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Impact of Working Capital Management on firms' performance: Evidence from Chemical sector listed firms in KSE-100 index

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Abstract: *The main objective of this paper is to determine the impact of working capital management on firm's performance in progressing market such as Karachi stock exchange. In this paper we utilized different variables for the analysis of working capital management and firm performance in KSE for a sample of 22 firms of chemical sector for the period of 6 years from 2005-2010. The variables that were used in this study for the measurement of working capital management are number of days receivables, number of days inventory and the Size, Leverage, Inventories, Equity, Sales, and GDP are the control variables. The dependent variable that is used in this study for the measurement of the firm performance is Return on Asset. The size of firm is positively affected by the firm profitability. The firms whose profits are higher, these firms are not interested in managing working capital and firm performance. The result from this study shows that there is negative relationship between the working capital and firm performance. The relationship between the size and profitability is positive. If the size of the firm is increased or decreased then the profitability increased or decreased respectively. Moreover, there are negative relationship between the profitability and the debt utilized by firms that support to pecking order theory.*
Keywords: *Working Capital Management, Equity, GDP, Chemical Sector, KSE-100*

I. Introduction

The present financial problems and decline that rapidity spread out from 2008 have brought very much attention to savings that companies made in temporary assets and capital utilized in the period of return into one year to signify the main part of things on a company's financial position. It marked the significance of temporary working capital management (WCM) of companies in worldwide and urged researcher's focus. Practitioners and researchers of same type supposed that perfect working capital management is necessary for companies among the successful financial period (Lo, 2005) and can be arranged well to develop the competition situation, profitability and others emphasize on progressing working capital management logically significant for the companies to survive from the impact of financial issues (Reason, 2008).

WCM is probably high proportion of total firm's resources. The top-level management underlining the high usage of short term resources and sources but because of the idea that there is no high standard results and observation about WCM's effect on firm's performance (Ricci and Divito, 1998; Garcia- Teruel and Martinez Sonano, 2007; Hill et al., 2010). As we use more efficient working capital or manage it more effectively, our performance increase and risk of bankruptcy also decreases. By increasing firm's performance the need of debt must be reduced or minimize. The main feature of WCM is cash conversion cycle (CCC) (Deloof, 2003). CCC defines as the time between selling the product on credit and return of that product's payment. If the CCC increases that means our payment is more delay. Due to this, our capital is more in working capital. The results of greater time period of CCC is very harmful for the organization because as greater time period of CCC the interest expenditures increase, the risk of default increases and the profitability decreases. Therefore, as CCC low, the management is more efficient and the benefit of low CCC is increasing the firm's liquidity plus profitability.

Liquidity and the stability both are demanding options as to perform a firm every day process. The requirement of liquidity is to make sure that the firms are capable to meet their temporary responsibilities and constant stream can be definite to a gainful project. The significance of cash as a sign of ongoing economic wellbeing should not be amazing in the observation of its vital position in business. It is a requirement that the business should be run together perfectly or profitably. Specified that stress of lesser credit limits and due to increased interest rates a quick reduction in requirements that occurs earnings on firm's goods and services. It is lead to a vertical increase in stocks of capital and fixed up to these stocks. Therefore, the average period, many firms change their attention from increment in internal success and managing cash. The difference in asset liability might be happen in which firms can enlarge the profitability in the short period but in a danger of its liquidation. Further, it offers more attention of liquidity that will be the cost of profitability. Therefore, the managers of units are in an impasse to achieve preferred exchange in order to increase the value of firm's liquidity and profitability (Padachi, 2006).

The breakdown rates between insignificant businesses to the very elevated compare with the big business. Preceding learning's have revealed that working capital management feeble to manage finance especially weak and insufficient long term finance is the main reason of breakdown between small firms (Berryman, 1983; Dunn and Cheatham, 1993 and Lazaridis and Tryfondis, between 2006).

