EFFECTS OF WORKING CAPITAL MANAGEMENT ON CORPORATE PROFITABILITY

by

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DECLARATION

I, Asubonteng Donkor declare that the research work reported in this dissertation is my own except where otherwise indicated and acknowledged. It is submitted in partial fulfilment of the requirement for the degree of Master of Business Administration in Finance at the North West University. This mini dissertation has not, either in whole or in part, been submitted for a degree or diploma to any other universities.

Signature of candidate: ..... Date: April 2014

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ABSTRACT

Working capital management is considered to be a vital issue in financial management decisions and it has its effect on the liquidity as well as on the profitability of a firm. A liquidity crisis is prevalent worldwide and has affected virtually all corporate entities. This has necessitated the effective and efficient management of any available cash needed to ensure that companies break even and survive this distressed time since credit is not easily come by. Moreover, an optimal working capital management positively contributes to creating firm value. This study examined the influence of working capital management components on the profitability of firms listed on the Johannesburg Stock Exchange (JSE). Specifically, the study used a survey of documentary analysis of companies' audited financial statements. Consequently, 20 listed companies for a period of five years (2008-2012) with a total of 100 observations were sampled. The data obtained was analysed quantitatively using Pearson's correlation and Oridnary least square (OLS) regression analysis. The key findings from the study indicated the following. First, a significant negative relationship between profitability and working capital management. This negative relationship suggests that managers can create profits or value for their companies and shareholders by correctly handling the cash conversion cycle and keeping each different component of working capital to a possible optimum level. Second, a significantly negative relationship between liquidity and profitability. This suggests that corporate managers can adopt a more generous credit policy to improve profitability by reducing the credit period granted to their customers and third, a significantly positive relationship between size and firm profitability is evident. This is consistent with the theoretical views of large firms higher economic of scale and good will in the market. Therefore, using these market diversifications is the right avenue, as they increase sales and maximize profitability. The debt used is negatively correlated with profitability, but this negative effect is negligible.

Keywords

working capital; inventory management; financial crisis; liquidity; cash conversion cycle; firm profitability; gross operating profit.

JEL Classifications: F23, F30, G01, G31, G32

LIST OF ABBREVIATIONS

ACAP	Alternative current assets policy
ACP	Average collection period
APP	Average payment period
ASE	Athens Stock Exchange
CCC	Cash conversion cycle
CCR	Cumulative capital requirements
CLRM	Classical linear regression model
CR	Current ratio
DR	Debt ratio
EOQ	Economic order quantity
GOP	Gross operating profit
GWC	Gross working capital
ISE	Istanbul Stock Exchange
ITID	Inventory turnover in days
JSE	Johannesburg Stock Exchange
KSE	Karachi Stock Exchange
NTC	Net-trade cycle
NWT	Net working capital
OLS	Ordinary least square
PWC	Permanent working capital
SG	Sales growth
TWC	Temporary working capital
VIF	Variance inflation factor
WCM	Working capital management

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1

ORIENTATION OF THE STUDY

"A big part of financial freedom is having your heart and mind free from worry about the what-ifs of life". -Suze Orman

1.1 INTRODUCTION

In the world of business, the ability to seek practical business tools and techniques to improve the financial performance of a firm is of paramount importance for success. This has been the highest priority of most firms as a result of the present global downturn. In particular, when global competition erodes profits resulting in low margins, turning to working capital as a source of cash represents an efficient managerial tool. A growing number of companies recognise working capital management (WCM) as a true competitive advantage in profit enhancement. WCM is the embodiment of balancing liquidity with profitability usually from two different angles: cash (that is, liquidity) management and inventory (that is, stock) management in a bid to ensure that survival of the corporate enterprise is achieved. As alluded to earlier, at no time in the world's history has greater need arisen for prudent WCM among global firms than in this period of global financial meltdown (Uremadu, Egbide & Enyi 2012). A liquidity crisis is prevalent worldwide and has affected virtually all corporate entities. This has necessitated the effective and efficient management of any available cash needed to ensure that companies break even and survive this distressed time since credit is not easily come by. Since 1970, the world has suffered several crises. The world recorded in total 147 banking crises over the period 1970-2011 (Laeven & Valencia 2012). However, the crisis of 2008-2009 has been the biggest shock to the worldwide financial system since the 1930s (Cornett, McNutt, Strahan & Tehranian 2011; Foster & Magdoff 2009). The crisis began in the late summer of 2007 with the collapse of two hedge funds, property of the

American firm Bear Stearns. It deteriorated over time, despite the attempts by governments to stop this process. A couple of months later, many of the so-called sub-prime loans were unravelled and it became clear that these loans had a very high risk. It was very likely that these loans could never be paid back. This led to the collapse and bailing out of the British bank Northern Rock and the central bank intervention of AIG, Freddy Mac and Fannie Mae. A year later, Lehmann Brothers in the US collapsed, which emitted a huge shockwave all over the world (Times 2010). The financial crisis spread also to Europe (Dabrowski 2010). According to Mishkin (2009), the main factors that created the financial crisis have been the risky and incorrect procedures for lending of the top banks of the United States. In their book, Petersen, Senosi and Mukuddem-Petersen (2010) indicate that the SMC shook the foundations of the financial industry by causing the failure of many iconic Wall Street investment banks and prominent depository institutions. Petersen et al. formulated the IDIOM hypothesis that asserts that the SMC was largely caused by the intricacy and design of subprime mortgage origination, securitization and agents that led to information problems and valuation opaqueness.

The financial crisis ended with bailouts of insolvent banks by governments, expansionary fiscal and monetary policies in many countries, a provision of credit facilities to unclog financial markets and guarantees of the liabilities of the banking system (Bordo & Landon-Lane 2010). Their article further maintains that the economic recovery started in the summer of 2009. In addition, the immoral lending practices in the United States are considered far from conservative and ultimately led to big problems for banks all over the world (Roubini 2009). Furthermore, the pre financial crisis period is until the year 2006; the financial crisis period is the years 2007, 2008 and 2009 and the after the financial crisis period is the year 2010. Africa's relatively weak global linkages suggested to some that it would be spared the worst effects of the global crisis which hit many developed and emerging market economies from around September 2008 (Bakrania & Lucas 2009). However, the region as a whole has indeed been exposed to the downturn and growth estimates for the continent have been continuously lowered from 5% in 2008 to 1.7% in April 2009 (IMF 2009). The main channel for this negative effect has been via the recession induced slow-down in foreign financial flows of all types into Sub-Saharan Africa and the region's dependency on commodity based export growth. Unlike most other countries on the African continent, South Africa has historically been a significant player in international markets. Its economy is more open than that of many industrialized countries. The open world economy which stimulated so much

international migration in the period before the First World War found in South Africa one of its growth engines as well as one of its most contradictory crucibles of imperialism. Given this global engagement expectation, South Africa would feel the effects of the global recession both quickly and deeply, and in ways which added to the economic problems created by race, inequality and the structural problems associated with the nature of its brand of capitalism (Mboweni 2009).

Gabriel Palma (2009), in his speech, observed that, unlike almost all other middle-income countries, South Africa entered the crisis with a greater degree of vulnerability: namely, a very large current account deficit, high interest rates and high inflation. He argued that South Africa had to re-impose capital controls, relinquish the independence of its central bank, jettison inflation targeting and address the problem of its over-sized and unproductive financial sector, a legacy of a long period of (US-type) financialization of its economic activity. In South Africa, the financial sector experienced a collapse of asset prices: between May 2008 and March 2009, South Africa's JALSH index fell by about 46% and the rand depreciated by 23% against the U.S. dollar. The result was dramatic increases in the cost of capital and a severe contraction in lending. These led to sharp downturns in the retail and manufacturing sectors. Manufacturing output in the first quarter of 2009 declined by 6.8% relative to the previous quarter, while mining production declined by 12.8% over the same period. Similar contractions were apparent in the retail and wholesale trade sales, with motor vehicle sales (domestic and export) in particular falling sharply (SARB Quarterly Bulletin 2009).

In the third quarter of 2009, 484 000 workers lost their jobs, the largest number in the manufacturing sector (about 150 000). The total job losses were more than the combined total of the first two quarters of that year taking the official unemployment rate to 24.5% and total (official) job losses up to the end of the third quarter over a million mark (Bond 2009).
Turning to macroeconomic balance indicators, inflation breached the outer limit of the target range (3-6%) and CPIX stood at an average 9.9% for 2008. The current account deficit as a percentage of GDP arose from a very modest and manageable 1.1% in 2003 to a disconcerting 5.8% in 2008; an alarming 7% in the first quarter of 2009, and a further 3% fall in the second quarter of 2009. Though initially this deficit was easily financed by steady foreign capital inflows (mainly portfolio investment but also some FDI), the tremors in global financial markets from around September 2008 threatened the sustainability of this key ratio,

for long regarded as the 'Achilles heel' of the modern South African economy (SARB Quarterly Bulletins, March 2009, June 2009 & September 2009). The Reserve Bank, after a long period of successive repo (bank) rate hikes from April 2005 (which saw the rate rise from a low 7% to 12% in June 2008), began cutting its key repo rate from the latter date, to its current low of 7% at the end of December 2009 which was the lowest rate so far in 27 years. The Johannesburg Securities Exchange (JSE) all-share index fell from a high of 32542 on 23 May 2008 to a low of 18066 on 21 November 2008, but volatility and uncertainty in the market were as worrying as the absolute fall. New listings remained subdued throughout 2009. The all-share index picked up, and it stood at 27895 as of 5 January 2010 (Business Day: 5 January 2010).

Depressed global conditions and lower liquidity on global financial markets also impacted on the rand-denominated bonds in the European and Japanese bonds markets in 2009. Turnover in the secondary domestic bond market fell in 2009; bond prices weakened and a much reduced level of participation by non-residents in the domestic market was detectable (SARB Quarterly Bulletin, September 2009:43-45). The local property market weakened from late 2008, but without the devastating consequences for low-income home owners felt in the US and to some extent in the UK (SARB Quarterly Bulletin September 2009). House price deflation continued in 2009, maintaining the downward trend noticeable in late 2008. The serial lowering of the repo and mortgage rate appears to have been off-set by commercial banks tightening lending conditions. Activity in new home construction also slowed as demand weakened, in part a consequence of depressed conditions in the labour market and a decline in household income expectations. However, millions of poor South Africans exist outside these formal property and real estate markets in sprawling informal settlements and slums. The government of South Africa appears to be making a more concerted effort to accelerate state housing provision but slowing economic activity nationally is being felt in lower aggregate taxation and in the context of so many competing demands on the fiscus, the ambitious targets to 'eliminate' informal settlements (the language of the state) and resettle these communities in low cost houses by 2014, may be jeopardized. Both the continent and South Africa have been hit by the global financial and economic crisis, though in ways not predicted or expected. While the crisis did not hit the banking sector in the same degree or as deeply as in the US and Europe, banks have experienced a drop in earnings and some stress. Bank regulation has proven to have been crucial to South Africa's reaction.

The major problem for South Africa has been the impact of slowing growth on employment and (through falling tax revenues) on service delivery to the poor, areas of the real economy that have been in deep crisis all through the post-1994 era. The government-supported programme of Black Economic Empowerment appears also to have taken some knocks. Following three consecutive quarters of contraction, South Africa's real GDP returned to positive growth in the third quarter of 2009 (an annualized increase of 0.9%) (SARB Quarterly Bulletin, December 2009). Whether this represents the beginning of a more rapid growth phase, backed by strong public investment after the 2010 World Cup, or the onset of a long period of low yet positive growth, remains unclear. Nevertheless, within the context of South Africa, debt remains at historically high levels. Generally, several authors studied the impact of the financial crisis in Africa while some gave special attention to the Southern Africa region (Meniago, Mukuddem-Petersen & Petersen 2013). In the years 2008-2009, the SMC tumbled into a financial crisis that spread into many regions of the world and was later commonly referred to as the Global Financial Crisis (GFC). Since the event of the GFC, we have seen its adverse effects in many of the advanced economies in the world (especially American and European banks) and its contagion did not seem to spare many emerging economies like South Africa (Meniago, Mukuddem-Petersen & Petersen 2013). Only a few studies considered exploring the impact of the financial crisis on a selected economy using an extensive econometric approach. Since the occurrence of the GFC, South Africa has record inflated levels in its debt to income ratios compared to those of previous years. Such high levels of debt expose the household sector and leave the economy more vulnerable to various external shocks. In place of this, there is a greater incentive to maintain household debt at a reasonable level and to identify the factors that mainly contribute to the inconsistencies in South African household debt.

This study explored and identified the impact of WCM on corporate profitability among listed companies in South Africa, specifically, the manufacturing industries. The study also took into account the capital metrics and drivers that most affect profitability highlighting the best way working capital can be managed to yield a positive impact on corporate profitability. The main purpose of WCM is to maintain an optimal balance between each of the working capital components. Business success depends heavily on the financial executives' ability to effectively manage receivables, inventory, and payables (Filbeck & Krueger 2005).

Firms can reduce their financing costs and/or increase the funds available for expansion projects by minimizing the number of investments tied up in current assets. Most of the financial managers' time and efforts are allocated to bringing non-optimal levels of current assets and liabilities back to optimal levels (Moyer, McGuigan & Kretlow 2009). An optimal level of working capital would be the one in which a balance is achieved between risk and efficiency. This requires continuous monitoring to maintain proper levels in various components of working capital, that is, cash receivables, inventory and payables, etc.

Contemporary companies are forced to compete in the national and also global markets under crucial rules. For sustainable profits a company has to apply a disciplinary manner, scan the rivals, and satisfy its shareholders and uncountable stakeholders (Eljelly 2004 & Salawu 2009). Not only companies coated in stock exchange markets, but also the others have to apply dynamic financial management techniques and leave old-fashioned management styles (Sinha 2009; Napompech 2012 & Eramus 2010). It is believed that by managing this way, a company may prosper and reach improved performance levels. Even though the importance of efficient WCM is well known, there are still companies on different scales not stressing working capital management. Ozatay (2009) emphasizes that a few basic factors must not be forgotten under crisis circumstances. There will be a problem under poor balance sheet conditions irrespective of the firms being private or public. Working capital is related to company characteristics, financial conditions and company indicators as well. Kargar & Blumenthal (1994) demonstrate that many investments shut down owing to bad working capital management despite healthy operations and profits (Chiou, Jeng-Ren, Li Cheng & Han-Wen Wu 2006). In addition, minute decreases in additional working capital investment may increase the prices of shares (Strischek 2001). The aim of this chapter is to give an insight into the background and rationale of this research topic.

