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IMPACT OF WORKING CAPITAL MANAGEMENT ON PROFITABILITY: A STUDY OF ELECTRICAL MACHINERY APPARATUS SECTOR OF KSE LISTED COMPANIES OF PAKISTAN[*]

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ABSTRACT

This study aims to find impact of working capital management on profitability of electrical machinery apparatus sector of Karachi Stock Exchange (KSE) listed companies of Pakistan. Return on assets is used as a proxy of profitability, which is dependent variable of this study. Independent variables that are used in this study are Current Ratio, Debt to Equity Ratio, Operating Cash flow to Debt Ratio, and Inventory Turnover Ratios of the firms. Time series data for period of 2007-2012 of electrical equipment firms listed on Karachi Stock Exchange were collected was collected from taken Karachi Stock Exchange and financial statements of firms, as well as. Our results showed that all independent variables are statistically significant and contains positive correlation with the profitability of electrical equipment firms listed on KSE. Therefore, there is need for policy makers to focus on the adoption of policies, which are in favor independent variables of this study.

Keywords: Return on assets; Inventory turnover ratio; Current ratio; Debt to equity ratio; Operating cash flow to debt ratio.

INTRODUCTION

The primary objective of any financial manager is to maximize the shareholders wealth. In this regard he has to make optimize decisions about maintaining of assets and liability level. Working capital simple means the current assets of the company that can be change from one type to other type during day to day operations of the firm (Gitman, 2002). Current assets are usually cash, prepaid expenses, short term investment, account receivables, inventory etc. Another term is used in this regard is Net working capital which is difference of current assets and current liabilities. It can be calculated by deducting the current assets from current liabilities. A financial manager takes decisions regarding the current assets and current liabilities this is called Working Capital Management (WCM). While making decisions he must consider the fact that a certain level of current assets is necessary to meet the short term liabilities and liquidity. This is the basic purpose of managing working capital that so to control the current financial resources of a firm in such a way that a balance is created between profitability of the firm and risk of insolvency.

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Here are two different theories to manage the working capital one of which is aggressive WCM policy and the second one is conservative WCM policy. An aggressive investment policy allows us to maintain high level fixed assets which generate the more profits. One the other end a conservative managing policy is opposite to it with less investment in fixed assets and more in current assets. For working capital aggressive policy implies that current liabilities are maintained in a greater portion as compared to long-term debts. WCM and profitability definitely have relation with each other. Previous research is available on this relationship but the sector i.e. Electrical and machinery equipment sector. Working capital is important part of business activities of a firm. For the electrical machinery sector as well, WCM is of crucial part. So, the objective of this study is to find out "Does efficient WCM have any impact on the profitability of firms of electrical and machinery equipment sector of Pakistan?"

Statement of the Problem

WCM is important area of finance because without proper management of working capital it is difficult for organization to run its operations smoothly. In order to explain the relationship between WCM and profitability different researches had been carried out in different parts of the world especially in developing countries. Despite the importance this issue failed to attract the attention of researchers in Electrical Equipment Sector of KSE Pakistan. Thus no research work is found while surfing on internet, browsing through the books and journals, on this topic In Pakistan. So by keeping in view the study is conducted to find out the relationship between WCM and profitability of the Pakistani Electrical Equipment Sector, and will also try to meet the gap between existing literatures.

Research hypotheses

Following are the hypotheses of this study:

H_1: There is significant relationship between Inventory turnover ratio and profitability of the firm

H_2: There is significant relationship between debt to equity ratio and firms profitability

H_3: There is no significant relationship between Current ratio and profitability of the firm

H_4: There is significant impact of operating cash flow to debt ratio on profitability of the firm

LITERATURE REVIEW

Gul, Rehman, Khan, and Khan (2013) observed the influence of WCM on performance of Small and Medium Enterprises (SMEs) in Pakistan. Independent variables were: number of days account receivable, number of day's inventory, CCC and number of days account payable. The data used in this study was taken from Small & Medium Enterprise Development Authority, Karachi Stock Exchange, tax offices, company itself and Bloom burgee business week. In addition to these variables some other variables were used which included firm size, debit ratio and growth. Oladipupu and Okafor (2013) examined the firm's WCM practice on its profitability and dividend payout ratio. Using both the Pearson product moment correlation technique and ordinary least square regression technique, they conclude that shorter net trade cycle and debt ratio promote high corporate profitability. The study focused on the extent of the effects of WCM on the Profitability and Dividend Payout Ratio. Financial data were obtained from 12 manufacturing companies quoted on the Nigeria

