Effect of Corporate Governance on Working Capital Management and Financial Performance

Dr. Nevine Sobhy Abdel Megeid

Effect of Corporate Governance on Working Capital Management and Financial Performance

Nevine Sobhy Abdel Megeid

Accounting Lecturer, PhD, CMA

Accounting and Finance Department

Arab Academy for Science, Technology and Maritime

Transport College of Management and Technology

Abstract

This research investigates the impact of corporate governance monitoring practices on the efficiency of working capital management and on improving the corporate financial performance. This research is based on a sample of 57 listed manufacturing firms in the Egyptian Stock Exchange for the period 2006-2010. Results were analyzed by using the multiple regression and Pearson correlation techniques. The result indicates that working capital management efficiency is critical for maintaining balance between liquidity and profitability. Findings show that return on assets and current ratio is negatively correlated with the Cash Conversion Cycle (CCC). This means that by shortening CCC, firms' profitability and liquidity improves. The results implies that firms can create value for their shareholders by keeping the CCC to minimum and through effective working capital management managers can promotes increase in firm profitability and liquidity. In addition, the results revealed that there is a significant impact of corporate governance practices on the efficiency of working capital management.

Keywords: Corporate Governance, Working Capital Management, Financial Performance, Profitability, Liquidity, Egyptian Listed Manufacturing Firms.

1.   Introduction

Working capital represents the amount of day-to-day operating liquidity available to a business. It is the difference between resources of the firm in cash or readily convertible into cash, which known as current assets, and organizational commitments for which cash will soon be required known as current liabilities (Ankita 2013). Working capital management is a method of deployment of current assets and current liabilities efficiently to maximize short-term liquidity. Managing the firm's working capital ensures that the firm has sufficient resources to continue its operations and likelihood of growth and continuity in business. All individual components of working capital play a vital

role in the performance of any firm (Daniel and Ambrose 2013). A firm can be very profitable if it can translate cash from operations within the same operating cycle, otherwise the firm would need to borrow to support its continued working capital needs (Brigham and Houston 2004). Working capital management involves the decision of the amount and composition of current assets and the financing of these assets (Malik et al. 2012), the greater the relative proportion of liquid assets, the lesser the risk of running out of cash, all other things being equal. Optimum working capital management affects liquidity and profitability, and enhances the value of the firm (Bagchi and Khamrui 2012). Working capital management is vital for short-run corporate solvency and survival as it allows the company to use the hidden cash and to limit working capital requirement.

Corporate governance is the structure, processes and mechanism that ensure that the firm is being directed and managed in a way that enhances long-term shareholder value through accountability of managers and enhancing organizational Performance (Velnampy 2013). Corporate governance prac□□ are the strategies, which should be formulated, in line with the short, medium and long-term objectives of the company with the interest of stakeholders (Morin and Jarrell 2001). It help better supervision over management activities and adoption of appropriate policies in the business unit are expected to prevent opportunistic actions affect accounts payable payment cycle and inventory conversion cycle and eventually Cash Conversion Cycle (CCC). The decisions involved in working capital management should be associated with the trend towards greater corporate responsibility and the conduct of business within acceptable ethical standards. Transparency, accountability and openness in reporting and disclosure of information, both operational and financial, are vital to the practice of good corporate governance. The organization of this research is as follows: Section 2 looks briefly at the relevant literature, shows research objectives and develops research hypotheses. Section 3 theoretically shows the relationship between corporate governance mechanisms and working capital management and how corporate financial performance is affected by working capital management efficiency. The methodological part and the explanatory variables used for the analysis part are dealt in Section *4*. The results analysis is discussed in Section 5 and Section 6 concludes on the results.

2. Literature Review

Working capital management has a significant importance in corporate financial management decision, thus the effects of corporate governance on working capital management and on corporate financial performance have been the focus of a substantial amount of theoretical and empirical research during the last two decades.

Achchuthan and Kajananthan (2013) found out the significant difference between corporate governance practices on working capital management

efficiency in listed manufacturing firms in SriLanka. The results revealed that there is no significant mean different between the levels of working capital management efficiency among corporate governance practices as board committees, board meetings and proportion of non-executive director except board leadership structure.

Agyemang and Michael (2013) examined the effect of working capital management on the profitability of companies listed on the Ghana stock exchange. The study found out that, the major component of working capital management such as inventory days, account payable and CCC have influence on the profitability of manufacturing companies.

Amarjit et al. (2013) found that corporate governance improves the efficiency of working capital management of American manufacturing firms. Larger board size may not be in favor of American manufacturing firms because it does not improve working capital management efficiency. The results of the study generally support the tradeoff theory of cash holdings.

Daniel and Ambrose (2013) found a negative relationship between profitability and number of day's accounts receivable and *CCC,* but a positive relationship between profitability and number of days of inventory and number of day's payable. The financial leverage, sales growth, current ratio and firm size also have significant effects on the firm's profitability. Analysis concludes that the management of a firm can create value for their shareholders by means of effective and efficient utilization of the resources of the organization through a careful reduction of the CCC to its minimum. Kajananthan and Achchuthan (2013) found a significant impact of corporate governance practices on current liabilities to total assets in working capital management. In contrast, the CCC and the current assets to total assets are not influenced by the corporate governance practices.

Ece (2012) suggested that an increase in both the CCC and the net trade cycle improves firm performance in terms of both the operating income and the stock market return for SMEs where as for bigger companies a decrease in CCC and net trade cycle is associated with enhanced profitability. Besides, the findings also imply that managers can use net trade cycle instead of CCC confidentially. Malik et al. (2012) tested the effect of working capital management on profitability. Findings show that there is a strong positive relationship between profitability and cash, accounts receivable and, inventory while there is a negative relationship between profitability and accounts payable. This means that increase in cash, inventory and credit sales will lead to increase profitability of firm.

Mahmood and Qayyum (2010) pointed out that to increase profitability of a company and ensuring sufficient liquidity to meet short-term obligations as they fall due two main objectives of working capital management. Profitability

is related to the goal of shareholders' wealth maximization, investment in current assets is made only if an acceptable return is obtained. While liquidity is needed for a company to continue business, a company may choose to hold more cash than needed for operational or transactional needs.

Zariyawati et al. (2009) examined the relationship between working capital management and corporate profitability. CCC was used as a measured for working capital management. The coefficient results of pooled OLS regression analysis provided a strong negative significant relationship between CCC and corporate profitability. This reveals that reducing cash conversion period results in increased profitability. Thus, company managers should work on shortening CCC until optimal level is achieved. Kyereboah-Coleman (2007) suggested that audit committees should have a minimum size of three members to enhance independence. An independent audit committee enhances the efficiency of working capital by auditing cash accounts, accounts receivable, accounts payable, and inventory accounts, which in turn, minimizes agency problems and agency costs.

Raheman and Nasr (2007) found a negative relation between variables of working capital management including the average collection period, inventory turnover in days, average collection period, CCC and net operating profitability. Besides, they also indicated that size of the firm, measured by natural logarithm of sales, and profitability had a positive relationship. Lazaridis and Tryfonidis (2006) investigated the relation between working capital management and corporate profitability of listed company in the Athens Stock Exchange. The result indicated that there was a statistical significance between profitability, measured through gross operating profit, and the CCC. The results claimed that the managers could create value for shareholders by handling correctly the CCC and keeping each different component to an optimum level. Abor (2004) used the CCC and net trade cycle as a measure of profitability and arrived at the following conclusions; that there is a negative significant relationship between profitability and number of day's inventory and number of day's account receivable but negative non-significant relationship between profitability and number of day's accounts payable. He also found a negative relationship between profitability and the CCC and trade cycle as well. Cossin and Hricko (2004) argue that cash holdings allow for optimal timing of an investment and avoid the underpricing issue. However, holding excessive cash does not necessarily make good business sense. Therefore, strong corporate governance is necessary to create and maintain sound cash holding policies. Deloof (2003) found a significant negative relation between gross operating income and the collection period of accounts receivable, average days in inventories and accounts payable of Belgian firms. These results suggest that managers can create value for shareholders by reducing collection period of accounts receivable and average days in inventories to a reasonable minimum. Eljelly

(2004) concluded that the effect of CCC on profitability is stronger than the effect of current ratio on it. Managing cash flow and CCC is a critical component of overall financial management for all firms, especially those who are capital constrained and more reliant on short-term sources of finance.