1.2 PROBLEM STATEMENT

WCM is essential to the survival of a firm because of its effects on a firm's profitability, risk and consequently its value (Smith 1980). WCM is an investment in current assets and current liabilities which are liquidated in a year or less, and is very crucial for a firm's day-to-day operations (Kesimli & Gunay 2011). It is difficult for an entity to run its business operations smoothly without proper and efficient WCM. Therefore, WCM can be seen as an important issue in any business institution. About two-thirds of a typical financial manager's time is devoted to WCM (Houston & Brigham 2003). Hence, the important part of WCM is the

proper maintenance of the required liquidity in the day-to-day operation of the company (Sinha 2009 & Eljelly 2004). Maintaining optimal liquidity ensures effective and efficient running of the firm and meeting maturing short-term financial obligations of the firm. WCM has been the main issue especially in developing countries and even in most developed countries (Sharma & Kumar 2011; Christopher & Kamalavalli 2009; Karaduman et al. 2011; Smith & Begermann 1997).

Different studies have been carried out in several parts of the world especially in developed countries to explain the relationship between WCM and profitability. However, despite the acknowledged importance, this issue failed to attract the attention of most researchers in South Africa. The thought of most managers of companies in South Africa regarding WCM is to increase the firm's profitability by shortening the cash conversion cycle. Flexibility in the trade credit policies of most firms could lead to a longer cash conversion cycle owing to higher levels of account receivables. Thus, extending the cash conversion cycle increases profitability. The traditional view of managers cannot be applied to all circumstances. Therefore, inadequate proper research study in this area results in most managers of various companies in South Africa having limited awareness in relation to WCM increasing firms' profitability. Keeping the above problem in mind, the study tried to find out the impacts of WCM corporate profitability. It also analysed the capital metrics and drivers that affect profitability the most.

1.3 AIMS AND OBJECTIVES

1.3.1 Aims

Few empirical studies have attempted to identify the relationship between WCM and profitability in different parts of the world especially in developed countries. Similarly, contributions have been made to identify the capital metrics and drivers that affect profitability most. The major aims of this dissertation were:

i. To investigate the impact of WCM on profitability of listed South African companies (manufacturing sector)
ii. To find out which capital metrics and drivers affect profitability most
iii. To identify the relationship between cash conversion cycle and profitability of firms
iv. To describe the relationship between debts used by the firms and their profitability
v. To discover the relationship that exists between liquidity and profitability of firms
vi. To formulate some suggestions pertaining to firm size and profitability

1.3.2 Objectives

The objectives of this study included:

i. Critically perusing literature related to WCM and the identification of its impacts on firms' profitability
ii. Considering related studies and accounting theories to help identify the capital metrics and drivers that affect profitability most
iii. Using regression analysis to describe the relationship between the cash conversion cycle and profitability of firms
iv. Using statistical inferences to analyse the relationship between debts used by the firm and their profitability
v. Using regression analysis to establish the relationship between the liquidity and profitability of firms
vi. Using a detailed statistical analysis with processed disaggregated data to formulate some suggestion pertaining to the inventory holding period, the size of a firm and its profitability

1.4 RESEARCH QUESTIONS AND HYPOTHESES

1.4.1 Research Questions

The following research questions were addressed:

i. How does WCM affect corporate profitability?
ii. What capital metrics and drivers affect profitability the most?
iii. What relationship exists between the cash conversion cycle and the profitability of firms?
iv. What is the relationship between debts used by the firm and its profitability?
v. What relationship exists between the liquidity and profitability of firms?
vi. How do the inventory holding period and the size of a firm affect its profitability?

1.4.2 Hypothesis

Several statements of supposition could be made in view of the impacts of WCM on firms' profitability. In this study, that efficient WCM would have a positive impact on corporate profitability in South Africa was hypothesized. The hypothesis was presented as follows:

Null Hypothesis (H_0): Efficient WCM will have a positive impact on corporate profitability.

Alternative Hypothesis (H_1): Efficient WCM will have a negative impact on corporate profitability.

1.5 SIGNIFICANCE OF THE STUDY

This study is important because:

i. To the best of our knowledge, this study is the first of its kind to conduct a detailed statistical analysis to investigate the effect of WCM on corporate profitability. This will help managers formulate appropriate policies to promote efficient WCM.

ii. It gives a provision for a comprehensive analysis with processed disaggregated data obtained using the OLS method assembled in a pooled fashion using the EViews computer package. It is believed that this method will afford a better opportunity and improved results to assess the performance of each variable more directly and precisely than doing so in a lumped fashion.

iii. The extensive review of literature on WCM on profitability will enhance the existing body of knowledge.

iv. It will benefit the top managers and policy makers of those selected companies regarding decisions on the optimum level of working capital, ways of managing it and overall policies on working capital management.

v. It will give a clear understanding about the relation between working capital components and corporate profitability.

vi. The study will form a guideline for those who wish to conduct their studies on a similar topic.

vii. It will provide brief information for the shareholders, prospective customers and creditors of a firm regarding profitability in relation to efficient working capital management and policy.

1.6 LIMITATION / DELIMITATIONS

Presently, a limitation may include the availability and access to data. Specifically, the availability of audited financial statements directly from selected companies (lack of willingness) and its reliability for the entire period is a limitation. In connection with the above problems and to a the reliability of data, it was collected from I-Net Bridge, BF McGregor and South African Revenue Service (SARS) from which the audited financial

statement is directly submitted by the tax paying companies to the office. The following ratios were extracted from I-Net Bridge: days sales in inventory; days sales in receivables; days payables outstanding, and current ratio. From BF McGregor the following ratios: debt to equity ratio, and operating profit margin were extracted. The other variables such as cash conversion cycle and dummy variables were calculated from the extracted data and this would then be a delimitation. The study used audited financial statements for a period of five years (2008–2012). However, the quality of the data depended highly on genuine information acquired from concerned populations or companies. Also a lack of adequate accounting disclosure and treatment was a limitation to the study output.

1.7 STRUCTURE OF DISSERTATION

This dissertation consists of the following chapters:

CHAPTER 1: ORIENTATION OF THE STUDY
CHAPTER 2: LITERATURE REVIEW
CHAPTER 3: DATA AND METHODOLOGY
CHAPTER 4: RESULTS
CHAPTER 5: CONCLUSION AND RECOMMENDATIONS

Chapter 1 consists of the introductory chapter. It provides a general introduction/background of the study; problem statement; purpose; aim and objectives; research questions and hypothesis; significance of the study; delimitations and limitations of the study and finally the structure of the dissertation.

Chapter 2 reviews the relevant theoretical and extensive literature regarding the effects of WCM on corporate profitability with special emphasis on all the capital metrics and drivers that affect profitability.

Chapter 3 includes the research methodology, in which a detailed explanation of the evaluation techniques implemented in the study is provided. In this chapter, the model aligned with the theoretical framework and some relevant empirical studies are specified. Moreover, the source and definitions of the variables used are explained in detail.

Chapter 4 provides the estimation and interpretation of the results of the different tests conducted in the previous chapter.

Chapter 5 includes the summary, conclusion and recommendations.

The bibliography contains all the articles, books and other sources used throughout the mini-dissertation.

Finally, the last section contains all the appendices.

CHAPTER 2
LITERATURE REVIEW

"The secret of business is to know something that nobody else knows".- Aristotle Onassis

2.1 INTRODUCTION

This chapter surveys the existing literature seeking to address the impact of WCM on corporate profitability across the globe. Both the theoretical and the empirical literature were searched. The theoretical framework of this study serves as a guide when selecting the variables to be measured. Also, it facilitates this research in estimating the statistical relationship of the variables of WCM and profitability. Key definitions and concepts relevant to WCM are also highlighted. Empirical literature of existing studies on the subject is critically reviewed. Specifically, the capital metrics and drivers that affect profitability most are investigated. Furthermore, this review highlights the gaps in the literature related to WCM.

2.2 THEORETICAL FRAMEWORK

This section talks about the theories and concepts relating to WCM. WCM is a functional area of finance that covers all the current accounts of the business entity. It is concerned with management on the level of the individual current assets as well as management of total working capital, thus managing the balance between a firm's short-term assets and its short-term liabilities. WCM involves two basic questions:

- What is the appropriate amount of working capital, both in total and for each specific account?
- How should working capital be financed?

The logic behind WCM is to ensure that the firm is able to continue its operation and that it has sufficient cash flow to meet both maturing short-term obligations and upcoming operational expenses. Indeed, improving the firm's working capital position generally comes from improvements in the operating divisions. The synergy between current assets and

current liabilities is, therefore, the main theme of the theory of WCM. Many aspects of WCM make it an important function of financial management. These aspects include time, investment, credibility and growth.

- ***Time:*** WCM requires much of the finance manager's time.
- ***Investment***: Working capital represents a large portion of the total investment in assets.
- ***Credibility***: WCM has great significance for all firms but it is critical for small firms.
- ***Growth***: The need for working capital is directly related to the firm's growth.

Most corporates finance literature, traditionally focusing on the study of long-term financial decisions such as investments, capital structures, dividends and firm valuations. Finance theories are discussed under three main threads as capital budgeting, capital structure and WCM. As a result, capital structure and capital budgeting are mostly related to the financing and managing of long-term investments. For a firm to operate and survive, the firm needs working capital. In many industries, working capital constitutes relatively a greater percentage of the total assets. This enables the firm to carry on with the day-to-day operations and also to fulfil its short-term financial obligations. The work of Smith & Sell (1980) as cited by Moyer et al. (2009:542) reveals that about 30% of companies have a formal policy for the management of their working capital and another 60% have an informal policy. A significantly greater percentage of the larger firms within the sample have a formal policy than do the smaller firms. Meanwhile, financial decisions about working capital are mostly related to financing and managing short-term investments under both current assets and current liabilities simultaneously (Pinches 2000; Brealey & Myers 2001; Brigham & Houston 2003; Damodaran 2002). Hence, WCM refers to the management of current assets and current liabilities (Ross, West & Jordan 2003; Raheman & Nasr 2007). Moyer et al. (2009:542) assert that WCM can be viewed as a continuing process that involves a number of day-to-day operations and decisions that determine the following:

- The firm's level of current assets
- The proportions of short-term and long-term debt the firm will use to finance its assets
- The level of investment in each type of current asset
- The specific sources and mix of short-term credit (current liabilities) the firm should employ.

WCM is considered as a crucial component of corporate financial management because of its effects on the firm's profitability, risk and consequently its value (Paramasivan & Subramanian 2009; Samiloglu & Demirgunes 2008). Kargar and Blumenthal (1994) as cited by Singh and Pandey (2008) assert that bankruptcy may be likely for firms that put inaccurate WCM procedures into practice, even though their profitability is constantly positive. Therefore, companies must avoid receding from optimal working capital levels by bringing the aim of profit maximization into the foreground. It is in contradiction to focus only on liquidity and consequently pass over profitability to WCM. This is because conserving policies of liquidity may fall below optimal levels of working capital requirement and affects the day-to-day running of the business. On the other hand, large amounts of working capital would mean that companies have idle funds and have to pay huge amounts as interest on such funds, since funds have a cost.

Profit maximization is the ultimate objective of any firm and, therefore, paucity of WCM may lead to shortages and difficulties in maintaining the smooth running of the firm. However, preserving liquidity of the firm is an important objective as well. The problem is that increasing profits at the cost of liquidity can threaten the day-to-day operations of the firm. There must be a trade-off between liquidity and profitability of firms. One objective should not be at the cost of another because each has its own importance. Firms that do not care about profit maximization cannot survive for a long period. In other words, insolvency or bankruptcy is the price to pay if firms do not care about liquidity. For these reasons, managers of firms should consider WCM as it does ultimately affect the profitability of firms. Indeed, firms having optimum levels of working capital have the advantage of maximizing its value. Having larger inventory and a flexible trade credit policy may lead to high sales. The risk of a stock-out is also drastically minimized by a large inventory. Flexible trade credit may stimulate sales because it allows a firm to access product quality before paying (Lazaridis & Tryfonidis 2006; Raheman & Nasr 2007).

Brigham and Ehrhardt (2011) indicate that delaying payment of accounts payable (another component of working capital) to suppliers allows firms to access the quality of obtaining products. This can be an inexpensive and flexible source of financing for the firm. On the other hand, if a firm is offered a discount for early payment, such deferment payables can be expensive. For the same reason, uncollected accounts receivables can lead to cash inflow problems for the firm.

A popular measure of WCM is the cash conversion cycle (CCC). The CCC represents the net time interval between the collection of cash receipts from product sales and the cash payment for the firm's various resource purchases. The CCC may increase profitability because it leads to higher sales. However, if the cost of higher investment in working capital rises faster than the benefits of holding more inventories or granting more trade credit to customers, corporate profitability may decrease with the CCC. Generally, WCM not only improves financial performance in today's cash-strapped and ambivalent economy, but it is the question of meeting firms' day-to-day business activities. Hence, WCM may have its own consequences on the firm's profitability, which in turn, may have a negative or positive impact on the shareholders' wealth. Therefore, it is a critical issue to know and understand the impacts of WCM and its influence on firms' profitability.

