

# EFFICIENCY OF WORKING CAPITAL MANAGEMENT AND CORPORATE PROFITABILITY: A CASE OF JORDANIAN INDUSTRIAL COMPANIES

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## **Abstract**

This paper aim to investigate the relation between working capital management and corporate profitability for a sample of 59 Jordanian industrial firms listed on Amman Stock Exchange for a period of 4 years from 2004 – 2007. The researcher studied the effect of different variables of working capital management including the Average collection period, Inventory turnover in days, Average payment period, Cash conversion cycle and Net trade cycle, on the Net operating profitability and Gross Profit as measures of profitability of Jordanian Industrial firms. Debt ratio, size of the firm (measured in terms of sales) and Current ratio and Sales Growth ratio have been used as control independent variables.

Multiple regression test is used for analysis; the results show that there is a strong significant relationship at  $\alpha = 1\%$ , between overall independent variables of the working capital management and profitability of the firms in all years and in every year in two models of study.

Simple regression used and the results indicate there is a significant relationship between Average collection period and profitability at negative significant relationship at  $\alpha = 5\%$ , and negative significant relationship at debt ratio at  $\alpha = 1\%$ . used by firms and net operating profit (profitability) ,but positive a significant relationship with cash conversion cycle and profitability at significant relationship at  $\alpha = 1$  .We also find that there is a positive relationship between size of the firm and its profitability, at significant relationship at  $\alpha = 1\%$ , also the analysis indicates the same result for model two measured the profitability as gross profit except the cash conversion cycle not significant value.

The researcher recommended emphasizing the role of board monitoring of management and management's compensation in its control of the firm's working capital. There is much to be done about working capital in Jordanian in future with different companies and extending the years of the sample. The scope of further research may be extended to the working capital components management including cash, marketable securities.

## **Operational Definitions (Key Words):**

**Ratio Analysis:** ratios depicting capital structure consider reserves such as amounts of debt and equity.. This ratio, however, provides a more relevant picture when an enterprise has financial assets. On the other hand, ratios related to turnover are able to depict a general view rather than revealing bottlenecks in the business. The equity ratio can be considered as the opposite to the debt ratio. It is, however, a very crude indicator, especially in the case of SMEs other than limited companies (CCA 2005)

**Working Capital Management (WCM):** explain the effect on liquidity as well on profitability of the firm ,deals with current assets and current liabilities .However firms with too few current assets may incur shortages and difficulties in maintaining smooth operations (Horne and Wachowicz, 2000)

**Profitability:** interpreted as a ratio, which expresses the rate of the profit amount benchmarked against some point of reference (%).As decision tools profitability ratios can be used to assess the financial health of a business. These ratios, created from the income statement, can be compared with industry benchmarks. The overall profitability measurement with indexes: these indexes compare the income brackets to some base measurement. The basic formula regarding to the profitability measurement, Ildikó Orbán – Tamás Dékán,(2009)

**Cash conversion cycle:** the sum of days of sales outstanding (average collection period) and days of sales in inventory less days of payables outstanding, (Keown et al. 2003, p.109)

### **Introduction:**

Liquidity management, which refers to management of current assets and liabilities, plays an important role in the successful management of a firm. If a firm does not manage its liquidity position well, its current assets may not meet its current liabilities. Hence, the firm may have to find external financing due to having difficulty in paying its short term debts. Unfortunately, every firm is not able to find external financing easily, especially as it is in small firm case. In addition, although firms are able find external financing, the cost of borrowing may be expensive, resulting in poorer bottom line

Liquidity management is necessary for all businesses, small, medium or large. Because, it means collecting cash from customers in time so that having no difficulty in paying short term debts. Therefore, when a business does not manage its liquidity well, it will have cash shortages and will result in difficulty in paying obligations. As a result, in addition to profitability, liquidity management is vital for ongoing concern. Corporate liquidity is examined from two distinct dimensions: static or dynamic views (Lancaster et al., 1999; Farris and Hutchison, 2002; and Moss and Stine, 1993). The static view is based on commonly used traditional ratios, such as current ratio and quick ratio, calculated from the balance sheet amounts. These ratios measure liquidity at a given point in time whereas dynamic view measures ongoing liquidity from the firm's operations. As a dynamic measure of the time it takes a firm to go from cash outflow to cash inflow which is measured by cash conversion cycle.

The study provides an empirical evaluation of the relationship between working capital management practices and its affects on profitability of Jordanian industrial companies listed on the Amman Stock Exchange. The organization of the remainder of this paper is as follows. Section two defines Problem Definition, Hypotheses and Importance and Contribution of the study. Section three provides literature review about the previous studies explain the relationship between the WC and profitability. Section four presents scope and methodology of the study. Section five analyzes findings of the study, and the final section provides the concluding remarks of this paper

### **Problem Definition**

The ultimate objective of any firm is to maximize the profit. But, preserving liquidity of the firm is an important objective too. The problem is that increasing profits at the cost of liquidity can bring serious problems to the firm. Therefore, there must be a trade off between these two objectives of the firms. One objective should not be at cost of the other because both have their importance. If we do not care about profit, we can not survive for a longer period. On the other hand, if we do not care about liquidity, we may face the problem of insolvency or bankruptcy. For these reasons working capital management should be given proper consideration and will ultimately affect the profitability of the firm.

