



The Effect of Working Capital Management Efficiency on the Operating Performance of the Industrial Companies in Oman

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ABSTRACT

The aim of this study is to examine the effect of working capital (WC) management efficiency on the operating performance of industrial companies listed in the Muscat Securities Exchange (MSM) in Sultanate of Oman. The study employed an explanatory non-experimental research design. 37 out of 48 industrial companies listed in the MSM were taken. The study used the data contained in the annual reports of these companies for the period 2009-2013. The WC management efficiency is measured WC ratios such as cash conversion cycle, current ratio, current assets turnover, net WC ratio (NWCR), while the operation performance is measured by net operating profit (NOP) and earnings before interest and tax. The regression results revealed that the first model is significant and there are only cash conversion cycle and NWCR have impact on the NOP, but the second model is insignificant.

Keywords: Working Capital Management Efficiency, Operating Performance, Working Capital Ratios

JEL Classifications: G30, G32, L25

1. INTRODUCTION

The working capital (WC) management decisions are one of the short term decisions of financial management. These decisions involved a firm's short-term assets and liabilities. It is focusing on the management of the firm's current assets and current liabilities. The main purpose of WC management is to reach optimal balance between WC management elements. The WC management efficiency is a main part of the overall organization strategy to create a value for shareholders (Afza and Nazir, 2008).

There are two types of WC; gross WC and net WC. The first one refers to a firm's current assets used in operations, including cash, marketable securities, accounts receivable, and inventory. Second, net WC refers to the relations between current assets and current liabilities where this net is calculated by current assets minus current liabilities.

There are many theoretical and empirical evidences revealed the importance of WC management. Theoretically, minimization of investments in current assets may create many problems to the

firm's operations. Deficiencies in these assets will lose the firm most opportunities to increase the liquidity and profitability. The maximizing of WC leads unnecessary accumulation of inventories and other current assets leading to many problems. For example, this will create inventory mishandling, wastage and theft; higher level of bad debts and increased operating inefficiencies (Barine, 2012).

Efficiency in the management WC requires a clear understanding of the economics of trade-off involved in it. Therefore firms try to keep an optimal level of WC that maximizes their value (Deloof, 2003).

In the same manner, Napompech (2012) confirmed that the efficient WC management involves managing current assets and current liabilities in a method that provides balance between removing potential inability to cope with short-term debts and avoiding unnecessary holdings in these assets.

There are many proxies to measure the efficiency of WC management. One of the most important proxies is cash conversion

cycle (CCC) which is the time lag between purchase of raw materials and the collection of cash from the sale of finished goods. If the time lag is longer, it means greater investment to WC elements and this causes greater financing needs (Vural et al., 2012), (Sen and Oruc, 2009). In this context, cash conversion efficiency is measured by relating net cash flows from operating activities to sales revenue (Kaur and Singh, 2013).

Another proxy is current ratio (CR) which means the relationship between current assets and current liabilities. It is measure the ability of the firm to pay off their short liabilities in the short-term period. The CR is computed by dividing the firm's current assets by its current liabilities (Baker and Powell, 2005).

The net WC to total assets ratio also used a proxy to measure the WC efficiency. It is computed by dividing net WC by total assets. This ratio provides information for liquidity because it indicates the percentage of total assets the firm carries as net WC. A higher ratio indicates a stronger liquidity position.

Current assets turnover (CAT) is another ratio for efficiency of WC management. This ratio refers to the portion of resources that are circulated again and again. This ratio is calculated by dividing current assets by total assets (Asad, 2012).

Theoretically and empirically, there are many other measures used in the frame of measuring the efficiency of WC such as accounts payable turnover, accounts receivables turnover, and inventory turnover, fixed financial assets ratio, financial debt ratio and size (Natural Log of Sales).

The present study employed two models of WC efficiency. The first model examines the effect of popular measures such as CR, CAT, net WC turnover and CCC as independent variables on net operating income as dependent variable. The second one tests the same independent variables on earnings before interest and tax (EBIT). Therefore, the study tested two hypotheses concerning each model. The first hypothesis tested the effect in the first model, while the second hypothesis tested the effect in the second model.