Investment specified the importance of working capital result, strategies of firm's threats in number of firms, working management strategy options and practices implications can be significant for market progress but not for accounting profitability. The possession of Successful management is to direct the profitability at commercial level. Specify the administrative achievements that could be calculated by market worth and suggestions in this learning the perfect working capital management must bring extra investors in market worth. The impact of working capital management that determine the strategies in growing markets together with the accounting and market progress of firms. Working capital is a finest declaration of cash changes. We are struggled to set a relationship among accounting so to made market progress and the management of cash conversion cycle. A relationship consists of all three significant aspects managing working capital. It is a sign to how much a firm can bring close to its functions or to describe the period break among the payments for commodities and group of sales. The best possible stage of inventories are projected to a direct cause on profitability while discharging working capital possessions in which the business cycle are to enlarge the inventory stages to take action to increase product demand. In the same way both of credits strategies from suppliers and credit clients recognize time that affects profitability. In order to recognize the working capital is organized the cash conversion cycle and its categories impact on firms' market value and accounting progress is statistically studied, we examine the link among the firm's working capital management and performance for the firms that are registered on the Karachi Stock Exchange for the phase 2005-2010. The impact of cash conversion cycle, No. of days receivables, No. of days in inventories, equity, GDP, inventories, sales, leverage and No. of days payable are to establish overall operations. Examine this difficult report, we have progressed objectives of our study, which will confidently put in towards a key feature of monetary administration known as working capital management. In Pakistan, not touched or extremely small study has been completed in this region. The focus of this study on working capital management and its effects on profitability for a model of Pakistani firms. The important aspects are: a connection between Working Capital Management and Profitability over a period of 6 years for 22 chemical Pakistani companies listed on Karachi Stock Exchange, predicts the large number of components of managing working capital and performance. The relationship among the Pakistani firms are established the two aspects of performance and liquidity. The size and performance relationship developed among the Pakistani firms. The Pakistani firms of chemical sector established the relationship among the debt that has been utilized and its performance.

II. Literature Review

As commercial finance is the main part of decision as well as the structure of capital judgment and budgeting of capital judgment. Managing of working capital is more significant element in commercial financing. Through perfect working capital management is to direct a firm respond speedily and properly for unexpected division in market components, so interest rates of rare items prices and gain aggressive rewards from opponents (Appuhami, 2008). Employees utilized a time prediction on every day capital decisions through current assets that are often transformed into other benefits types that are short term investments (Rao, 1989). Current liabilities in this case that a firm is responsible for doing duties stated in short term liabilities on rational basis. Liquidity is dependent for continuing firm on the working cash changes created from firm's assets (Soenen, 1993). From consequence, managing the working capital by company is very difficult part in the area of monetary organization (Joshi, 1995).

1. Return on Assets

Return on assets means how much a firm generates profits and effectiveness with given resources. It is also called return on investment (ROI). A study was made on the correlation of operating performance and liquidity in two countries (Japan plus Taiwan) (Wang, 2002). He also checks it out the correlation among value of firm plus liquidity. He takes the results and found that there was indirect relationship between return on equity, return on assets and CCC. He pointed out that although there must be dissimilarity into monetary structure as well as constitution distinctiveness of both states. Nevertheless, if the liquidity is high then the performance is also better that direct affected the firm's value.

1.1 Sales

The term sales means selling a product or service for returns of money or reward. Shin and Soenen (1998) argued that by adopting efficient credit policy, organizations can increase their sales and increasing in sales may results into larger cash cycle and larger cash cycle increase the profitability of the organization. However, usually the long cash conversion cycle affects the profitability of the organizations.

H1: *There is a significant relationship between sales and return on assets.*

1.2 Size

Size means how much a company retains of resources. The firm's volume extent to their functions in developing and progressing countries that is significant to the firms working in growing markets. In growing markets, the firms are typically low size with incomplete contact to longer period capital markets. Those firms are likely to depend on extra serious proprietor financing, trade on debt and short time debt funding to their desirable savings cash, receivables and inventories (Chittenden et al, 1998; Saccurato, 1994).

