Article can be accessed online at http://www.publishingindia.com

CASH MANAGEMENT IN IT SECTOR - A STUDY

Somnath Das*

Abstract *Cash plays a very important role in modern business, specifically a new one. Cash is the life blood of every business. Cash may be in the form of liquid money, bank balance etc. In this respect, cash management is both art as well as science of managing a company's short-term resources for its ongoing activities, mobilising funds and optimising liquidity. In this contest another important concept which is related with the cash management is the Treasury technique which emphasizes the liquidity by different factors and processes which convert immediately into cash for increasing profitability. Inefficient cash management may lead the company to bankruptcy. In this paper we highlighted different perspectives by which we can control the corporate cash of the company from Cash Conversion Cycle, Cash Flow, and Creditworthiness point of view. In this paper we tried to interlink among them to control and manage cash well, so that bankruptcy can be prevented and profitability should be improved.*

Keyword: *Cash Management, Treasury Management, Cash Conversion Cycle, Cash Holding and Creditworthiness*

INTRODUCTION

Cash performs various functions in our day-to-day life. It is a reservoir from which money may be used to meet emergencies (Bari, 1981). Now a days, business uses credit instead of cash in its routine work. The use of bills, draft, credit cards, debit cards, ECS, fund transfer through Internet etc. replaces the use of coin and paper currency (Bradley, 1974). Sometimes, the term 'cash' refers to the currency plus bank A/C balances held at different commercial banks (Brandt, 1965; Clarkson, Elliott, & Johnson, 1972; Driscoll, 1983).

It is both art as well as science of managing a company's short-term resources to sustain its ongoing activities, mobilise funds, and optimise liquidity (Kim, Mauer, & Sherman, 1998; Chiou, Cheng, & Wu, 2006). Lack of cash may lead the company to bankruptcy. Therefore, efficient cash management does not mean to prevent bankruptcy but it helps to improve the profitability and reduces the risk of company (Ferreira & Vilela, 2004; Jensen, 1986; Kalcheva & Lins, 2007).

Cash management is particularly important for new and growing business. Cash flow can be a problem even when a small business has numerous clients, offers a superior product to its customers and enjoys a sterling reputation in its industry. It creates a problem for innovation or expansion of the business (Coyel, 2000). Another important concept which is related to the cash management is the Treasury management. Treasury management is known as a set of techniques which give emphasis on the liquidity of a company by affecting the factors and processes which convert immediately into cash with the objective of increasing the profitability and improving the working capital management (Nunn, 1981; Cohen & Robbins, 1966).

In this study we focused on Cash Conversion Cycle. The term Cash Conversion Cycle can be considered a length of time between purchase of raw-materials and collection of cash from debtors. In liquidity management Cash Conversion Cycle is an important parameter for measuring its efficiency. Cash Conversion Cycle of a company indicates the efficiency of managing working capital (Fazzari & Petersen, 1993; Guney, Ozkan, & Ozkan, 2007).

Regulation of cash flow is known as cash control. The main techniques of controlling cash flows are Accelerating Cash Inflows and Control over Cash Payments. Accelerating cash flow can be done with the help of three methods viz. centralisation of cash functions, internal control over cash receipts, and streamlining of banking arrangements. Concentration banking and lock-box system helps the streamlining of banking arrangements (Dittmar & Mahrt-Smith, 2007).

A good cash management system must have an organisational frame work which controls the cash flow. Such framework identifies who is responsible for particular function viz. collecting cash, payment authorisation, making payments, bank accounts and funds transfer between accounts, arranging overdraft facilities and loans, investing cash surpluses and foreign currency transaction (Emery, 1987; Myers, 1977; Myers & Majluf, 1984).

* Assistant Professor in Commerce, Rabindra Mahavidyalaya, Champadanga, Hooghly, West Bengal, India.
Email: somnath211@yahoo.co.in

Credit availability can solve both these problems. But, use of credit is a complex idea. Common people have wrong conception or negative idea about uses and application of credit. 'Buy now-pay later' or promise to pay in future for immediate goods existed in the earlier agricultural societies. Giving credit means you are taking risk. Credit analysis is actually the risk analysis. The credit analyst must consider the nature and type of the business as well as the applicant in his personal judgment.

It is the age of credit. Nothing can be possible in the world of business, without the liberal extension of credit. In most of the cases it is seen that information pertinent to the credit decision making is not available from the credit applicant. Then the companies are taking decision on the basis of past experience or the general impression of the customer. Proper evaluation of risk regarding credit granting decision becomes very important before the commencement of sales because once the credit is accepted by creditor organisation of its credit applicant, servicing and loss mitigation technique can control the future losses only to a limited extent. The pros and cons of the situation can affect the decision.

Therefore, the data required for the credit analysis must be changed or adjusted subject to the requirement. The next step is application of some analytical procedure to the financial figure for judging creditworthiness of applicant. To develop the financial as well as statistical technique is fairly recent and still in process. The generally used financial tools are ratio analysis, sources and application of fund analysis, trend analysis, common size statement and other analyses determining the financial position of the applicant (Koen & Obseholster, 2006).

REVIEW OF LITERATURE

Leire San Jose, Txomin Iturralde and Amaia Maseda conducted a study on 501 Spanish firms with more than 10 employees (2008). In this study confirmatory factor analysis was used. In the study it was observed that the P-value of the chi-square does not attained the recommended figure. It was due to the size of the sample. They opined that cash management was a culture that forms part of the strategy of companies and dependent more on managers themselves than the characteristics of companies.

Joost Bergen undertook a study on 101 companies in Europe, the US and Canada in 2005. The study revealed four cash management models like decentralised liquidity and cash flow management, centralised liquidity and decentralised cash flow management, decentralised liquidity and centralised cash flow management, and centralised liquidity and centralised cash flow management. It was also observed that decentralised organisations had the most to gain, as they were able to achieved considerable efficiencies through the introduction of a more centralised approach-perhaps through an SSC.

Farris, Hutchison and Hasty (2011) made a study on cash to cash metric. For this they initially taken 21608 companies but latter such firms reduced to 5884 firms. This study presented an overview of cash to cash and its calculation, comparisons between product and service industries etc. The study also revealed that cash-to-cash knowledge of managers helped the service industries to improve their liquidity position and overall value.

Pedro Ortin Angel and Diego Prior made a study on accounting turnover ratios and cash conversion cycle. The main objective of the study was to deduce the amount of days spent completing an operational process from turnover ratios. This study provided additional tools for financial statements analysis in order to get accurate result or working capital management.

Opler, Pinkowitz, Stulz and Williamson (1999) undertook a study on corporate cash holdings. In this study they suggested that dividend paying firms or those that can easily sell assets hold lower levels of cash. They argued that firms with multiple product lines and low inventory levels relative to sales had shorter cash conversion cycles and therefore hold less cash. They also argued that through derivatives cash holdings can be reduced by coordinating risk management and cash management activities.