2.2.1 Financing Working Capital

The resources of a company are usually invested in capital investments, such as machinery, plants and equipment, and in short-term investments, that is, working capital. However, the capital structure of the entity determines how a firm finances these investments. In one way or another, a firm's networking capital has to be financed. In a case in which networking capital (NWC) is positive (current assets exceeding current liabilities), the NWC is financed with long-term capital such as shareholders' contributions (equity) or long-term borrowing. In an instance in which NWC is negative (current liabilities exceeding current assets), the NWC is financed with short-term capital, which can increase the cost of borrowing significantly. The cost of assets that a company purchases over time is called a company's cumulative capital requirement (Brealey & Myers 2003:841-842). The cumulative capital requirement (CCR) usually grows irregularly, having to do with the fluctuating nature of most businesses. This capital requirement can be financed with either long-term or short-term financing. In a situation in which long-term financing is not enough to meet the capital requirement, the firm must obtain short-term financing for its business operations. However, if the long-term financing is more than the cumulative capital requirement, the company has surplus of cash. This determines if the company is short-term borrower or lender (Brealey et al. 2003:8)

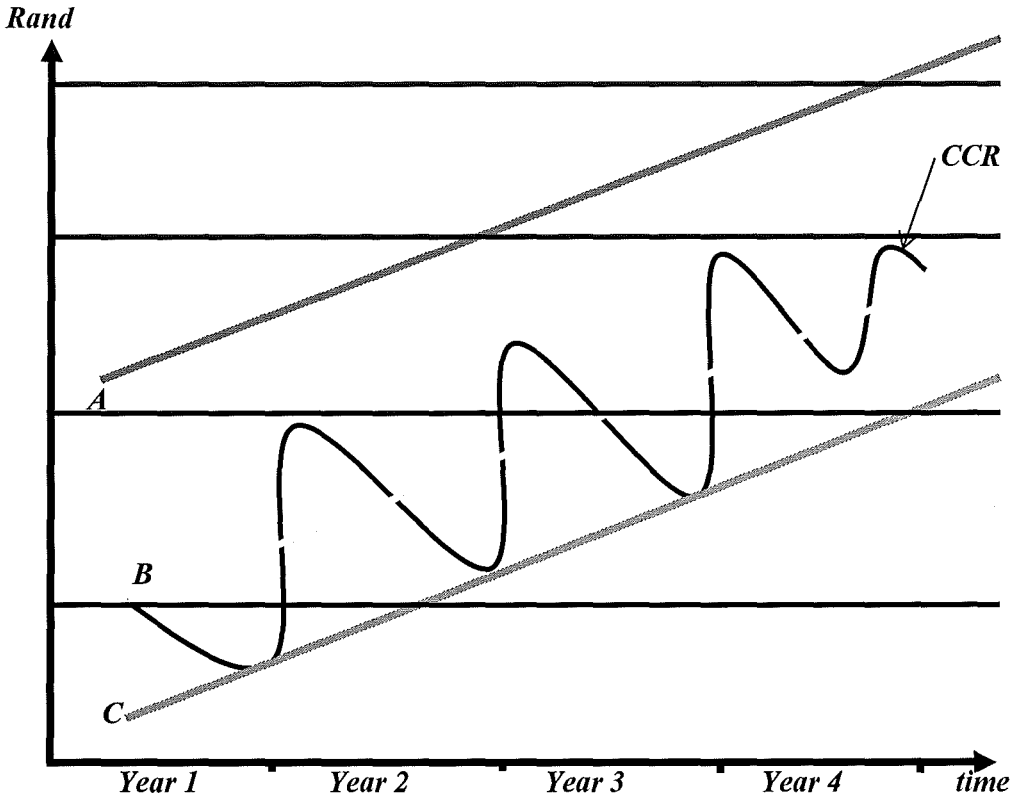


Figure: 2.1 Cumulative Capital Requirements - CCR

Source: Brealey, Myers & Allen 2006

Figure 2.1 represents how an entity's financing decisions is affected by its working capital requirements. The different scenarios are marked A, B and C. Line A represents a scenario in which the company constantly holds excess cash which in turn can be invested in short-term securities. Line B indicates a scenario in which the business entity is a short-term borrower for part of the year and a short-term lender for the other part. Line C denotes a scenario in which there is a permanent need for short-term financing. In some cases, a firm that invests a lot of capital into its gross working capital (that is, its current assets) may need to use more long-term financing than a company which can match the maturities of its short-term liabilities with its short-term assets. This is very industry specific. There is, however, support for the theory that most financial managers try to match the maturities of their liabilities and assets (Graham & Harvey 2001). This means that long-lived assets, such as machines or buildings, are financed with long-term financing, while working capital is financed (as much as possible) by short-term financing.

2.2.2 Concept of Working Capital

2.2.2.1 Value perspective

The core concept of working capital has been subjected to considerable change over the years. A few decades ago the concept was viewed as a measure of the debtor's ability to meet his/her obligations in case of liquidation. The prime concern was whether or not the current assets were immediately realizable and available to pay debts in case of liquidation. In applying this measure a one-year period was frequently used to classify assets and liabilities as those due within one year for working capital purposes. In recent years, the focus has shifted from this liquidation point of view and the current emphasis shifted to the ability of the firm to pay its maturity obligations from the funds by current operations. In this sense, working capital is a dynamic measure of the margin or buffer for meeting current obligations. To understand the concept of working capital it is better to have basic knowledge about various aspects of working capital. To start with, the concept of working capital can be explained through two angles. These are value and time. From the value point of view, working capital can be classified as gross working capital or net working capital. From the perspective of time; working capital can be classified as permanent and temporary working capital.

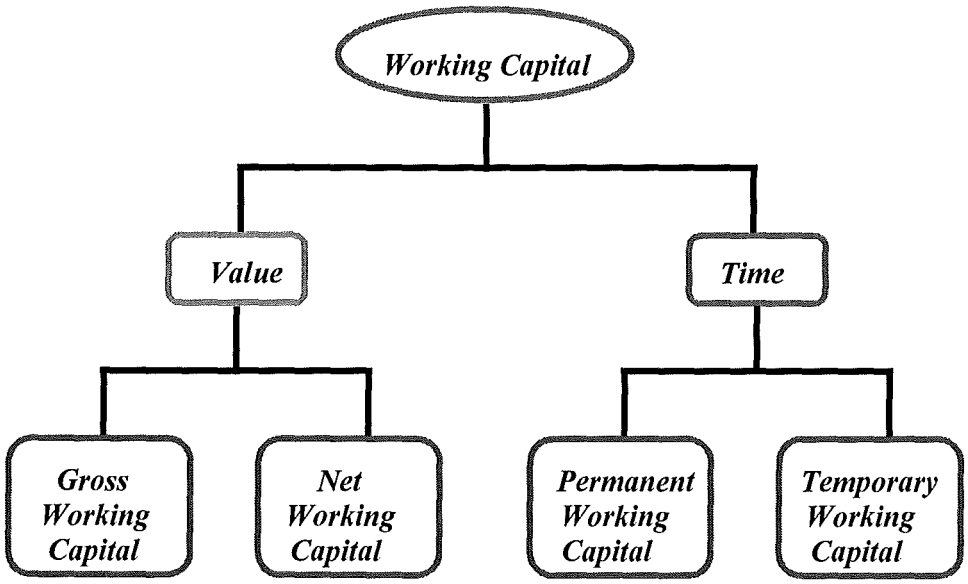


Figure: 2.2 Concept of Working Capital

Source (Sinha, 2009).

Gross working capital (GWC) constitutes the total corporate assets. It is made up of cash, and cash equivalent that a business has on-hand to run the business. Cash equivalents comprise of accounts receivable, investments, and marketable securities, which may be liquidated within the calendar year (Sinha 2009). Generally, the total investments in all current assets are known as GWC.

Networking capital (NWC) normally denotes the difference between the company's current assets and current liabilities. Brealey and Myers (2006) define NWC as the number of assets or cash left over after subtracting a company's current liabilities from its total current assets. Current liabilities (CL) here refers to all the claims of outsiders which are expected to mature for payment within one accounting year. These include creditors for goods, bills payable, bank overdraft, accrued expenses etc. On the hand, current assets represent the value of all assets that are reasonably expected to be converted into cash within one year in the normal course of business. Current assets (CA) include cash and cash equivalents, accounts receivables, debtors, inventory, marketable securities, prepayments and all other liquid assets that can be readily converted to cash.This can be mathematically presented as:

$$NWC = Current\ Asset - Current\ Liabilities$$

Depending on the value of the current liabilities, the NWC may be either positive or negative. A negative NWC arises when a current liability is greater than the current asset and a positive NWC arises when current liability is less than the current asset. Both positive and negative NWC provide equal importance to the manager of the firm (Brigham et al. 2003). As a positive NWC directs all attention to optimum investment and financing of the current assets, a negative NWC connotes the liquidity position of the firm and suggests the extent to which NWC needs may be financed by permanent sources of funds.

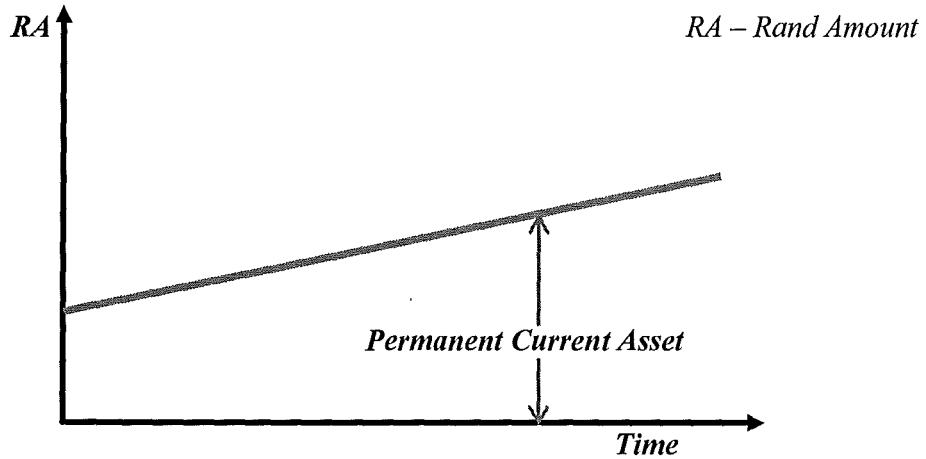
2.2.2.2 Time perspective

Businesses encounter seasonal or cyclical fluctuations in their operations and do not need the same level of current assets throughout the year. For example, during a slack time a manufacturing company does not need to invest as much into raw materials, work in-process, or finished goods inventory because of the decrease in sales. On the other hand, during a peak season (for example, Christmas and Easter holiday seasons), retail stores need higher levels

of merchandise. As we can see, during the year the level of production and sales fluctuates, and thus the need for current assets also fluctuates. Similarly, at the peak seasons of the economy, firms must accumulate enough currents assets, but can sell off inventories and reduce receivables when the economy slacks off. From the perspective of time, Paramasivan and Subramanian (2009) indicate that WC may be classified as permanent WC and temporary WC.

Permanent working capital (PWC)

PWC refers to a minimum number of investments in all working capital which is required at all times to carry out minimum levels of business activities (Brigham et al. 2003). It can be viewed as the minimum working capital required for producing predetermined production. In other words, it represents the current assets required on a continuing basis over the entire year. It is also known as fixed or core working capital. It is financed through long-term debt and ordinary shares. Further, working capital has a limited life, usually not exceeding a year. In actual practice some part of the investment in working capital is always permanent. Since firms have relatively longer life and production does not stop at the end of a particular accounting period, some investment is always locked up in the form of raw materials, work-in-progress, finished stocks, book debts and cash. Investment in these components of working capital is simply carried forward to the next year. This minimum level of investment in current assets that is required to continue the business without interruption is referred to as PWC (Fabozzi & Peterson 2003:679).



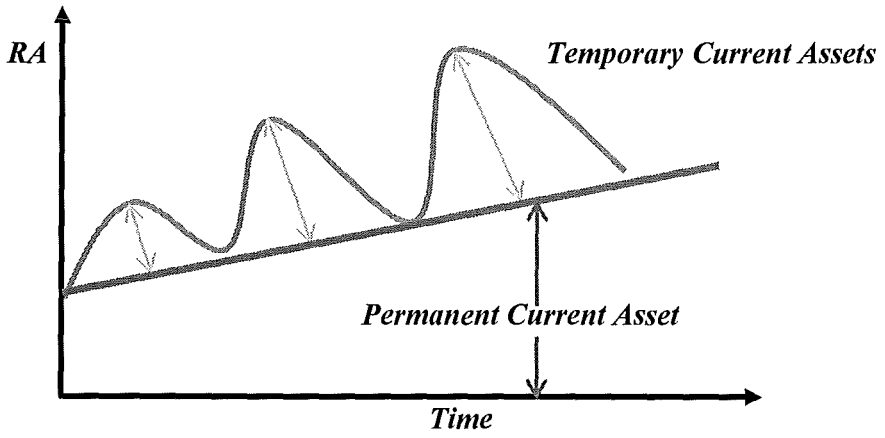
The amount of current asset required to meet a firm's long-term minimum needs

Figure: 2.3 Permanent Working Capital

Source: Lumby & Jones (2007)

Temporary working capital (TWC)

The number of investments required to take care of the fluctuations in business activities is known as TWC. It is also known as fluctuating or variable working capital. Fabozzi and Peterson (2003:678) define TWC as a rise of working capital from seasonal fluctuations in a firm's business operations. The quantum of TWC keeps on changing from time to time depending on the business activities (changes in the production and sales). Firms do not have to maintain this form of working capital throughout the year, or year after year. It may be better to use short-term (bank credit) rather than long-term sources of capital to satisfy temporary needs. In other words, it represents additional current assets required at different times during the operating year. For example, extra inventory has to be maintained to support sales during peak sales period (seasonal working capital). Similarly, receivables also increase and must be financed during periods of high sales. On the other hand, investment in inventories, receivables and the like decreases in periods of depression (special working capital). TWC is financed by short-term debt, fluctuates over time with seasons and special needs of firm operations, whereas, PWC changes as firms' sizes increase over time



The amount of current asset that varies with seasonal requirements

Figure: 2.4 Temporary Working Capital

Source: Lumby & Jones (2007)

2.2.3 Determinants of Working Capital

Generally, there are two main factors that influence WC decisions of a firm and these are internal and external factors (Paramasivan & Subramanian 2009). These factors vary from time to time and their effect on organizations differs from one firm to the other. This is due to the differences in the business operations of each firm. A brief discussion of these factors is as follows:

2.2.3.1 Internal factors

These are factors that a company takes into account while determining the optimal level of WC needed for the business. It concurs with the inherent factors relating to the business. These factors are presented as follows:

- ***Size and type of business***

Size may be measured in terms of the scale of operations. A firm with a larger scale of operations has a comparatively higher WCR than a small firm. Likewise, in some organizations, the sales are mostly on a cash basis and the operating cycles are also short. In these concerns, the WCR is also low. Similarly, trading and financial firms have less investment in fixed assets but require a larger sum of money to be invested in WC.

- ***Production policy***

WCR also fluctuates according to production policy. The production policy of the firm can be a uniform production policy or a seasonal production policy. No matter which policy is adopted, it has an influence on working capital decisions. A company that adheres to a uniform production policy regularly needs working capital. On the other hand, a firm whose production policy solely depends upon the situation or conditions like season WCR will basically depends on the conditions laid down by the company and the changing demand of its products.

- ***Credit policy***

As a rule, the higher the sales of a firm, the larger its profits and the higher its stock price. Sales, in turn, depend on a number of factors, some exogenous but others under the firm's control. The major controllable determinants of demand are sales prices, product quality, advertising and the firm's credit policy (Brigham & Ehrhardt 2011; Sinha 2009:369). The extent to which a firm grants credit facilities to its customers influences its WCR. A firm which allows liberal credits to its customers may have higher sales, but consequently will have larger amounts of funds tied up in sundry debtors. Such firms need higher amounts of working capital. Similarly, lower amounts of working capital are required by the firm that adopts an austere credit coupled with efficient debt collection machinery

- ***Growth and expansion of business***

Increasing business operations as well as sales volumes of a firm have a tremendous impact on the WC of the firm. Thus, as the firm's activity increases so does WC required by the firm become prevalent. Every growing firm need funds to invest in fixed assets in order to expand its operations, increase sales volume and to sustain its growing exponentially. As a result, there is an increased investment in current assets to support the increased scale of operations. Thus, every growing firm has a continual need for additional funds.