Stock Exchange over 5 years period (2002 to 2006). Almazari (2013) investigated the relationship between WCM and the firms' profitability for the Saudi cement manufacturing firm. The results showed that Saudi cement industry's current ratio was important liquidity indicator which effected profitability, the cement firms must choose a trade-off between these two objectives so that, neither the liquidity nor profitability suffers. The sample was taken 8 Saudi cement manufacturing companies listed in the Saudi Stock Exchange for period of 5 years from 2008-2012. Ahmad, Azeem, and Rehman (2013) investigated the effect of WCM on the operating liquidity of manufacturing companies listed on Karachi Stock Exchange, Pakistan. The study concluded that operational liquidity of manufacturing firms can be improved by using proper policies and strategies of WCM.

Al-Mwalla (2012) investigated the impact of WCM on the firms' profitability and examined in a sample of 57 companies on Amman Stocks market for the period of 2001 to 2009. This was concluded a conservative policy of investment has a positive impact on the company's profitability. Napompech (2012) argued that working capital is needed for day-to-day operations of a firm. The regression analysis was based on a panel sample of 255 companies listed on the Stock Exchange of Thailand from 2007 through 2009. The result showed significant negative relationship between gross operating profits and inventory conversion period and the receivables collection period. Nyabwanga, Lumumba, Odondo, and Otineo (2012) examined the impact of WCM on performance of SSEs in Kisi South District, the findings of the study were that, WCM practices were low among SSEs as majority had not adopted formal WCM routines and their performance was on a low side.

Afeef (2011) in his paper on investigating the effect of WCM on Profitability of SME's in Pakistan based on a sample of 40 Pakistani SMEs listed in Karachi Stock Exchange for a period of six years from 2003 to 2008 leading to a total of 240 observations. The Correlation matrix of the pooled data of firms observed, significant negative relationship of the Inventory Conversion Period and the Receivable Collection Period with the Operating Profit to Sales was observed. .However, no significant relationship was found between the profitability and the Payable Deferral Period, CCC & Current Ratio.

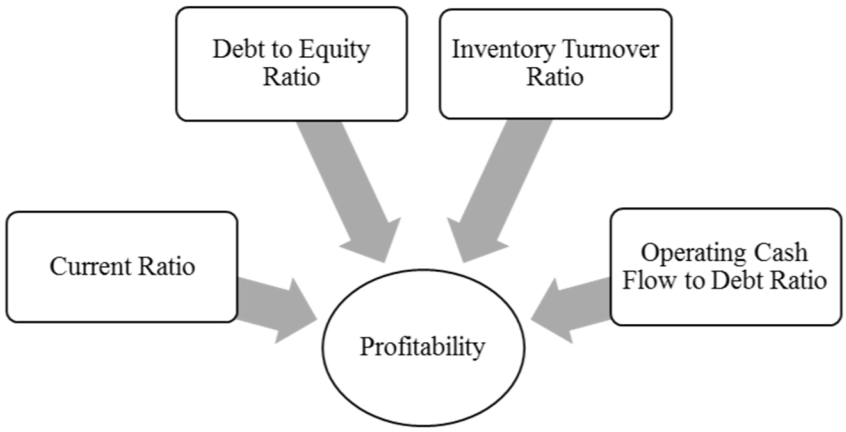
Afza and Nasir (2010) found a significant and positive relationship between WCM and profitability. Gill, Biger, and Mathur (2010) draw a conclusion by using pearson correlation model that if account receivable, inventory, account payable are maintained at optimal level then the firm may generate maximum profits. Dong and Su (2010) observed the significant positive association of CCC with the return on assets of the firms. Kumar and Sharma (2011) observed that in India, CCC has positive significant relationship with profitability of the firm. Johnson and Templar (2011) stated that there is passively significant impact of current assets on the return on capital employed. Mehmood, Jan, and Ullah (2010) concluded that, to improve profitability of a firm and sufficient liquidity to meet short term liabilities as it fall due are two objects of WCM initiative release capital and increase profitability that can be used for investments or to reduce the debt. It also works for to improve efficiency in the areas of receivables, inventories and payables.

Uyar (2009) also worked on it and conclude that there is significant positive relationship between WCM and profitability but one of the variable that was Cash Conversion Cycle (CCC) showed negative association with WCM. Lue, Lee, and Hwang (2009) concluded that if a firm's value enhanced the CCC will decreased. Above mentioned review of empirical studies shows mix evidence in context of impact of WCM on profitability of firm. In a few studies, impact of WCM is weak, whereas, most of the studies provided strong deviance that WCM has positive and significant impact on firm's profitability. Their level of significance vary from country to country and sector to sector.