Amitava Basu (2011) made a study on eight cement companies using the Bathory's risk description model. The model is developed using four years' data. In this study data have been collected from secondary sources i.e. The Stock Exchange official Directory of Bombay Stock Exchange and Capitaline data base. In this study the main focus is given to the liquidity, profitability and capital adequacy. The model also showed that these three ratios influenced the score of individual companies. He also showed that where these factors are good they obtained high score.

OBJECTIVES OF THE STUDY

The presents study is prepared to make an in-depth analysis of the selected companies in IT sector in respect of their Cash Conversion Cycle, Cash Holding and Cash flow, and Credit Worthiness during the period of 2002-2011.

More specifically the objectives of our study as a whole are as under,

1. To design an effective cash management policy for smooth cash procurement and disbursement without endangering the operating capability and productivity of the firm.
2. To determine the exact working cash balance in conformity with the nature of the firm and how the

temporarily unused fund be invested in interest earning assets.

3. To make a comparative analysis of the Liquidity position of selected companies from five different sectors in India during the period covered in the study, i.e. 2002 to 2011.
4. To find out the cash conversion cycle with help of RCP, ICP, and PDP of the selected companies through the technique of ratio analysis and other statistical tools.
5. To measure the credit score (CS) and try to establish a relationship between cash conversion cycle and creditworthiness.

METHODOLOGY OF THE STUDY

Five popular companies from IT sector have been selected for the study. The data of the selected companies for the period 2002 to 2011 used in this study have been taken from the secondary sources i.e. Capitaline Corporate Database of Capital Market Publishers (I) Ltd. Mumbai.

Cash Conversion Cycle (CCC)

According to Richards-Laughlin, CCC is the sum of receivables conversion period (RCP) plus the inventory conversion period (ICP) minus the payment deferral period (PDP) i.e. CCC = RCP + ICP – PDP.

Shorter cash conversion cycle means better liquidity position of the organisation. Here, we established the relationship between CCC and debtors more than six months, CCC and CR, CCC and inventory turnover ratio, CCC and debtors turnover ratio and CCC and creditors turnover ratio. Efficiency of the inventory management has been measured by inventory turnover ratio (ITR) which is the ratio between cost of goods sold and average stock. So inventory turnover ratio is negatively related with CCC. Debtors' turnover ratio (DTR) is the ratio of credit sales to average receivables. Debtors' turnover ratio is negatively related with CCC. Organisation's ability to avail credit facility from suppliers has been measured by creditors' turnover ratio (CTR) which is the ratio of credit purchase to average payables. Therefore, CCC is positively related with the creditors' turnover ratios.

Profitability, size of the organisation and cumulative profitability can influence the cash conversion cycle of the organisation. In this study profitability has been measured by return on net worth (RONW), size of the organisation has been represented through the amount equal to the log value of total assets. Shareholders fund has been selected in this study as cumulative profitability which consists of equity share capital and reserve surpluses. The log value of shareholders' fund represents the cumulative profitability.

Cash Flow and Creditworthiness

Cash flow statement is a statement which reveals the impact of all business transaction over a period of time on the cash position of the firm. It shows the causes of change in cash balance between two balance sheet dates. It gives the information of sources of cash and also application of cash. As per Accounting Standard 3 cash flow statement consist three activities, say operating activity, investing activity and financing activity.

CCC is related with the cash flow from operating activity. More collection of cash reduces the need of working capital and we know that lower cash conversion cycle is also signifies minimum need of working capital. Therefore, cash conversion cycle is positively related with cash flow from operating activity. In investing activity we add the sale of fixed assets and less the purchase of fixed assets. This effect can be seen in the cash holding of the firm. By investing funds in fixed assets or in shares or debentures of other companies decreases the cash holding of the firm and vice-versa. Therefore, cash holding is negatively related with the cash flow from investing activity. All we know it. Firm can easily collect funds from money market at a very negligible cost. Therefore, they are not holding cash for future requirements. In cash flow from financing activity we consider the inflow by issue of shares, pref. shares, debentures, taking long-term loans and outflow by redemption of pref. shares, debentures, repayment of long-term loan etc. Holding excess cash without any purpose has to bear cost in the form of interest, dividend and also affect the profitability of the firm indirectly. Therefore, cash holding of the firm is inversely related with the Cash flow from investing activity.

To develop a credit evaluation model from the financial statement of the selected companies, we used Bathory's - 'risk description model' with small changes. In actual model the main influencing factors are accumulated profitability and inventory but for our purpose we use the cash flow instead of Inventory. Eight different ratios are calculated from the financial statement as stated above. In determination of ratios, emphasis has been given on the firms' liquidity, profitability and capital adequacy. For the purpose of our study five companies each from five different sectors are selected, as stated earlier, with the help of purposive sampling procedure. The model is prepared on the basis of ten years data; it will be more predictive and reveals the appropriate creditworthiness of the companies. For analysing the date statistical tools like arithmetic mean, percentage etc. and statistical technique like Pearson's simple correlation analysis and statistical test like 't' test have been applied at appropriate places.

Risk Description Model

1. Net Profit/ Capital Employed = Profitability (Annual)

2. Net Tangible assets (Shareholders Fund)/Total Liabilities (Long term + Short term debt) = Profitability (Cumulative)
3. Net Profit/Current Liabilities = Liquidity
4. Normalised working capital/Credit Exposure = Capital Adequacy
5. Equity/Current Liability + Credit exposure = Capital Adequacy
6. Net Assets/Credit exposure = Comfort Margin
7. Total assets/Total liability + Credit exposure = Debt Capacity
8. Net Profit + Depreciation/Current Debt = Priority debt service ability.

In our model eight ratios are taken into consideration by giving equal weight to them.

The resulting formula would be denoted as –

$CS = L^* \sum xi$

CS = Credit Scores

Xi = Variables (I = 1 to 8)

L = Constant Multiplier = 100/8 = 0.125

The developed model is thus = $0.125^*\sum xi$

Risk Description Model

Here, NWC = Normalised Working Capital, NTA = Net Tangible Assets, E = Equity Shareholders fund, CL = Current Liabilities, TL = Total Liabilities, CR. EXPOSU = Credit Exposure (0.25% of CA), CD = Current Debt, D = Depreciation, NP = Net Profit, NA = Net Assets, CE = Capital Employed.

For analysing the data statistical tools like arithmetic mean, standard deviation, coefficient of variation etc. and statistical techniques like Pearson's simple correlation analysis and multiple regression analysis and statistical test like 't' test have been applied at appropriate places.

FINDINGS OF THE STUDY

From Table 1 it is found that the cash conversion cycle of Philips India Ltd. is highest in the year 2006 (49.84 days) and lowest in the year 2003 (39.03 days). On an average it is 44.1 days. Philips followed a mixed trend during the study period.