The discussion of the importance of working capital management, its different components and its effects on profitability leads us to the problem statement which we will be analyzing .The problem statement to be analyzed in this study is: "Does Working Capital Management Affect Profitability of Jordanian Industrial Firms?"

### **Hypotheses:**

The study makes a set of testable hypothesis, the null hypotheses H0 presented:

H01: There is no significant relationship between efficient working capital management and profitability in the Jordanian industrial firms.

H02: There is no significant relationship between liquidity and profitability in the Jordanian industrial firms.

H03: There is no significant relationship between size of firms and profitability in the Jordanian industrial firms.

H04: There is no significant relationship between debt and Profitability in the Jordanian industrial firms.

### **Importance and Contribution of this Study:**

Working capital management is a very important component of corporate finance because it directly affects the liquidity and profitability of the company. It deals with current assets and current liabilities. Working capital management is important due to many reasons. For one thing, the current assets of a typical manufacturing firm accounts for over half of its total assets. For a distribution company, they account for even more. Excessive levels of current assets can easily result in a firm's realizing a substandard return on investment. However firms with too few current assets may incur shortages and difficulties in maintaining smooth operations (Horne and Wachowicz, (2000). Efficient working capital management involves planning and controlling current assets and current liabilities in a manner that eliminates the risk of inability to meet due short term obligations on the one hand and avoid excessive investment in these assets on the other hand (Eljelly, 2004).

Many surveys have indicated that managers spend considerable time on day-to-day problems that involve working capital decisions. One reason for this is that current assets are short-lived investments that are continually being converted into other asset types (Rao 1989). With regard to current liabilities, the firm is responsible for paying these obligations on a timely basis. Liquidity for the on going firm is not reliant on the liquidation value of its assets, but rather on the operating cash flows generated by those assets (Soenen, 1993). Taken together, decisions on the level of different working capital components become frequent, repetitive, and time consuming.

This study contributes towards a very important aspect of financial management known as working capital management. It is almost untouched in Jordanian or very little research has been done in this area. This research is focusing on working capital management and its effects on profitability for a sample of Jordanian industrial firms. The main objectives are: To establish a relationship between working capital management and Profitability over a period of four years for 59 Jordanian industrial companies listed on Amman Stock Exchange, to find out the effects of different components of working capital management on profitability, to establish a relationship between the two objectives of liquidity and profitability of the Jordanian firm, to find out the relationship between profitability and size of the Jordanian firm and to find out the relationship between debt used by the Jordanian firm and its profitability

### Theoretical Framework:

#### Profitability Points of View:

Profitability has been shown to be the best indicator of performance (Brozik 1984). On the other hand, even the best profitability does not help if there are financing difficulties. A financing crisis can be fatal, especially during rapid growth, in spite of excellent profitability and business opportunities. Profitability will be analyzed studying the structure of profit and the return on capital. The former has traditionally been focused on, but a present-day accounting approach such as the International Financial Reporting Standards (IFRS) of the European Union (EU) favors return on assets (ROA) or return on equity (ROE) (Laitinen and Laitinen 2004).

Return can be calculated on total capital, invested capital and the enterprise's own capital. The return on assets (ROA) is obtained by dividing the sum of net results, financial expenses and taxes by assets, i.e., the sum of debt and equity. The return on equity (ROE) can be obtained by dividing net profit by equity. The return on capital employed (ROCE), ROA, ROE; ROI etc. are based both on the contribution delivered by sales and the sales related to the total investment, the relation between which is called the Du Pont return on investment formula (fig. 1).

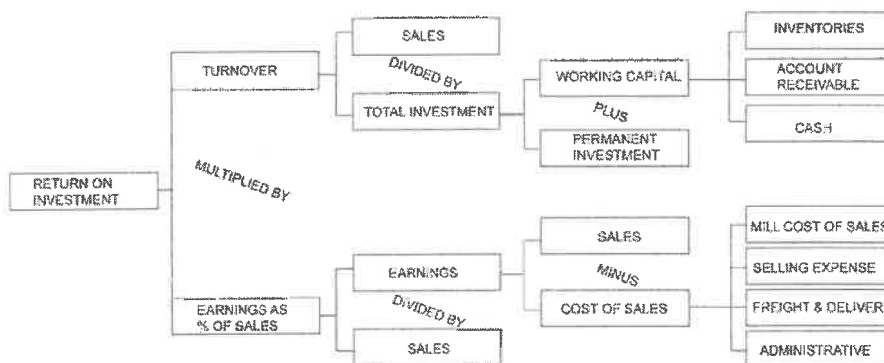


Figure (1):.

The Du Pont returns on investment formula (Johnson and Kaplan 1987)

The most important indicator of the operational activities of a small and medium sized enterprise (SME) is the return on assets (ROA), where the assets mean the sum of debt and equity. In SMEs, the equity may be difficult to quantify, if not misleading, so that ROE may be biased. Moreover, ROE can be very misleading because of leverage, which exaggerates the return both in good and bad times

### **Financing Points of View:**

Successful financing impacts the profitability, liquidity and solvency of an enterprise. Points of view in finance analysis are financial adequacy and capital structure. In SMEs, financial adequacy is essential and often critical. Capital structure provides only a general picture. More generally, the dynamics of economic processes – flows – are emphasized and static factors – reserves – are primarily only background information. The liquidity ratios could be grouped into dynamic liquidity, such as the financing result percentage, static liquidity, such as the quick ratio, and other ratios such as combined ratios; e.g., the net working capital percentage. Solvency consists of static solvency, such as the equity ratio and dynamic solvency, such as the loan repayment margin or liability pay-back period (Laitinen and Laitinen 2004).