- ***Inventory policy and operating efficiency***

The inventory policy of a firm also has an impact on the WCR. A lower amount of working capital is required by a firm that stocks raw materials efficiently. The opposite also holds. A firm that has an efficient and coordinated utilization of capital minimizes the amount needed to be invested in working capital.

- ***Dividend policy***

Payment of dividend utilizes cash while retaining profit acts as a source of working capital. This implies that the dividend policy of a firm affects its WCR. Thus a firm that pays lower dividends to shareholders has a higher amount of retained profit to boost the firm's working capital. On the contrary, paying higher dividends may result in lower cash reserves which in turn negatively affects working capital.

- ***Depreciation policy***

Depreciation charges do not involve any cash outflow. The impact of a depreciation policy on working capital is therefore indirect. In the first place, depreciation affects the tax liability and retention of profits and dividend.

- ***Aberrant factors***

Industrial actions such as strikes and lockouts require additional working capital. Recessionary conditions necessitate a higher number of finished goods remaining in stock. Similarly, inflationary conditions necessitate more funds in order to maintain the same number of current assets.

2.2.3.2 External factors

In certain instances the entity's WCR is affected by factors which are beyond the control of a firm's internal administration and management process. These factors, collectively called external factors, are discussed as follows:

- ***Business fluctuations***

Most firms experience fluctuations in demand for their products and services. These business variations affect the WCR. When there is an upward swing in the economy, sales increase correspondingly. A firm's investment in inventories and book debts also increases Under boom, additional investment in fixed assets may be made by some firms to increase their productive capacity. This act of a firm requires additional funds. On the other hand, when there is a decline in economy, sales come down and consequently the conditions. The firm then tries to reduce its short-term borrowings. Similarly, seasonal fluctuations may also affect a firm's requirement of working capital. Generally, business fluctuations lead to cyclical and seasonal changes in the production and sales and affect the WCR.

- ***Technological changes and research and development***

The accelerated changes in technology coupled with successes in research and development in the area of production can have immediate effects on the temptation to with work capital levels. If a firm wishes to install a new machine in the place of an old system, the new system can utilize less expensive raw materials, the inventory needs may be reduced and work capital needs may be affected.

- ***Taxation policy and level of taxes***

The prevailing tax regulations determine the amount of tax to be paid by a firm. In most cases, taxes have to be paid in advance on the basis of the profit of the preceding year. The tax policy of the country influences the work capital decisions of the company. For example, if a country follows a regressive taxation policy, that is, imposing heavy tax burdens on business firms, the latter are left with very little profit for distribution and retention purpose. Consequently firms have to borrow additional funds to meet their rising work capital needs. On the other hand, if the tax policy is liberalized, the pressure on work capital needs is minimized.

- *Conditions of supply*

The availability of expeditious and sufficient supply of inputs, spares, stores etc. promotes management of small investment in inventory or work on the Just-In-Time principle. However, if supply is fluctuant, inadequate, unreliable or channelled through agencies, it is essential to keep higher volumes of stock increasing WCR.

- *Discrepancies in the availability of raw materials*

The availability of certain raw materials on a continual basis without interruption sometimes affects WCR. There may be some materials which are not easily accessible because their source is few or is irregular. To achieve consistent production, the business entity may be forced to purchase and stock such materials far in excess of genuine production purposes. This may lead to excessive inventory of such materials.

2.2.4 Double shift working and working capital requirement (WCR)

Several scholars are of the view that increasing the number of hours of production has an effect on the WCR of the firm. The economy of introducing double shifts is the greater use of non-current assets with little or marginal requirement of additional asset (Sinha 2008:380; Brigham & Ehrhardt 2011). An increase in stock is required with double shift working but an increase in inventory is not equivalent to the rise of production. Hence the minimum level of inventory may not be very much higher. The amount of material in process will not change because of double shift working. Since work begun in the first shift will be completed in the second, capital tied up in material in progress will be the same as with single shift working. However, the cost of work-in-progress will not change unless the second shift workers are paid at a higher rate. Also fixed overheads will not be affected, whereas variable overheads will rise in proportion to the increase in production. However semi-variable overheads will increase accordingly as a resultof the variable elements .

2.2.5 Working capital cycle (WCC)

WCC refers to the length of time from the purchase of raw materials entering the production process, work in progress being converted into account receivables to debtors being realized in cash after the expiry of the credit period (Arnold 2008:529-530; Sinha 2009:375). WCC is the core of WCM and includes all the major dimensions of business operations. Improper handling of a single account in this cycle may destabilize the operations of a firm and

possibly lead to its extinction. Therefore, maintaining a balance between the components of working capital and its management is extremely important for the smooth running of business. The following chart shows the framework of a firm's working capital cycle (WCC)

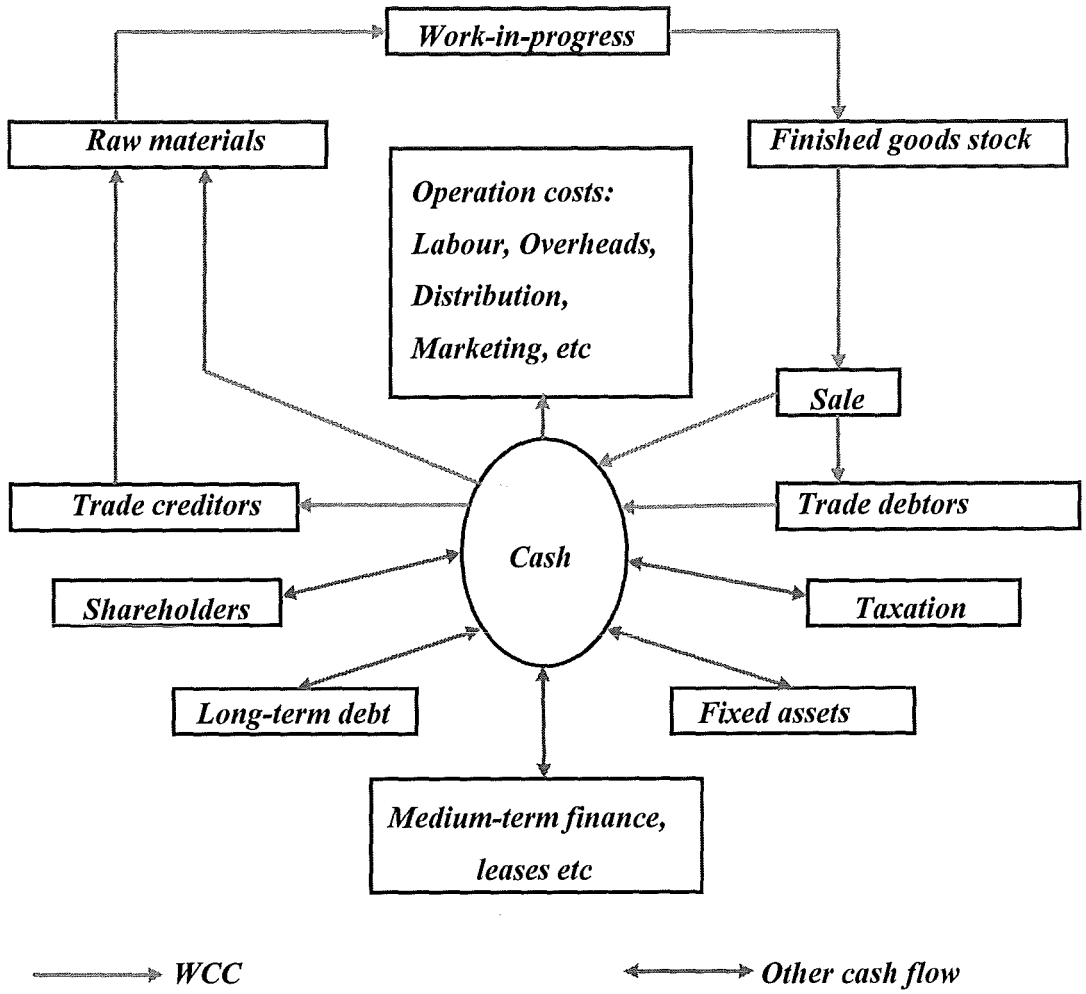


Figure: 2.5 Working Capital Cycle

Source: Arnold (2008:530)

The above figure reveals that funds invested in operations are recycled back into cash. The longer the period of this conversion, the longer the operating cycle. A standard operating cycle may be for any time period but does not generally exceed a financial year. However, if it were possible to complete the sequence (WCC) instantly, there would be no need for current assets (working capital). But, since it is not possible, the firm is forced to have current assets. Because cash inflows and outflows do not match in the business operations, the firm has to keep cash for meeting short-term obligations through proper management of working capital components. Therefore, WCM deals with the act of planning, organizing and

controlling the components of working capital (current asset and liability) like cash, bank balance, inventory, receivables, payables, overdraft and short-term loans (Paramasivan & Subramanian 2009). Moyer et al. (2009) define WCM as being concerned with the problems that arise in attempting to manage the current asset, current liabilities and the interrelationship that exists between them. Smith (1980), however, notes that WCM is the administration of the whole aspect of both current assets and current liabilities. Generally, WCM involves two basic questions. First, what is the appropriate number for current assets, both in total and for each specific account? And second, how should those current assets be financed? A brief description regarding the various issues involved in the management of each of the WC components is discussed as follows:

2.2.5.1 Receivable management

The term 'receivable' is defined as debt owed to firms by customers arising from the sale of goods and services in the ordinary course of business (Sinha 2009:416). Firms would, in general, rather sell for cash than on credit, but competitive pressures force most firms to offer credit for substantial purchases, especially to other businesses. The benefits from credit sales and receivables management are increased sales and high profit margins. The impact of a liberal policy of trade credit is likely to have two forms. First, it is oriented to sales expansion, that is, to increase sales to existing customers or attract new ones. Second, the firm may extend credit to protect its current sales against emerging markets (Sinha 2009:417). Fabozzi and Peterson (2003:651) mention that when a firm allows customers to pay for goods and services in the future, it generates accounts receivable.

An opportunity cost is associated with account receivables (trade credit) because the firm cannot invest this money elsewhere until it collects its receivables. However, because of the possibility of high opportunity cost of invested money in trade credits and credit losses, the consequences of this change may become difficult to realize. The goal of receivables management is to maximize the value of the firm by achieving a trade-off between profits on additional sales that arise owing to credit being extended on the one hand and cost of carrying the receivables and credit losses on the other. For this reason, the finance manager has to obtain optimum sales value, limit the cost of receivables, cost of collection, administrative expenses, credit losses and opportunity cost of funds tied up in the receivables.

Pandey (2000) also assert that financial managers have to reduce the number of debtors to a minimum according to the credit policies offered to customers, and offer cash discounts suitably depending on the cost of receivables and opportunity cost of funds tied up in the trade credits. Indeed account receivables management has to look through cost and benefit analysis including the credit and collection policies of firms in maintaining receivables.The account receivables can be represented with the schedules according to the number in each age group or according to the total rands the receivables represent in each age group. Hence, the higher the number of accounts in the shortest term groups, the faster the collection or effort is made (Fabozzi & Peterson 2003:660). Ratios can be used to gain an overall picture of how fast credit managers collect account receivables. Therefore, the average collection period (ACP) represents the average length of time required to convert the firm's receivables into cash – that is, to collect cash following sales as:

$$ACP = \frac{Receivables \times 365}{Sales}$$

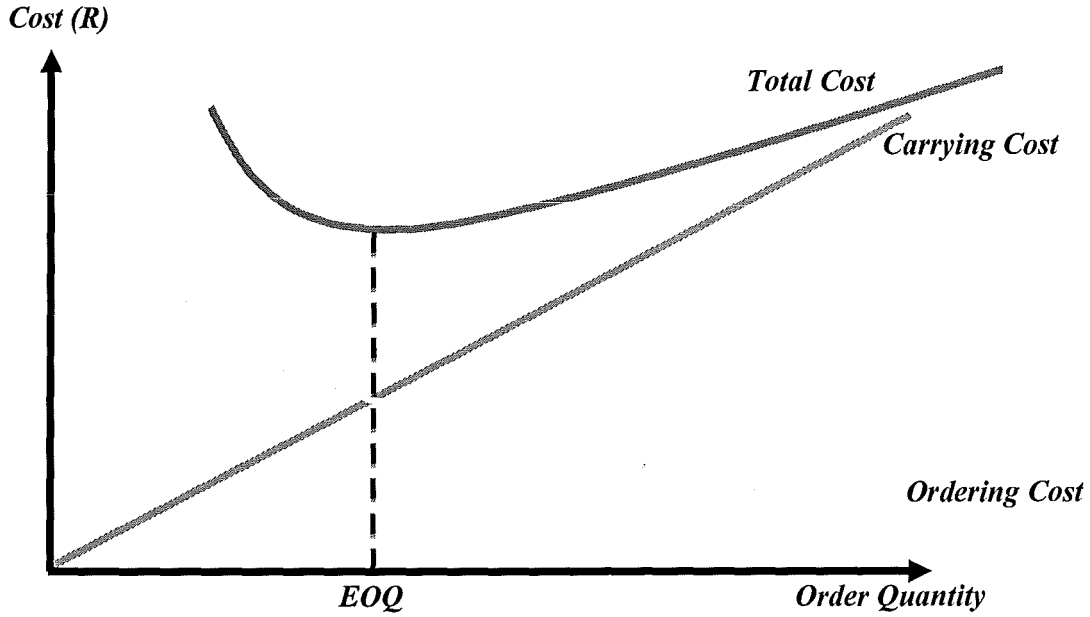
The quality of debtors is measured by this ratio. A short collection period implies prompt payment by debtors. It reduces the chances of credit losses. Similarly, a longer collection period implies too liberal and inefficient credit collection performance. It is difficult to provide a standard collection period of debtors (Brigham & Houston 2003:691).

2.2.5.2 Inventory management

Inventory refers to the stockpile of product a company is offering for sale and constitutes an important component of current assets. It consists of raw material, work-in-process and finished goods available for sale. Inventory management, a difficult task, refers to an optimum investment in inventories (Brigham & Houston 2003:707). Excess investment in inventories is unprofitable for the business and both excess and inadequate investments in inventories are not desirable (Fabozzi & Peterson 2003:658). Hence, the firm should operate within the two danger points. Additionally, proper inventory management requires close coordination among the sales, purchasing, production, and finance departments. There should be a synergy among these departments.