Dahya and Travlos (2000) describe that with dual-responsibility, CEOs serve the interests of the management team and one way to protect the team's position is to hold excessive corporate liquidity. In addition, the CEO together with the board of directors formulates policies, including policy related to working capital management. Lyroudi and Lazaridis (2000) concluded that a considerable positive relationship exists among CCC and current ratio, average age of inventory and average collection period. In addition, they located an inverse relationship between CCC and average payment period. They concluded that there was no statistically significant relationship between variables used for liquidity measurement and that used for profitability measurement and they suggested that CCC had no significant relationship with debt ratio.

2.1 Research Objectives

This research gives more attention to the importance of corporate governance mechanisms and its significant impact on the efficiency of working capital management in emerging markets like Egypt and shows how the later affect the firm financial performance in terms of profitability and liquidity.

The main objectives of this research are:

1. To examine the impact of corporate governance practices on the efficiency of working capital management of listed manufacturing firms in Egypt.

2. To examine impact of working capital management on the profitability of listed manufacturing firms in Egypt,

3. To examine impact of working capital management on the liquidity of listed manufacturing firms in Egypt.

2.2 Research Hypotheses

To achieve the research objectives, the following hypotheses were developed:

H_1: There is a positive relationship between corporate governance practices and efficiency of working capital management of listed manufacturing firms in Egypt.

H_2: There is a positive relationship between efficiency of working capital management and improvement of profitability of listed manufacturing firms in Egypt.

H_3: There is a positive relationship between efficiency of working capital management and improvement of liquidity of listed manufacturing firms in Egypt.

3. Working Capital Management Efficiency

Working capital management involves the relationship between a firm's short-term assets and its short-term liabilities. Current assets include those assets that in normal course of business have to return into cash within a short period under normal conditions, ordinarily within a year and such temporary investment as may be readily converted into cash upon need (Paul et al. 2013). A certain part of the investment in working capital is financed by current liabilities as payable and short-term maturity. The amounts invested in working capital are often high in proportion to the total assets employed and so it is vital that these amounts are used in an efficient and effective way (Kesseven 2006). The working capital's efficiency is measured by net working capital that represents the excess of current assets over current liabilities. This indicator explains the firm's ability to meet its short-term liabilities.

Efficient working capital management includes planning and controlling of current liabilities and assets in a way it avoids excessive investments in current assets and prevents from working with few currents assets insufficient to fulfill the responsibilities (Mehmet and Eda 2009). Working capital decisions are reversible and based on cash flows and profitability. It aims at reducing the locking up of funds in working capital to improve the return on capital employed. It seeks to formulate proper policies for managing current assets and liabilities as well as the techniques for maximizing the benefits derived from it (Niranjan and Suvarun 2010). Inefficient working capital management policy, induced by poor corporate governance, has a negative impact on shareholders' wealth. Effective corporate governance serves as a check on the management of the firm's resources (Amarjit et al. 2013).

The purpose of working capital management is to. manage firm's liquidity to maintain efficient profitability. Sound profitability increases the profit of the firm where liquidity helps maintaining the operation of the firm. The usual practice of a firm is to maintain the positive working capital at a level, which ensures better liquidity, good profitability with a reasonable level of risk. The situation of negative working capital is very unusual and mainly linked with financing decision of the firm. There are three theories of working capital management as follows (Nwankwo 2005) (Sandhar and Janglani 2013):

1. Conservative approach: The company keep a large amount of current assets in relations to the total assets of the company. For financing of working capital, aggressive policy implies that current liabilities are maintained in a greater portion as compared to long-term debts. High level of current liabilities requires more resources to be in liquid form to pay back debts earlier. The implication of this approach is that it yields a lower expected profitability resulting in a lower risk. This defensive

policy will also increase the company's net working capital situation but the firm will be short of funds to be used in other productive sectors.

2. Aggressive approach: The company holds high levels of fixed assets and low investment in current assets may generate more profits for a firm. The implication of the offensive policy is that it yields higher profitability resulting in a higher risk of insufficient funds for daily operations and for the payment of short-term debts and lower working capital.

3. Moderate approach: This balanced strategy minimizes the risk that the company will be unable to pay off its matured obligations. At this limits, a company could attempt to match exactly the maturity structure of its assets and liabilities. This policy is considered an equilibrium policy providing the best development of profitability and liquidity financial goals.

A company may adopt an aggressive working capital management policy with low CCC. While conservative strategy indicates that, a company may adopt a conservative working capital management policy with a high CCC (Jose et al. 1996). The conservative policy of working capital may ensure sound liquidity but endangers the profitability. While, aggressive policy helps in making profits but the liquidity is not promised. Before deciding a proper level of working capital investment, a firm's management has to evaluate the trade-off between expected profitability and the risk that it may be unable to meet its financial obligations (Panigrahi 2014).

3.1 Corporate Governance Practices and Working Capital Management

Corporate governance refers to the system by which corporations are managed and controlled. It encompasses the relationships among a company's shareholders, board of directors, and senior management. These relationships give the framework within which corporate goals are set and performance is monitored. Corporate governance encompasses the authority, accountability, stewardship, leadership, direction and control exercised in the process of managing organizations. Both corporate governance practices and working capital management are connected with firm performance and firm value. An ideal working capital management positively contributes in creating firm value (Bagchi and Khamrui 2012). By managing working capital effectively, shareholders can get the most return on their invested capital. Weak corporate governance might have adverse consequences for cash management (Harford et al., 2008), accounts receivable, inventory, accounts payable, and cash conversion. Achchuthan and Kajananthan (2013) argue that corporate governance practices are strategies, which are formulated to meet the short, medium and long-term goals of a firm as well as interests of the shareholders. As a result, working capital management efficiency becomes an important mechanism for meeting the short-term goals of a firm.

The board of directors is the critical link between shareholders and managers and is potentially the most effective instrument of good governance. The oversight of the company is ultimately their responsibility. The board, when operating properly, is also an independent check on corporate management to make sure that management acts in the shareholders' best interests.

Corporate governance plays an important role in controlling the management of working capital by formulating sound policies. The board of directors and the Chief Executive Officer (CEO) are responsible for formulating policies of cash management, accounts receivable, inventory purchases and maintenance, accounts payable, and all other policies in the organization.

The role of CEO duality, board size, and audit committee in working capital management cannot be ignored. CEO duality and board size help in maintaining a proper level of working capital in the organization (Gill and Shah 2012). They may lead to high cash balances, high volume of accounts receivable, high amount of accounts payable and a fast CCC (Amarjitet al. 2013).

The board to be able to supervise the actions of the management and to direct the company, they must have enough independence. This can be achieved by having some members in the board who are not part of the management of the company and have no relationship with other stakeholders. In addition, the board must set up an audit committee to check the accounting, reporting and auditing of financial statements; it helps in putting checks and balances that help shareholders in supervising the management of a company (Wanjau 2007). In addition, the experience and quality of board members can affect their skill in controlling and guiding the affairs of a company (Kleinsschnmidt 2007).

3.2. Working Capital Management and Corporate Financial Performance

The purpose of working capital management is to manage firm's liquidity to keep up the efficient profitability. Liquidity means the amount of capital available for company to invest and spend. It refers to the ability of the business organization to meet its short term debts and obligations when they come due without suffering any loss (Niranjan and Suvarun 2010). It can be defined as the average time required converting non-cash current assets into cash; the shorter the period required the stronger the liquidity position of the business organization.