The Profitability and WCM, or vice versa:

It cannot be ruled out that the negative relation between WCM and profitability is to some extent a consequence of profitability affecting WCM, and not vice versa. Indeed, the most plausible explanation for the negative relation between accounts payable and profitability is that less profitable firms wait longer to pay their bills. A negative relation between inventory and profitability can be caused by declining sales, leading to lower profits and more inventories.

An alternative explanation for the negative relation between accounts receivable and profitability could be that customers want more time to assess the quality of products they buy from firms with declining profitability. However, finance based models explaining trade credit (e.g. Schwartz, 1974) argue that firms able to obtain funds at a low cost will offer trade credit to firms facing higher financing costs. Emery (1984) sees trade credit as a more profitable short term investment than marketable securities. These models imply that higher profits should lead to more accounts receivable, because firms with higher profits have more cash to lend to customers. This is confirmed by Deloof and Jegers (1996), who find that Belgian firms with a shortage of cash reduce investment in accounts receivable

### **Previous Empirical Evidence:**

Many researchers have studied working capital from different views and in different environments. The following ones were very interesting and useful for my research:

**Ali Uyar ,(2009)**the purpose of this article is (1) to set industry benchmarks for cash conversion cycle (CCC) of merchandising and manufacturing companies, and to

examine the relationship between (2) the length of the CCC and the size of the firms, and (3) the length of the CCC and profitability. He collected data of this study from the financial statements of the corporations listed on the Istanbul Stock Exchange (ISE) for the year 2007. The author utilized ANOVA and Pearson correlation analyses for empirical investigation. The major findings of the study are as follows. The lowest mean value of the CCC is found in the retail/wholesale industry, with an average of 34.58 days, and the highest mean value of the CCC is found in the textile industry, with an average of 164.89 days. There is a significant negative correlation between the CCC and the variables; the firm size and the profitability. The findings of this paper are based on a study conducted on the ISE. Hence, the results are not generalized able to non-listed companies. Secondly, the sample comprises merchandising and manufacturing companies. Therefore, the results are valid for those industries.

**Joseph Kerstein, Atul Rai ,(2007)** they reexamine market reactions to large and small working capital accruals and predict that the market is more likely to discount unexpected earnings when positive or negative large working capital accruals (LWCAs) lead to small increases in earnings. They find that the earnings response coefficient (ERC) is lower when small earnings increases are accompanied by LWCAs of either sign, but not in other cases. Results are robust to alternate definitions of working capital accruals and the inclusion of ERC control variables.

**Kothari, Leone and Wasley, (2004)** managers are normally expected to reserve accruals for use in future earnings management rather than greatly overshoot bonus earnings targets. The existence of positive LWCAs along with small earnings declines is also inconsistent with likely managerial incentives, which, according to the literature, encourage managers to increase accruals a bit more to achieve positive earnings growth. Possible alternative explanations for LWCAs include value-increasing actions (i.e., positive signals), attempts to mitigate timing problems, or errors in the measure.

**Eljelly, (2004)** elucidated that efficient liquidity management involves planning and controlling current assets and current liabilities in such a manner that eliminates the risk of inability to meet due short-term obligations and avoids excessive investment in these assets. The relation between profitability and liquidity was examined, as measured by current ratio and cash gap (cash conversion cycle) on a sample of joint stock companies in Saudi Arabia using correlation and regression analysis. The study found that the cash conversion cycle was of more importance as a measure of liquidity than the current ratio that affects profitability. The size variable was found to have significant effect on profitability at the industry level. The results were stable and had important implications for liquidity management in various Saudi companies. First, it was clear that there was a negative relationship between profitability and liquidity indicators such as current ratio and cash gap in the Saudi sample examined. Second, the study also revealed that there was great variation among industries with respect to the significant measure of liquidity.

**Deloof, (2003)** discussed that most firms had a large amount of cash invested in working capital. It can therefore be expected that the way in which working capital is managed will have a significant impact on profitability of those firms. Using correlation and regression tests he found a significant negative relationship between

gross operating income and the number of days accounts receivable, inventories and accounts payable of Belgian firms. On basis of these results he suggested that managers could create value for their shareholders by reducing the number of days' accounts receivable and inventories to a reasonable minimum. The negative relationship between accounts payable and profitability is consistent with the view that less profitable firms wait longer to pay their bills.

**Ghosh and Maji, (2003)** in this paper made an attempt to examine the efficiency of working capital management of the Indian cement companies during 1992 – 1993 to 2001 – 2002. For measuring the efficiency of working capital management, performance, utilization, and overall efficiency indices were calculated instead of using some common working capital management ratios. Setting industry norms as target-efficiency levels of the individual firms, this paper also tested the speed of achieving that target level of efficiency by an individual firm during the period of study. Findings of the study indicated that the Indian Cement Industry as a whole did not perform remarkably well during this period.