In general, the purpose of inventory management is to determine and maintain the optimum level of a firm's investment in inventory. At the same time, it helps to hold the costs of

ordering and carrying inventories to the lowest possible level. Similarly, a firm can reduce its finished goods inventory by reducing the production and by producing only the goods to meet the current demand. However, such a strategy can also create trouble for the company if the demand for the product rises suddenly. Such a situation may also cause the customer dissatisfaction and even a loyal customer can switch to the competitor's brand. The firm should have enough inventories to meet the unexpected rise in demand but the cost of holding this inventory should not exceed its benefit (Brealey & Myers 2003:821). Companies want to keep the inventory at a level which maximizes the profit and this level is known as optimal level, but what is an optimal level of inventory for a company? In order to answer this question, finance managers analyse the cost associated with inventory, that is, carrying cost and ordering cost using economic order quantity (EOQ) as follows:



The relationship between ordering, carrying and total cost

Figure: 2.6 Economic Order Quantity (EOQ)

Source: Moyer et al. (2009:641)

$$EOQ = \sqrt{\frac{2 \times (Demand\ for\ the\ year\ in\ uits)(Cost\ to\ place\ a\ single\ order)}{Cost\ to\ hold\ one\ unit\ inventory\ for\ a\ year}}$$

A company can monitor its inventory by looking through its financial ratios like that of monitoring receivables. Inventory turnover rate (ITR) provides an indication of the efficiency

with which a firm manages its inventory levels. An entity is expected to maintain optimum inventory levels that are proportional to its activities. ITR is calculated by dividing the cost of sales by the average inventory. The average inventory is obtained by adding the opening and closing balances of inventory for that period and dividing by two. A high inventory turnover is suggestive of. good inventory management, while a low turnover could suggest excessive inventory levels, the presence of damaged inventory and low sales volumes

$$Inventory\ Turnover\ Rate = \frac{Cost\ of\ Sales}{Average\ Inventory}$$

Dividing 365 by ITR gives the inventory turnover in days (ITID). ITID measures the number of days it takes to convert inventory into sales and evaluates the efficiency with which a firm is able to manage its inventory. It is also known as the inventory-holding period. Brigham and Houston (2003:691) assert that ITID ratio indicates whether investment in stock is within proper limits or not. The higher this period, the higher the investment in inventory, which indicates that funds that could be used to improve the firm's ability to meet its short-term obligations are tied up in inventory.

$$Inventory\ Turnover\ in\ Days = \frac{365}{Inventory\ Turnover\ Rate}$$

There is no rule of thumb for interpreting ITR. The criteria may be different for different companies depending upon the nature of the industry and business conditions. However, trend analysis or comparative study of inventory turnover is still beneficial for financial analysis.

2. 2.5.3 Cash management and marketable securities

Cash and marketable securities are the most liquid of a firm's asset. Cash is the sum of the currency a company has on hand and the funds on deposit in a bank account (Moyer et al 2009; Brealey & Myers 2003). Literally cash can be viewed as a basic indicator of business health. Cash is the medium of exchange that permits management to carry on the various functions of the business organization. In fact, the survival of a firm can depend on the availability of cash to meet financial obligations in time. Marketable securities consist of short-term investments a firm makes with its temporarily idle cash (Moyer et al. 2009; Sinha

2009). Marketable securities can be sold quickly and converted into cash when needed. Unlike cash, marketable securities provide a firm with interest. However, there is a fair possibility that the cost of holding marketable securities may exceed their benefit. Effective cash and marketable securities management is important in contemporary firms, government agencies and non-profit organizations.

According to Sinha (2009:200), a company needs cash for four motives: transaction needs, speculative needs, precautionary needs and compensation motives.

- ***Transaction needs***

The availability of cash accelerates the meeting of the day-to-day expenses and meeting other financial obligations of the firm. The inflows of cash from operations should normally be adequate for this purpose. In some cases, inflows may be temporarily blocked. In such situations, it is only the reserve cash balance that can enable the firm to meet its financial obligations.

- ***Speculative needs***

For profitable opportunities that may be availed in future and which may be lost for want of ready cash settlements, cash may be held to advantage.

- ***Precautionary needs***

Cash may also be held in order to guard against unexpected occurrences. Thus in the absence of cash, unexpected events may bring the operations of the firm to a halt.

- ***Compensation motive***

Another motive for holding cash is to compensate banks and other lenders for providing certain financial services and loans.

Cash should be considered as an inventory which is very important for the smooth running of the business. Therefore, it is justifiable for all business entities to have cash reserves. The question now is how much cash reserve a firm should have. This question is significant because small amounts of cash may force a company into a situation in which it will not be able to meet its financial obligations as they fall due. Or the other excessive cash balance will

not yield any returns. The minimum level of cash reserve depends on the ability of a company to raise cash when it is required, future cash needs and the company's ability to keep cash to safeguard future unexpected events. Firms may also want to have sufficient cash reserves to exploit the investment opportunities available in the future. But having excessive reserves of cash can turn out to be an idle resource. The maximum level of cash reserve depends on investment opportunities available in the future, return on these investments and the transaction cost of making the investments (Gallagher & Joseph 2000). The cash management function is concerned with determining (1) the optimal size of a firm's asset balance; (2) the most efficient method of controlling the collection and disbursement of cash and (3) the appropriate types and amounts of short-term investments a firm should make (Moyer et al. 2009:594). This means that cash management involves much more than simply paying bills and receiving payments of goods and services.

2. 2.5.4 Accounts payables management

The major source of unprotected short-term financing for a company is accounts payable. It arises from transactions when inputs are purchased but no formal note is signed indicating the purchaser's liability to the seller. In effect, the purchaser agrees to settle on the supplier the amount required in accordance with the terms of credit stated on the supplier's invoice. The debts resulting from credit sales and recorded as an account receivable by the seller and as an account payable by the buyer is known as accounts payable (Megginson, Smart & Graham 2010). Arnold (2008:479-482) describes accounts payable as the cheapest and simplest way of financing an organization. Brigham and Houston (2003:720) are of the view that business entities generally make purchases from other firms on credit, recording the debts as accounts payable and about 40% of these payables constitute the largest single category of short-term debt (current liabilities) of the of the average non-financial corporation. Accounts payable arises when a business entity purchases inputs from a supplier for which payment has to be made on a specified date in the future. Accounts payable can be beneficial to all business entities regardless of their size. For instance, earlier payment comes with a cash discount. Also stretching accounts payable beyond the due dates is a source of funds, but at the expense of supplier relations.

On the other hand, stretching accounts payable or leaning on the trade can have a double impact on the firm: the cost of discount forgone and the possible deterioration of credit trading. If the entity prolongs its payables excessively so that payables are significantly

delinquent, its credit rating will suffer. The possible consequence is that suppliers may view the entity with mistrust and may apply strict credit terms, if indeed they sell at all. That is, there is certainly an opportunity cost to deterioration in a company's credit reputation owing to excessive slowness in payments. Nevertheless, periodic and reasonable leaning on payables is not necessary bad per se. It should be done objectively in relation to its associated cost and in relation to alternative sources of short-term credit.

Generally, business entities not only need to manage their payables in an honest way but they should also have the ability to generate sufficient cash to pay the mature accounts payable. The failure of a firm to generate enough cash to meet such obligations passes a negative signal to the market. This will directly affect the share price, relationship with creditors and suppliers. Consequently, in this situation raising more funds by borrowing money or getting more supplies from the suppliers will be much more difficult. Such financial distress may lead to the extinction of the firm. One way of monitoring accounts payable is by the payables deferral period ratio. This ratio measures the duration for which the firm is able to defer payment on its various resource purchases (Moyer et al. 2009:544). It can be calculated as:

$$\textit{Payables deferral period (PDP)} = \frac{\textit{Average accounts payables} \times 365}{\textit{Cost of sales}}$$

In general, a firm having smaller accounts payable days, may be paying the bills in time or be taking advantage of trade discounts due early payment. On the other hand, a larger number of accounts payable days could mean a low cash flow which may not be sufficient to pay bills in time.

2. 2.5.5 Short-term financing

Short-term financing includes financial instruments which include bank overdraft, commercial papers, bill of exchange, and loans from commercial finance institutions. The maturity for all these liabilities is fewer than twelve months (Arnold 2008:474-79; Van Horne 2002). A poor working capital policy (WCP) may lead to cash distress and as a result firms may not be able to meet their short-term borrowings; therefore, it is imperative for companies to have a good WCP. The consequences for defaulting on payments of short-term borrowing may be detrimental to the firm. Companies may not be able to win the trust of other financial institutions to borrow more money. The entire market may perceive this situation in a

negative way which may result in the decline of the share price of the business entity. Despite these harsh situations, suppliers and creditors may hesitate to enter into a new contract with the firm.

2. 2.5.6 Cash conversion cycle (CCC)

All business entities follow a WCC in which they purchase or produce inventory, hold them for a time, and then sell them for cash. This process is known as the cash conversion cycle (CCC). CCC represents the net time interval between the collection of cash receipts from product sales and the cash payments for the company's various resource purchases (Moyer et al. 2009:544). Companies typically follow a chain purchasing inventory, selling goods on credit, and then collecting accounts receivable (Van Horne 2002:690). In the context of a manufacturing firm, CCC can be defined more precisely as the sum of time that raw materials are stored for the processing and the time taken by the production process, plus the time that finished goods are kept and sold and the time taken by the debtors to pay their liability, less the period of maturity of account payable. By this definition it is quite clear that longer CCC requires more investment in the current assets. Furthermore, good CCC (depends on company's target) is helpful for the organization to pay its obligations at the right time which will enhance the goodwill of the company. On the other hand, a company with poor CCC will not be able to meet its current financial obligations and will face financial distress. CCC is also used as a gauge to measure the aggressiveness of WCP. It is believed that longer CCC corresponds to defensive WCP and shorter CCC corresponds to aggressive WCP (Arnold 2008:530-31)

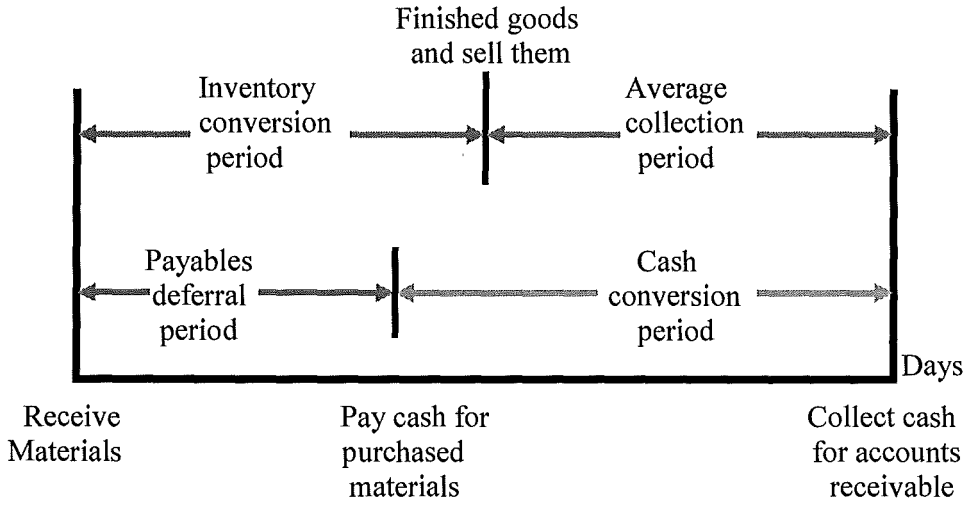


Figure 2.7 Cash Conversion Cycle

Source: Brigham & Ehrhardt (2011:649)

In figure 2.7 above, these three periods can be combined to find the theoretical or target CCC. Thus, CCC is equal to the sum of the inventory conversion period and average collection less payables deferral period. But the sum of the inventory conversion period and average collection gives the operating cycle. CCC is represented as follows:

$$CCC = Operating\ cycle - Payable\ deferral\ period$$

Generally, a company having a good position of liquidity depends upon the company's policy of lowering CCC without increasing cost. Reducing sales may be preferable.

2.2.6 Alternative Working Capital Policy

A strategy which provides the guidelines to manage the current assets and current liabilities in such a way that it reduces the risk of default can be best described as a working capital policy (Afza & Nazir 2007). The working capital policy (WCP) mainly focuses on the liquidity of current assets to meet current liabilities. Working capital policies, through their effect on a firm's expected future returns and risk associated with these returns, ultimately have an impact on shareholder wealth. Effective working capital policies are crucial for a firm's long-term growth and survival (Moyer et al. 2009:542). For example, a firm having inadequate WC to expand production and sales may lose revenue and profits. WC is used by firms to maintain liquidity, that is, the ability to meet their cash obligations as they come due. Otherwise, the firm may incur the costs associated with a deteriorating credit rating, a potential forced liquidation of assets, and possible bankruptcy. A firm having a higher level of liquidity has lot of idle funds and has to bear the cost of these idle funds. On the other hand, a firm having low levels of liquidity may face lack of funds to meet its current financial obligations (Arnold 2008). Current assets are the basic elements of working capital and WCP also relies upon the level of current assets as opposed to the level of current liabilities (Afza & Nazir 2007).

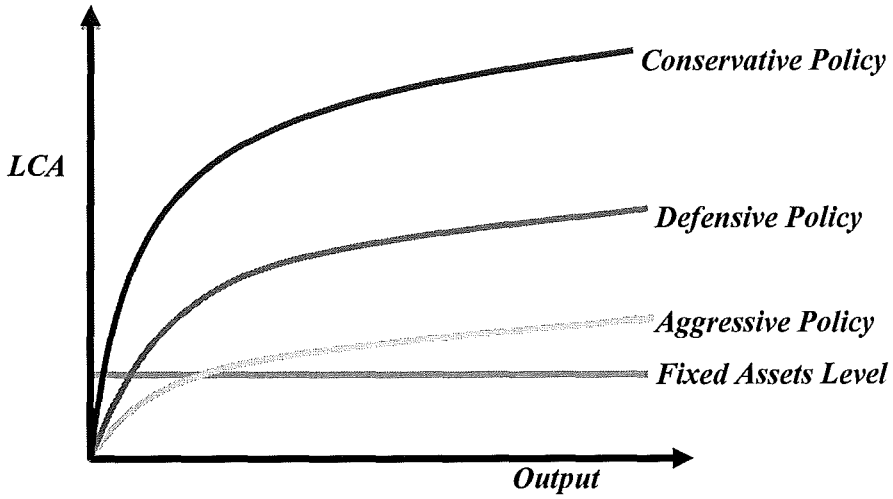


Figure: 2.8 Alternative Working Capital Policy

Source: Peterson & Fabozzi (2003)

The literature of finance categorizes WCP into three embodiments: defensive, aggressive and conservative WCP (Arnold 2008:535-36). These different embodiments are discussed in subsections 2.2.5.1, 2.2.5.2 and 2.2.5.3.