CONCEPTUAL FRAMEWORK AND RESEARCH DESIGN

Working capital means current assets of the firm. We have to maintain the current assets to meet the short term obligations as well as to run the operating activities. But this is observed that maintaining the high level of working capital may harmful for the profitability of the company because high level of current assets means high level of investment freeze. On the basis of this logic research is attempt to explore the effect of working capital on profitability of electrical machinery sector of Pakistan. The purpose of this study is check impact of working capital management on profitability of the electrical machinery apparatus sector of KSE listed sector of Pakistan. Empirical studies witness on inclusion of various variables concerned to working capital such: return on assets, asset test ratio, current ratio, inventory turnover ratio, operating cash flow to debt ratio are the variables used in this study.

FIGURE 1
Schematic Diagram



Variables and their Measurement

Our study included four independent variables (i.e. return on assets, asset test ratio, current ratio, inventory turnover ratio, operating cash flow to debt ratio) to check their impact on dependent variable (i.e. Profitability). A brief explanation of concerned variable are as below.

Inventory turnover ratio. This ratio shows how many times firm inventory is sold and replaced over a particular period. The days in the period can be divided by the inventory turnover formula to calculate the days it takes to sell the inventory on hand or 'inventory turnover days'. Generally, this ratio calculated as:

$$ITR = \frac{Sales}{\text{Inventory}}$$

However, this ratio may also be calculated as:

$$ITR = \frac{Cost\ of\ Goods\ Solod}{\text{Average Inventory}}$$

Current ratio. Firm's ability to pay short term debt is called current asset ratio. It can be measured, current asset divided by current liabilities.

$$CR = \frac{Current\ Assets}{\text{Current Liabilities}}$$

Debt to equity ratio. It is ratio of total liabilities of the company to its stockholders equity. This ratio is a leverage ratio, and measures the degree to which the assets of the

business are financed by the debts and the shareholders' equity of a business. DER is calculated using the following formula:

$$DER = \frac{Total\ Liabilitties}{\text{Shareholdeers'}Equity}$$

Operating cash flow to debt ratio. This ratio compares a firm's operating cash flows to its total debt. This ratio provides an information of a firm's ability to cover its debt with yearly cash flow from operations. Generally, this ratio calculated as:

$$OCDR = \frac{Operating\ Cash\ Flow}{Total\ Debt}$$

Return on assets. This ratio shows how profitable a firm's assets are in generating revenue. ROA can be computed as:

$$ROA = \frac{Net\ Income}{Average\ Total\ Assets}$$

Collection of Data, Statistical and Econometrics techniques be applied

Time series data on above mentioned variable (i.e. ITR, CR, DER, OCDR, and ROA) were gathered from electrical equipment firms listed on Karachi Stock Exchange. Data were used for the period 2007 to 2012. Furthermore, Financial statements of some of firms were are used to verify the relativity of data sources.

In this paper, we employed vastly used method (i.e. Ordinary Least Square (OLS), as this conducted to view the dependence of some variables on other. We have also checked the characteristics of data by calculating the descriptive statistics of concerned variables. Econometric form of model is as below:

$$\text{ROA} = \beta_0 + \beta_1 \text{ITR} + \beta_2 \text{CR} + \beta_3 \text{DER} + \beta_4 \text{OCDR} + \varepsilon_t$$

Here, β_0 indicates constant term of model; β_1, β_2, β_3, and β_4 refers to coefficients of independent variables (i.e. ITR, CR, DER, and OCDR); and ε_t is error term. Furthermore: ROA refers to Return on Assets

- ROA refers to Return on Assets
- ITR refers to Inventory Turnover Ratio
- CR refers to Current Ratio
- DER refers to Debt to Equity Ratio
- OECD refers to Operating Cash Flow to Debt Ratio

RESULTS AND DISCUSSION

In this study, we have employed OLS method to test our hypothesis and to achieve the objected of study, such as: descriptive statistics, correlation between the dependent and independent variables, ANOVA test, and Durbin Watson test etc.

TABLE 1

Descriptive Statistics of Variables

Variables	Mean	Standard Deviation	N
ROA	5.5000	4.7334	6
CR	1.1850	.05244	6
DER	2.1883	.21217	6
ITR	4.8650	.91666	6
OCDR	-.0083	.04535	6

Note. ROA, CR, DER, ITE, and OCDR refers to Return on Assets, Inventory Turnover Ratio, Current Ratio, Debt to Equity Ratio, and Operating Cash Flow to Debt Ratio.