**Marc Deloof, (2000)** the relation between working capital management and corporate profitability is investigated for a sample of 1009 large Belgian non-financial firms for the 1992-1996 periods. Trade credit policy and inventory policy are measured by number of day's accounts receivable, accounts payable and inventories, and the cash conversion cycle is used as a comprehensive measure of working capital management. The results suggest that managers can increase corporate profitability by reducing the number of day's accounts receivable and inventories. Less profitable firms wait longer to pay their bills.

**P. C. Narware, (2000)** working capital management and profitability of the company disclosed both negative and positive association. Out of the nine ratios selected for the study three ratios, namely CTSR, WTR and DTR registered negative correlation with the selected profitability ratio, ROI. The slopes of the ROI equation depicted that positive and negative influence of variations in the independent variables on the profitability of the company. Out of the five regression coefficients of the ROI Line, only one coefficient which was associated with DTR revealed negative influence on the profitability. The coefficient of multiple determination ( $R^2$ ) makes it obvious that 68.50 percent of the total variation in the profitability of the company. WCL of the company concluded, the increase in the profitability of the company was less than the proportion to decrease in Working capital

**Shin and Soenen (1998)** investigate the relation between a measure of the cash conversion cycle and corporate profitability. For a large sample of listed American firms for the 1975-1994 periods, they find a strong negative relation. This result indicates that managers can create value for their shareholders by reducing the cash conversion cycle to a reasonable minimum.

**Schilling (1996)** mentions optimum liquidity position, which is minimum level of liquidity necessary to support a given level of business activity, in his writing. Briefly, he says it is critical to deploy resources between working capital and capital investment, because the return on investment is usually less than the return on capital investment. Therefore, deploying resources on working capital as much as to maintain optimum liquidity position is necessary. Then he sets up the relationship between CCC and minimum liquidity required such that if the CCC lengthens, the

minimum liquidity required increases; conversely, that if the CCC shortens, the minimum liquidity required decreases

**Healy, (1985)** examine the market's reaction to positive and negative earnings changes influenced by large working capital accruals (LWCAs) and predict circumstances where LWCAs lead to varying market expectations of earnings quality, which has neither been suggested nor tested in earlier work. They argue that annual earnings changes associated with either positive or negative LWCAs are more likely to be viewed by the market as being managed and, therefore, being of lower quality when they are associated with small earnings changes. On the other hand, we anticipate that the existence of LWCAs does not, in and of itself, necessarily connote earnings management to the market. For example, large positive earnings surprises having positive LWCAs are inconsistent with the 'bonus hypotheses.

#### **Population and Sample Selection:**

The data used in this study was acquired from Amman Stock Exchange (ASE), companies' guide of industrial firms. Data of firms listed on the ASE for the most recent four years formed the basis of our calculations. The period covered by the study extends to four years starting from 2004 to 2007. The reason for restricting to this period was that the latest data for investigation was available for this period. The sample is based on financial statements of the 59 Jordanian industrial firms.

#### **Research Design and Hypotheses:**

##### **Data and Model Specification:**

This study undertakes the issue of identifying key variables that influence working capital management of Jordanian firms. Choice of the variables is influenced by the previous studies on working capital management.

All the variables stated below have been used to test the hypotheses of this study. They include dependent, independent and some control variables:

##### **Dependent Variables:**

Profitability measures:

1. Net Operating Profitability (NOP).
2. Gross Profitability (GP).

##### **Independent Variables:**

1. Average Collection Period (ACP) used as proxy for the Collection Policy It is calculated by dividing account receivable by sales and multiplying the result by 365 (number of days in a year).

2. Inventory turnover in days (ITID) used as proxy for the Inventory Policy It is calculated by dividing inventory by cost of goods sold and multiplying with 365 days.

3. Average Payment Period (APP) used as proxy for the Payment Policy. It is calculated by dividing accounts payable by purchases and multiplying the result by 365.



4. The Cash Conversion Cycle (CCC) used as a comprehensive measure of working capital management, and is measured by adding Average Collection Period with Inventory Turnover in Days and deducting Average Payment Period, or simply [number of days accounts receivable + number of days inventory – number of days accounts payable]

5. Shin and Soenen (1998) use the net trade cycle (NTC) as a comprehensive measure of WCM. The net trade cycle is simply [accounts receivable + inventory – accounts payable] x 365 / sales. All regressions in this paper that include the cash conversion cycle were also estimated with the net trade cycle instead of the cash conversion cycle.

#### Control Variables:

6. Current Ratio (CR) which is a traditional measure of liquidity is calculated by dividing current assets by current liabilities.

7. Size (S) (Sales).

8. Sales Growth (SG) (this year's sales - previous year's sales)/previous year's sales)

9. Debt Ratio (DR) used as proxy for Leverage and is calculated by dividing Total Debt by Total Assets,

#### Model Specification:

The study uses panel data regression analysis of cross-sectional and time series data. And use the pooled regression type of panel data analysis. The pooled regression, also called the constant coefficients model is one where both intercepts and slopes are constant, where the cross section firm data and time series data are pooled together in a single column assuming that there is no significant cross section or temporal effects.