Profitability reflects the result of business operations. Liquidity for the ongoing firm is not reliant on the liquidation value of its assets, but rather on the operating cash flows generated by those assets (Soenen 1993). Liquidity is a precondition to make sure that firms are able to meet its short-term obligations and its continued flow can be guaranteed from a profitable venture. Some businesses choose to have enough cash funds available to meet their daily needs, some firms have overdraft or borrowing facilities, and others use a form of asset finance (Bender 2009). In most of the cases it's been seen that there is always a

negative relationship between liquidity and profitability, Sound profitability increases the profit of the firm where liquidity helps maintaining the operation of the firm (Ankita 2013). Excessive levels of current assets may have a negative effect on the company's profitability, because a low-level of current assets may lead to a lower level of liquidity and stock outs resulting in difficulties in maintaining smooth operations (Afza and Nazir 2007).

Excess of investment in working capital may result in low profitability and lower investment may result in poor liquidity (Panigrahi 2014), each component of working capital including cash, marketable securities, account receivables and inventory management play a vital role in the performance of any firm (Eljelly 2004). Investments in current assets are inevitable to ensure delivery of goods or services to the final customers and a proper management of it should give the desired impact on either profitability or liquidity (Kesseven 2006). Optimal level of liquidity guarantees a firm to meet their short-term debts and the proper management of flow can be promised by a profitable business. Working capital management has proportion balance of working capital components i.e. debtors, inventory and payable and the use of cash effectively for daily business operations. Proper optimization of working capital balance means minimizing the working capital requirement and realizing most possible revenues (Ganesan 2007). The liquidity of a firm actually depends on the effective management of the composition of current assets vis-a-vis current liability. In fact, the components of current assets other than cash have varying degree of liquidity depending on the time taken for conversion of assets into cash. The components of current liability also have varying degree of the span of time made available to the firm by the short term creditors (Niranjan and Suvarun 2010).

Firms with high liquidity of working capital may have low-risk than low profitability. On the contrary, firm that has low liquidity of working capital, facing high-risk results to high profitability. The issue here is in managing working capital, firm must account all the items in both accounts and try to balance the risk and return (Amalendu and Amit 2012). The trade-off between profitability and liquidity is the key to working capital management, especially in the manufacturing sector. If an organization at any given time does not have the enough funds to meet its short-term obligations such as creditors, salaries, and the day-to-day expenses, then it is likely to become technically insolvent, conversely. If the business or firm is so conservative it may have a surplus of working capital, which will adversely affect profits (Yusuf 2013), maintaining a proper level of liquidity within the organization is fundamental for smooth operations of a firm. The level of cash a firm maintains is characterized by its policies of working capital requirements, cash flow management, dividend payments, investment, and asset management (Opler et al. 1999).

4. Research Methodology

Data on corporate governance practices, working capital management and financial performance obtained from the Egyptian Stock Exchange annual reports of 57 listed manufacturing firms that were selected as a sample size during 2006-2010.

Descriptive statistics analysis describes the main features of the collected data and reports the mean and standard deviation of the dependent and independent variables. Pearson correlation analysis is used to check the linear relationship between variables of the study and regression analysis used to find out the influence of independent variables on the dependent variable.

Figure (1) presents the research conceptual framework. It shows the dependent and independent variables as well as the control variables used to test the relationships between the variables of the three research hypotheses.

Figure (1) Research conceptual framework


```
        ┌─────────────────────┐              ┌─────────────────────┐
        │ Independent Variables│              │ Dependent Variables │
        └─────────────────────┘              └─────────────────────┘
```

Corporate Governance
CEOD = CEO Duality
BSIZ = Board Size
BIND = Board Independence
BSR = Board Structure and Composition
AC = Audit Committee
AIND = Audit Committee Independence
FINEX = Audit Committee Financial Expertise
Control Variables
FS = Natural Logarithm of Total Sales
ROA = Earnings before interest and taxes to total assets.

First Hypothesis

Working Capital Management Efficiency
CCC = Cash Conversion Cycle

Working Capital Management Efficiency
ARP = Accounts Receivable Period
APP = Accounts Payable Period
ICP = Inventory Conversion Period
CCC = Cash Conversion Cycle
Control Variables
FS = Natural Logarithm of Total Sales
FL = Financial Leverage
SG = Sales Growth

Second Hypothesis

Profitability
ROA = Return on Assets

Working Capital Management Efficiency
ARP = Accounts Receivable Period
APP = Accounts Payable Period
ICP = Inventory Conversion Period
CCC = Cash Conversion Cycle
Control Variables
FS = Natural Logarithm of Total Sales
FL = Financial Leverage
ROA = Earnings before Interest and Taxes to Total Assets.

Third Hypothesis

Liquidity
CR = Current Ratio
QR = Quick Ratio

4.1 Hypothesis One Regression Model

The first hypothesis tests the relationship between corporate governance practices and working capital management efficiency. Corporate governance is considered the independent variables and the working capital management efficiency is considered as a dependent variable, measured using the Cash Conversion Cycle. CCC is used as a comprehensive measure of working capital efficiency as it shows the time lag between expenditure for the purchase of raw material and the collection of sales of finished goods. CCC combines the working capital components related to operational processes, reflecting the

46

purchasing, production and sales processes. The cash cycle measures the average number of days that working capital is invested in the operating cycle.

Firm size is used as a control variable as it may influence the firm's working capital management efficiency. Bigger firms need larger investments in working capital due to their larger sales levels. Accordingly, larger firms may be able to use their size to enhance relationships with suppliers that are necessary for reductions in investments in working capital.

In addition, ROA is a profitability ratio is used as a control variable, it explains how efficiently a firm is utilizing its existing resources for the maximization of profits. Increase in ROA may influence positively the way firms manage their working capital. Table (1) shows the definitions and measures of variables tested in the first hypothesis.

The following multiple regression model allows identifying how the corporate governance practices affect the firm working capital management efficiency.

$CCC_{it} = \beta_0 + \beta_1\, CEOD_{it} + \beta_2\, BSIZ_{it} + \beta_3\, BIND_{it} + \beta_4\, BSR_{it} + \beta_5 AC_{it} + \beta_6 AIND_{it} + \beta_7\, FIN\, EX_{it} + \beta_8\, FS_{it} + \beta_9\, ROA_{it} + \varepsilon_{it}$

Where:

CCC = Cash conversion cycle for firm i in year t

t = Time 1, 2,.., 5 years

I = 1, 2, 3,..., 57 manufacturing firms listed in Egyptian Stock Exchange

β_o = The intercept of equation Pi-$P9$- Coefficient of the explanatory variables

$CEOD_{it}$ = Equals 1 if the chairman of the board is not an independent director, otherwise equal 0

$BSIZ_{it}$ = Logarithm of the number of directors serving in the board

$BIND_{it}$ = Number of independent directors divided by the total number of directors on the board

BSR_{it} = The proportion of outside and inside directors

AC_{it} = Equal 1 if the firm have audit committee director, Otherwise, it equals zero

$AIND_{it}$ = Number of independent directors on the audit committee divided by the total number of directors on the audit committee

$FINEX_{it}$ = Number of independent directors with financial

expertise on the audit committee divided by the total number of directors on the audit committee

FS_{it} = Natural logarithm of total sales

ROAit = Earnings before interest and taxes to total assets

ε = The error term of the model

Table (1) Hypothesis one: Research variables definitions and measures

Variables	Symbol	Definition and Measure
Dependent Variable: Cash Conversion Cycle	CCC	Cash Conversion Cycle: The CCC refers to the number of days between the expenditure of the firm's cash for the purchase of raw materials and the collection of cash front product sales. CCC calculated as Accounts Receivable Period + Inventory Conversion Period - Accounts Payable Period. The longer the CCC, the greater the net investment in current asset and hence the greater the need to sought for funds to finance the current assets.
Independent Variables: Corporate Governance Practices	CG	CG = f (CEDO, BSIZ, BIND, BSR, AC, AIND, ETNEX, FS, ROA)
	CEOD	CEO Duality: One if the chairman of the board is not an independent director. Otherwise, it equals zero.
	BSIZ	Board Size: Logarithm of the number of directors serving in the board.
	BIND	Board Independence: It is measured as the number of independent directors divided by the total number of directors on the board.
	BSR	Board Structure and Composition: It is measured as the proportion of outside and inside directors. Inside directors are directors who are also employees of the firm, and outside directors are non- executive directors, who are considered independent from management and free from any business or other relationship that could materially interfere with the exercise of their independent judgment.
	AC	Audit Committee: One if the firm has audit committee director. Otherwise, it equals zero.