In case of Asian, the CCC is highest in the year 2010 (483.04 days) and lowest in the year 2002 (94.31days). On an average it is 275 days. From the table it is clear that there has been a steady increase in CCC except in the year 2007 and 2011.

In case of Wipro, the picture is totally different. It comprises very small days in CCC. The highest CCC has been identified in the years 2006 (57.97 days) and 2008 (44.93 days). The CCC of Wipro followed a mixed trend. It started with 54.85 days and ended with 56.27 days. On an average it is 51.3 days.

CMC maintained a moderate CCC during the study period. It started with 39.66 days and ends with 18.65 days. The highest CCC is found in the year 2005 (78.23 days) and smallest CCC is depicted in the year 2010 (16.36 days). On an average it is 43 days. So the liquidity position of the study period except the years 2005, 2003 and 2006.

From Table 1, it has been found that the CCC of the Videocon is highest in the year 2006 (109.63 days) and lowest in the year 2009 (52.70 days). It also registered a mixed trend of CCC during the study period. On an average it is 86.8 days. The company maintained a moderate CCC during the study period.

Therefore, among five companies, the liquidity position of CMC is good as compared to others. It also portrays that the liquidity management system of CMC is sound, than other five companies in that sector.

In Table 2 the values of average cash conversion cycle (CCC) of the companies under study have been ascertained by applying arithmetic mean and consistency of CCC have also been measured by using the coefficient of variation (CV) of their cash conversion cycle. The industry wise ranks have been assigned to the selected companies both in respect of average and consistency.

The average CCC of CMC, among the selected companies, is the lowest, followed by Philips, Wipro, Videocon and Asian respectively in that order. The table also reveals that in respect of consistency of designing CCC, Philips captured the top position and followed by Wipro, Videocon, Asian, and CMC respectively. Considering both average and consistency aspects together, Philips occupied the first rank whereas Wipro got the second position, followed by CMC, Videocon, and Asian.

Coefficient of correlation is the measurement of degree of association between two variables. A positive value of 'r' indicated high values of one variable are generally associated with the high values of other variables and low values with low values. In Table 3 an effort has been made to measure the degree of relationship between cash conversion cycle (CCC) and each of the factors related with CCC such as inventory turnover ratio (ITR), current ratio (CR), debtors turnover ratio (DTR), debtors more than six months (Debt>6 Months), and creditors turnover ratio (CTR). To test the significance of such coefficient, 't' test has been applied.

Table 3 shows that the correlation coefficients between CCC and ITR in Philips, Asian, Wipro, CMC, and Videocon are 0.387, 0.815, 0.2, 0.812 and (-) 0.011, respectively. Out of which the correlation coefficient between CCC and ITR in Philips, Asian, Wipro and CMC are positive and correlation

coefficient in case of Asian and CMC are statistically significant both at 5% and 1% level of significance. It implies that the strength of positive association between CCC and ITR in Asian and CMC is highly significant. Higher ITR helps to minimize CCC. But, the correlation coefficient between CCC and ITR in Videocon is negative and statistically insignificant both at 5% and 1% level of significance.

Table 3 exhibits that in IT sector the correlation coefficients between CCC and CR in Philips, Asian and CMC, are 0.102, 0.972 and 0.761. Out of which the correlation coefficient between CCC and CR of Asian and CMC are statistically significant at 5% level. It indicates that the degree of positive association between CCC and CR in Asian and CMC selected for our study is highly significant. On the other hand the correlation coefficients between CCC and CR in Wipro and Videocon are (-) 0.052 and (-) 0654. Out of which the correlation coefficient between CCC and CR of Videocon is statistically significant at 5% level. It implies negative association between CCC and CR.

Table 3 depicts that in case of IT sector the correlation coefficients between CCC and DTR in Philips, Asian, Wipro and CMC, are 0.677, 0.982, 0.034 and 0.449 respectively. Out of which the correlation coefficients between CCC and DTR in Philips and Asian are statistically significant at 5% level. It implies positive association between CCC and DTR in these four companies. On the other hand the correlation coefficient between CCC and DTR in Videocon is (-) 0.042 which is not at all significant. It implies negative relationship between CCC and DTR in Videocon.

In case of IT sector the correlation coefficients between CCC and Debtors more than six months in Philips, Asian, and Wipro are (-) 0.140, (-)0.659 and (-) 0.152 respectively. Out of which the same in case of Asian is statistically significant at 5% level. It implies the negative association between CCC and debtors more than six months in Philips, Asian, and Wipro. Debt collection policy which minimizes CCC of these three companies is good. On the other hand, the correlation coefficients between CCC and debtors more than six month are positively low in CMC and Videocon which are 0.271 and 0.314 respectively. It implies positive association between them which are not desirable.

Table 3 shows that in IT sector the correlation coefficients between CCC and CTR in Philips, Wipro, CMC, and Videocon are (-) 0.266, (-) 0.519, (-) 0.598 and (-) 0.276 respectively. It implies that the association between CCC and CTR is negative in Philips, Wipro, CMC, and Videocon Ltd. It is due to low creditor's turnover ratio which is desirable to shorten the CCC. On the other hand the correlation coefficient between CCC and CTR in Asian is positive which does not portrayed the theoretical conception of lower CTR to shorter CCC.

In Table 4 an attempt has been made to assess the influence profitability, size of the organisation and cumulative profitability on cash conversion cycle. In this study, return on net-worth (RONW) has been taken as the measure of owners' profitability, log value of total assets has been taken as the measure of size of the organisation, and shareholder's fund has been taken as the measure of cumulative profitability. The linear regression equation has been fitted in this study is $CCC = b_0 + b_1$ RONW $+ b_2$ Size of Org. $+ b_3$ Shareholders' fund, where b_0 is the value of intercept term (constant) and b_1, b_2 and b_3 are the slopes of the line i.e. the regression coefficient of CCC on RONW, size of org, and shareholders' fund. This regression equation has been tested by 't' test.

Table 4 shows that in case of IT sector for one unit increase in RONW the CCC of Philips stepped up by 5.84 units, which is found to be statistically significant at 5% level. The table also shows that for one unit increase in the size of the org. the CCC of Philips goes up by 3.817 units which is found to be statistically insignificant at 5% level. It is found from Table 4 that for one unit increase in shareholders fund the CCC is increased by only 0.578 units which is also statistically insignificant at 5% level. It implies that the influence of RONW, size of org, and shareholders' fund on CCC is positive. The coefficient of determination (R^2) makes it clear that 65.5 % of the variation of the company's CCC is accounted for by the variation in RONW, size of org, and shareholders' fund.

It has been found from Table 4 that for one unit increase in RONW the CCC of Asian increased by only 0.004 unit which is not statistically significant. Table 4 shows that for one unit increase in size of the organisation the CCC of Asian goes down by 8.636 units which is also statistically insignificant at 10% level. Similarly, Table 4 reveals that for one unit increase in shareholders' fund the CCC of Asian stepped up by 6.503 units which is not at all significant at 5% level. The influence of RONW and shareholders' fund on CCC is positive but not significant whereas size of the organisation negatively influenced the CCC of the company. The coefficient of determination (R^2) makes it clear that 54.0 % of the variation of the company's CCC is accounted for by the variation in RONW, size of org, and shareholders' fund.