The aim of this study is to examine the effect of WC management on the operating performance of industrial companies listed in the Muscat Securities Exchange (MSM) in Sultanate of Oman. The study employed an explanatory non-experimental research design. All 48 industrial companies listed in the MSM were taken. The study used the data contained in the annual reports and financial statements of listed these companies for the period 2009-2013. The WC management efficiency is measured WC ratios such as CR, CAT, WC turnover, while the operation performance is measured by gross margin and EBIT.

Lack of an empirical evidence on the measuring the efficiency of WC management in industrial sector of Oman is a main motivating force to study the issue in more detail. Therefore, the present study is an attempt to fill this gap and evaluate the relationship between WC management and firm performance for a sample of 48 industrial firms listed on Mascut Securities Market for a period of 2009-2013.

The study consists of five sections. In the current section; the study presented the introduction including the aims, problem of the study, the hypotheses and some theoretical issues. The second section presents the literature review. In the third section, the study presented the model, data and methodology used in this study. Section four provides results of the analysis, and finally, in section five, the study presented the conclusions.

2. LITERATURE REVIEW AND EFFICIENCY OF WC MANAGEMENT

Efficient of WC management is an important for achieving both liquidity and profitability of an organization. A weak and inefficient WC management leads to tie up funds in idle assets and reduces the liquidity and profitability of an organization (Reddy and Kameswari, 2004). Efficient liquidity management involves planning and controlling and in such a manner that eliminates the risk of inability to meet due short-term obligations and avoids excessive investment in these assets.

The company should have an effective WC management policy. This policy requires that managers find appropriate investment levels of cash, marketable securities, accounts receivable, and inventories and the appropriate level and mix of short-term financing.

Generally, there are three tendencies to discuss the WC management. The first one is related to components and determinants of WC. In this tendency, the literature review is discussed the optimal investment in WC and its components and the determinants which are responsible for this optimal investment in WC. Most of these literatures concluded that the components and determinants of WC have impact on the firm's operations.

Manoori and Muhammad (2012) examine the determinants of WC of 94 firms listed on Singaporean exchange for 2003-2010. They revealed that firm size, operation cash flow, capital expenditures, and gross domestic products negatively are associated to the WC management. Also, the study indicated that firms with more profitability have longer CCC. Finally, the study did not find any significant association between CCC and debt ratio.

Abbadi and Abbadi (2013) examine the determinants of WC for Palestinian industrial firms. They used a sample of 11 industrial firms that are listed on the Palestine Securities Exchange for 2004-2011. Their model includes WC as the dependent variable, while there are some financial and economic variables, such as CCC, operating cash flow, leverage, firm size, return on assets, interest rate on loans, and economic growth rate, as independence variables.

The study found that the CCC, return on assets and operating cash flow are significant determinants and positively related to the WC, while leverage and firm size are significant but negatively related to the WC.

Wasiuzzaman and Arumugam (2013) examine the determinants of WC for 192 Malaysian companies for 2000-2007. The study

includes a wide range of determinants such as leverage, age of the firm, level of investment of tangible assets, sales growth and board of directors' characteristics. The study found that there are some determinants have a significant association with WC while other determinants have not.

Binti Mohamad and Elias (2013) investigates the practice of WC management in 150 public listed companies from seven different sectors that were listed in Bursa Malaysia Main Market covering the period of 2002-2011 was undertaken. The study used CCC and WC as a proxy for WC requirement while debt, capital expenditure, free cash flow, gross domestic product and firm growth are used as the determinant variables. The result of the study showed that there are significant associations between WC and its determinants factors.

Salawu and Alao (2014) explored the factors determining the WC in the listed manufacturing firms in Nigeria for the periods 2000-2009. Financial variables such as sales, purchases, inventory, creditors, debtors and total assets were extracted from the the results showed that the significant factors determining WC included sales growth, size of the firm, gross domestic product, leverage. The proportion of fixed assets to total assets and the net trading cycle also determined WC but were not significant at the 0.05 level.

The second tendency is related to policy or approach of WC. Most of the following studies tested the association of policies such as aggressive, conservative, investment and financing policies and profitability and liquidity to determine which policy or approach prefers.

Afza and Nizar (2008) investigate the association between the aggressive/conservative WC policies for 17 industrial groups of public limited companies listed at Karachi Stock Exchange for a period of 1998-2003. The study found significant differences among their WC investment and financing policies across different industries. Also, the study found a negative association between the profitability measures of firms and degree of aggressiveness of WC investment and financing policies.