Variables	Symbol	Definition and Measure
Control Variables	AIND	Audit Independence: Number of independent directors on the audit committee divided by the total number of directors on the audit committee.
	FINEX	Financial Expertise: Dummy variable of one, if at least one member of a company's audit committee possesses professional accounting qualification and zero otherwise.
	FS	Firm Size: Natural logarithm of total sales.
	ROA	Return on Assets: It used as a proxy of firm's profitability and explains the performance and progress of the business in utilizing its resources to generate the income. It is a ratio of the earnings before interest and taxes to total assets.

4.2 Hypothesis Two Regression Model

The second hypothesis seeks to investigate the impact that effective working capital management has on the financial performance of listed manufacturing firms in Egypt.

In order to analyze the effects of working capital management variables on the firm's profitability, we used the Return on Assets (ROA) as the dependent variable. ROA of a firm because of an activity is closely related to level and distribution of assets of the firm and efficiency in application of these assets. In lots of firms, current assets called working capital make up of a remarkable part of community assets (Mehmet and Eda 2009).

Concerning the independent variables, we measured working capital management by using the number of days of accounts receivable plus number of days of inventory minus number of day's accounts payable. Table (2) shows the definitions and measures of variables tested in the second hypothesis.

The following multiple regression model allows identifying how the firm profitability is affected by working capital management efficiency.

$$ROA_{it} = \beta_0 + \beta_1 ARP_{it} + \beta_2 APP_{it} + \beta_3 ICP_{it} + \beta_4 CCC_{it} + \beta_5 FS_{it} + \beta_6 FL_{it} + \beta_7 SG_{it} + \varepsilon_{it}$$

Four different regression models were estimated to capture the effects of working capital management components on profitability for the selected firms as follows:

$$ROA_{it} = \beta_0 + \beta_1 ARP_{it} + \beta_2 FS_{it} + \beta_3 FL_{it} + \beta_4 SG_{it} + \varepsilon_{it} \quad \text{Model (1)}$$

$$ROA_{it} = \beta o + \beta_1\,APP_{it} + \beta_2\,FS_{it} + \beta_3\,FL_{it} + \beta_4\,SG_{it} + \varepsilon_{it} \qquad \text{Model (2)}$$

$$ROA_{it} = \beta o + \beta_1\,ICP_{it} + \beta_2\,FS_{it} + \beta_3\,FL_{it} + \beta_4\,SG_{it} + \varepsilon_{it} \qquad \text{Model (3)}$$

$$ROA_{it} = \beta o + \beta_1\,CCC_{it} + \beta_2\,FS_{it} + \beta_3\,FL_{it} + \beta_4\,SG_{it} + \varepsilon_{it} \qquad \text{Model (4)}$$

Where:

ROA_{it} = Return on Assets of firm i, 1, 2, 3,..., 57 manufacturing firms listed in Egyptian Stock Exchange for the period t of 2006- 2010

βo = The intercept of equation

$\beta_1 - \beta_7$ = Coefficient of the explanatory variables

ARP_{it} = Accounts receivable period

APP_{it} = Accounts payable period

ICP_{it} = Inventory conversion period

CCC_{it} = Cash conversion cycle

FS_{it} = Natural logarithm of total sales

FL_{it} = Financial leverage

SG_{it} = Sales growth

ε_{it} = The error term of the model

Table (2) Hypothesis Two: Research variables definitions and measures

Variables	Symbol	Definition and Measure
Dependent Variable	ROA	Return on Assets: It used as a proxy of firm's profitability and explains the performance and progress of the business in utilizing its resources to generate the income. It is a ratio of the earnings before interest and taxes to total assets.
Independent Variables: Cash Conversion Cycle	CCC	CCC = f (ARP, APR, ICP, FS, FL, SG)
	ARP	Accounts Receivable Period: It shows how many times company collects its account receivable. High ratio increases the liquidity of the company. It is calculated as: Accounts Receivable Period = (Receivables/Sales) x 365.
	APP	Accounts Payable Period: It reflects the average time it takes the firms to make payment to their suppliers. The higher the value the longer firms take to settle their payment commitment to their supplies. It is calculated as Accounts Payable Period =

Variables	Symbol	Definition and Measure
		(Payables/Cost of Sales) x 365.
	ICP	Inventory Conversion Period: It reflects the average number of day's stock held by the firms. Longer storage times represent a greater investment in inventory for particular levels of operations. It is calculated as Inventory Conversion Period = (Inventory/Cost of Sales) x 365.
Control Variables	FS	Firm Size: It is measured by taking the natural log of the total sales.
	FL	Financial Leverage (Debt Ratio): It shows the how much of the firm's assets are financed by external debt. In case the financial charges due to external financing is larger than the earnings before interest and taxes, the firm can incur great losses. It is measured by dividing' the total liabilities by total assets.
	SG	Sales Growth: It is measured by dividing the increase or decrease in sales by the previous year's sales figure as follows: $[(\text{sales}_t - \text{sales}_{t-1}) / \text{sales}_{t-1}]$.

4.3 Hypothesis Three Regression Model

Working capital are the resources, which a firm has at hand to run its daily operations. It provides a measure of business's liquidity, or its ability to meet its short-term obligations as they come due. Ongoing liquidity refers to the inflows and outflows of cash through the as the product acquisition, production, sales, payment and collection process takes place overtime. As the firm is ongoing liquidity is a function of its CCC, it will be more appropriate and evaluate effectiveness of working capital management by CCC. Working capital management seeks to maintain an optimum balance of each working capital component thereby ensuring that firms operate with sufficient fund (cash flows) that will service their long-term debt and satisfy both maturing short-term obligation and upcoming operational expenses.

The third hypothesis seeks to investigate the impact that effective working capital management has on the financial performance in terms of liquidity of listed manufacturing firms in Egypt. It predicts the impact on working capital variables and CCC on current ratio and quick ratio. The liquidity ratios, of

current and quick, are used to determine the responsiveness of a firm to pay for its liabilities. Current ratio (CR) indicates extent of soundness of the current financial position of a company, and the degree of safe and security provided for the creditors. It determines whether a firm could pay off all its short-term debt with the capital it got from selling assets. Ideal current ratio is 2:1 is considered satisfactory. Table (3) shows the definitions and measures of variables tested in the third hypothesis.

To capture the effects of working capital management efficiency on liquidity for the selected firms, two multiple regression models were estimated as follows:

$$CR_{it} = \beta_0 + \beta_1\ ARP_{it} + \beta_2\ APP_{it} + \beta_3\ ICP_{it} + \beta_4\ CCC_{it} + \beta_5\ FS_{it} + \beta_6\ FL_{it} + \beta_7\ ROA_{it} + \varepsilon_{it} \qquad \text{Model (1)}$$

$$QR_{it} = \beta_0 + \beta_1\ ARP_{it} + \beta_2\ APP_{it} + \beta_3\ ICP_{it} + \beta_4\ CCC_{it} + \beta_5\ FS_{it} + \beta_6\ FL_{it} + \beta_7\ ROA_{it} + \varepsilon_{it} \qquad \text{Model (2)}$$

Where:

CR_{it} = Current ratio

QR_{it} = Quick ratio

i = 1, 2, 3, ..., 57 manufacturing firms listed in Egyptian Stock Exchange for the period t of 2006-2010

β_0 = The intercept of equation

$B_1 - \beta_7$ = Coefficient of the explanatory variables

ARP_{it} = Accounts receivable period

APP_{it} = Accounts payable period

ICP_{it} = Inventory conversion period

CCC_{it} = Cash conversion cycle

FS_{it} = Natural logarithm of total sales

FL_{it} = Financial leverage

ROA_{it} = Earnings before interest and taxes to total assets.