It is found from table 4 that for one unit increase of RONW the CCC of Wipro has gone up by 0.018 units which is not statistically significant at 5% level. The table also shows that for one unit increase in size of the organisation the CCC of Wipro stepped up by 8.036 units which is also not statistically significant at 5% level. Table 5 shows that for one unit increase of shareholders' fund the CCC of Wipro rapidly goes down by 8.401 units and it is also not statistically significant at 5% level. It implies that the influence of RONW and size of the organisation on CCC of the company is positive but insignificant whereas the influence of shareholders fund on CCC is negative in the

company. The coefficient of determination (R^2) makes it clear that 28.5 % of the variation of the company's CCC is accounted for by the variation in RONW, size of org, and shareholders' fund.

Table 4 shows that for one unit increase in RONW the CCC of CMC stepped up by 0.219 units which is statistically insignificant at 5% level. Table 4 also reveals that for one unit increase in size of the organisation, the CCC of CMC goes down by 21.359 units which is also statistically insignificant at 5% level. Table 4 shows that for one unit increase in cumulative profitability the CCC of the company rapidly increased by 35.883 units which is also statistically not significant at 5% level. It indicates the influence of RONW and cumulative profitability on CCC of the company is positive but insignificant while the influence of size of the organisation is negative on the CCC of the company. The coefficient of determination (R^2) makes it clear that 77.8 % of the variation of the company's CCC is accounted for by the variation in RONW, size of org, and shareholders' fund.

It has been revealed from Table 4 that for one unit increase in RONW the CCC of Videocon Ltd. is stepped down by 0.437 units which is statistically insignificant at 10% level. On the other hand, Table 4 also reveals that for one unit increase in size of the organisation the CCC of Videocon goes down by 20.615 units which is not statistically significant at 5% level. Table 4 also shows that for one unit increases in shareholder's fund, the CCC of Videocon decreases by 24.704 units which is statistically insignificant at 5% level. It implies that the influence of size of the organisation on CCC of the company is positive whereas the impact of profitability as well as cumulative profitability is negative on the CCC of the company. The coefficient of determination (R^2) makes it clear that 58.6 % of the variation of the company's CCC is accounted for by the variation in RONW, size of org, and shareholders' fund. Therefore, from Table 4 it is found that only in case of Philips the influence of RONW, size of the organisation and cumulative profitability on CCC is positive.

Table 1: Analysis of Cash Conversion Cycle of Selected Companies of IT sector

COMPANIES	2011	2010	2009	2008	2007	2006	2005	2004	2003	2002	AVG
PHILIPS	45.94	43.52	40.86	39.69	49.26	49.84	43.17	42.22	39.03	47.36	44.1
ASIAN EC. LTD.	387.45	483.04	474.89	237.52	234.79	240.73	236.37	198.12	166.31	94.31	275
WIPRO	56.27	49.13	47.12	44.93	45.42	57.97	54.44	51.96	51.19	54.85	51.3
CMC	18.65	16.36	36.46	26.79	41.62	59.72	78.23	43.78	68.31	39.66	43
VIDEOCON	82.47	81.75	52.70	90.92	103.78	109.63	97.12	92.99	76.47	80.17	86.8

Source: Compiled and computed from 'Capitaline Corporate Database' of Capital Market Publishers (I) Ltd., Mumbai.

Table 2: Ranking on the basis of Average and Consistency of Cash Conversion Cycle Of the Selected Companies from IT Sector

Companies	Avg	Sd	Rank Of Avg.	Coeff. Of Var.	Rank Of Coeff.	Total Rank	Over All Rank
PHILIPS	44.1	3.8582	2	8.7509	1	3	1
ASIAN EC. LTD.	275	129.932	5	47.188	4	9	5
WIPRO	51.3	4.58772	3	8.938	2	5	2
CMC	43	20.5023	1	47.726	5	6	3
VIDEOCON	86.8	16.0867	4	18.533	3	7	4

Source: Compiled and computed from 'Capitaline Corporate Database' of Capital Market Publishers (I) Ltd., Mumbai.

Table 3: Karl Pearson's Simple Correlation Analysis between CCC and ITR, CR, DTR, Debt > 6 Months and CTR of the Selected Companies from IT Sector

COMPANY	CCC & ITR		CCC & CR		CCC & DTR		CCC & DEBT > 6 MONTHS		CCC & CTR	
	(r)	't' Value	(r)	't' Value	(r)	't' Value	(r)	't' Value	(r)	't' Value
PHILIPS	0.387	1.187	0.102	0.29	0.677*	2.602	-0.140	-0.4	-0.266	-0.78
ASIAN EC. LTD.	0.815**	3.978	0.972**	11.7	0.982**	14.71	-0.659*	-2.48	0.548	1.853
WIPRO	0.2	0.577	-0.052	-0.15	0.034	0.096	-0.152	-0.43	-0.519	-1.717
CMC	0.812**	3.935	0.761*	3.318	0.449	1.421	0.271	0.796	-0.598	-2.11
VIDEOCON	-0.011	-0.03	-0.654*	-2.45	-0.042	-0.12	0.314	0.935	-0.276	-0.812

Note: Figures in the parentheses indicate 't' values.
* Correlation is significant at the 5% level (2tailed).
**Correlation is significant at the 1% level (2tailed).
Source: Compiled and computed from 'Capitaline Corporate Database' of Capital Market Publishers (I) Ltd., Mumbai.

Table 4: Analysis of Multiple Regression of CCC on RONW, Size of Org. and Shareholders' Fund of the Selected Companies of IT Sector

Regression Equation is CCC = b_0 +b_1 RONW+b_2 Size of Org.+b_3 Shareholders' Fund

COMPANY	PARTIAL REGRESSION COEFFICIENT			CONSTANT	R2ED
	RONW	SIZE OF THE ORGANISATION	SHAREHOLDERS' FUND		
PHLIPS	5.840 (3.343)**	3.817 (0.467)	0.578 (0.086)	-11.328 (-1.542)	0.655
ASIAN	0.004 (0.162)	-8.636 (-2.289)**	6.503 (1.628)	8.344 (2.387)	0.540
WIPRO	0.018 (0.349)	8.036 (1.190)	-8.401 (-1.104)	7.590 (1.763)	0.285
CMC	0.219 (1.248)	-21.359 (-0.510)	35.883 (1.094)	-28.226 (-0.903)	0.778
VIDEOCON	-0.437 (-2.190)*	20.615 (1.661)	-24.704 (-1.753)	15.762 (2.302)	0.586

Note: Figures in the parentheses indicate 't' values.
* Correlation is significant at the 5% level (2tailed).
**Correlation is significant at the 1% level (2tailed).
Source: Compiled and computed from 'Capitaline Corporate Database' of Capital Market Publishers (I) Ltd., Mumbai.