Al-Shubiri (2010) examines the impact of aggressive/conservative WC investment and financing policy on profitability and risk of industrial Jordanian firms for the period of 2004-2007. The total sample of the study consists of 59 industrial firms listed on Amman Stock Exchange. The result showed a negative association between the profitability and degree of aggressiveness of WC investment and financing policy.

Padachi et al. (2012) examines the approaches of WC financing in a sample of Mauritian small and mid-sized manufacturing companies. The study was depending on the survey and case studies. A total of 145 survey forms were collected out of a sample of 420 manufacturing companies. The results indicate that the internal resources, non-bank sources and short-term debts are the main sources of financing. The study provided some new evidence in support of the different policies to financing WC.

The third tendency is related to measure the efficiency of WC. Most of those studies examined the effect of the efficiency of WC and profitability measured by EBIT, return on assets (ROA), gross operating profits, return on equity (ROE) and firm value.

Ramachandran and Janakiraman (2009) analyze the association between WC management efficiency and EBIT of the paper industry in India during 1997-1998 to 2005-2006. They measured the efficiency by three index values; performance index, utilization index, and efficiency index. The control variables are CCC, accounts payable days, accounts receivables days, and inventory days. Further, fixed financial assets ratio, financial debt ratio and size (Natural Log of Sales) are considered as in the analysis, and are associated with the EBIT. The study reveals that the paper industry has managed the WC satisfactorily. The accounts payable days has a significant negative association with EBIT and the paper industry in India performs remarkably well during the period.

Sen and Oruc (2009) determine the association between efficiency level of firms being traded in Istanbul Stock Exchange in WC management and profitability measured by ROA. According to the results in terms of both all the firms involved in the study and sectors there is significance negative association between CCC, net WC level, CR, accounts receivable period, inventory period and ROA.

Raheman et al. (2010) analyze the impact of WC management on firm's performance in 204 Pakistani manufacturing firms listed on Karachi Stock Exchange for the period 1998-2007. The results indicate that the CCC, net trade cycle and inventory turnover in days are significantly affecting the performance of the firms. The financial leverage, sales growth and firm size also have significant effect on the firm's profitability.

Charitou et al. (2010) used a sample of firms listed in the Cyprus Stock Exchange for the period 1998-2007 to investigate the effect of WC management on firm's financial performance of. The results indicate that the CCC and all its major components; namely, days in inventory, days sales outstanding and creditors' payment period – are associated with the firm's profitability measured by ROA.

Afeef (2011) determines the potential effect of WC management on the profit performance of a sample of 40 Pakistani small and medium enterprises listed in Karachi Stock Exchange for a period from 2003 to 2008. The profitability indexes used in this study were ROA and operating income. The result indicated that indicators of WC management had a perceptible impact on profitability of s sample under study.

Napompech (2012) examine the effects of WC management on profitability. The regression analysis was based on a panel sample of 255 companies listed on the Stock Exchange of Thailand for period 2007-2009. The results indicated a negative association between the gross operating profits and inventory conversion period and the receivables collection period. The results also showed that industry characteristics have an impact on gross operating profits.

Vural et al. (2012) in their study used the secondary data collected from 75 manufacturing firms listed on Istanbul Stock Exchange Market for the period 2002-2009. The study examines the association between WC management components and performances of the firms measured by gross operating profit and firm value measured by Tobin Q. They found that the firms can increase profitability by shortening collection period of accounts receivable and CCC.

Akoto et al. (2013) examine the relationship between WC management practices and profitability of all the 13 listed manufacturing firms in Ghana for the period from 2005 to 2009. The study used ROE as a proxy for profitability. The results indicate that there is a significantly negative relationship between profitability and accounts receivable days. However, the firms' CCC, current asset ratio, size, and current asset turnover significantly positively influence profitability.

Kaur and Singh (2013) analyses the WC performance of 164 Indian manufacturing BSE 200 companies classified into 19 industries over the period of 2000-2010. The model of this study includes independent variables, namely; cash conversion efficiency, days operating cycle and days WC. The dependent variables are profitability measured by income to current assets and income to average total assets. The results indicated that the efficient management of WC significantly affects profitability.

Jayarathna (2014) evaluated the effect of WC management on profitability (ROA) using a 5 years (2008-2012) dataset on 20 industrial companies listed in Colombo Stock Exchange in Sri Lanka. The study found that the industrial companies can enhance their profitability by a good managing of WC.