2.2.6.1 Defensive (Hedging) policy

The use of long term debt and equity to finance fixed assets and a considerable portion of current assets constitutes a defensive policy. With this policy, the firm can adopt a financial strategy which matches the life span of assets with the expected life of the sources of funds raised to finance assets (Paramasivan & Subramanian 2009). Inventory expected to be cleared in 60 days could be financed with a 60-day bank loan; a machine with a life span of 10 years could be financed with a loan of a 10-year term; a 30-year building could be financed with a 30-year mortgage bond, and so forth (Van Horne 2002). Thus, a company's assets not financed by spontaneous sources should be financed in accordance with the rule: permanent assets (including PWC needs) financed with long-term sources and temporary assets (fluctuating working capital need) with short-term sources of finance towards the liquidity risk. A defensive policy reduces the risk by decreasing the current liabilities but it also affects profitability because long-term debt offers high interest rates which increase the financing cost (Arnold 2008:530). This means firms become more risk averse and deem it appropriate to keep cash or near cash balances, higher levels of inventory and generous credit terms.

Mostly a firm that is operating in a hazy ambience prefers to adopt such a policy because it is not sure about the future prices, demand and short-term interest rate. In such circumstances it is proper to have a high level of current assets. This means keeping a higher level of inventories to meet an abrupt rise in demand and to prevent the risk of discontinuity in production.

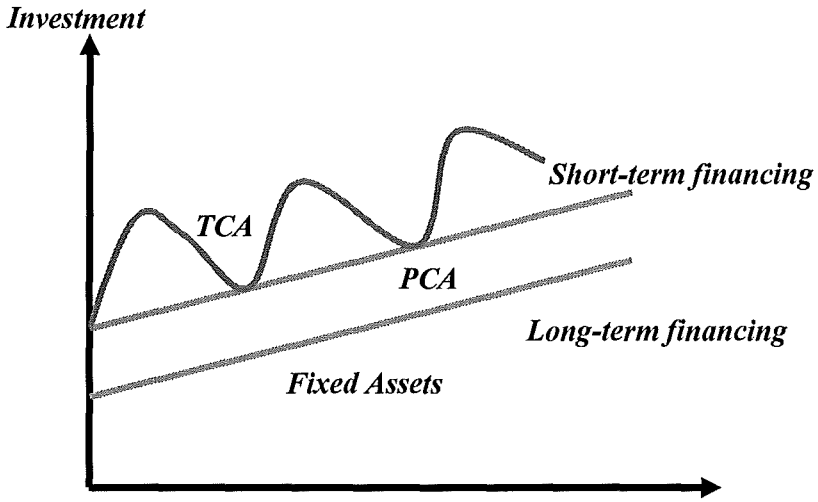
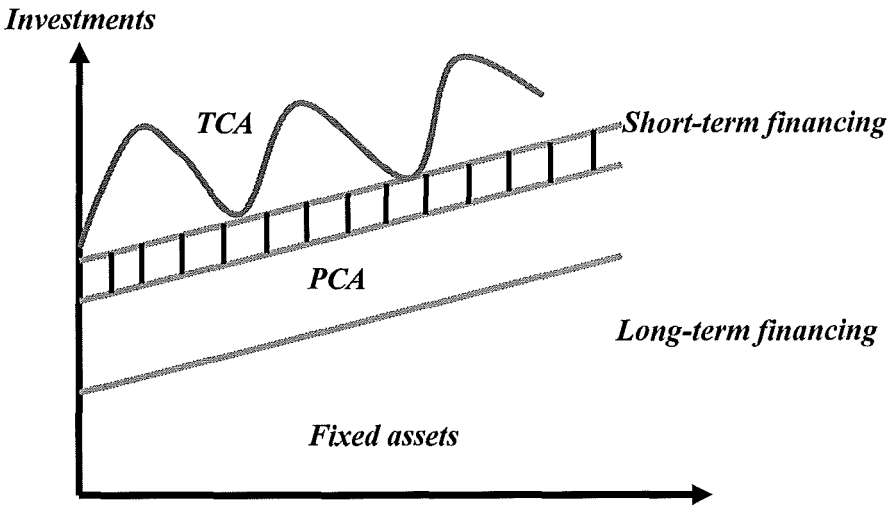


Figure: 2.9 Defensive Financing Strategy

Source: Sinha (2009)

2.2.6.2 Aggressive policy

With this policy, the business entity uses mere short-term financing than is warranted. The company finances a part of its permanent current assets with short-term financing. This is more risky than using long-term debt, but may add to the returns on assets due lower interest rate. With an aggressive policy, the entire estimated requirement of current assets should be financed from short-term sources and even a part of fixed assets financing be financed from short-term sources (Van Horne 2002:616; Paramasivan & Subramanian 2009). This approach makes the finance mix more risky, less costly and more profitable. Furthermore, few finance managers take even more risk by financing a long-term asset with short-term debts as this approach pushes the working capital onto the negative side. This policy increases the risk of default because a company may face a lack of resources to meet short-term liabilities but it also gives a high return but the high return is associated with high risk (Arnold 2008:536).



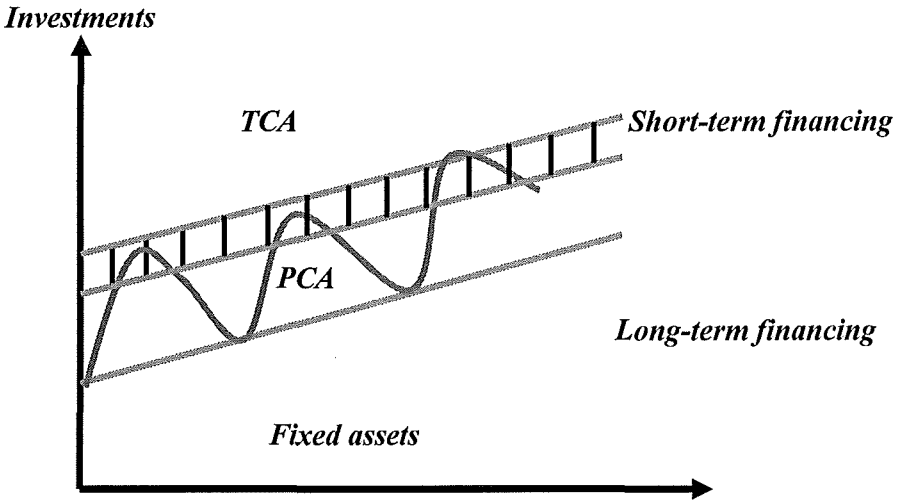
Shaded area indicates the firm's continuous use of short-term financing to support its permanent asset needs.

Figure: 2.10 Aggressive Financing Strategy

Source: Sinha (2009)

2.2.6.3 Conservative policy

Using this approach, a company finances its permanent assets and also part of its temporary current assets with long-term financing. A conservative approach is less risky so far as insolvency is concerned; however the funds may be invested in such investments which yield small returns to build up liquidity. For business entities to balance the risk and return, they adopt the conservative approach. Basically, this approach can be viewed as a balance between a defensive and an aggressive policy. Temporary current assets, assets which appear on the balance sheet for a short period, are financed by the short-term borrowings, and long-term debts are used to finance fixed assets and permanent current assets (Van Horne 2002:617). A firm that follows this approach finds a moderate level of working capital with moderate risk and return. It is called as 'low profit low risk' concept (Paramasivan & Subramanian 2009). Further, this policy does not only reduce default risk but it also lessens the opportunity cost of additional investment in the current assets.



Shaded area represents the firm's use of long-term plus spontaneous financing in excess of the firm's permanent asset financing needs

Figure: 2.11 Conservative Financing Strategy

Source: Sinha (2009)

Despite the points elaborated above, the level of working capital also depends on the level of sales. This is because sales serve as a source of revenue for every business entity. Sales can influence working capital in three possible ways (Arnold 2008:534-35).

- As sales increase, working capital also increases with the same proportion so, the length of CCC remains the same.
- As sales increase, working capital increases at a slower rate.
- As sales increase, the level of working capital rises in an inappropriate manner, that is, the working capital may rise at a rate quicker than the rate of increases in the sales.

A company with stable sale or growing sale can adopt an aggressive policy because it has a confidence in its future cash inflows and is confident to pay its short-term liabilities at maturity. On the other hand, a company with unstable sale or with fluctuation in the sale cannot think of adopting an aggressive policy because it is not sure about its future cash inflows. In such a situation, the adoption of an aggressive policy is similar to committing suicide. Hence, searching for other methods may be the better choice. A conservative policy implies greater liquidity and lower risk whereas an aggressive policy indicates higher risk and poor liquidity. A defensive current assets policy falls in between conservative and aggressive policies. The current assets policy of most firms may fall between these two extreme policies.

2. 2.7 Profitability and Liquidity Measures

Profitability ratios measure a firm's profits generated from its operations relative assets, equity or sales for a specific period. A company's profitability is of outmost interest to investors because information relating to profitability assists in predicting future returns on invested funds and growth potentials of the company (Berry et. al. 2008). A higher percentage of profitability plays an important role in acquiring external finance for the business because creditors, investors and suppliers do not hesitate to invest their money in such a company (Sinha 2009; Van Horne 2002; Fabozzi & Peterson 2003:733). There are several measures of profitability which a company can use. Below are a few measures of profitability.

Net profit margin (NPM):It measures the percentage of each sale rand remains after deducting interest, dividend, taxes, expenses and costs. In other words, it calculates the percentage of profit a company is earning against its sales per rand. Higher value of return on sale shows the better performance (Gitman 1999).

$$Net\ profit\ margin\ (NPM) = \frac{Earnings\ available\ for\ ordinary\ shareholders}{Net\ sales} \times 100$$

Return on asset (ROA): This ratio explains how efficient a company is at utilizing its available assets to generate profit. It calculates the percentage of profit a company is earning against per dollar of assets (Weston & Brigham 1977:101). A higher value of ROA shows better performance. ROA is calculated as follows:

$$ROA = \frac{Earnings\ available\ for\ ordinary\ shareholders}{Total\ assets} \times 100$$

Gross operation profit: this ratio explains how efficient a company is at utilizing its operating assets. This ratio calculates the percentage of profit earned against the operating assets of the company (Weston & Brigham 1977:101).

$$Gross\ operating\ profit = \frac{Sales - Cost\ of\ sales}{Total\ asset - Financial\ asset}$$

rising interest rates; an entity may be unable to generate enough profits to cover interest obligations (Barry et al. 2008:337; Peterson & Fabozzi 2003:586). It can be calculated as dividing total debt by total asset.

$$\textit{Debt-Equity ratio} = \frac{\textit{Total debt}}{\textit{Total assets}} \times 100$$

2.2.8 Trade-off between Liquidity and Profitability

Different types of financial decisions (investment decision, finance decision, liquidity decision and dividend decision) have to be taken by financial managers at different times. In all aspects of financial management, the finance manager always encounters the dilemma of liquidity and profitability and has to strike a balance between the two (Sinha 2009). Liquidity indicates the ability of the firm to meet its short-term financial obligations when they fall due. Thus the entity must have sufficient cash to pay bills as and when they fall due and also have enough cash reserves to meet unforeseen demands at all times.

Likewise, profitability requires that the funds of a firm be utilized so as to yield the highest returns. It measures the company's profit at a particular point in time relative to sales, equity or assets for that point in time. Hence, liquidity and profitability are conflicting decisions; when one increases the other declines. More profitability leads to less liquidity. The reverse is also true. The major challenge that a finance manager has to face in all financial decisions involves this conflict between liquidity and profitability. Trade creditors of the firm always want the firm to keep the level of short-term assets higher than the level of short-term liabilities; this is because they want to secure their money. Thus trade creditors are always in their comfort zone if the current assets of the firm exceed the current liabilities.

On the other hand, the managers of a company are always in opposition to that. Obviously each manager wants to pay the mature debts but he or she also knows that excess of current assets may be costly as idle resources will not yield any returns to the firm. For example, stocking high levels of inventory increases storage expense. Therefore, managers prefer to keep levels of current assets (cash, inventory, account receivable) to a level which is sufficient to meet current liabilities. Also managers prefer investing the excessive cash to earn some returns. Hence, managers have to decide between two extreme positions; either

they choose short-term investments with low profitability, that is, low return and high liquidity or choose long-term investments (investments in non-current assets such as subsidiaries), with higher returns, that is, high profit margin and low liquidity. However, creditors of the company want managers to invest in short-term assets because they are easy to liquidate but this decreases profitability because of the low interest rate. On the other hand, if managers prefer long-term investments in order to enhance profitability, default lenders have to wait longer and bear some expense to sell these assets because the liquidity of long-term investment is low. Arnold (2008) asserts that, in reality, no managers will opt for both extremes; instead they want to have a balance between profitability and liquidity which will not only fulfil their need of liquidity but also give the required level of profitability.

2.3 REVIEW OF EMPIRICAL EVIDENCE

The concept WCM has been assessed by a couple of studies from the perspective of both developing and developed nations. The pioneer work of Mueller (1953) about corporate working capital and liquidity may be considered as the best-known study in this field (Demirgunes & Samiloglu 2008). The difficulty, compounded because of the lack of any uniformity in defining what is meant by 'working capital', motivated Mueller to study corporate working capital and liquidity literature. Hence, the study was conducted using qualitative methods to answer three problems towards which the paper was directed. The question posed was: 'What is meant by corporate working capital, liquidity and sources of liquidity?' Indeed the study concludes that the term 'working capital' should be co-extensive with current assets and described by its functions as revolving capital. Further, the study notes that the nature of an asset is determined by its function and not by its name. On the other hand, the study pinpoints that the ordinary use of the term 'liquidity' makes it more a problem of marketing than accounting and finance and hence, liquidity is a consequence of the dynamic function of satisfying social wants. Finally, the study concludes that it is through working capital that the source of liquidity is attained.

Grablowsky (1976) examines mismanagement of accounts receivable by small business in US firms and its impacts on success. Prior to his study in 1975, he conducted a survey on US firms' credit policies and reports that most firms moved an account from active in-house collection to the bad debt file between four to twelve months after the due date. The survey also reveals that even if a customer became a slow payer or was occasionally delinquent, many retailers continued to extend credit to him or her. These signify the existence of

collection problems in the US. Considering the above problem, he was interested in studying the relationship of such policy on a firm's success. Grablowsky (1976) concludes there is a significant relationship between various success measures and the employment of formal working capital policies and procedures. Similarly, Walker and Petty (1978) mention that managing cash flow and CCC is a critical component of overall financial management for all firms, especially those that are capital constrained and more reliant on short-term sources of finance. Long et al. (1993) developed a model of trade credit in which asymmetric information leads good firms to extend trade credit so that buyers can verify product quality before payment. Their sample contains all industrial (SIC 2000 through 3999) firms with data available from Compustat for the three-year period ending in 1987 and uses regression analysis. They define trade credit policy as the average time receivables are outstanding and measure this variable by computing each firm's days of sales outstanding as accounts receivable per dollar of daily sales. To reduce variability, they average days of sales outstanding and all other measures over a three year period. They found evidence consistent with the model. The findings suggest that producers may increase the implicit cost of extending trade credit by financing their receivables through payables and short-term borrowing.