Net Cash Flow from Operating Activity

Net cash flow from operating activity has been shown in Table 5. On an average the cash flow from operating activity of Wipro (2207.05 Crore) is highest and it is followed by Videocon (242.143 Crore), Philips (120.64 Crore), CMC (63.113 Crore), and Asian (5.947 Crore) respectively.

Net Cash Flow from Investing Activity

Net cash flow from investing activity has been shown in Table 6. The average cash flow from investing activity of Asian (-11.817 Crore) is highest and it followed by CMC (-22.09 Crore), Philips (-30.57 Crore), Videocon (-384.9 Crore), and Wipro (-1647.4 Crore) respectively.

Net Cash Flow from Financing Activity

Net cash flow from financing activity has been shown in Table 7. On an average the cash flow from financing activity of Videocon (140.129 Crore) is highest and it followed by Asian (8.601 Crore), CMC (-16.91 Crore), Philips (-51.31 Crore), and Wipro (-84.039 Crore) respectively.

Net Increase/Decrease in Cash flow

Net increase and decrease in cash flow have been shown in Table 8. From the average point of view only in case of Videocon (-2.63 Crore) it is negative. Wipro (475.64 Crore) registered the first place, followed by Philips (38.76 Crore), CMC (24.10 Crore), and Asian (2.73 Crore) respectively.

Analysis of Correlation

Table 9 shows that the correlation coefficients between CCC and cash flow from operating activity in Philips, Asian, Wipro, CMC, and Videocon are 0.231, (-) 0.235, 0.142, 0.789, and 0.474 respectively. Out of which the correlation coefficients between CCC and cash flow from operating activity in Philips, Wipro, CMC, and Videocon are positive and correlation coefficient in case of CMC is statistically significant both at 5% and 1% level. It implies that the strength of positive association between CCC and cash flow from operating activity in CMC is highly significant. Good cash management through operating activity minimizes the CCC of these companies except Asian which produces negative correlation and it is also statistically insignificant.

Table 9 depicts that the correlation coefficient between average cash holding and cash flow from investing in Philips, Asian, Wipro, CMC, and Videocon are (-) 0.273, (-) 0.123, (-) 0.699, (-) 0.506, and (-) 0.225 respectively. All the correlation coefficients are negative and showing the negative relationship. Out of which the correlation coefficient in Wipro is statistically significant at 5% level. It implies the strength of negative association between average cash holding and cash flow from investing activity in Wipro is highly impressive. It signifies the efficiency in managing cash through control over investing activity.

Table 9 also depicts that the correlation coefficients between average cash holding and cash flow from financing activity in Philips, Asian, Wipro, CMC, and Videocon are 0.256, 0.241, (-) 0.148, (-) 0.543 and (-) 0.099 respectively. Out of which the correlation coefficients in Wipro, CMC, and Videocon are negative. It implies the strength of negative association between average cash holding and cash flow from financing activity. It signifies the efficient cash management system in regards with controlling the financing activity of these companies is impressive.

Bathory's 'Risk Description Model' is self-explanatory in nature. In this case our objective is to gives an idea to the credit analyst, about extracting best result of using financial statement.

It is found from Table 10 that in IT sector the average scores of ratio x_1, x_2, x_3, x_4, x_5, x_6, x_7, and x_8 in Philips India Ltd. (Philips) are 0.1879, 0.9567, 0.229, 65.607, 1.1326, 259.22, 2.0051, and 1.7122 respectively. Out of which ratio x_6 registered the highest by score 259.22 and ratio x_1 is the lowest which is 0.1879 score. The total of average score is 331.05. The credit score of Philips is 41.382.

From Table 11, it is found that the average scores of ratios x_1, x_2, x_3, x_4, x_5, x_6, x_7, and x_8 in Asian are 0.0425, 4.1337, 0.4173, 262.02, 4.6422, 268.64, 7.56, and 3.4261 respectively. Out of which ratio x_6 is the highest, whose score is 268.64 whereas ratio x_1 is the lowest by scoring 0.0425. The total of average score is 550.9. The credit score of Asian is 68.86.

Table 12 reveals that the average scores of ratio x_1, x_2, x_3, x_4, x_5, x_6, x_7, and x_8 in Wipro are 0.2553, 2.8177, 1.5202, 182.82, 5.1936, 550.28, 4.1129, and 1.7369 respectively. The highest score is registered by ratio x_6 (550.28) while ratio x_1 (0.2553) is the lowest in Wipro. The total of average score is 748.73. The credit score of Wipro is 93.592.

Table 13 shows that the average scores of ratio x_1, x_2, x_3, x_4, x_5, x_6, x_7, and x_8 in CMC are 0.2345, 0.8938, 0.3456, 120.74, 1.2437, 236.33, 2.0051, and 1.9353 respectively. Out of which ratio x_6 (236.33) is the highest and ratio x_1 (0.2345) is the lowest. The total average score is 363.73. The credit score of CMC is 45.466.

It has been found from Table 14 that the average scores of ratio x_1, x_2, x_3, x_4, x_5, x_6, x_7, and x_8 in Videocon are 0.0913, 2.8602, 0.5376, 210.54, 2.9976, 347.39, 6.4592, and 3.4714 respectively. The highest score is revealed by ratio x_6 which is 347.39 and the lowest score is registered by ratio x_1 which is 0.0913. The total average score is 574.35. The credit score of Videocon is 71.794.

Therefore, from Tables 10, 11, 12, 13, and 14 we can conclude that the cumulative profitability condition is good in Asian whereas regarding current profitability condition Wipro is the best. On the other hand from the point of view of debt paying capacity of Asian is the best. The score revealed that highest credit score obtained by Wipro and it followed by Videocon, Asian, CMC and Philips in that order.

In Table 15, ranking on the basis of credit score of companies has been done. In this ranking Wipro captured the first position.

In depth analysis of credit score it is revealed that the credit score of selected companies is mainly influenced by two ratios, Liquidity ratio (x_4) and comfort margin(x_6).

Table 15 shows that the ratio x_4 in Philips, Asian, Wipro, CMC and Videocon is 65.61, 262, 182.8, 120.37, and 210.5 respectively. On the other hand, ratio x_6 in Philips, Asian, Wipro, CMC, and Videocon is 259.2, 268.6, 550.3, 236.3, and 347.4 respectively. In Asian ratio x_4 is highest and in Wipro ratio x_6 is highest. Ratio X_6 of Wipro helped the Wipro to capture the first position. From overall point of view ratio x_4 is highest in Asian.

In-depth analysis of the individual company's credit performance on the basis of credit score table indicates that liquidity ratio (x_4) i.e. the ratio of normalised working capital to credit exposure is highly affected by percentage of current liabilities to current assets and percentage of cash to current assets.