The general form of our model is:

$$\text{Model (1): } \text{NOPI } t = \beta_0 + \sum \beta_i X_{it} + \varepsilon \text{-----Equation (1)}$$

$$\text{Model (2): } \text{GPI } t = \beta_0 + \sum \beta_i X_{it} + \varepsilon \text{-----Equation (2)}$$

NOPI  $t$  : Net Operating Profitability of firm  $i$  at time  $t$ ;  $i = 1, 2, \dots, 59$  firms.

GPI  $t$  : Gross Profitability of firm  $i$  at time  $t$ ;  $i = 1, 2, \dots, 59$  firms

$\beta_0$ : The intercept of equation

$\beta_i$  : Coefficients of  $X_{it}$  variables

$X_{it}$  : The different independent variables for working capital Management of firm  $i$  at time  $t$

$t$  : Time = 1, 2, ....., 6 years.

$\varepsilon$  : The error term

Specifically, when we convert the above general least squares model into our specified variables it becomes:

$$\text{NOP it} = \beta_0 + \beta_1 (\text{ACP it}) + \beta_2 (\text{ITID it}) + \beta_3 (\text{APP it}) + 4 \beta_4 (\text{CCC it}) + \beta_5 (\text{NTC it}) + \beta_6 (\text{CR it}) + \beta_7 (\text{S it}) + \beta_8 (\text{SG it}) + \beta_9 (\text{DR it}) + \varepsilon \text{-----Equation (3)}$$

$$\text{GP it} = \beta_0 + \beta_1 (\text{ACP it}) + \beta_2 (\text{ITID it}) + \beta_3 (\text{APP it}) + 4 \beta_4 (\text{CCC it}) + \beta_5 (\text{NTC it}) + \beta_6 (\text{CR it}) + \beta_7 (\text{S it}) + \beta_8 (\text{SG it}) + \beta_9 (\text{DR it}) + \varepsilon \text{----- Equation (4)}$$

Where:

NOP: Net Operating Profitability

GP: Gross Profitability

ACP: Average Collection Period

ITID: Inventory Turnover in Days

APP: Average Payment Period

CCC: Cash Conversion Cycle

CR: Current Ratio

DR: Debt Ratio

S: Sales

NTC: Net Trade Cycle

SG: Sales growth

$\varepsilon$ : The error term.

#### Data and main Empirical Results:

The purpose of this research is to contribute towards a very important aspect of financial management known as working capital management with reference to Jordanian. Here we will see the relationship between working capital management practices and its affects on profitability of 59 Jordanian firms listed on Amman stock Exchange for a period of four years from 2004 – 2007. This section of the paper discusses the firms and variables included in the study, the distribution patterns of data and applied statistical techniques in investigating the relationship between working capital management and profitability.

The determinants of net operating profitability are investigated for all 59 firm observations. The results are shown in table 1. A number of different regression coefficients are estimated for selected independent variables.

Table (1) presents the analysis of multiple regression results for each independent variable and all total variables observations and net operating profit of total period sample from 2004 to 2007. The results indicate there is significant value for the relationship between all variables and net operating profit (over the entire model) with F- statistics. 52.840 and the-p value is (0.000). The adjusted R<sup>2</sup>, also called the coefficient of multiple determinations, is the percent of the variance in the dependent explained uniquely or jointly by the independent variables and is .668.

In addition the simple regression used between each independent variable and the relationship with net operating profit ( model 1) , the results indicate there is a positive significant value with cash conversion cycle as comprehensive measure of checking efficiency working capital management with t- test 6.162 and the p value is

(0.000) , adjusted R<sup>2</sup> .137. But it is significant at  $\alpha$ . = 1%. It means that if the firm is able to increase this time period known as cash conversion cycle, it can increase its profitability. There is a Positive significant value of sales (measures of size) and NOP with t-test 21.534; with p-value of (.000), adjusted R<sup>2</sup> .665. The result is highly significant at  $\alpha$ . = 1%, It shows that as size of the firm increases, it will increase its profitability there is a negative significant value of account collection period with -3.291 with p-value of (.002), But it is significant at  $\alpha$ . = 1%, adjusted R<sup>2</sup> -.145, if the average collection period increases it will have a negative impact on the profitability and it will decrease. which implies that the collection policy of a firm has a significant effect on profitability and debt ratio as control variable there is negative significant value with t- test -1.835 and the p value is (0.072) , But it is significant at  $\alpha$ . = 5%, adjusted R<sup>2</sup> -.039. Which means that, when leverage of the firm increases, it will adversely affect its profitability.