Finally, the literature review in general indicated that a strong relationship exist between WC management and profitability, but after having a condensed literature review an ambiguity arises that which variable or ratio of WC management is more influential than the other. It varies from industry to industry.

3. RESEARCH METHOD, DATA AND METHODOLOGY

3.1. Model for WC Management and Performances

The econometric models developed comprise two equations. The first model utilizes net operating profit (NOP) as performance indicator while the second model utilizes EBIT. These equations are tested in the current study and are formally presented below:

$$EBIT_{it} = \alpha_0 + CCC_{it} + CR_{it} + CAT_{it} + NWCR_{it} + \varepsilon_{it} \quad (1)$$

$$EBIT_{it} = \alpha_0 + CCC_{it} + CR_{it} + CAT_{it} + NWCR_{it} + \varepsilon_{it} \quad (2)$$

NOP - Net operating profit ratio

EBIT - Earnings before interest and tax ratio

CCC - Cash conversion cycle ratio

CR - Current ratio

CAT - Current assets turnover

NWCR - Net working capital ratio

α - Constant

β - Beta

ε - Error term

i - i^{th} firm

t - t^{th} period

The study used the following measures to define the variables of the equations (Table 1):

These models were tested used correlation and regression. F-test was used to find the differences between the three distinguished sectors in the industrial sector. Normality check of the data was also carried out in this study.

3.2. Sample Selection and Data Collection

The target population is all industrial companies listed on Muscat Securities Market (MSM) in Sultanate of Oman. There are 48 companies in the industrial sector listed on (MSM) during the period of this study. Within the sector; 18 companies in food sector and 10 companies in construction sector and 10 companies in chemical sector. The rest of companies are 10 were excluded because the number of companies in each subsector are very limited (4 companies in electricity, 4 companies in mining and 2 companies in textile). Also, the study exclude one company from food industry sector because it is financial statements are not competed. Data of this study was collected from secondary sources. Accounting and market information were collected from MSM database. The methodology of the study is a content analysis of annual reports of a sample 37 companies out of 48 (77.08%) for the period 2009-2013. Table 2 imagines the distribution of sample for all sectors.

The annual reports for the sample were checked then calculate the value of all variables for testing by using the Statistical Package for the Social Sciences software. Unfortunately, the only annual reports of this period are presented on the website of MSM because the market itself began to publish the reports since 2007. Some of the companies in the sample were registered in the 2008.

Table 1: Definition of variables

| Variables | Definition |
|-----------|--|
| NOP | Net operating profit/sales |
| EBIT | Earnings before interest and tax/sales |
| CCC | Cash from operating activities/sales |
| CR | Current assets/current liabilities |
| CAT | Current assets/total assets |
| NWCR | Net working capital/total assets |

Table 2: Population and samples

| Sector | Population | Number of sample | % |
|--------------|------------|------------------|-------|
| Food | 18 | 17 | 94.4 |
| Construction | 10 | 10 | 100 |
| Chemical | 10 | 10 | 100 |
| Other | 10 | 0 | 0 |
| Total | 48 | 37 | 77.08 |

4. RESEARCH FINDINGS

4.1. Multicollinearity Test

According to this test, it is very serious to ensure that the independent variables are not influencing by other independent variables. Table 3 indicates that multicollinearity is not a problem, as the correlations between all independent variables are relatively low and all of them are insignificant.

It seems that the problem of multicollinearity between independent variables are not significant because all correlations are less and insignificant. In our case, the multicollinearity is not a problem and we can depend on the model.

4.2. Results and Discussion

4.2.1. Regression analysis (all sectors)

Regression analysis, utilizing the ordinary least squares method, is used to test the first hypothesis. Table 4 showed the correlations between the variables as follows:

As in the Table 4, in the first model, it seems that the correlation between dependent variable (NOP) and net WC ratio (NWCR) is positive and significant at 0.01. The correlations between (NOP) and CR and CCC are insignificant. In the second model, the correlation of variable NWCR is positive and significant at 0.01.