On the other hand, Peel and Wilson (1996) examined working capital and financial management in the small firm sector of the UK. They were primarily interested in investigating whether the cause of corporate failure is due to lack of short-term financing or inefficient management of working capital. As a result, they used quantitative survey methods and conclude that for small and growing businesses an efficient WCM is a vital component of success and survival; that is, both profitability and liquidity. They further assert that smaller firms should adopt formal WCM routines in order to reduce the probability of business closure, as well as to enhance business performance. Given these peculiarities, they stress the efficient management of working capital, and more recently good credit management practice as being pivotal to the health and performance of the small firm sector. Smith and Begemann (1997) emphasize that those who promote the working capital theory share that profitability and liquidity comprise the salient goals of WCM. The problem arises because the maximization of the firm's returns could seriously threaten its liquidity, and the pursuit of liquidity has a tendency to dilute returns. This article evaluates the association between traditional and alternative working capital measures and return on investment (ROI), specifically in industrial firms listed on the Johannesburg Stock Exchange (JSE).

The problem under investigation was to establish whether the more recently developed alternative working capital concepts showed improved association with return on investment in relation to that of traditional WC ratios or not. Results indicated that there were no significant differences among the years with respect to the independent variables. The results of their stepwise regression corroborated that total current liabilities divided by funds flow accounted for most of the variability in ROI. The statistical test results showed that a traditional WC leverage ratio, current liabilities divided by funds flow, displayed the greatest associations with return on investment. Well-known liquidity concepts such as the current and quick ratios registered insignificant associations while only one of the newer working capital concepts, the comprehensive liquidity index, indicated significant associations with return on investment. Shin and Soenen (1998) researched the relationship between WCM and value creation for shareholders. The standard measure for WCM is CCC.

The cash conversion period reflects the time span between disbursement and collection of cash. It is measured by estimating the inventory conversion period and the receivable conversion period, less the payables conversion period. In their study, the researchers used net-trade cycle (NTC) as a measure of WCM. NTC is basically equal to CCC in which all three components are expressed as a percentage of sales. NTC may be a proxy for additional WC needs as a function of the projected sales growth. Shin and Soenen (1998) examine this relationship by using correlation and regression analysis, by industry, and WC intensity. Using a Compustat sample of 58,985 firm years covering the period 1975-1994, they find a strong negative relationship between the length of the firm's net-trade cycle and its profitability. Based on the findings, they suggest that one possible way to create shareholder value is to reduce firm's NTC.

To test the relationship between WCM and corporate profitability, Deloof (2003) used a sample of 1,009 large Belgian non-financial firms for a period of 1992–1996. Using correlation and regression tests, he discovered a significant negative relationship between gross operating income and the number of days accounts receivable, inventories, and accounts payable of Belgian firms. Considering the study results, he suggests that managers can increase corporate profitability by reducing the number of days account receivables and inventories. De Chazal (1998) reveals that 60% of enterprises suffer from cash flow problems. Narasimhan and Murty (2001) stress the need for many industries to improve their

return on capital employed by focusing on some critical areas such as cost containment, reducing investment in WC and improving WC efficiency. Ghosh and Maji (2003) attempted to examine the efficiency of WCM of Indian cement companies during 1992–93 to 2001–2002. They calculated three index values: performance index, utilization index, and overall efficiency index to measure the efficiency of WCM, instead of using some common WCM ratios. By using regression analysis and industry norms as a target efficiency level of individual firms, Ghosh and Maji (2003) tested the speed of achieving the target level of efficiency by individual firms during the period of study and found that some of the sample firms successfully improved efficiency during these years.

Lyroudi and Lazaridis (2000) used the Greek food industry to examine the cash conversion cycle (CCC) as a liquidity indicator of the firms and tried to determine its relationship with the current and the quick ratios. The main objective of the study was to investigate the implications of CCC in terms of profitability, indebtness and firm size. The results of their study show that there is a significant positive relationship between CCC and the traditional liquidity measures of current and quick ratios. CCC also positively relates to the return on assets and the net profit margin but has no linear relationship with the leverage ratios. Conversely, the current and quick ratios have a negative relationship with the debt to equity ratio, and a positive one with the times interest earned ratio. Finally, the study concludes that there is no difference between the liquidity ratios of large and small firms.

In the same country, Lazaridis and Tryfonidis (2006) investigated the relationship between WCM and the corporate profitability of listed companies in the Athens Stock Exchange. They conducted a panel study by using a sample of 131 firms listed on the Athens Stock Exchange (ASE) for the period of 2001 to 2004. The result from regression analysis shows that there is a statistically significant relationship between profitability, measured through gross operating profit, and CCC and its components (accounts receivables, accounts payables, and inventory). Considering the results, they concluded that managers could create value for shareholders by correctly handling CCC and keeping each different component to an optimum level.

Raheman and Nasr (2007) studied the effect of different variables of WCM including the average collection period, inventory turnover in days, average payment period, CCC, and current ratio on the net operating profitability of Pakistani firms. They selected a sample of 94 Pakistani firms listed on the Karachi Stock Exchange for a period of six years from 1999

to 2004 and found a strong negative relationship between variables of WCM and profitability of the firm. They found that as CCC increases, it leads to decreasing profitability of the firm and managers can create a positive value for the shareholders by reducing CCC to a possible minimum level. Martinez-Solano (2007) collected a panel of 8872 small- to medium-sized enterprises (SMEs) from Spain covering the period 1996 to 2002. They tested the effects of WCM on SME profitability using the panel data methodology. The results, which are robust to the presence of endogenic, demonstrate that managers can create value by reducing their inventories and the number of days for which their accounts are outstanding. Moreover, shortening CCC also improves a firm's profitability.

On the other hand, Singh and Pandey (2008) made an attempt to study the working capital components and the impact of WCM on profitability of Hindalco Industries Limited for the period of 1990 to 2007. Results of the study show that current ratio, liquid ratio, receivables turnover ratio and working capital to total assets ratio have a statistically significant impact on the profitability of Hindalco Industries Limited.

Samiloglu and Demirgunes (2008) investigated the effect of WCM on firm profitability. In their study, a sample of 5843 Turkish listed manufacturing companies in Istanbul Stock Exchange (ISE) for the period of 1998 to 2007 were analysed under a multiple regression model. Empirical results show that, for the mentioned sample and period, accounts receivables period, inventory period and leverage significantly and negatively affect the profitability of Turkish manufacturing firms, while firm growth (in sales) significantly and positively affects firm profitability. However, it is also concluded that CCC, size and fixed financial assets, have no statistically significant effects on firm profitability of Turkish manufacturing firms for the period of 1998 to 2007.

The traditional relationship between WCM policies and a firm's profitability for a sample of 204 non-financial firms listed on the Karachi Stock Exchange (KSE) for the period 1998 to 2005 was studied by Afza and Nazir (2008). The study reveals a significant difference between WC requirements and financing policies across different industries. Moreover, regression result found a negative relationship between the profitability of firms and the degree of aggressiveness of working capital investment and financing policy. The researchers suggest that managers can increase value if they adopt a conservative approach towards working investment and financing policy.

Falope and Ajilore (2009) used a sample of 50 Nigerian quoted non-financial firms for the period 1996 to 2005. Their study utilized panel data econometrics in a pooled regression in which time-series and cross-sectional observations were combined and estimated. They observe a significant negative relationship between net operating profitability and the average collection period, inventory turnover in days, average payment period and CCC for a sample of 50 Nigerian firms listed on the Nigerian Stock Exchange. Furthermore, they see no significant variations in the effects of WCM between large and small firms.

In the same year, Mathuva (2010) examined the influence of WCM components on corporate profitability by using a sample of 30 firms listed on the Nairobi Stock Exchange (NSE) for the period 1993 to 2008. He used Pearson and Spearman's correlations, the pooled ordinary least square (OLS), and the fixed effects regression models to conduct data analysis. The key findings of his study are that (1) a highly significant negative relationship exists between the time it takes for firms to collect cash from their customers (accounts collection period) and profitability; (2) a highly significant positive relationship exists between the period taken to convert inventories into sales (the inventory conversion period) and profitability and (3) a highly significant positive relationship exists between the time it takes a firm to pay its creditors (average payment period) and profitability.

Amarjit, Nahum & Neil (2011) investigated the relationship between WCM and firms' profitability using a sample of 88 American manufacturing companies listed on the New York Stock Exchange for the period of three years from 2005 to 2007. They primarily sought to extend Lazaridis and Tryfonidis's (2006) findings by testing with the same hypothesis. They find a statistically significant relationship between CCC and profitability, measured through gross operating profit. The study concludes that managers can create profits for their companies by handling CCC correctly and by keeping accounts receivables at an optimal level.

Wajahat and Hammad (2010) conducted a study with the purpose of exploring the relationship between WCP and the profitability of Swedish firms. Furthermore, this study aimed to investigate the nature of the relationship between WCP and components of CCC. For the purpose of their study, the researchers used a sample of 37 listed companies in the OMX Stockholm stock exchange over the period of five years from 2004 to 2008 and six regressions were run on 185 observations in SPSS software. The result of regression analysis

shows that managers cannot change the level of profitability by adopting any of WCP, that is, no relationship exists between WCP and profitability.

Charitou, Elfani and Lois (2011) investigated the impact of WCM on firms' performance for non-financial institutions listed in the Karachi Stock Exchange (KSE- 30). Index. A panel data was used in their study for 21 KSE-30 Index listed firms for the period 2001 to 2010. They obtained their results by using Canonical Correlation Analysis for identifying the relationship between WCM and firms' performance. Their findings show that WCM has a significant impact on firms' performance and conclude that managers can increase the value of shareholder and returns on asset by reducing their inventory size, CCC and net trading cycle. Also firms' overall performance will increase as a result of increased liquidity and time frame for suppliers.

Similarly, Napompech (2012) also examined the effects of WCM on profitability. The regression analysis was based on a panel sample of 255 companies listed on the Stock Exchange of Thailand from 2007 through 2009. The results revealed a negative relationship between the gross operating profits and inventory conversion period and the receivables collection period. He concludes that managers can increase the profitability of their firms by shortening CCC, inventory conversion period, and receivables collection period. However, they cannot increase profitability by lengthening the payables deferral period. The findings also demonstrate that industry characteristics have an impact on gross operating profits.

In conclusion, the literature review indicates that WCM has impacts on the profitability of a firm. Having optimum levels of WC components helps firms to meet their day-to-day operations and are vital for maximizing value and profitability. Hence, cash conversion is the most important measure of WCM efficiency of a firm. Indeed, keeping smaller CCC depends on firms' WCP. This helps a firm to increase its profitability. However, there is still ambiguity regarding the appropriate variables that may serve as proxies for WCM as a whole. For example, in his research, Mathuva (2010) finds that a highly significant positive relationship exists between the period taken to convert inventories into sales and profitability, which finding is contrary to that of Deloof (2003) whose study findings conclude that a negative relationship exists between day sales in inventory and profitability. This, therefore, shows that there is no clear-cut direction of the relationship between any of the variables of WCM and firms' profitability. The differences in the direction of the impact could be

attributable to any one of the following factors: (1) different characteristics of firms per country; (2) differences in the nature of the industries selected in different studies, and (3) differences in the economic conditions for the selected time frames.

Earlier researchers such as Mueller (1953) and Grablowsky (1976) also discovered that there were ambiguities in misinterpretation of working capital. Hence, not incorporating all relevant and most important variables (independent and control) used to measure both working capital and profitability, creates difficulties for comparability of studies conducted in similar areas. Moreover, studies regarding working capital are mostly related to improving models to determine optimal liquidity and cash balance, rather than analysing underlying reasons for relationships between liquidity, WCM practices and profitability. As a result, this study tried to identify relevant variables, which were missed in previous studies.

Unlike the previous studies, this study ran the regression for gross operating profit together with all the selected relevant variables to see their impact on firms' profitability. Including new variables (current ratio and sales growth as a measure of liquidity and profitability) and running the regression by including all variables would enhance the findings and solve the problem of missing important variables, which was observed in previous studies. In general, the inclusion of these relevant variables would fill the gap identified in this study. The other consideration noted in the literature review is that firms in boosting sales can manipulate WCM components. This, however, is not the focal point of this study.

CHAPTER 3

RESEARCH METHODOLOGY

"Research is an organized method for keeping you reasonably dissatisfied with what you have". -Charles F. Kettering

3.1 INTRODUCTION

The intention of this chapter is to provide a brief outline of the broad underlying principle of research methodology and the choice of the appropriate research method for the study in order to address the research questions formulated in section 1.4. Section 3.2 discusses the research design of the study. The subsections discuss data, data source and the sampling design. Section 3.3 describes the data analysis method. The subsections present the different regression models and the variables used.

3.2 SURVEY DESIGN

The study assessed the effect of WCM on the corporate profitability of selected manufacturing listed companies in South Africa. To achieve the research objectives and to test the hypotheses, the study adopted a quantitative research approach. Survey research was chosen as a strategy of inquiry. The use of a survey design in the study has the following benefits: First, a generalization process from sample to population is the intention of a quantitative as opposed to a qualitative research. In this type of research, only one sample of subjects is studied and based upon characteristics of that sample, generalization is made back to the population from which the sample was formerly chosen. Second, it would give a chance for the researcher to produce data based on empirical figures and last, the use of survey design was economically viable. This means, it can produce a large amount of data in a short time with a low cost. Accordingly, the data for the study was collected using structured documentary reviews of companies' financial statements (especially balance sheets and income statements). Further, the survey was cross sectional, in which data is collected at

one point in time. The subsequent sections present a discussion of the structured survey of documents, sampling design and data analysis in an orderly manner.

3.2.1 Data and Data Source

The data for the study was collected using structured documentary reviews of targeted companies' audited financial statements like balance sheets and income statements. The required data for the study was more quantitative, therefore appropriate data could not be collected using simply distributed questionnaires to the company's managers or other concerned bodies. For this reason, reviewing selected companies' balance sheet and income statement items would be the right avenue to determine the coefficient of correlation and regression analysis between WCM and firms' profitability. Additionally, it was preferred for its convenience and cost effectiveness. However, the main problem of using secondary data was the lack of accessibility to relevant sources of information directly from selected companies (lack of willingness) and its reliability.