ε_{it} = The error term of the model

Table (3) Hypothesis Three: Research variables definitions and measures

Variables	Symbol	Definition and Measure
Dependent Variables:	CR	Current Ratio: The firm's current assets divided by its current liabilities. It is used for testing the liquidity of a business and measures the ability of a business to repay its short-term debts. Current ratio

Variables	Symbol	Definition and Measure
Liquidity Ratios		should be greater than 1. It is the indicator of the firm's ability to meet its short-term liabilities, but very high current ratio may be the result of underutilized resources in the business.
	QR	Quick Ratio: It shows the credit worthiness of a firm. It measures the firm's ability to meet short-term obligations from its most liquid assets. It is calculated as: (Current assets — Inventories) / Current liabilities. If the value of this ratio is higher, then it shows that the firm can pay its debts earlier.
Independent Variables: Cash Conversion Cycle	CCC	CCC = f (ARP, APR, ICP, FS, FL, ROA)
	ARP	Accounts Receivable Period: It is calculated as: Accounts Receivable Period = (Receivables/Sales) x 365.
	APP	Accounts Payable Period: It is calculated as: Accounts Payable Period = (Payables/Cost of Sales) x 365.
	ICP	Inventory Conversion Period: It is calculated as: Inventory Conversion Period = (Inventory/Cost of Sales) x 365.
Control Variables	FS	Firm Size: It is measured by taking the natural log of the total sales.
	FL	Financial Leverage: It is the financial debt ratio, which is used in order to establish the relation between the external financing of the firm and its total assets.
	ROA	Return on Assets: Earnings before interest and taxes to total assets.

5. Results Analysis and Discussion

5.1 Hypothesis One Results Analysis

The statistical results on the relationship between corporate governance mechanisms and working capital management efficiency of the Egyptian listed manufacturing firms are presented in this section. Table (4) presents the

descriptive statistics of the pooled data of all firms included in the sample with total observations come to 285 (57 listed manufacturing firms x 5 years). The mean CEO duality was 0.062. This implies that some firms in the sample selected had CEOs who also acted as the board chairman. The average board size was 7.24 while the mean number of board structure was 5.258. Financial enterprise had a mean of 1.087. The average working capital management efficiency measured using CCC was 120 days. ROA had a mean of 13.178 while the average firm size was 6.789.

Table (4) Descriptive statistics of hypothesis one collected variables

Descriptive Statistics (Number of observations = 285)		
Variables	**Mean**	**St. Dev.**
Cash Conversion Cycle	120.070	136.678
CEO Duality	0.062	0.315
Board Size	7.24	4.458
Board Independence	0.568	0.348
Board Structure	5.258	4.367
Audit Committee	0.587	0.268
Audit Committee Independence	3.873	2.785
Financial Expertise	1.087	0.975
Firm Size	6.789	5.587
Return on Assets	13.178	10.268

Table (5) presents Pearson correlation coefficient; it shows that CEO duality, board size, board independence, audit committee and audit independence, financial expertise and firm size were positively correlated with CCC, the relationship was statistically significant ($p < 0.05$) except for financial expertise. While ROA was found to be negatively correlated with CCC, the relationship was statistically significant. The results show that there is a statistical significant relationship between corporate governance practices (CEO duality, board size, board independence, board structure, the existence of audit committees and independence) and working capital management efficiency.

For the control variables, log of total sales used as proxy for size of a firm shows a significant positive relationship with CCC which means that bigger size firms can influence more the efficiency of their working capital policy and approach compared to firms of smaller size. Bigger firms need larger investments in working capital because of their larger sales levels and can buy larger quantities of products and have negotiating power to get more favorable credit terms from their vendors. In addition, the result profitability (ROA) was found to be significantly negatively correlated with CCC.

Table (5) Pearson correlation coefficient on efficiency in working capital and corporate governance

	CCC	CEOD	BSIZ	BIND	BSR	AC	AIND	FINEX	FS	ROA
CCC	1									
CEOD	0.351** 0.025	1								
BSIZ	0.589** 0.031	0.589** 0.011	1							
BIND	0.687** 0.001	0.689** 0.001	0.589* 0.028	1						
BSR	0.678** 0.003	0.258* 0.032	0.367* 0.023	0.358* 0.041	1					
AC	0.689** 0.001	0.397 0.051	0.258 0.062	0.698** 0.003	0.589 0.23	1				
A1ND	0.587* 0.020	0.258** 0.003	0.368 0.231	0.458** 0.001	0.368 0.051	0.845* 0.03	1			
FINEX	0.487. 0.123	0.589 *0.064*	0.489 0.057	0.413* 0.031	0.159 0.061	0.256 0.054	0.456 0.053	1		
FS	0.769** 0.002	0.369 0.124	0.751 0.354	0.258 0.354	0.259 0.452	0.547 0.141	0.235 0.123	0.365 0.125	1	
ROA	-0.284** 0.001	0.258 0.051	0.658 0.005	0.287* 0.030	0.369 0.059	0.259 0.057	0.10 0.064	0.235 0.060	0.689** 0.003	1

** Correlation is significant at the 0.01 level (2-level)

* Correlation is significant at the 0.05 level (2-level)

Table (6) Regression results for the effect of corporate governance on CCC management efficiency

	Regression Coefficients
Constant	3.254
CEOD	1.235
BSIZ	3.354
BIND	5.235
BSR	2.356
AC	1.254
AIND	2.365
FINEX	2.450
FS	4.235
ROA	-10.235

By analyzing the regression coefficients results presented in table (6), we conclude that if the firm is implementing corporate governance practices it will be more efficient in managing working capital. This efficiency in turn helps in reducing working capital requirements and this will lead to increasing its profitability.

Firms that follow the best corporate governance practices have improved internal control systems which results in more accountability and allows to benefit from managing working capital effectively at both the strategic, executive and operational levels. Corporate governance practices ensure continuous improvement of receivables and payables processes, which results in increasing the return on working capital invested in operations and increasing the firm and all the stakeholders' value by achieving higher profitability and enhancing firms to grow.

5.2 Hypothesis Two Results Analysis

The statistical results on the relationship between working capital management and profitability of the selected Egyptian listed manufacturing firms are presented in this section.

Table (7) presents the descriptive statistics of the pooled data of all firms included in the sample. The ROA has a mean value of 12.4% of the total assets for all the manufacturing firms in the sample and its standard deviation is 0.645. The receivables collection period averages 65 days. On average, it takes 85 days to sell inventory, with a standard deviation of 81. On average, companies wait 61 days to pay their purchases. On average, the companies in this sample have an 88 days CCC, implying that typical to the manufacturing sector firms turnover their stocks on an average of 4.10 times a year.

Natural logarithm of assets; debt ratio and sales growth were used as control variables. The natural logarithm of total assets measures the size of the firm and allows checking its relationship with profitability. The mean of this variable is 16.58 and the standard deviation is 14.62. The mean of debt ratio, which is used to verify the relationship between debt financing and profitability, is 1.15, with a standard deviation of 2.58. Lastly, information from descriptive statistics shows that the mean value of sales growth ratio is 2.84 with a standard deviation of 1.68.

Table (7) Descriptive statistics of hypothesis two collected variables

Descriptive Statistics (Number of observations = 285)		
Variables	**Mean**	**St. Dev.**
Return on Assets	0.124	0.645
Accounts Receivable Period	64.95	58.65
Accounts Payable Period	61.15	48.87
Inventory Conversion Period	85.06	81.20
Cash Conversion Cycle	88.86	75.52
Firm Size	16.58	14.62
Financial Leverage	1.15	2.58
Sales Growth	2.84	1.68

Table (8) provides the Pearson correlation for the variables that are used in the regression model. Pearson's correlation analysis is used for data to find the relationship between working capital management and ROA. The correlations between ROA and other variables are statistically significant.