Table 3: Correlations matrix

| Variables | CR | WC | CAT | CCC |
|-----------|--------|--------|--------|-----|
| CR | 1 | | | |
| WC | -0.023 | 1 | | |
| CAT | -0.020 | -0.025 | 1 | |
| CCC | -0.189 | -0.074 | -0.066 | 1 |

**Correlation is significant at the 0.01 level (two-tailed). CR: Current ratio, CAT: Current assets turnover, CCC: Cash conversion cycle, WC: Working capital

Table 4: Correlations of two models

| Sample | Variables | CCC | CR | CAT | NWCR |
|---------|-----------|----------|----------|-------|---------|
| Model 1 | NOP | -0.514** | -0.587** | 0.208 | 0.460** |
| Model 2 | EBIT | -0.574** | -0.559** | 0.280 | 0.560** |

**Correlation is significant at the 0.01 level (two-tailed). Source: SPSS output, CR: Current ratio, CAT: Current assets turnover, CCC: Cash conversion cycle, NWCR: Net working capital ratio

Table 5: Model summary of two samples

| Model | R | R ² | Adjusted R ² | Standard error of the estimate |
|-------|--------------------|----------------|-------------------------|--------------------------------|
| 1 | 0.678 ^a | 0.460 | 0.390 | 4.11306 |
| 2 | 0.272 ^a | 0.074 | -0.045 | 99.99562 |

^aPredictors: (Constant), CCC, CR, CAT, NWCR. Source: SPSS output, CR: Current ratio, CAT: Current assets turnover, CCC: Cash conversion cycle, NWCR: Net working capital ratio

Table 6: ANOVA^b of two models

| Model | Sum of squares | | df | | Mean square | | F | Significant |
|------------|----------------|------------|---------|---------|-------------|---------|-------|--------------------|
| | Model 1 | Model 2 | Model 1 | Model 2 | Model 1 | Model 2 | | |
| Regression | 446.310 | 24846.196 | 4 | 111.577 | 6211.549 | 6.595 | 0.621 | 0.001 ^a |
| Residual | 524.436 | 309972.818 | 33 | 16.917 | 9999.123 | | | 0.651 ^a |
| Total | 970.746 | 334819.013 | 37 | | | | | |

^aPredictors: (Constant), CCC, CR, CAT, NWCR, ^bDependent variable: Model 1: NOP, Model 2: EBIT, Source: SPSS output. CR: Current ratio, CAT: Current assets turnover, CCC: Cash conversion cycle, NWCR: Net working capital ratio, NOP: Net operating profit, EBIT: Earnings before interest and tax

The correlations between EBIT and CCC and CR are negative and significant at 0.01. Also, the correlations between EBIT and CCC and CR are negative and insignificant at 0.01.

Table 5 showed that R² is 0.46 and 0.074, which implies that independent variables included in the two models explain 46.0% and 7.4% respectively. It is obvious in Table 5 that explanation power of Model 1 is 46%, while it is 7.4% for Model 2. For Model 1, the R² is supporting the model while the R² is not supporting the significant of Model 2.

Table 6 presented the regression results. These results show that F-ratio is 6.595 for Model 1 which is significant at 0.01 and 0.621 for Model 2 which is not significant at 0.01 (or 0.05). The results of Model 1 statistically support the significance of the regression model, but the Model 2 is statistically not support the significance of the regression model.

Table 7 indicated the definition of each variable in the equation of two models.

Table 7 explains that the NWCR and CCC in the first model are significant variables in the regression equations (Significant <0.05). It means that the NOP influenced by NWCR since the firms with high level of this ratio has a good NOP. Also, the CCC has impact on NOP. This result shows that more profitable firms under industrial sector failed to reduce the CCC. This requires that firms can create value for their shareholders by keeping the CCC to minimum.

4.2.2. Test for Model 1 Three sectors (dependent variable NOP)

Table 8 explores the results of regression Model 1 in three industrial sectors; food, construction and chemical. The regression Model 1 is run to examine the impact of the CCC, CR, CAT and NWCR on NOP:

The regression showed only a significant positive impact of 5.044 for NWCR on NOP in the food sector and significant negative effect of -2.923 for CCC on NOP in the construction sector. There are no significant effect of others variables on NOP in the above two sectors. Finally, there are no association between all variables and NOP in the chemical sector. In the food and construction sectors, the R² is supporting the results. This means that the independent variables interpret 76.5% and 51.7% respectively in the variance of NOP in both sectors. These results indicate that increase the net WC by increase current assets or decrease current liabilities or both leads to increase the NOP in the food sector. This result is consistent with the logic of operations in food sector because NWCR indicates the percentage of total assets the food firms carry as net WC. A higher NWCR indicates a stronger liquidity condition and this is what food firms are needed.