H2: *There is a significant relationship between size and return on assets.*

1.3 Numbers of day's receivable (NDR)

Sales are made on credit and recovery of the payments of these sales in the period is called number of day's receivable (NDR). The accomplishments of business greatly depend lying on the capability of financial managers to control cash conversion cycle (Filbeck and krueger, 2005). Organization can minimize firm's debt cost and raise the capital for obtainable ventures through reducing the amount of short term resources. If the firm have more current assets so that it directly affect the profitability. This is because negative relationship between excessive of short term assets and profitability. Gitman (1974) introduced the idea of cash conversion cycle is a critical management component of working capital. Cash conversion cycle is to describe the collection period that firm give for buying of main figure of stock period in which organization attain its sales of completed goods. Richards and Laughlin (1980) operational zed the thought by reflecting the cash cycle that net time gap among cash expenses on buying's and the final recovery revenue from the sale of goods. The positive method of cash conversion cycle is the number of days means stock in hand and collections negatively the number of day's costs to the suppliers. The combination of old learning is the parts among the cash conversion cycle. There are three forms. Combination among gains and stock (Sartoris et al., 1983), combine stock due (see Hadley, 1964; and Haley and Higgins, 1973), and combine parts of working capital (see Damon and Schramm, 1972; Crum et al., 1983). The parts link of working capital means to take action that one part affect another part of the organization (Sartoris et al., 1983). For example, stock managers are to take action at the stage of goods production. The large quantity of stock in other parts working capital (collections and payments) is to contribute as a threat that must be responding a decrease in quantity of final products to draw out an earnings edge. As an outcome, fruitless stock administration will have a cause on company's prosperity, by scheming payments and danger of not utilizing goods. Unluckily the relationship of researchers among the working capital management latter does not give positive results, McInnes (2000).

H3: *There is a significant relationship between No. of day's receivable and return on assets.*

1.4 Numbers of day's inventory (NDI)

An economic evaluation of a firm's performance to provides financiers an inspiration of how lengthy it gets a business to revolve its stock into sales. Usually, the lesser the number of days the good for firm. However, it is essential to keep in mind that the average inventory is change according to firm to firm and industry to industry. By maintaining the working capital, we also increase our liquidity. By this increasing our liquidity firm value also, increase. When we settle the inventory level more than our need, our production department must be in disturbance. By this, our delivering cost increase (Blinder and Maccine, 1991). Number of day's receivable, number of day's payable and number of days inventory as a complete measure of WCM that used for forming trade credit policy and inventory management policy. Deloof (2003) founds number of day's inventory (NDI), number of day's receivables and number of day's payables as significantly negatively correlated with gross operating income. Hence, he proposed that by decreasing the number of day's receivables and the number of day's inventory up to a certain level managers of firms can give value to their equity holders.

H4: *There is a significant relationship between No of day's inventories and return on assets*

1.5 Leverage

Leverage means funds take from outsider parties' likes banks, capital market, money market and other financial institutions. If a business is leveraged, we can say that firm takes loans to purchase assets. Raheman and Nasr (2007) made the research of ninety-four firms listed in KSE and take the results on WCM and profitability. He judged that there is the indirect correlation among profitability and WCM. In addition, they founded that leverage and liquidity have indirect correlation with WCM but size of the firm has direct relationship with profitability. Therefore, WCM is very important component in any type and size of the firm. If we want to increase the firm's performance then we must check it out those elements that directly or indirectly effect on the working capital. Wilner, (2000) view that the majority firms briefly utilize trade credit in spite of its clear larger cost and trade debt interest rates normally go beyond 16 percent. In 1993, Pakistani firms comprehensive their debts towards clients by investment. Deloof (2003) originate to analyze information from the National Bank of Pakistan that in 1997 no. of days accounts payable are 16 percent to total assets and no. of day's accounts receivables and no. of day's inventory are accounted for 21 percent and 24 percent correspondingly. Summers and Wilson, (2000) give arguments on KSE in chemical industry that is more than 80 percent of everyday business dealings based on credit.