Regarding ARP, the results from the correlation analysis shows a negative coefficient -0.418. It indicates that there is a high significance at $\alpha = 1\%$. The negative correlation between ARP and ROA suggests that an increase of the receivables collection period will have a negative impact upon operating profitability. Correlation results between ICP and ROA shows that the correlation coefficient is negative and is highly significant. The coefficient is -0.294 and the p-value is 0.000. This shows that the result is highly significant $\alpha = 1\%$. It indicates that if the firm takes more time in selling inventory, it will adversely affect its profitability. It means that when the time span during which inventories remain within the firm increases, profitability decreases. Correlation results between the average collection period and net operating profitability analysis shows a negative coefficient -0.381, with p-value of (0.010). It indicates that the result is highly significant at $\alpha = 1\%$, and that if the average collection period increases it will have a negative impact on the profitability and it will decrease. The negative coefficient presented by APP in relation to ROA suggests that less profitable companies wait longer to pay their bills. The CCC also has a negative coefficient -0.284 and the p-value is 0.000, which is significant at $\alpha = 1\%$. It implies that if the firm is able to decrease its CCC, it can improve its operating profitability.

Firm size, measured by the natural logarithm of sales, and sales growth has a positive relation with profitability. Their correlation coefficient is 0.398 and 0.337, respectively, and they are highly significant at $\alpha = 1\%$. It shows that an increase in firm' size and sales increases their profitability. The debt ratio, in relation to ROA, has a negeative and significant coefficient. Positive sales growth is associated with increased investment in net working capital. Firm sales growth influences a firm's working capital investment and so it's CCC.

Table (8) Pearson correlation of the ROA with the indicators of working capital management

	ROA	**ARP**	**APP**	**ICP**	**CCC**	**FS**	**FL**	**SG**
ROA	1							
ARP	-0.418** 0.001	1						
APP	-0.381** 0.010	0.309* 0.003	1					
ICP	-0:294** O.000	0.354** 0.041	0.385** 0.002	1				
CCC	-0.284**	0.537**	0.417	0.814**	1			

	ROA	ARP	APP	ICP	CCC	FS	FL	SG
	0.000	0.039	0.060	0.001				
FS	0.398** 0.003	-0.275* 0.005	-0.348** 0.047	-0.287* 0.022	-0.348* 0.036	1		
FL	-0.487** 0.025	0.218* 0.016	0.228 0.061	0.318" 0.048	0.418* 0.005	-0.3□* 0.035	1	
SG	0.337** 0.000	-0.401** 0.027	-0.187** 0.037	-0.178* 0.048	-0.287* 0.003	-0.241** 0.053	-0.360* 0.026	1

** Correlation is significant at the 0.01 level (2-level)

* Correlation is significant at the 0.05 level (2-level)

Table (9) gives the coefficient estimates from the formerly stated panel data regressions, namely Model (1), Model (2), Model (3) and Model (4).

All results for all models are found statistically significant, and the signs of coefficients are same as the ones from the correlation matrix (Table 8).

Efficient working capital management increases profitability, then there is a negative relationship between the measures of working capital management and profitability variable and vice versa. With other words, there is a negative relationship between profitability and the CCC, inventory receivable days, accounts payable days and accounts receivable days, which was used as a measure of working capital management efficacy. The negative result indicates the number of days a company has received cash from sales before it must pay its suppliers.

The negative relationship between accounts receivables and firms' profitability suggests that less profitable firms will pursue a decrease of their accounts receivables in an attempt to reduce their cash gap in the CCC. Likewise, the negative relationship between number of days in inventory and corporate profitability suggests that in the case of a sudden drop in sales accompanied with a mismanagement of inventory will lead to tying up excess capital at the expense of profitable operations.

Model (4) regression results indicate that CCC has a significant negative relationship with operating pr□□□ that as CCC increases, profitability decreases. This means that firms with high CCC earn lower profits as compared to firms with low CCC. Therefore managers can create profits for their companies by handling correctly the CCC and keeping each different component (accounts receivables, accounts payables, inventory) to an optimum level.

The results indicate that selling products quicker, collecting money from customers faster, and paying suppliers sooner are all related to an increase in the firm's profitability.

The negative relationship reveals that the CCC is linked with profitability, which indicates the impact that efficient management of working capital has on firm profitability, in other words, if the firm is able to reduce CCC, and then the firm is efficient in managing working capital. This efficiency will lead to increasing its profitability.

When it comes to the control variables, Log of total sales used as proxy for size of a firm shows a significant positive relationship with profitability which means that bigger size firms have more profitability compared to firms of smaller size. As bigger companies are more able to decrease cash gaps, which may enhance their profitability and firms with an important debt ratio are expected to have a low-level of profitability (Raheman and Nasr 2007), this may be due to the power over their suppliers to get credit on their purchases.

Financial leverage is highly significant but negatively correlated with working Capital and firm profitability.

This result is consistent with the results of Narendre et al. (2009), who found that a higher debt ratio is due to less capital available for daily operations. Therefore, the firm may have to raise capital from outside in response to a lack of funding, and exercise caution in working capital management so as not to aggravate the shortage of funds. In addition,

Sales growth is added in the research as a control variable to measure the investment growth opportunity in the industry. Sales growth is positive and highly significant associated with the increase in the profitability of the firm because increase in sales is associated with the increase in profits.

A high growth rate indicates that a firm has enough profits to both manage its obligations as well as making new investments, a more preferable state than a low sustainable growth rate, which indicates that a firm has too little incoming cash flow to cover its obligations.

By analyzing the results, it can be concluded that if the firm is able to decrease these periods, then the firm is efficient in managing working capital. This efficiency will lead to increasing its profitability.

According to the previous statistical results analysis, hypothesis one is supported, profitability is negatively related to CCC and positively related to working capital management efficiency.

Table (9) Regression results for the effect of working capital management factors on profitability

	Model 1	Model 2	Model 3	Model 4
Constant	-0.309* (-0.003)	-0.315* (-3.46)	-0.345** (-0.017)	-0.356* (-0.034)
ARP	-0.008* (-0.025)			
APP		-0.006 (0.056)		
ICP			-0.003* (0.028)	
CCC				-0.0003* (-0.036)
FS	0.023* (0.036)	0.013* (0.025)	0.031** (0.027)	0.146* (0.028)
FL	-0.067* (-0.025)	-0.094* (-0.036)	-0.095* (-0.025)	-0.083** (-0.023)
SG	2.567* (0.067)	2.577* (0.025)	2.977* (0.023)	2.287* (0.015)

** Correlation is significant at the 0.01 level (2-level)

* Correlation is significant at the 0.05 level (2-level)

5.3 Hypothesis Three Results Analysis

The statistical results on the relationship between working capital management efficiency and liquidity of the selected Egyptian listed manufacturing firms are presented in this section.

Table (10) gives the descriptive statistics of hypothesis three collected variables. The average current ratio was 2.015, which indicate a good liquidity position of company and implies that on average the firms always keep enough current assets to offset their current liabilities. The standard deviation was 0.758 and CV% is 37.6%.

Liquid or quick ratio (LR) average was 1.064, which indicates a good position from creditor's point of view. The accepted norm is 1:1. However, from the management point of view, it indicates poor investment policy because excessive liquidity may lead to lower profitability. The S.D is 0.286 and CV % is 26.87%.

It is expected that the firms with more profitability have more liquidity, so profitability variable was used as a control variable to make its effect on liquidity neutral. ROA was used as profitability criterion. Also firm sizes, measured as the natural logarithm of total sales and financial leverage are used as control variables.

The firms that have more sales naturally have more liquidity. So the firm size variable was used to control the effect of this.

The CCC shows that, it takes the firm's around 96 days on average to realize net cash on selling products. While they paid, their creditors before receiving the sales proceed. Inventory takes on an average 61 days to be sold. Account receivable period has an overall mean of 81 days. In addition, the average time taken for the firms to pay their suppliers or creditors (APP) is 76 days.