Finally, ITID, APP, NTC and CR independent variables not significant variables but the results indicate negative relationship, the ITID variable means if the firms can be interpreted that if the inventory takes more time to sell and it means that the inventory policy of the firm will affect its profitability, APP variable means that the less profitable firms wait longer to pay their bills. Speeding up payments to suppliers might increase profitability because firms often receive a substantial discount for prompt payment, NTC, comprehensive measure of checking efficiency working capital management .It means that if the firm is able to increase this time period known as cash conversion cycle, decrees profitability , CR variable means Current ratio is a traditional measure of checking liquidity of the firm, It indicates that the two objectives of liquidity and profitability have inverse relationships. So, the Jordanian firms need to maintain a balance or tradeoff between these two measures, SG variable has a positive significant value. It means if sales growth increase, increase profitability

**Table (1): Results of Regression Analysis between Every, All Independent Variables and Dependent Variables (NOP) for All Years**

		Model (1): Dependent Variable : Net Operating Profit									
Year	description	ACP	ITID	APP	CCC	NTC	CR	S	SG	DR	All-V
2004 to 2007	R	.400	.042	.020	.376	.015	.004	.816	.021	.236	.825
	R <sup>2</sup>	.160	.002	.000	.141	.000	.000	.667	.000	.056	.681
	Adj- R <sup>2</sup>	-.145	-.003	-.004	.137	-.004	-.004	.665	-.004	-.039	.668
	F- test	-	-	-	-	-	-	-	-	-	52.840
	SIG	.002**	.525	.755	.000***	.815	.954	.000***	.746	.072*	.000***
	T-test	-3.291	-.636	-.312	6.162	-.234	-.058	21.534	.324	-1.835	-

\* Significant at p <0.10 \*\* Significant at p< 0.05 \*\*\* Significant at p< 0.01

Table (2) presents the analysis of multiple regression results for each independent variable and all total variables observations and gross profit of total period sample from 2004 to 2007. The results indicate there are significant value for

the relationship between all variables (over all the model) and gross profit in model (2) with F- statistics 154.603 and the p value is (0.000).with the adjusted  $R^2$  , also called the coefficient of multiple determinations, is the percent of the variance in the dependent explained uniquely or jointly by the independent variables and is .841

In addition the simple regression used between each independent variable and the relationship with gross profit, the results indicate there are positive significant value of sales (measures of size) and GP with t-test 34.836; with p-value of (.000), adjusted  $R^2$  .838. The result is highly significant at  $\alpha$ . = 1%. It shows that as size of the firm increases, it will increase its profitability, there is a negative significant value of account collection period with -2.594 with p-value of (.012), But it is significant at  $\alpha$ . = 5%, adjusted  $R^2$  -.090, if the average collection period increases it will have a negative impact on the profitability and it will decrease, Which implies that the collection policy of a firm has a significant effect on profitability. And the debt ratio there is negative significant value as control variable with t- test -2.431 and the p value is (0.018) , But it is significant at  $\alpha$ . = 5%, adjusted  $R^2$  -.078 Which means that, when leverage of the firm increases, it will adversely affect its profitability.

Finally, ITID, APP, NTC and CR independent variables not significant variables but the results indicate negative relationship, the ITID variable means if the firms can be interpreted that if the inventory takes more time to sell. It means that the inventory policy of the firm will affect its profitability, APP variable means that the less profitable firms wait longer to pay their bills. Speeding up payments to suppliers might increase profitability because firms often receive a substantial discount for prompt payment, NTC, comprehensive measure of checking efficiency working capital management .It means that if the firm is able to increase this time period known as cash conversion cycle, decrees profitability , CR variable means Current ratio is a traditional measure of checking liquidity of the firm, It indicates that the two objectives of liquidity and profitability have inverse relationships. So, the Jordanian firms need to maintain a balance or tradeoff between these two measures, SG variable has a positive value of firm will affect its profitability. It means if sales growth increase, increase profitability. Also CCC variable has a positive value as comprehensive measure of checking efficiency working capital management

**Table (2): Results of Regression Analysis between Every, All Independent Variables and Dependent Variables (GP) for All Years**

		Model (2): Dependent Variable : Gross Profit									
year	description	ACP	ITID	APP	CCC	NTC	CR	S	SG	DR	All-V
2004 to 2007	R	.325	.021	.023	.043	.027	.013	.916	.011	.306	.920
	$R^2$	.106	.000	.001	.002	.001	.000	.839	.000	.094	.846
	Adj- $R^2$	-.090	-.004	-.004	-.002	-.004	-.004	.838	-.004	-.078	.841
	F- test	-	-	-	-	-	-	-	-	-	154.603
	SIG	.012**	.746	.727	.514	.677	.846	.000***	.865	.018**	.000***

T-test	-2.594	-.324	-.350	.654	-.416	-.194	34.836	.171	-2.431	-
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\* Significant at  $p < 0.10$  \*\* Significant at  $p < 0.05$  \*\*\* Significant at  $p < 0.01$

Table (3) presents the analysis of simple and multiple regression in two models (net operating profit and gross profit as dependent variables) and every, overall independent variables (ACP/ ITID/ CCC/ NTC/ CR/ S/ SG/ DR) and the results indicate the overall variables of independent variables test and the only independent variable test that has a coefficient significant value are (CCC/S / SG) discussed below.