***H5:** There is a significant relationship between leverage and return on assets*

1.6 Inventory

The supplies, work in process merchandise and finished goods that are ready for sale in the market. The inventory is the part of assets of the firm. A specific part of inventory is very necessary to keep with him because it is the source of our revenue and earnings. The linkage between the elements of working capital management (WCM) shows that decision about any of these elements affect the remaining elements and performance of other units of the firm (Sartoris et., 1983). The decision making about inventory value a lot about firm performance, if a firm takes high level of inventory, it will face risk of unused inventory so in this case other WCM elements (payables and receivables) will contribute to the risk and respond to decrease the level of finished goods to increase the profit. According to McInnes (2000), 94 percent of firms never build linkage between their WCM elements. One of the important scales for the efficient management of inventory is turnover. We calculate turnover by dividing annual sales with the average inventory. It specifies that how efficiently our invested cash in that inventory are generating benefits for us (Rose, 1979). The strength of working in the investment of inventory depends on strength of relation with turnover. Larger turnover results into larger efficiency. Therefore, by reducing the level of holding inventory we can increase turnover rates. Sometimes the reduction in the inventory level may cause shortage of inventory to customers in the required time (Coyle et., 1992).

***H6:** There is a significant relationship between inventory and return on assets.*

1.7 Equity

Equity is the outstanding attention in the resources of a firm that remains following withholding its liabilities. It also called shareholder's equity. Davic and Krstic (2001) made a research in Poland. They find out an indirect relationship among profitability and leverage when book value of firm is used for calculation of leverage. This relationship directly support to pecking order theory.

***H7:** There is a significant relationship between equity and return on assets*

1.8 Gross domestic Product (GDP)

Gross domestic Product (GDP) is the total market value of goods and services produces in a country in a given year.

***H8:** There is a significant relationship between GDP and return on assets.*

The hazards that incurred in Working capital management are related to organize the short term assets. It is impossible to attain considerable stage of capital. It is possible to become bankrupt and might be obligatory in liquidation (Altman's, 1968). Multivariate forecasting base on Pakistani corporations consist of working capital is a base mechanism. The information gather from the KSE organizations that is utilized, Taffler (1982) made a four components model that is not a successful forecast. Working capital consists of all four alternative components.

If we want to increase firm's performance, we decrease the inventory level, cash collection period and all those elements that affect our liquidity and working capital. We also focus on the payment period that as late as much possible is good for organization because if payment period is late then the amount that we pay latterly we use it to another investment opportunity that lead to increase our firm value plus performance.

The current assets are sufficient to meet its current liabilities to guarantee a logical edge of safety. Every current asset has to be organized perfectively to sustain liquidity whereas firms unable to high a stage of each of them. Every temporary source of finance continuously organized to make sure that are attained and used the finest feasible means. Main component that alert the working capital management substitution among productivity and threats which is connected to the stages of short term assets and liabilities. Afterward actions of working capital management are not long term actions. Managers utilized different methods to take action: cash changes or liquidity and profitability or capital Returns are key thoughts (from which cash flow is maybe significant).

Smith (1980) gives the significance of tradeoffs among the both objectives management of working capital, mainly among profitability and liquidity. He describes the actions that are able to increase the probability but not sufficient liquidity. On the other hand, decrease in possible profitability of the company focus on all liquidity.

The profitability and performance is completely depend on the management of the firm that how it manage their working capital. We take two aspects of WCM

1. If the firm not were able to use WCM in effective way then not only it affects the profitability but also monetary disaster.
2. If the firm has, more working capital then needed then we can say the firm made their funds inoperative.
3. Nevertheless, if the firm has less working capital then it itself create difficulties for him because it is occur then not only our operation could affect but also to our profitability.

Whereas the most predictable actions of financial changes in current ratio and liquidity ratio (see for example Emery, 1984; and Kamath, 1989) give arguments that continuing Liquidity of firm not dependent on the insolvency worth of assets but quietly working cash changes created by those assets.

In case the researcher affects the working capital management's conclusion affect the management of working capital. Two factors are discussed. The factors that affects the all companies are universal factors in which a few exact industries are exaggerated by these factors. A few universal factors which firms are political affairs (Carey, 1949), trade, financial conditions (Ben-Horim and Levy, 1983) and causes between industries (Hawaii, et al.,, 1986) and legislation (Peel et al., 2000). However, unique reasons are studied primary writing are administration structure (García- Teruel et al., 2007), management act (Krishna et al., 1993), savings rule (Seidner, 1990) and administration financial ability (Abdul Rahman & Mohamed Ali, 2006). By the diverse methods of study shows that influence alarming the working capital administration minimum number openly examined the influence on company act. The pragmatic inquiry whether a petite cash change sequence is having better effect for the corporation helpfulness is questioned from the preceding writing.