Table (10) Descriptive statistics of hypothesis three collected variables

Descriptive Statistics (Number of observations = 285)		
Variables	**Mean**	**St. Dev**
CR	2.015	0.758
QR	1.064	0.286
ARP	80.958	78.558
APP	75.984	68.258
ICP	60.947	57.589
CCC	95.946	82.688
FS	0.159	0.098
FL	2.125	1.358
ROA	12.354	8.369

Pearson's correlation analysis used to find the relationship between working management and firm's liquidity. The results of Pearson correlation analysis shown in table (11) show an inverse significant relationship of liquidity

with the accounts receivable period, inventory conversion period and CCC. These results mean that if the firm is able to decrease this time known as cash conversion cycle, it can improve its liquidity level; as if account receivable period increases, it will have a negative impact on the liquidity.

In addition, there is s negative relationship between accounts payable period and liquidity levels. A negative relationship between number of day's accounts payable and liquidity is consistent with the view speeding up payments to suppliers might decrease liquidity.

The results show that the liquidity increases in firms wait longer to pay their bills and indicates that if the firm takes more time in selling inventory. Therefore, it is important for firms to efficient managing their working capital to decrease the level of inventory turnover time and the receivables collection period to maximize the shareholder's wealth as efficient management of working capital has a positive effect on the firms' liquidity. These are consistent with the view that the shorter the period between production and sale of products the higher is the firm's liquidity.

Table (11) Pearson correlation coefficient of working capital efficiency and Liquidity

	CR	QR	ARP	APP	ICP	CCC	FS	FL	ROA
CR	1								
QR	0.897** 0.032	1							
ARP	*-0.698** 0.018*	-0.687** 0.010	1						
APP	-0.689* 0.025	0.789** 0.014	0.685* 0.036	1			-		
ICP	-0.458* 0.042	-0.268** 0.006	0.365* 0.008	0.258* 0.018	1				
CCC	-0.369** 0,001	-0.487* 0.014	0.368" 0.014	-0.268** 0.002	0.689** 0.087	1			
FS	0.874* 0.003	0.867** 0.025	0.489 0.007	0.697* 0.001	0.368* 0.036	0.587** 0.003	1		
FL	0.578** 0.002	0.690* 0.036	0.145** 0.001	0.236* 0.002	0:251** 0.001	-0.356* 0.031	0.258* 0.001	1	

	CR	QR	ARP	APP	ICP	CCC	FS	FL	ROA
ROA	-0.344* 0.004	-0.312** 0.001	-0.369** 0.025	-0.589* 0.006	-0.856** 0.003	-0.186* 0.007	0.125* 0.003	0.584* 0.065	1

** Correlation is significant at the 0.01 level (2-level)

* Correlation is significant at the 0.05 level (2-level)

These previous results are consistent with Se☐☐ling (1996) Who suggests that CCC is the most dynamic tool in managing liquidity. The relationship is that the longer the CCC, the minimum level of needed liquidity rises, and conversely. The shorter the CCC, the minimum level of liquidity needed decreases, thus current ratio and quick ratio are positively related to working capital management efficiency. Firm liquidity and CCC influenced by firm size, large firms secure quantity discounts from inventory vendors as they buy larger quantities and they negotiate a longer repayment period. In addition, they are efficient in collecting receivables quickly. All of these make large firms more able in maintaining lower levels of liquidity and cash cycle, as compared to smaller size firms.

Financial leverage as a control variable is used because companies take debt from financial institutions and eventually firms have to pay the debt with interests back to them. The results show a negative relationship between leverage ratio and CCC.

In addition, Pearson correlation analysis shows that the current ratio has a significant negative relationship with profitability (measured by ROA). The coefficient is -0.344 and p-value of (0.004). The result is significant at $\alpha = 5\%$. It indicates that the two goals of liquidity and profitability have inverse relationships. Therefore, the firms need to keep up a balance or trade-off between these two measures.

The regression coefficients for the effect of working capital management factors on liquidity presented in table (12) shows high values for current ratio and quick ratio, which show that the company is solvent, which should lead to the better liquidity, shorter CCC and efficient working capital management.

For the control variables, log of total sales used as proxy for size of a firm shows a significant positive relationship with liquidity which means that bigger size firms have more liquid compared to firms of smaller size. In addition, there is a negative relation between current and quick ratio and liquidity.

By analyzing the results, we conclude that if the firm is able to decrease CCC, then the firm is efficient in managing working capital. This efficiency will lead to increasing its liquidity.

Table (12) Regression results for the effect of working capital management factors on Liquidity

	Model 1	Model 2
Constant	23.153	16.365
ARP	-12.356** (0.035)	-10.235** (0.025)
APP	10.256** (0.014)	15.369** (0.025)
ICP	-8.367** (0.035)	-7.365** (0.071)
CCC	-6.325* (0.010)	-5.658* (0.002)
FS	5.258** (0.001)	4.267** (0.002)
FL	3.258** (0.022)	2.365** (0.012)
ROA	-7.368** (0.025)	-6.365** (0.001)

** Correlation is significant at the 0.01 level (2-level)

* Correlation is significant at the 0.05 level (2-level)

6. Conclusion

The statistical results indicate that corporate governance practices are a prerequisite to well managed working capital. Effective working capital management significantly influences profitability as well as liquidity of the firm. The results from the correlation analysis show that if companies are able to reduce the time that accounts receivable are outstanding, plus the time span during which inventories remain within the firm, plus the time required for settling its accounts payable. Consequently, working capital management will be efficient since it will lead to increased operational profitability; by means, reducing CCC provides positive contribution to firm's return on assets and current ratio. The results revealed a positive significance between the size of the firm, growth of sales and profitability from other side. Finally, financial leverage correlated negatively with profitability. We conclude that there is a significant relationship between the various components of working capital indicating that effective working capital management has a significant positive impact on profitability and liquidity. Much liquidity of the firm is not recommended because it will negatively affect profitability, therefore there must be a balance between the profit earned from the investments in the assets that were financed from borrowing and the financing charges payable to creditors and this the role efficient working capital management can play. Profitability and liquidity are equally important to the success of firms. A well- managed working capital promotes a company's well-being on the market in terms of profitability and liquidity and it acts in favor for the growth of shareholders value. This research recommends that manufacturing companies in Egypt should adopt corporate governance mechanisms that will lead to efficient working capital management. In addition, keeping working capital at optimal and balance will have a direct and significant impact on the firm financial performance in terms of its profitability and liquidity.

References

1. Abor J. (2004). Working Capital Management and Corporate Profitability: Evidence from Ghana. *LBS Management Review,* Vol. 9 No. 1, pp. 32-45.

2. Achchuthan, S. and Kajananthan, R. (2013). Corporate Governance Practices and Working Capital Management Efficiency: Special Reference to Listed Manufacturing Companies in Srilanka. *International Journal of Business and Management Review,* Vol. 1 No. l, pp. 72-85.

3. Afza, T. and Nazir, M. (2007). Is it Better to be Aggressive or Conservative in Managing Working Capital? *Proceedings of Singapore Economic Review Conference (SERC),* pp. 97-98.

4. Agyemang Badu E. and Michael Kwame A. (2013). The Relationship between Working Capital Management and Profitability of Listed Manufacturing Companies in Ghana. *International Journal of Business and Social Research,* Vol. 3 No. 2, pp. 25-34

5. Amalendu Bhunia and Amit Das (2012). Affiliation between Working Capital Management and Profitability. *Interdisciplinary Journal of Contemporary Research In Business,* Vol. 3 No. 9, pp. 957-968.

6. Amarjit S. Gill; Kelowna, Canada; et al. (2013). The Impact of Corporate Governance on Working Capital Management Efficiency of American Manufacturing Firms. *Managerial Finance,* Vol. 39 No. 2, pp. 116-132.

7. Ankita Rajdev (2013). Working Capital Management of Makson Healthcare PVT Ltd: A Trade-Off between Liquidity and Profitability, an Empirical Study. *Journal of Arts, Science and Commerce*, Vol. IV Issue 3, pp. 87-94.