From Table 16 it is found that the liquidity ratio (x_4) as per our model in Philips is 66.547 whereas its current liabilities consist 60.31 % of current assets and at the same time cash covers 25.61% of current assets.

The liquidity ratio in Asian is 262.01 whereas its current liabilities consist only 17.90% of current assets and at the same time cash occupied only 2.41% of current assets.

The liquidity ratio (x_4) in Wipro is 182.81 while its current liabilities consist of 30.58% of current assets and at the same time cash occupied 22.06 % of current assets.

The liquidity ratio (x_4) in CMC is 120.74 while its current liabilities consist of 47.12 % of current assets and at the same time cash holds 16.75% of current assets.

The liquidity ratio (x_4) in Videocon is 210.54 whereas its current liabilities consist of only 30.90% current assets and at the same time cash occupied only 10.25% of current assets.

Therefore, Table 16 revealed that the liquidity ratio of Asian and Videocon is good due to the reason that in these companies current liabilities consist less percent of current assets and also cash occupied very nominal portion.

Coefficient of correlation is the measurement of degree of association between two variables. A positive value of 'r' indicated high values of one variable are generally associated with the high values of other variables and low values with low values. In this study multiple correlation

Table 5: Analysis of Cash Flow from Operating Activity of the Selected Companies of IT Sector (As a Whole) (Rs. In Crores)

Industry	Company	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Avg.	Max	Min
IT	PHILIPS	85	122	135.5	158.5	2.5	213.5	157.8	73.3	201.8	56.5	120.64	213.5	2.5
	ASIAN	-9.18	-0.46	10.48	22.39	-12.7	-30.17	-139	48.39	-25.41	194.91	5.947	194.9	-138.8
	WIPRO	857.81	736.66	913.9	1666	1912	2670	715.9	4411	4477.4	3710.5	2207.05	4477	715.9
	CMC	-11.1	-11.1	2.27	3.97	23.91	147.2	90.88	66.38	147.14	171.59	63.113	171.6	-11.1
	VIDEOCON	34.58	-13.22	71.18	40.46	206.1	308.3	233.9	597.7	317.16	625.3	242.143	625.3	-13.22

Source: Compiled and computed from 'Capitaline Corporate Database' of Capital Market Publishers (I) Ltd., Mumbai.

Table 6: Analysis of Cash Flow from Investing Activity of the Selected Companies of IT Sector (As a Whole) (Rs. In Crores)

Industry	Company	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	AVG	Max	Min
IT	PHILIPS	-0.5	17.6	-2.4	-72.4	-32.1	167.7	22.1	-220	-123.4	-62.4	-30.57	167.7	-219.9
	ASIAN	-9.17	-2.62	-7.92	-4.11	2.12	-17.94	-11.9	-27	20.05	-59.71	-11.817	20.05	-59.71
	WIPRO	-988.21	-635.38	-1062	-869	-1686	-1882	-1124	-3663	-3126	-1439	-1647.4	-635.4	-3663
	CMC	-5.17	-5.17	-8.14	-7.9	15.98	-75.69	-4.55	-16.9	-21.11	-92.32	-22.09	15.98	-92.32
	VIDEOCON	-200.07	-66.14	-155	-834	-108	-389.2	-431	-877	-230.9	-558.5	-384.9	-66.14	-877.2

Source: Compiled and computed from 'Capitaline Corporate Database' of Capital Market Publishers (I) Ltd., Mumbai.

Table 7: Analysis of Cash Flow from Financing Activity of the Selected Companies of IT Sector (As a Whole) (Rs. In Crores)

Industry	Companies	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	AVG	Max	Min
IT	PHILIPS	-77.7	-85	-66.3	-26.6	-17.5	-16.2	-23	-22.1	-161.3	-17.4	-51.31	-16.2	-161.3
	ASIAN	18.82	7.84	-6.27	-20.7	11.31	76.52	144	-13.9	-0.48	-131.2	8.601	144	-131.2
	WIPRO	-22.93	14.88	28.57	-551	59.8	238.5	2291	-70.7	-96.2	-2733	-84.039	2291	-2733
	CMC	16.52	16.52	4.14	-0.69	-26.5	-61.94	-3.36	-14.6	-64.08	-35.07	-16.91	16.52	-64.08
	VIDEOCON	171.1	75.43	50.07	826.9	-88.1	114.6	237.8	206.4	-81.73	-111.1	140.129	826.9	-111.1

Source: Compiled and computed from 'Capitaline Corporate Database' of Capital Market Publishers (I) Ltd., Mumbai.

Table 8: Analysis of Net Increase / Decrease of Cash Flow of the Selected Companies of IT Sector (As a Whole) (Rs. In Crores)

Industry	Companies	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	AVG	Max	Min
IT	PHILIPS	6.8	54.6	66.8	59.5	-47.1	365	156.9	-169	-82.9	-23.3	38.76	365	-168.7
	ASIAN	0.47	4.76	-3.71	-2.39	0.78	28.41	-6.67	7.51	-5.84	3.99	2.73	28.41	-6.67
	WIPRO	-153.33	116.16	-120	246.8	286.1	1026	1883	677.1	1255.1	-461	475.64	1883	-461
	CMC	0.25	0.25	-1.73	-4.62	13.36	9.56	82.97	34.85	61.95	44.2	24.10	82.97	-4.62
	VIDEOCON	5.61	-3.93	-33.3	33.42	10.22	33.69	40.8	-73	4.49	-44.3	-2.63	40.8	-73.02

Source: Compiled and computed from 'Capitaline Corporate Database' of Capital Market Publishers (I) Ltd., Mumbai.

Table 9: Karl Pearson's Correlation Analysis between CCC and Cash Flow from Operating Activity, Avg. Cash Holding and Cash Flow from Investing Activity and Financing Activity of the selected companies of IT, Consumer Durable, Pharmaceuticals, FMCG and Retail Sector (As a Whole)

Industry	Companies	CCC & Cash Flow from Operating Activity	t value	Avg. Cash Holding & Cash Flow from Investing Activity	t value	Avg. Cash Holding & Cash Flow from Financing Activity	t value
IT	PHLIPS	0.231	0.672	-0.273	-0.803	0.256	0.749
	ASIAN	-0.235	-0.684	-0.123	-0.351	0.241	0.7024
	WIPRO	0.142	0.406	-0.699*	-2.765	-0.148	-0.423
	CMC	0.789**	3.632	-0.506	-1.659	-0.543	-1.829
	VIDEOCON	0.474	1.523	-0.225	-0.653	-0.099	-0.281

Note: Figures in the parentheses indicate 't' values. * Correlation is significant at the 5% level (2tailed). **Correlation is significant at the 1% level (2tailed)

Source: Compiled and computed from 'Capitaline Corporate Database' of Capital Market Publishers (I) Ltd., Mumbai.