Pakistan Chemical Sector

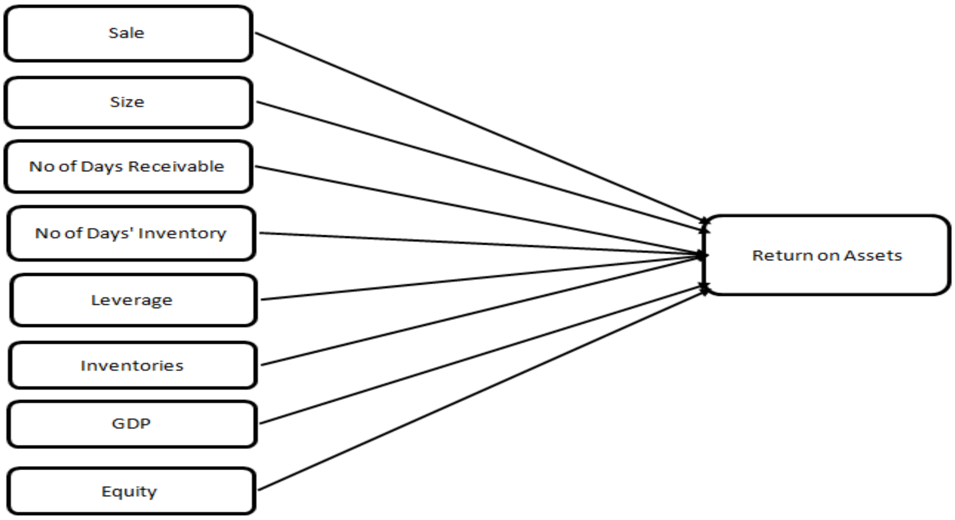
Most of the chemicals that we import from the different countries are developed. Nevertheless, Pakistan is developing country. Pakistan went through under number of reforms in Karachi Stock Exchange (KSE). In 2000, the Pakistan enters into a rising market. When Pakistan chemical industries enter into foreign trade there is a progress in chemical sector such as FFC is the most famous company in Pakistan who takes larger portion of KSE.

There are limited resources in Pakistan and many economical crises. This is because there is political instability in Pakistan. In foreign countries, the stock exchange is very strong, efficient and performance base but in Pakistan, the stock exchange is weak and event base due to economical and political crisis.

In Pakistan, there are two type of finance. First, is debt and second is equity. In Pakistan, debt is more use then ideal rate. However, the ideal situation of debt to equity is 60% equity and 40% debt. Because the condition in Pakistan is different, debt to equity is 73% debt and 27% equity utilized in Pakistan. Karachi Stock Exchange is trading in Pakistan like that progressing Markets.

The chemical sector produced a basis of capital in business to play vital role. Because the financial crisis in Pakistan are short in time. In Pakistan the KSE as well as central bank issued annual Reports of the Manufacturing companies progress that is concerned by the audit committee with some limited resources and financing in Pakistan. The availability of financing of short term financing and larger period of working capital is more efficiently and effectively for requirements. For the importance of company performance, how much company made investment in management for contribution?

Research Model



III. Methodology

We choose KSE for the collection data in this study we select the chemical sector in KSE & the 22 firms that are listed in KSE. In KSE, the firms that are listed must show their profits to attract investors. The listed firms are more incentives as compared to unlisted firms because the listed firms present their financial working and operations.

Here we take the data of manufacturing firms and do work on chemical sectors. In this paper, we take the sample of 22 firms 6 years data in chemical sector from KSE. The annual report of the period 2005-2010 of the 22 firms, which are listed in Karachi Stock Exchange. We study their annual reports deeply and apply different test for the analyses to apply a criteria for the filtration of data. In this paper, we take the balance sheets and income statements of the 22 chemical industries for the purpose of check the effect of return on assets on firm's performance.