8. Bagchi, B. and Khamrui, B. (2012). Relationship between Working Capital Management and Profitability, a study of Selected FMGG Companies in India. *Business and Economic Journal*, pp. 1-11. Available at: http://astonjournals.com/manuscripts/Vol2012/BEJ- 60_Vol2012.pdf, 13-6-2012

9. Bender, R. (2009). Corporate Financial Strategy. UK. Elsevier Butterworth-Heinemann.

10. Brigham, E. F. and Houston, J. F. (2004). Fundamentals of Financial Management (10th Ed.). J. W. Calhoun, Ed. South-Western, United States of America: Thomson Learning.

11. Cossin, D. and Hricko, T. (2004). The Benefits of Holding Cash: A Real Options Approach. *Managerial Finance,* Vol. 30 No. 5, pp. 29-43.

12. Dahya, J. and Travlos, N.G. (2000). Does The One Man Show Pay? Theory and Evidence on the Dual CEO Revisited. *European Financial Management*, Vol. 6 No. 1, pp. 461-483.

13. Daniel Mogaka and Ambrose Jagongo (2013). Working Capital Management and Firm Profitability: Empirical Evidence from Manufacturing and Construction Firms Listed on Nairobi Securities Exchange, Kenya. *International Journal of Accounting and Taxation*, Vol. 1 No. 1, pp. 1-14.

14. Deloof, M. (2003). Does Working Capital Management Affect Profitability of Belgian Firms?. *Journal of Business Finance and Accounting,* Vol. 30 No. 3/4, pp. 573-588.

15. Ece C. Karadagli (2012). The Effect of Working Capital Management on the Profitability of Turkish SMEs. *British Journal of Economics, Finance and Management Sciences,* Vol. 5 No. 2, pp. 36-44.

16. Eljelly, A. (2004). Liquidity and Profitability trade-off: an empirical investigation in an emerging market. *International Journal of Commerce and Management,* Vol. 14 No. 2, pp. 48-61.

17. Ganesan, V. (2007). An Analysis of Working Capital Management Efficiency in Telecommunication Equipment Industry. *Rivier Academic Journal*, Vol. 3 No. 2, pp. 1-10.

18. Gill, A. and Shah, C. (2012). Determinants of Corporate Cash Holdings: Evidence from Canada. *International Journal of Economics and Finance*, Vol. 4 No. 1, pp. 70-79.

19. Harford, J.; Mansi, S.A.; et al. (2008). Corporate Governance and Firm Cash Holdings in the US. *Journal of Financial Economics,* Vol. 87 No. 3, pp. 535-555.

20. Jose, M. et al. (1996). Corporate Returns and Cash Conversion Cycles. *Journal of Economics and Finance,* Vol. 20 No. l, pp. 33-46.

21. Kajananthan, R. and Achchuthan, S. (2013). Corporate Governance Practices and Its Impact on Working Capital Management: Evidence from Sri Lanka. *Research Journal of Finance and Accounting,* Vol.4 No.3, pp. 23-31.

22. Kesseven Padachi (2006).Trends in Working Capital Management and its Impact on Firms' Performance: An Analysis of Mauritian Small Manufacturing Firms. *International Review of Business Research Peepers,* Vol. 2 No. 2, pp. 45-58.

23. Kleinschmidt, M. (2007). Venture Capital, Corporate Governance, and Firm Value. London, Springer.

24. Kyereboah-Coleman, A. (2007). Corporate Governance and Firm Performance in Africa: A Dynamic Panel Data Analysis. Available at: www.ifc.org/ifcext/cgf.nsf/AttachmentsByTitle/PS2.3/SFIL E/Kyereboah-Coleman%2B- %2BCorporate%2BGovernance.pdf

25. Lazaridis, I. and Tryfonidis, D. (2006). Relationship between Working Capital Management and Profitability of Companies Listed in the Athens Stock Exchange. *Journal of Financial Management and Analysis,* Vol. 19 No. 1, pp. 26-35.

26. Lyroudi, K. and Lazaridis, J. (2000). The Cash Conversion Cycle and Liquidity Analysis of the Food Industry in Greece. *Social Science Research Network Electronic Paper Collection.* Available at: http://papers,ssrn.com/paper.taf?abstract_id=236175orhttp://ssrn.com/abstract=236175

27. Mahmood and Qayyum. A. (2010). Working Capital Management and Corporate Performance of Manufacturing Sector in Pakistan. *International Research Journal of mance and Economics,* Vol. 47, pp. 1450-2887.

28. Malik Muhammad; Waseem Ullah Jan; et al. (2012). Working Capital Management and Profitability: An Analysis of Firms of Textile Industry of Pakistan. *Journal of Managerial Sciences,* Vol. VI No. 2, pp. 155-165.

29. Mehmet Sen and Eda Oruc (2009). Relationship between Efficiency Level of Working Capital Management and Return on Total Assets in ISE. *International Journal of Business and Management,* Vol. 4 No. 10, pp. 109-114.

30. Morin, R. A. and Jarrell, S.L. (2001). Driving Shareholder Value, Value-Building Techniques for Creating Shareholder Wealth. McGraw-Hill, New York.

31. Narendre, V.; Menon, S.; et al. (2009). Factors Determining Working Capital Management in Cement Industry. *South Asian Journal of Management,* Vol. 15 No. 4, pp. 64-78.

32. Niranjan Mandal and Suvarun Goswami (2010). Impact of Working Capital Management on Liquidity , Profitability and Non-Insurable Risk and Uncertainty Bearing: A Case Study of Oil and Natural Gas Commission (ONGC). *Great Lakes Herald,* Vol. 4 No. 2, pp. 21-42.

33. Nwankwo, O. (2005). Dimensions of Financial Management. Enugu: Jones Communication and Publishers.

34. Opler, T.; Pinkowitz, L.; et al. (1999). The Determinants and Implications of Corporate Cash Holdings. *Journal of Financial Economics,* Vol. 52 No. 1, pp. 3-46.

35. Panigrahi. A. K (2014). Relationship of Working Capital with Liquidity, Profitability and Solvency: A Case Study of ACC Limited. *Asian Journal of Management Research*, Vol. 4 Issue 2, pp. 308-322.

36. Paul Muoki Nzioki; Stephen Kirwa Kimeli; et al. (2013). Management of Working Capital and Its Effect on Profitability of Manufacturing Companies Listed on Nairobi Securities Exchange, Kenya. *International Journal of Business and Finance Management Research,* Vol. 1, pp. 35-42.

37. Raheman, A. and Nasr, M. (2007). Working Capital Management and Profitability-Case of Pakistani Firms. *International Review of Business Research,* Vol. 3 No. 1, pp. 279-300.

38. Sandhar, Simranjeet and Janglani, Silky (2013). Study on Liquidity and Profitability of Selected Indian Cement Companies: A Regression Modeling Approach. *International Journal of Economics, Commerce and Management,* Vol. I Issue 1, pp. 1-24.

39. Schilling, G. (1996). Working capital's Role in Maintaining Corporate Liquidity. *AFP Exchange,* Vol. 16 No. 5, pp. 4-7.

40. Soenen L. A. (1993). Cash Conversion Cycle and Corporate Profitability. *J. Cash Manage.* Vol. 13, pp. 53- 57.

41. Velnampy T. (2013) Corporate Governance and Firm Performance: A Study of Sri Lankan Manufacturing Companies. *Journal of Economics and Sustainable Development,* Vol. 4 No. 3, pp. 228-236.

42. Wanjau, J. (2007). A Survey of Relationship between Corporate Governance and Performance in Microfinance Institutions in Kenya. University of Nairobi.

43. Yusuf Aminu (2012). Nexus between Liquidity/Profitability Trade-Offs For Working Capital Management in Nigeria's Manufacturing Sector. *International Journal of Arts and Commerce,* Vol. 1 No. 6, pp. 55-58.

44. Zariyawati et al. (2009). Working Capital Management and Corporate Performance: Case of Malaysia. *Journal of Modern Accounting and Auditing,* Vol. 5 Issue 11, pp. 47-54.