets: Approch followed by Small and Medium Enterprises in Pakistan, *Interdisciplinary Journal of Contemporary Research in Business*, Vol 2 (7), November 2010, pp. 136-144.

193 Al-Shubiri, F. N. (2011), The Effect of Working Capital Practices on Risk Management: Evidence From Jordan, *Global Journal of Business Research,* Vol 5 (11), pp. 39-54.

194 Magpayo, C. L. (2011), Effect of Working Capital Management and Financial Leverage on Financial Performance of Philippine Firms, *In proceedings of 13th International Research Conference at Melbourne*, Published by World Business Institute, Australia.

195 Al-Mwalla, M. (2012), The Impact of Working Capital Management Policies on Firm's Profitability and Value: The Case of Jordan, *International Research Journal of Finance and Economics,* Issue 85, pp. 147 – 153.

196 Hussain, A., Farooq, S. U. and Khan, K. U. (2012), Aggressiveness and Conservativeness of Working Capital: A Case of Pakistani Manufacturing Sector, *European Journal of Scientific Research*, Vol 73 (2), pp. 171 – 182.

197 Islam, M. N. and Mili, S. A. (2012), Working Capital Investment and Financing Policies of Selected Pharmaceutical Companies in Bangladesh, *Research Journal of Finance and Accounting,* Vol 3 (4), pp. 1-8.

198 Vahid, T. K., Mohsen, A. K. and Mohammadreza, E. (2012), The Impact of Working Capital Management Policies on Firm's Profitability and Value: Evidence from Iranian Companies, *International Research Journal of Finance and Economics,* Issue 88, pp. 155 – 162

199 Agrawal, H. L. (1984), Working Capital Policy-Developing an Analytical Model, *The Management Accountant*, February-1984, pp. 68-69.

200 Pradhan, R. (1986), Financing Pattern of Working Capital in Indian Industries, *The Management Accountant*, April 1986, pp. 205-206.

201 Chitnis, K. M. (1988). *Working Capital Management of Large Industrial Units*, Dastane Ramchandra & Co. New Delhi.

202 Majumdar, C. (1996), Borrowing as a Source of Financing Working Capital in the Corporate Sector in India: An Empirical Analysis, Abstract of Doctoral Dissertation – *Finance India*, Vol X (1), March 1996, pp. 103–107.

203 Babu, Dr. T. K. S and Jain, P. K. (1999), Short Term and Long Term Debt Financing in India – An Empirical Study of the Private Corporate Sector, *The Management Accountant*, February 1999, pp. 107-114.

204 Hyderabad, R. L. (1999). WCL Management: Case Analysis, *Journal of Accounting and Finance*, Vol 13 (1), March 1999, pp. 96-104.

205 Hyderabad, R. L. (1999), Evaluation of Working Capital Investment and Financing Policies of Large Public Limited Companies in India, *Finance India*, Vol XIII (3), September 1999, pp. 837-847.

206 Rao, D. G. (2001), Working Capital Management through Fund Flow Statement: An Analysis of Cement Industry. *In Working Capital Management edited by Pramanik and Rao. Deep and Deep Publications*, New Delhi, pp. 127-146.

207 Luther, C. T. Sam (2007), Madras Cements Limited-Working Capital Policies, *Icfai Reader*, August 2007, pp. 55-67.

208 Yadav, R., Kamath, V. and Manjrekar, Dr. P. (2009), Working Capital Management: A Study of Maharashtra's Bulk Drugs Listed Companies, *Chemical Business*, July 2009, pp. 27- 34.

209 Singh, K. and Chekol, F. (2009), Working Capital Management: Comparison of Policies and Performance, *The Indian Journal of Commerce*, December 2009. Vol. 62 (4), pp. 34-44.