Table 1 shows the descriptive statistics variables (i.e. ROA, ITR, CR, DER, and OECD). Results indicates that mean values of Variables are 5.50, 1.185, 2.1883, 4.865, and -0.0083 for the ROA, CR, DER, ITA, and OCED respectively. Whereas, standard division values indicates how much real values are deviate from the mean value. Results shows that real values of ROA, CR, DER, ITR, and OCDR are deviate from the mean value about 4.7334, 0.0524, 0.2121, 0.9166, and 0.0453 respectively.

TABLE 2
Correlation between the Dependent and Independent Variables

		ROA	CR	DER	ITR	OCDR
Pearson Correlation	ROA	1.000	.311	.519	.941	-.196
	CAR	.311	1.000	-.515	.145	-.433
	DER	.519	-.515	1.000	.495	-.018
	ITR	.941	.145	.495	1.000	-.201
	OCDR	-.196	-.433	-.018	-.201	1.000

Note. ROA, CR, DER, ITE, and OCDR refers to Return on Assets, Inventory Turnover Ratio, Current Ratio, Debt to Equity Ratio, and Operating Cash Flow to Debt Ratio.

If we look at the table for correlation, return on asset is correlated with current ratio about 31 percent, with debt equity ratio about 50 percent, with inventory turnover ratio about almost 94 percent, and whereas, operating cash flow to debt ratio is negatively correlated with return on assets.

TABLE 3
Model Summary

Model	R Square	Durbin Watson
	.515	2.136

Table 3 shows values of R-square and Durbin Watson. Durbin-Watson test indicates 2.136 value to check the auto correlation and it shows there is no problem of auto correlation between the variables. Whereas, the value of R squared explained the variation of data results showed the independent variables (i.e. IRT, CR, DER, and OCDR) explains 51 percent variation in the dependent variables (i.e. ROA as measure of profitably). Table 4 shows result of ANOVA test of this study. F-test is applied to check the fitness of a model. Results showed .005 which is lesser than .05 so this model is overall good fit.

TABLE 4
Results of ANOVA

Model	F Value	Sig.
	23940.865	0.005(a)

Table 5 show details results of regression analysis. T-test is applied to see the fitness of model for individual variable. Results shows that t-test value of each variable is less than .05, which tells us that all independent variable are statistically significant at 5 level of confidence and model is good fit for each variable. Another test that is Variance Inflation Factor (VIF) also applied to check multicollinearity between the variables, and the results showed all independent variables (i.e. DER, ITR, and OCDR) have not contain problem of multicollinearity, alternately, only CR ratio has a little problem of multicollinearity. After putting the value of constant and confidents, the econometric form of our final model is as below:

$$\text{ROA} = 29.390 + 3.469\ \text{ITR} + 47.494\ \text{CR} + 10.262\ \text{DER} + 18.243\ \text{OCDR}$$

TABLE 5
Details Results of Regression Analysis

	Unstandardized Coefficients		T	Sig.	95% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Lower Bound	Upper Bound	Tolerance	VIF	B	Std. Error
(Constant)	29.390	.691	-130.199	.005	-98.742	12.183		
CR	47.494	.461	103.038	.006	41.637	21.351	.400	2.497
DER	10.262	.118	86.598	.007	8.756	11.767	.370	2.702
ITR	3.469	.023	151.842	.004	3.179	3.760	.533	1.875
OCDR	18.243	.395	46.169	.014	13.222	7.264	.729	1.372

Note. All variables are define previously, VIF, B, and Std. Error refers to Variance Inflation Factor, Coefficients of Betas, and standard Error.

CONCLUSIIONS

The purpose of this study was to check impact of WCM on profitability of electrical machinery apparatus sector of KSE listed companies of Pakistan. Data were gathered for the period 2007 to 2012. OLS method employed to achieve the objectives of this study. We used four independent variable (i.e. ITR, CR, DER, and OCDR). Our results shows that all independent variables have significant impact on profitability of electrical machinery apparatus sector of KSE listed companies of Pakistan. Further, about 52 percent variation in profitability is explained by the independent variables. There is also positive relationship between profitability and independent variables. Therefore, there is need to focus on ITR, CR, DER, and OCDR to enhance the profitability of this sector. Our results suggest that policy maker have need to adopt policy, which are in favor of development of ITR, CR, DER, and OCDR.

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