IV. Data Analysis & Results

Descriptive statistics

	ROA	SALES	INVENT0RIES	GDP	EQUITY	NDR	NDI	SIZE	LEV
Mean	10.97	9139413	1005873.83	4.8313	4495950	39.301	69.251	12.051	26.685
Median	10.18	3214462	309667	5.68	1419022	29	95	6.505	0.5372
Maximum	49.03	88154698	7837089	7.67	27053639	365	274	44.34	3401
Minimum	-33.77	0	0	1.6	-4311020	0	2	5.17	0.0294
Std. Dev.	14.315	14489900	1475125.67	1.972	6259754	51.584	78.680	64.700	298.241

Mean of Return on asset is 10.97% of total fixed assets. It described that firms have average Return on asset is 10.97 percent. Its standard deviation is 14.31, which show that there is high deviation in Return on asset margin among sampled firms in our analysis.

The company number of day's receivables in chemical industries is 39.30 days, which shows that the firm number of receivables is better. The standard deviation of number of day's receivables is 51.58. The maximum and minimum value of NDR is respectively 365.0 and 0.00 days. The firm is number of days in inventory 69.25 that shows that the firm how much time takes the stock in hand. The mean of size of the firm's is 12.05. So the maximum and minimum values of size are respectively is 44.34 and 5.17 which shows that firm is in larger market

Working Capital Management and Firm Performance Measured by Return on assets

Dependent Variable: ROA		
Method: Panel Least Squares		
Sample: 2005 2010		
Variable	**Coefficient**	**Prob.**

C	-31.0469	0.0401
SALES	0.0000	0.0265
SIZE	6.7187	0.0061
NDR	-0.0693	0.0116
NDI	0.0145	0.0464
LEV	-0.0013	0.6835
INVENTRIES	0.0000	0.0119
GDP	0.1763	0.7299
EQUITY	0.0000	0.6258
R-squared	0.3662	
Adjusted R-squared	0.3225	
Durbin-Watson stat	1.1808	
Sum squared residual	14220.4471	
F-statistic	8.3775	0.0000

In this table, we measure Different variables. Here the Return on assets is the dependent variables and the NDR (number of days receivables) and NDI (number of days inventories) are the independent variables.

The relationship between ROA and other variables are positive or negative that shown in this table. NDR (no. of day's receivables) has inverse relationship with ROA, if NDR increased, the ROA decreased and if NDR decreased, the ROA is respectively increased. So that its affect on working capital management and firm's performance. There is a relationship between ROA and NDI (number of day's inventories) if inventories increase than ROA increased and if NDI decreased then ROA is decreased. R square shows change in dependent variables due to the change in independent variables. Adjusted R square adjusts the variables of the model. F statistics shows the significance of the model variables that how much the model is significance or not.

There is positive relationship between the sizes of the firm with ROA. If the short term assets or long term assets decreased firm size is also decreased. Leverage shows the firm debt to assets ratio in this study which is applied on the sample firms of the chemical sector of KSE. There is positive relationship between the Sales of the firm with ROA.

V. Conclusion

Due to the current USA, Subprime financial crisis the firms were stimulated to use the resources in efficient manners. There are huge literature available that gives importance for the long time financing and longer period investment. The firm short term investment that is important in these financial problems. In this paper, we measure the firm's performance by Return on assets. We ensure that the firms are able to meet their short period responsibilities and out flows that gave us the surety for profitability. The liquidity importance in this paper shows by firm working capital management and performance relationship, also display the firm position in the current market. Managers of the firms want to attain the relationship to maximize the firm profitability and liquidity value. In this paper, we attain data from many previous learning to determine the relation that give importance on the firms, which are developed. All the firms sample from chemical sector that are listed in Karachi stock exchange. Some of them are large and some are small they must try to manage their working capital. In these firms the forecasting which related to finance is very difficult. In this study, we determine the relationship among the working capital management that can be measured by the different variables. In this study, we predict the relationship between the dependent and independent variables, which have positive or negative relationship with the working capital and firm performance. In this paper, we found the negative relationship of working capital management with receivables and positive with inventory. We take here the sample of 22 chemical firms from Karachi stock exchange for 6 years from 2005-2010 and to utilized different variables to analyze them. In this paper, we ended with the management of working capital that is to manage the current assets and current liabilities and to provide finance to current assets. All the above studies result that how to motivate the managers and policy makers to attract investors, so that the managers pay attention to improve the working capital management and firms performance.

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