Table 10: Risk Description Model – Ratio Measurement (Philips)

RATIOS	DESCRIPTION	AVG. SCORES
X1	NP/CE	0.1879
X2	NTA/TL	0.9567
X3	NP/CL	0.229
X4	NWC/CR.EXPOSU	65.607
X5	E/CL+CR.EXPOSU	1.1326
X6	NA/CR.EXPOSU	259.22
X7	TA/TL+CR.EXPOSU	2.0051
X8	NP+D/CD	1.7122
TOTAL AVG SCORES		331.05
CREDIT SCORES(CS)		41.382

Table 11: Risk Description Model – Ratio Measurement(Asian)

RATIOS	DESCRIPTION	AVG SCORES
X1	NP/CE	0.0425
X2	NTA/TL	4.1337
X3	NP/CL	0.4173
X4	NWC/CR.EXPOSU	262.02
X5	E/CL+CR.EXPOSU	4.6422
X6	NA/CR.EXPOSU	268.64
X7	TA/TL+CR.EXPOSU	7.56
X8	NP+D/CD	3.4261
TOTAL AVG SCORES		550.9
CREDIT SCORES(CS)		68.86

Table 11: Risk Description Model – Ratio Measurement(Asian)

RATIOS	DESCRIPTION	AVG SCORES
X1	NP/CE	0.2553
X2	NTA/TL	2.8177
X3	NP/CL	1.5202
X4	NWC/CR.EXPOSU	182.82
X5	E/CL+CR.EXPOSU	5.1936
X6	NA/CR.EXPOSU	550.28
X7	TA/TL+CR.EXPOSU	4.1129
X8	NP+D/CD	1.7369
TOTAL AVG SCORES		748.73
CREDIT SCORES(CS)		93.592

Table 13: Risk Description Model – Ratio Measurement(CMC)

RATIOS	DESCRIPTION	AVG SCORES
X1	NP/CE	0.2345
X2	NTA/TL	0.8938
X3	NP/CL	0.3456
X4	NWC/CR.EXPOSU	120.74
X5	E/CL+CR.EXPOSU	1.2437
X6	NA/CR.EXPOSU	236.33
X7	TA/TL+CR.EXPOSU	2.0051
X8	NP+D/CD	1.9353
TOTAL AVG SCORES		363.73
CREDIT SCORES(CS)		45.466

Table 14: Risk Description Model – Ratio Measurement(Videocon)

RATIOS	DESCRIPTION	AVG SCORES
X1	NP/CE	0.0913
X2	NTA/TL	2.8602
X3	NP/CL	0.5376
X4	NWC/CR.EXPOSU	210.54
X5	E/CL+CR.EXPOSU	2.9976
X6	NA/CR.EXPOSU	347.39
X7	TA/TL+CR.EXPOSU	6.4592
X8	NP+D/CD	3.4714
TOTAL AVG SCORES		574.35
CREDIT SCORES(CS)		71.794

Source: Compiled and computed from 'Capitaline Corporate Database' of Capital Market Publishers (I) Ltd., Mumbai.

Table 15: Ranking on the basis of Credit Scores of the Selected Companies from IT Sector

RATIOS / COMPANIES	PHILIPS	ASIAN	WIPRO	CMC	VIDEOCON
X1	0.188	0.042	0.255	0.234	0.091
X2	0.957	4.134	2.818	0.894	2.86
X3	0.229	0.417	1.52	0.346	0.538
X4	65.61	262	182.8	120.7	210.5
X5	1.133	4.642	5.194	1.244	2.998
X6	259.2	268.6	550.3	236.3	347.4
X7	2.005	7.56	4.113	2.005	6.459
X8	1.712	3.426	1.737	1.935	3.471
TOTAL AVG SCORES	331.1	550.9	748.7	363.7	574.4
CREDIT SCORES(CS)	41.38	68.86	93.59	45.47	71.79
RANKING (SECTOR WISE)	5	3	1	4	2

Source: Compiled and computed from 'Capitaline Corporate Database' of Capital Market Publishers (I) Ltd., Mumbai.

Table 16: Analysis of Liquidity Position of IT Sector

COMPANIES	CA	CL	AVG CASH as % OF CA	CL % OF CA	NWC/CREDIT EXPOSURE
Philips	970.02	536.43	0.256094	0.60306931	66.54718374
ASIAN	299.914	61.914	0.024133	0.17903678	262.0151972
WIPRO	7958.161	2515.2	0.220652	0.30581381	182.8154209
CMC	474.209	221.34	0.167573	0.47122719	120.7437469
VIDEOCON	1732.431	566.69	0.10255	0.30907971	210.5429216

Source: Compiled and computed from 'Capitaline Corporate Database' of Capital Market Publishers (I) Ltd., Mumbai.

techniques among cash as a percent of CA, CL as a percent of CA and NWC/Credit Exposure has been applied. To test the significance of such coefficient, 't' test has been used.

It is found from Table 17 that the correlation coefficient between cash as a percent of current assets and liquidity ratio (x_4) revealed the negative correlation which is (-) 0.858, statistically insignificant. On the other hand the correlation coefficient between current liabilities as a percent of current assets and liquidity ratio (x_4) signified very high negative relation (-) 0.990 and it is statistically significant at 1% level.

It follows the theoretical proposition that higher the portion of current liabilities consists of current assets, lower the liquidity position of the concern and vice-versa. The correlation analysis in Table 17 shows that cash as a percent of current assets and current liabilities as a percent of current assets has a high positive correlation (0.796) which is statistically insignificant.

Source: Compiled and computed from 'Capitaline Corporate Database' of Capital Market Publishers (I) Ltd., Mumbai.

CONCLUSION

Liquidity management deals with the management of current assets and current liabilities. Its main objective is to maintain current assets in such a way that it can meet the current liabilities timely. Many firms take the advantage of external financing due to the difficulty in paying its short-term debt. But the firm cannot collect such external financing easily, particularly in case of small firms. External financing is the costly. So, the efficient liquidity management of the company helps its long-term prosperity and healthy bottom lines and more specifically to make the company remain solvent.

Cash conversion cycle (CCC) is a useful technique by which we can easily and quickly assess the liquidity of the firm. It invariably measures the time lag between cash payments for purchase of inventories and collection of receivables from customers. CCC is a dynamic measure of continuous liquidity management, which comprises both balance sheet and income statement data with time dimension.

An individual firm's CCC is helpful but from industries standpoint it is crucial for a company to evaluate its performance regarding CCC and assess opportunities for

improvement because the length of CCC may differ from industry to industry. From the liquidity point of view CMC is good. It also portrays that the liquidity management system of CMC is sound than other five companies in that sector. From the point of view of consistency of designing CCC, Philips captured the top position and followed by Wipro, Videocon, Asian and CMC respectively. The correlation coefficients between CCC and ITR, CCC and CR, and CCC and DTR of most of the companies are positive whereas the correlation coefficients between CCC and debtors more than six months and CCC and CTR of most of the companies are negative. Both results support the theoretical principal. The impact of RONW on CCC of most of the companies is positive whereas the effect of size of the organisation on CCC of most of the companies is negative. On the other, the impact of shareholders' fund on CCC of most of the companies is positive.