The simple regression results indicate in year 2004 there is a positive significant value for the sales(S) (measured as size) and profitability, with t-test 9.554 and p-value of (.000). The result is highly significant at  $\alpha = 1\%$  and the same result of model 2 ,there is a positive significant value for the sales(S) , with t-test 4.259 and p-value of (.000) but less in adjusted  $R^2$  .228 compared with .609 in model 1 ,

In addition in model 1, multiple regression used and the results show the significant relationship between all variables and NOP (over all the model) with F value 2.615 and p- value of (.018), it indicates that the result is significant at  $\alpha = 5\%$ , with adjusted  $R^2$  .182 and show the negative relationship between the inventory turn over on days, net trade cycle, sales growth and debt ratio variables and profitability. But in model 2 show the significant relationship between all variables and GP (over all the model) with F value 12.034 and p- value of (.000), it indicates that the result is significant at  $\alpha = 1\%$ , adjusted  $R^2$  .603 and show the negative relationship between the inventory turn over on days, net trade cycle, sales growth and debt ratio variables and profitability.

The simple regression results indicate in year 2005 there is a positive significant value for the cash conversion cycle (CCC), sales(S) (measured as size) and sales growth (SG) and profitability, with t-test 11.539-18.131-3.799 respectively, and p-value of (.000-.000-.000). The result is highly significant at  $\alpha = 1\%$  in model 1, and the same result of model 2 ,there is a positive significant value for the cash conversion cycle (CCC), sales(S) , sales growth (SG) and profitability, with t-test 9.227-13.624-4.738 and p-value of (.000-.000-.000) ,but adjusted  $R^2$  .596-.761-270 compared with .699-.850-.188 in model 1.

In addition in model 1, multiple regression used and the results show the significant relationship between all variables and NOP (over all the model) with F value 31.480 and p- value of (.000), it indicates that the result is significant at  $\alpha = 1\%$ , with adjusted  $R^2$  .828 and show the negative relationship between the average collection period, cash conversion cycle, net trade cycle and debt ratio variables and profitability. But in model 2 show the significant relationship between all variables and GP (over all the model) with F value 43.202 and p- value of (.000), it indicates that the result is significant at  $\alpha = 1\%$ , with adjusted  $R^2$  .870 and show the

negative relationship between the cash conversion cycle, net trade cycle, credit ratio and debt ratio variables and profitability.

The simple regression results indicate in year 2006 there is a significant value for the sales(S) (measured as size) and profitability, with t-test 20.932, and  $p$ -value of (.000). The result is highly significant at  $\alpha = 1\%$ , and the same result of model 2, there is a significant value for the sales(S) (measured as size) and profitability, with t-test 14.052, and  $p$ -value of (.000), but adjusted  $R^2$  .775 compared with .883 in model 1.

In addition in model 1, multiple regression used and the results show the significant relationship between all variables and NOP (over all the model) with F value 22.924 and  $p$ - value of (.000), it indicates that the result is significant at  $\alpha = 1\%$ , with adjusted  $R^2$  .755 and show the negative relationship between the average payment period, credit ratio, sales growth and debt ratio variables and profitability. But in model 2 show the significant relationship between all variables and GP (over all the model) with F value 69.144 and  $p$ - value of (.000), it indicates that the result is significant at  $\alpha = 1\%$ , with adjusted  $R^2$  .875 and show the negative relationship between the average payment period, net trade cycle, sales growth, inventory turn over on days, credit ratio and debt ratio variables and profitability.

The simple regression results indicate in year 2007 there is a significant value for the sales(S) (measured as size) and profitability, with t-test 24.857 and  $p$ -value of (.000). The result is highly significant at  $\alpha = 1\%$ , and the same result of model 2, there is a significant value for the sales(S) (measured as size) and profitability, with t-test 13.205, and  $p$ -value of (.000), but adjusted  $R^2$  .753 compared with .915 in model 1.

In addition in model 1, multiple regression used and the results show the significant relationship between all variables and NOP (over all the model) with F value 19.766 and  $p$ - value of (.000), it indicates that the result is significant at  $\alpha = 1\%$ , with adjusted  $R^2$  .725 and show the negative relationship between the average payment period, credit ratio, inventory turn over and debt ratio variables and profitability. But in model 2 show the significant relationship between all variables and GP (over all the model) with F value 72.700 and  $p$ - value of (.000), it indicates that the result is significant at  $\alpha = 1\%$ , with adjusted  $R^2$  .910 and show the negative relationship between the average payment period, inventory turn over on days, and debt ratio variables and profitability.

**Table (3): Results of Regression Analysis Relationship between Every, All Independent Variables and Every Dependent Variable (NOP- GP) for Each Year.**

Year	Index	Model (1) DEP V: NOP				Model (2) DEP V: GP			
		CCC	S	SG	ALL-V	CCC	S	SG	ALL-V
2004	R	.039	.785	.111	.543	.029	.491	.122	.811
	R <sup>2</sup>	.001	.616	.012	.295	.001	.241	.015	.658
	Adj- R <sup>2</sup>	-.016	.609	-.005	.182	-.017	.228	-.003	.603
	SIG	.771	.000***	.405	.018**	.829	.000***	.359	.000***
	T-test or F-test	.293	9.554	-.840	2.612	.217	4.259	-.925	12.034
2005	R	.839	.923	.449	.925	.777	.875	.532	.943
	R <sup>2</sup>	.704	.852	.202	.855	.603	.765	.283	.890