In the construction sector, there is only CCC has a negative impact on NOP. This means that the decrease in CCC leads to increase in NOP. The construction firms used their cash in operating activities and they need to convert cash into raw materials and not to tie up this cash in the banks or in hand.

4.2.3. Test for Model 2 Three sectors (dependent variable EBIT)

Table 9 explores the results of regression Model 1 in three industrial sectors; food, construction and chemical. The regression Model 2 is run to examine the impact of the CCC, CR, CAT and NWCR on EBIT:

As in the Table 9, the second model is significant only in the food sector which is significant at 0.01 but it is not in the other two sectors. In the model, only NWCR has impact on EBIT at 0.01 significant which means that the profitable companies have a high WC and they have enough current assets to cover current liabilities. In other words, the liquidity risk in terms of high current liabilities is insignificant. The R^2 (72.5%) is supporting the results which means that any increase in the NWCR leads increase in EBIT. In the construction and chemical, the model is insignificant and there are no any independent variables have impact on EBIT. Statistically, this is may be true because the model is significant in

the food sector and insignificant in those two sectors. Logically, it is may be also true because the food companies need more current assets (such as raw materials inventory) and the level of current assets is higher than the other two sectors.

5. CONCLUSIONS

This study aims at indentifying the effects of WC management efficiency on the two measures of profitability; net operating profit (NOP) and EBIT of Omani industrial companies listed on MSM for the period of 2009-2013. WC management efficiency is measured by four independent variables; CCC, CR, NWCR and CAT. The study analyzed the annual reports for 37 (out of 48) manufacturing companies in three distinguished sectors; food (17 companies), construction (10 companies) and chemical (10 companies).

The study tested two models about the effect of WC management efficiency on profitability. The first model analyzed the effect of WC management efficiency on the NOP while the second model analyzed the effect of WC management efficiency on EBIT. The previous studies concluded mixed results regarding the WC management efficiency. Some of them indicated positive effects; others indicated negative effects and the third group concluded no effect. This is may be because there are some differences in the environment of research, sectors, period of analysis and statistical methods.

In the Model 1 and on the level of 37 industrial companies, the results of statistical analysis indicate that there are negative correlations between CCC, and CR and NOP. Also, NWCR has a positive correlation with NOP. Regression analysis showed that only CCC and NWCR have impact on NOP at 5% levels of significance. R^2 is 46% of total variance which means that the CCC and NWCR interpret only 46% of any changing in NOP. Also, the

Table 7: Coefficients of two models

| Models | NOP | | EBIT | |
|------------|--------|-------------|--------|-------------|
| | T | Significant | T | Significant |
| (Constant) | 3.732 | 0.001 | 2.416 | 0.033 |
| CCC | 1.535 | 0.035 | -0.055 | 0.957 |
| CR | -1.717 | 0.096 | -0.969 | 0.352 |
| CAT | 1.081 | 0.288 | -0.272 | 0.790 |
| NWCR | 4.549 | 0.000 | 1.099 | 0.280 |

*Dependent variable: Model 1: NOP, Model 2: EBIT. Source: SPSS output, CR: Current ratio, CAT: Current assets turnover, CCC: Cash conversion cycle, NWCR: Net working capital ratio, NOP: Net operating profit, EBIT: Earnings before interest and tax

Table 8: Summary of regression for three sector under Model 1 (NOP)

| DV | IV (s) | Food (N=17) | | | Construction (N=10) | | | Chemical (N=10) | | |
|-----|--------|--|---------|-------------|--|---------|-------------|--|---------|-------------|
| | | R ² (0.765), F value (9.764), Significant (0.001) | | | R ² (0.517), F value (8.546), Significant (0.019) | | | R ² (0.329), F value (0.490), Significant (0.746) | | |
| | | Correlation | T value | Significant | Correlation | T value | Significant | Correlation | T value | Significant |
| NOP | CCC | -0.578* | -1.313 | 0.214 | -0.939** | -2.923 | 0.019 | 0.083 | 0.486 | 0.653 |
| | CR | -0.423- | -1.272 | 0.228 | -0.902** | -0.345 | 0.740 | -0.358 | -0.022 | 0.984 |
| | CAT | 0.169 | 0.510 | 0.619 | 0.648* | -0.550 | 0.600 | 0.300 | 0.017 | 0.987 |
| | NWCR | 0.539* | 5.044 | 0.000 | 0.745* | 0.360 | 0.729 | 0.167 | 0.781 | 0.479 |