Cash flow is just one measurement for evaluating a company, but it is important because it focuses on actual operations and eliminates one-time expenses and non-cash charges. Cash flow is one of the most important measurements used by investors in valuing a company. According to cash flow from operating activity, Wipro (considering average) captured the top position. In respect of cash flow from investing activity Asian (considering average) occupied the first place. Regarding cash flow from financing activity Videocon holds the top place. Considering all the activities of cash flows, the net cash flow of Wipro is quite impressive from the point of view of liquidity as well as profitability. The correlation coefficients between CCC and cash flow from operating activity of most of the companies are positive and out of which some are statistically significant. It implies the efficient cash management system in respect of managing current assets and liabilities. The correlation coefficients between average cash holding and cash flow from investing activity of most of the companies are negative and out of which some are statistically significant. It signifies most of the firms invested their unused funds in some income generating assets. Lastly, the correlation coefficients between average cash holding and cash flow from financing activity of most of the companies are negative. It supports the theoretical principal of lower the cash holding, higher the cash flow from financing activity.

Credit score signifies the credit worthiness of the company. Higher CS signifies better credit worthiness and vice-versa. Higher credit worthiness gives the opportunity to the company for late payment and late payment increases the deferral period. It again decreases the cash conversion cycle. Lower CCC represents less requirement of working capital. So liquid cash are not blocked in other types of current assets, it can invest in some profitable project to enhance profit. Hence good credit worthiness indirectly increases the profitability of the organisation. From another point of view credit worthiness helps the company for achieving higher debtors' turnover. As the credit manager takes the decision of granting credit before the commencement of sales then it helps the organisation to take decision regarding its future investment projects. It helps the management to know how and when money should be collected and such information protect the company to borrow funds for investing future profitable projects. It also minimizes the CCC of the organisation which indirectly increases the profit of the organisation.

REFERENCES

Bari, R. R. (Ed.). (1981). *Selected readings in cash management.* Triveni Publications.

Basu, A. (2011). Ratio based credit evaluation model. *International Journal Of Research In Commerce, It & Management,* 1(1), 106-110.

Bradley, J. F. (1974). *Administrative financial management*. Dryden Press.

Brandt, L. K. (1965). *Business finance: A management approach*. Prentice-Hall.

Chiou, J. R., Cheng, L., & Wu, H. W. (2006). The determinants of working capital management. *Journal of American Academy of Business,* 10(1), 149-155.

Clarkson, G. P., Elliott, B. J., & Johnson, A. (1972). Managing money and finance. Gower Press.

Cohen, J. B., & Robbins, S. M. (1966). *The financial manager: Basic aspects of financial*

administration. Harper & Row.

Coyle, B. (2000). *Cash flow control.* Global Professional Publishing.

Dittmar, A., & Mahrt-Smith, J. (2007). Corporate governance and the value of cash holdings. *Journal of Financial Economics,* 83(3), 599-634.

Driscoll, M. C. (1983). *Cash management: Corporate strategies for profit.* Wiley.

Emery, G. W. (1987). An optimal financial response to variable demand. *Journal of Financial and*

Quantitative Analysis, 22(02), 209-225.

Farris II, M. T., Hutchison, P. D., & Hasty, R. W. (2011). Using cash-to-cash to benchmark service industry performance. *Journal of Applied Business Research (JABR),* 21(2).

Fazzari, S. M., & Petersen, B. C. (1993). Working capital and fixed investment: new evidence on

financing constraints. *The RAND Journal of Economics,* 328-342.

Ferreira, M. A., & Vilela, A. S. (2004). Why do firms hold cash? Evidence from EMU countries. *European Financial Management,* 10(2), 295-319.

Guney, Y., Ozkan, A., & Ozkan, N. (2007). International evidence on the non-linear impact of leverage on corporate cash holdings. *Journal of Multinational Financial Management,* 17(1), 45-60.

San José, L., Iturralde, T., & Maseda, A. (2008). *Treasury Management Versus Cash Management*. SSRN Electronic Journal 09/2008; DOI: 10.2139/ssrn.1088015

Jensen, M. C. (1986). Agency costs of free cash flow, corporate finance, and takeovers. *The American Economic Review,* 323-329.

Jose, M. L., Lancaster, C., & Stevens, J. L. (1996). Corporate returns and cash conversion

cycles. *Journal of Economics and Finance,* 20(1), 33-46.

Kalcheva, I., & Lins, K. V. (2007). International evidence on cash holdings and expected managerial agency problems. *Review of Financial Studies,* 20(4), 1087-1112.

Keynes, J. M. (2006). *General theory of employment, interest and money.* Atlantic Publishers & Dist.

Kim, C. S., Mauer, D. C., & Sherman, A. E. (1998). The determinants of corporate liquidity: Theory and evidence. *Journal of Financial and Quantitative Analysis,* 33(3), 335-359.

Koen, M., & Oberholster, J. (1999*). Analysis and interpretation of financial statements*. Juta and

Company Ltd.

Moss, J. D. & Stine, B. (1993). Cash conversion cycle and firm size: A study of retail firms. *Managerial Finance,* 19(8), 25-34.

Myers, S. C. (1977). Determinants of corporate borrowing. *Journal of financial economics,* 5(2), 147-175.

Myers, S. C., & Majluf, N. S. (1984). Corporate financing and investment decisions when firms have information that investors do not have. *Journal of Financial Economics,* 13(2), 187-221.

Nunn, K. P. (1981). The strategic determinants of working capital: A product-line perspective. *Journal of Financial Research,* 4(3), 207-219.

Opler, T., Pinkowitz, L., Stulz, R., & Williamson, R. (1999). The determinants and implications of

corporate cash holdings. *Journal of Financial Economics,* 52(1), 3-46.

Ortín-Ángel, P., & Prior, D. (2004). Accounting turnover ratios and cash conversion

cycle. *Problems and Perspectives in Management*, 1, 189-205.

Uyar, A. (2009). The relationship of cash conversion cycle with firm size and profitability: an empirical investigation in Turkey. *International Research Journal of Finance and Economics,* 24(2), 186-193.

Pandey, I. M. (1999). *Financial management.* Vikas Publishing House Pvt. Ltd.

Petersen, M. A., & Rajan, R. G. (1997). Trade credit: theories and evidence. *Review of Financial*

Studies, 10(3), 661-691.

Solomon, E., & Pringle, J. J. (1981). *An introduction to financial management.* Scott, Foresman.

Van Horne, J. C. (1968). *Financial Management and Policy*, 254-71. Prentice-Hall.

Walker, D. A. (1991). An empirical analysis of financing the small firm. *In Advances in small business finance* (pp. 47-61). Springer Netherlands.