	Adj- R <sup>2</sup>	.699	.850	.188	.828	.596	.761	.270	.870
	SIG	.000***	.000***	.000***	.000***	.000***	.000***	.000***	43.202
	T-test or F-test	11.539	18.131	3.799	31.480	9.227	13.624	4.738	.000***
2006	R	.046	.941	.008	.888	.042	.883	.016	.943
	R <sup>2</sup>	.002	.885	.000	.789	.002	.779	.000	.889
	Adj- R <sup>2</sup>	-.015	.883	-.017	.755	-.016	.775	-.018	.875
	SIG	.731	.000***	.950	.000***	.753	.000***	.906	69.144
	T-test or F-test	-.345	20.932	-.063	22.924	.316	14.052	-.119	.000***
2007	R	.033	.958	.030	.874	.024	.870	.021	.960
	R <sup>2</sup>	.001	.917	.001	.763	.001	.757	.000	.922
	Adj- R <sup>2</sup>	-.017	.915	-.017	.725	-.017	.753	-.017	.910
	SIG	.806	.000***	.821	.000***	.857	.000***	.874	.000***
	T-test or F-test	.247	24.857	-.228	19.766	.181	13.205	-.160	.72.700

\* Significant at  $p < 0.10$  \*\* Significant at  $p < 0.05$  \*\*\* Significant at  $p < 0.01$

### Conclusion and Recommendations:

Most firms have a large amount of cash invested in working capital. It can therefore be expected that the way in which working capital is managed will have a significant impact on the profitability of firms.

Simple regression test used and indicate there is a significant negative relationship between net operating profitability and the average collection period, and cash conversion cycle and sales as (measures size of firm) and debt ratio for a sample of Jordanian firms listed on Amman Stock Exchange. These results suggest that managers can create value for their shareholders by reducing the number of day's accounts receivable to a reasonable minimum. The results also indicate there is a significant negative relationship between gross profit and average collection period, and sales as measures size and debt ratio.

Multiple regression test used and indicate there is a significant relationship between net operating profitability / gross profit and overall independent variables for every year and total sample years.

Finally, the results indicate that variables ITID, APP, NTC and CR, SG not significant values but related inversely with the overall two models except SG variable related a positive value.

On basis of the above analysis we may further conclude that these results can be further strengthened if the firms manage their working capital in more efficient ways. Management of working capital means "management of current assets and current liabilities, and financing these current assets". If these firms properly manage their cash, accounts receivables and inventories in a proper way, this will ultimately increase profitability of these companies

The researcher recommended emphasizing the role of board monitoring of management and management's compensation in its control of the firm's working capital. There is much to be done about working capital in Jordanian in future with different companies and extending the years of the sample. The scope of further research may be extended to the working capital components management including cash, marketable securities

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## " فعالية إدارة رأس المال العامل وربحية الشركات : حالة في الشركات الصناعية الأردنية "

### الملخص

تهدف هذه الدراسة للتحقق من العلاقة بين ادارة رأس المال العامل وربحية الشركات للعينه المكونه من ٥٩ شركة صناعية اردنية مدرجة قي بورصة عمان عن فترة أربع سنوات من ٢٠٠٤ ولغاية ٢٠٠٧ .

يلدرس الباحث أثر مختلف العوامل المؤثرة على ادارة رأس المال العامل وتتضمن متوسط فترة التحصيل ، معدل دوران المخزون ، متوسط فترة الدفع ، دورة تحويل النقد ، ودورة صافي التجارة على صافي الربح التشغيلي ومجمل الربح كمقاييس للربحية في الشركات الصناعية الاردنية . تم استخدام نسبة المديونية وحجم الشركة مقياس بحجم المبيعات ونسبة التداول ونسبة نمو المبيعات كمتغيرات مستقلة للرقابة .

تم استخدام اختبار الانحدار المتعدد في التحليل وأظهرت النتائج وجود علاقة ذو دلالة احصائية عند مستوى ١٪ بين جميع متغيرات الدراسة مجتمعه الدالة على ادارة رأس المال العامل وربحية الشركات ولجميع السنوات ولكل سنة وفي نموذجي الدراسة .

تم استخدام اختبار الانحدار البسيط حيث أظهرت النتائج ان هناك علاقة ذو دلالة احصائية وسالبه بين متوسط فترة التحصيل وربحية الشركات عند مستوى ٥٪ ووكذلك وجود علاقة ذو دلالة احصائية سالبه عند مستوى ١٪ لنسبة المديونية المستخدمة في الشركات مع الربحية ، في حين اظهرت النتائج وجود علاقة ذو دلالة احصائية وموجبة بين حجم الشركة والربحية عن مستوى ١٪ وتتضمن التحليل نفس النتائج للنموذج الثاني والتي تم فيه قياس الربحية بمتغير مجمل الربح باستثناء دورة تحويل النقد حيث لم تظهر أي علاقة ذو دلالة احصائية .

يوصي الباحث بالتاكيد على دور ادارة رقابة مجلس الادارة والتعويض الاداري في رقابة الشركات في رأس المال العامل بحيث يجب ان يكون هناك المزيد من العمل في الأبحاث المستقبيله في مجال ادارة رأس المال العامل في الاردن ولتختلف الشركات ولتختلف فترات الدراسة . ان محور البحث المستقبلي من الممكن أن يتضمن عناصر أخرى في ادارة رأس المال العامل تتضمن النقدية ، الأوراق المالية (أسهم وسندات) .