Source: SPSS output, IV: Independent variables, DV: Dependent variable, NOP: Net operating profit, CR: Current ratio, CAT: Current assets turnover, CCC: Cash conversion cycle, NWCR: Net working capital ratio

Table 9: Summary of regression for three sector under Model 2 (EBIT)

| DV | IV (s) | Food (N=17) | | | Construction (N=10) | | | Chemical (N=10) | | |
|------|--------|---|---------|-------------|--|---------|-------------|--|---------|-------------|
| | | R ² (0.725), F value (66.8), Significant (0.000) | | | R ² (0.398), F value (0.827), Significant (0.561) | | | R ² (0.398), F value (0.662), Significant (0.650) | | |
| | | Correlation | T value | Significant | Correlation | T value | Significant | Correlation | T value | Significant |
| EBIT | CCC | -0.400 | -0.055 | 0.957 | -0.489 | 0.128 | 0.903 | -0.383 | -1.393 | 0.236 |
| | CR | -0.575* | -0.969 | 0.352 | -0.290 | -0.189 | 0.857 | -0.298 | -1.462 | 0.218 |
| | CAT | 0.066 | -0.272 | 0.790 | 0.648* | -0.088 | 0.933 | 0.450 | -0.594 | 0.584 |
| | NWCR | 0.561* | 46.154 | 0.000 | 0.709* | 0.673 | 0.531 | 0.300 | 0.258 | 0.809 |

IV: Independent variables, DV: Dependent variable, EBIT: Earnings before interest and tax, CR: Current ratio, CAT: Current assets turnover, CCC: Cash conversion cycle, NWCR: Net working capital ratio

results indicated that there are no correlation and regression at 5% levels of significant between CAT and NOP.

In the Model 2 and on the level of 37 industrial companies, the statistical analysis indicates the same results but the regression analysis showed that the model is insignificant at 5% and 1%. R^2 is 7.4% of total variance which means that model does not interpret any important changes in EBIT.

Turn to the subsectors (food, construction and chemical). On the level of food sector, the two Models (1 and 2) were significant and the results indicated that there is only NWCR has impact at 5% levels of significant on NOP and EBIT. R^2 has a good explanation power in the both models.

On the level of construction and chemical sectors, the results of statistical analysis indicate that there are no impacts at 5% levels of significance for two models on NOP and EBIT. R^2 are not supporting the results of models.

The statistical overall result of the study is that the industrial companies in Oman support their NOP but not to EBIT if they enhance WC management efficiency in general and in the food sector in particular. This is may be true because the food companies need more current assets (such as raw materials inventory) and the level of current assets is higher than the other two sectors. The study indicated that the food industry has managed the WC satisfactorily.

The results of this study are similar to those found in previous studies such as the study of Ramachandran and Janakiraman (2009) regarding the impact of WC efficiency on EBIT. Also the results of the study are consistent with the results of the study of Sen and Oruc (2009) regarding the negative impact of CCC on profitability. The results of studies of Raheman et al. (2010) and Vural et al. (2012) have agreed with the results of this study. On the other side, the result of this study regarding the impact of CCC is different with the result of the study of Akoto et al. (2013) which concluded that the CCC has a positive impact on the profitability.

On the basis of the empirical evidence obtained in this study it can be argued that it is necessary to conduct a more exhaustive follow-up study of the WC policy in industrial sector and other sectors in order to formulate a strategy to help companies avoid the chronic problem of overinvestment that could destroy their profitability in general and NOP in particular.

Several policy implications can be drawn from the above mentioned results of the study. The industrial companies should enhance WC management efficiency to increase the NOP. The study provides evidence to the financial managers in regarding the factors impact on their WC management in order to analyzed these factors and formulate the appropriate strategy of WC management.

As any other studies, the present study has some limitations. Due to available information about the companies listed on MSM the annual reports for only 5 years (2009-2013) were analyzed because only those reports are presented on the websites of these

companies and MSM. Also, there are many other determinants of WC efficiency were not examined such as inventory turnover, days operating cycle, days of accounts receivable and so on. This is because there are some difficulties to collect the information from the companies. Therefore, further research would be required to examine the impact of those determinants on the profitability in the industrial sector and/or other sectors.

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