Considering the above problems and to excel the reliability of data, the data was collected from I-Net Bridge, SARS and BF McGregor. The following ratios were also extracted from I-Net Bridge: (1) days sales in inventory; (2) days sales in receivables; (3) days payables outstanding and (4) current ratios. Ratios extracted from BF McGregor were the debt to equity ratio and the operating profit margin. The other variables such as CCC and dummy variables were calculated from the extracted data.

Consistent with the findings of Lazaridis and Tryfonidis (2006) and Mathuva (2010) who collected financial data of firms listed on respective stock exchanges, this paper collected data exclusively from JSE listed firms (manufacturing industries). The reason for choosing this market was primarily owing to the availability and reliability of the financial statements in that they were subject to mandatory audit by recognized audit firms. Furthermore, firms listed on the stock exchange present true operational results in comparison with unlisted companies (Lazaridis & Tryfonidis 2006). The number of all manufacturing firms across different sectors of the JSE whose data was available for the period under investigation (2008 – 2012) totalled 84 firms. Under these 84 firms were 483 firm year observations for the five-year period starting in January 2008 and ending in December 2012.

3.2.2 Sampling Design

According to ISIC classifications, manufacturing enterprise involves industrial groups or business types such as:

- Manufacture of food products, beverages and tobacco products
- Manufacture of textiles, clothing and leather goods
- Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials; manufacture of paper and paper products; publishing, printing and reproduction of recorded media
- Manufacture of coke, refined petroleum products and nuclear fuel; manufacture of chemicals and chemical products; manufacture of rubber and plastic products
- Manufacture of other non-metallic mineral products
- Manufacture of basic metals, fabricated metal products, machinery and equipment and of office, accounting and computing machinery
- Manufacture of electrical machinery and apparatus not elsewhere classified
- Manufacture of radio, television and communications equipment and apparatus, and of medical, precision and optical instruments, watches and clocks
- Manufacture of transport equipment
- Manufacture of furniture; manufacturing not elsewhere classified; recycling
- Manufacture of furniture and manufacture of jewellery and related articles and other manufacturing enterprises not elsewhere mentioned
- Manufacturing of automobiles

Similarly, choosing the right and appropriate study area for the problem identified may enhance the output of the study and help to achieve its objective. The decision to use manufacturing companies was based on the following two aspects that enhance the validity of the study. First, manufacturing companies represent an appropriate sample in order to analyse WCM. Because all three components of working capital (inventory, account receivable and payable) usually play important roles in the manufacturing sector, comparability of the sample companies will be enhanced. For instance, service companies most probably hold much less inventory and accounts receivable. Consequently, they represent a less reliable source of information for this specific study. Second, most of the previous studies in different countries in relation to this topic were conducted on manufacturing companies like those by Deloof (2003), Zariyawati et al. (2008) and Raheman & Nasr (2007). For this reason, the

researcher believed that manufacturing companies were suitable for the problem under study. The sampling procedure employed in this study was a stratified sampling method based on the afore-mentioned ISIC classifications of manufacturing enterprises. Four differnt types of manufacturing firms were chosen based on the combination of their nature.

Each of four strata was divided into three groups based on companies' turnover[1]. As the researcher discussed in the literature section, the nature and the turnover of the companies are crucial factors that determine and affect WC requirements of a firm. Hence, the researcher believed that stratifying companies based on their nature and turnover was an appropriate technique for this specific study. Indeed, the representativeness of all groups in the sample was increased and it reflected the true proportion of the sample about the population.

However, in designing a sample, basing the sample selection on a comprehensive list of potential respondents who had an equal chance of selection was vital to increasing the representativeness of the samples. Considering the limited time and resource, the researcher selected twenty companies from the stratified population based on the nature of operations and turnover of the companies, using random sampling techniques. Unlike other sampling techniques, the stratified sampling method has the following advantage which led the researcher to use it. First, it improves the accuracy of the sample, that is, it ensures that any differences between the strata are controlled by ensuring that each stratum is proportionately represented. Second, stratified sampling is a tool to reduce selection bias. However, if stratum 1's group is either overrepresented or underrepresented in a sample, selection bias has occurred and the sample will not accurately reflect the larger population. Moreover, a simple random sampling method was used for the following advantages. First, the method gives equal chance for all strata in the study to be included in the sample. Second, it minimizes the existence of sampling biases, and third, the method itself is too easy to use. Accordingly, the study had a total of 100 observations to undertake.

[1] The annual turnover of companies was used as the second base of stratification to enhance the representativeness of the sample data since there was no basis to group companies based on their size such as large, medium and small. Using companies' average turnover for five years (5) the population was segregated into three groups as group X, group Y and group Z. Group X represented companies with turnover from 500,000.00 up to 5,000,000.00; Y 5,000,001.00 up to 10,000,000.00 and Z greater than 10,000,000.00.

3.3 DATA ANALYSIS METHODS

Before presenting the data analysis methods adopted, the study tried to specify the variables and models used for the study. Accordingly, the study identified a total of nine variables including one dependent, four independent and four control variables based on the previous studies in different countries on similar topics: namely, those by Narware (2003), Deloof (2003), Rahemal and Nasr (2007), Zariyawati et al. (2008), Phuong (2010) and Amarjit Gill el at. (2010), and discussed as follows:

Gross operating profitability (GOP) as a measure of the profitability of a firm is used as a dependent variable. It is expressed as:

$$GOP = \frac{Sales - Cost\ of\ sales}{Total\ Assets - Financial\ Assets}$$

Regarding independent variables, average collection period (ACP) was used as a proxy for the collection policy of firms while inventory turnover in days (ITID) was used as a measure for the inventory policy of firms, and second independent variable. Similarly, average payment period (APP) was used as proxy for the payment policy of firms and third independent variable and the last independent variable was CCC which was used as a comprehensive measure of WCM. Current ratio was used as a traditional measure of a firm's liquidity, and as a control variable. In addition, size was another control variable and calculated as Natural logarithm of sales. Debt ratio (DR) was also used as a proxy for leverage and was computed by dividing total debt by total assets, and finally, sales growth (SG) was used as a measure of sales growth and calculated as:

$$SG = \frac{Current\ year's\ sales - Previous\ year's\ sales}{Previous\ year's\ sales}$$

3.3.1 Model Specifications

To analyse the effect of WCM on profitability, the study used the following methods: (1) descriptive statistical analysis wherein a description of features of the data in the study such as mean and standard deviation of each variable is presented; (2) correlation matrix, which measures the degree of association between all the variables under consideration. In essence, the matrix explores whether or not the relationship between variables is positive or negative,

in addition to determining the degree of the association between variables under consideration; and (3) regression analysis is used to gauge the extent to which a unit change in each respective explanatory variable has on profitability, while other independent variables are held fixed. Pooled ordinary least squares method is used in regression analysis, wherein time series and cross-sectional observations are combined in determining the causal relationship between profitability variable and the independent variables used in the study (Pervez & Kjell 2005).

3.3.2 General Regression Model

The effect of WCM on corporate profitability is modelled using the following general regression equation:

$$Y_{it} = Б_0 + \sum_{i=1}^{n} Б_i . x_{it} + \varepsilon \qquad \textbf{Eq. 3.1}$$

Where:

Y_{it} = Gross operating profit of a firm i at time t; i = 1, 2, 3..... 20 firms.

$Б_0$ = Intercept of equation

$Б_i$ = Coefficient of x_{it} variables

x_{it} = The different independent variables for WCM of firm i at time, t.

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

ε = Error term

The study used panel data regression analysis of cross-sectional and time series data. In line with studies by Deloof (2003), Martinez-Solano (2006) and Mathuva (2010), this study determined the effect of working capital on corporate profitability using pooled regression ordinary least squares, wherein each respective variable for all the companies under study and for all the corresponding years was pooled together in a single column in running the ordinary least squares regression models. While some researchers such as Dermirgunes and Samiloglu (2008) and Mathuva (2010) use a fixed effects regression model which, according to Mathuva (2010), explains the variations in profitability within firms, this study used the pooled ordinary least squares regression model which explains the variations in profitability between firms. The choice of the model was underpinned by the fact that the aim of this research was not necessarily to examine variations in profitability within firms but to

examine variations in profitability among all firms in the manufacturing sector listed on the JSE. Pooled regression model is one in which both intercepts and slopes are constant, wherein cross-section firm data and time series data for each variable are pooled together in a single column (Nasr & Raheman 2007).

3.3.3 Specific Regression Models

To avoid a multicollinearity problem, defined by Brooks (2006) as a problem that arises if some or all of the explanatory variables are highly correlated with one another, different model specifications were used. In addition, an endogeneity problem wherein an exogenous explanatory variable impacts on another explanatory variable within the same regression model and therefore distorts the impact of both explanatory variables on the independent variable, the study again employed different model specifications. The above general least square model (Eq. 3.1) was converted into specified variables as follows:

$$\Upsilon_{it} = Б_0 + Б_1(ACP_{it}) + Б_2(ITID_{it}) + Б_3(PDP_{it}) + Б_4(CCC_{it}) + Б_5(CDR_{it}) + Б_6(DR_{it}) + Б_7(SG_{it}) + Б_8(S_{it}) + \varepsilon \quad \textbf{Eq.3.2}$$

Regression model for account receivable

$$\Upsilon_{it} = Б_0 + Б_1(ACP_{it}) + Б_2(CDR_{it}) + Б_3(DR_{it}) + Б_4(SG_{it}) + Б_5(S_{it}) + \varepsilon \quad \textbf{Eq. 3.3}$$

Regression model for inventory

$$\Upsilon_{it} = Б_0 + Б_1(ITID_{it}) + Б_2(CDR_{it}) + Б_3(DR_{it}) + Б_4(SG_{it}) + Б_5(S_{it}) + \varepsilon \quad \textbf{Eq. 3.4}$$

Regression model account payable

$$\Upsilon_{it} = Б_0 + Б_1(APP_{it}) + Б_2(CDR_{it}) + Б_3(DR_{it}) + Б_4(SG_{it}) + Б_5(S_{it}) + \varepsilon \quad \textbf{Eq. 3.5}$$

Regression model CCC

$$\Upsilon_{it} = Б_0 + Б_1(CCC_{it}) + Б_2(CDR_{it}) + Б_3(DR_{it}) + Б_4(SG_{it}) + Б_5(S_{it}) + \varepsilon \quad \textbf{Eq. 3.6}$$

Where:

Υ = gross operating profit

ACP = average collection period

ITID = inventory turnover in days

PDP = payment deferral period

CCC = cash conversion cycle

CDR = current ratio

DR = debt ratio

Size, S = natural logarithm of sales

SG = sales growth

ε = error term

For different cases, the data collected was processed using Statistical Package for the Social Sciences (SPSS) and Eviews software packages where applicable. It is known that different software packages have different features used to generate statistical output even if the results are the same. For the sake of convenience in presenting the regression output and balancing limitations of each package, the researcher used both methods in different cases throughout the analysis part of the study. Hence, for the test of the classical linear regression model (CLRM), both software packages were used together in different cases. The study used descriptive statistics: Pearson correlation coefficient and regression analysis.

Descriptive analyses were used to describe patterns of behaviour or relevant aspects of phenomena and detailed information about each variable. They show the average and standard deviation of the different variables of interest in the study. They also present the minimum and maximum values of the variables that help in gaining a picture about the maximum and minimum values a variable can achieve and process using SPSS.

The study used correlation analysis, specifically Pearson correlation, to measure the degree of association between different variables under consideration which were generated using SPSS package. Similarly, with the help of Eviews software, the study used multiple regression analysis to estimate the causal relationships between profitability variable, liquidity and other chosen variables. The researcher used pooled ordinary least squares to investigate the effect of WCM on corporate profitability and to test the research hypotheses.

For quantitative analysis especially in regression analysis, a pooled regression was conducted since the data has both time series and cross-sectional dimensions. The major benefits of panel data are that it is more useful in studying the dynamics of adjustment, and it is better able to identify and measure effects that are simply not detectable in pure cross-sections or pure time series data. Moreover, many variables can be more accurately measured at the

micro level and biases resulting from aggregation over firms or individuals are eliminated (Brooks 2008:488-489). As mentioned above, for this research OLS (ordinary least square) was used. Therefore, before the regressions were run, tests for fulfilment of basic CLRM assumptions were tested. Consequently, the basic CLRM assumptions tested in this study were normality of the error distribution, linearity, homoscedasticity (equal variance) and multicollinearity (VIF variance inflation factor,).

3.3.4 Diagnostic Tests

Diagnostic tests are robust statistical tests carried out to verify if the data used has met the assumptions underlying the ordinary least squares regression. Where possible, such tests remove problems associated with panel time series data. Some of the problems of panel time series data include heteroskedasticity, multicollinearity, and autocorrelation, among others. The diagnostic tests carried out in the study are detailed in chapter 4.

Test for heteroskedasticity

One of the main assumptions for the ordinary least squares regression is the homogeneity of the variance of the residuals. If the variance of the residuals is non-constant, then the residual variance is heteroskedastic making the regression estimates: namely, coefficients and standard errors, to be biased if the models are not re-specified or variables not transformed. As per equation (Eq. 3.7) below, heteroskedasticity means that the variance of the error term is not constant over time.

$$e_i^2 \neq \sigma_i^2 \quad \text{for all } i \qquad \textbf{E.q 3.7}$$

Test for multicollinearity

The regression models were tested for multicollinearity. The primary concern with multicollinearity is that, as the degree of multicollinearity increases, the regression model estimates of the coefficients become unstable and the standard errors for the coefficients can be inflated. The variance inflation factor (VIF) is used to detect whether one predictor has a strong linear association with the remaining predictors (the presence of multicollinearity). Lazaridis and Tryfonidis (2006) claim that VIF measures how much of the variance of an estimated regression coefficient increases if predictors are correlated. Montgomery, Peck and Vining (2007) suggest that when VIF is greater than 5-10, the regression coefficients are

poorly estimated. In this study, the VIF command when regressing profitability against the explanatory variables was used.

Test of normality

A normality test was conducted for all the independent variables before OLS regression analysis as applied. The Shapiro-Wilk Test was used. It is shown to be a better tool in many statistical conditions correlated to other tests of normality. Moreover, the Shapiro-Wilk Test is most appropriate for small-size samples. For large values of Kolgomorov Smirnov D-statistics, the null hypothesis will be rejected. According to Norusis [15], 'it is almost impossible to find data that are exactly normally distributed'. He advised that for most statistical tests, it is adequate that the data be approximately normally distributed. Data transformation processes such as natural log, square root, square and inverse were implemented to enhance normality. Nevertheless, this study utilized only descriptive statistics and multiple regression analysis.

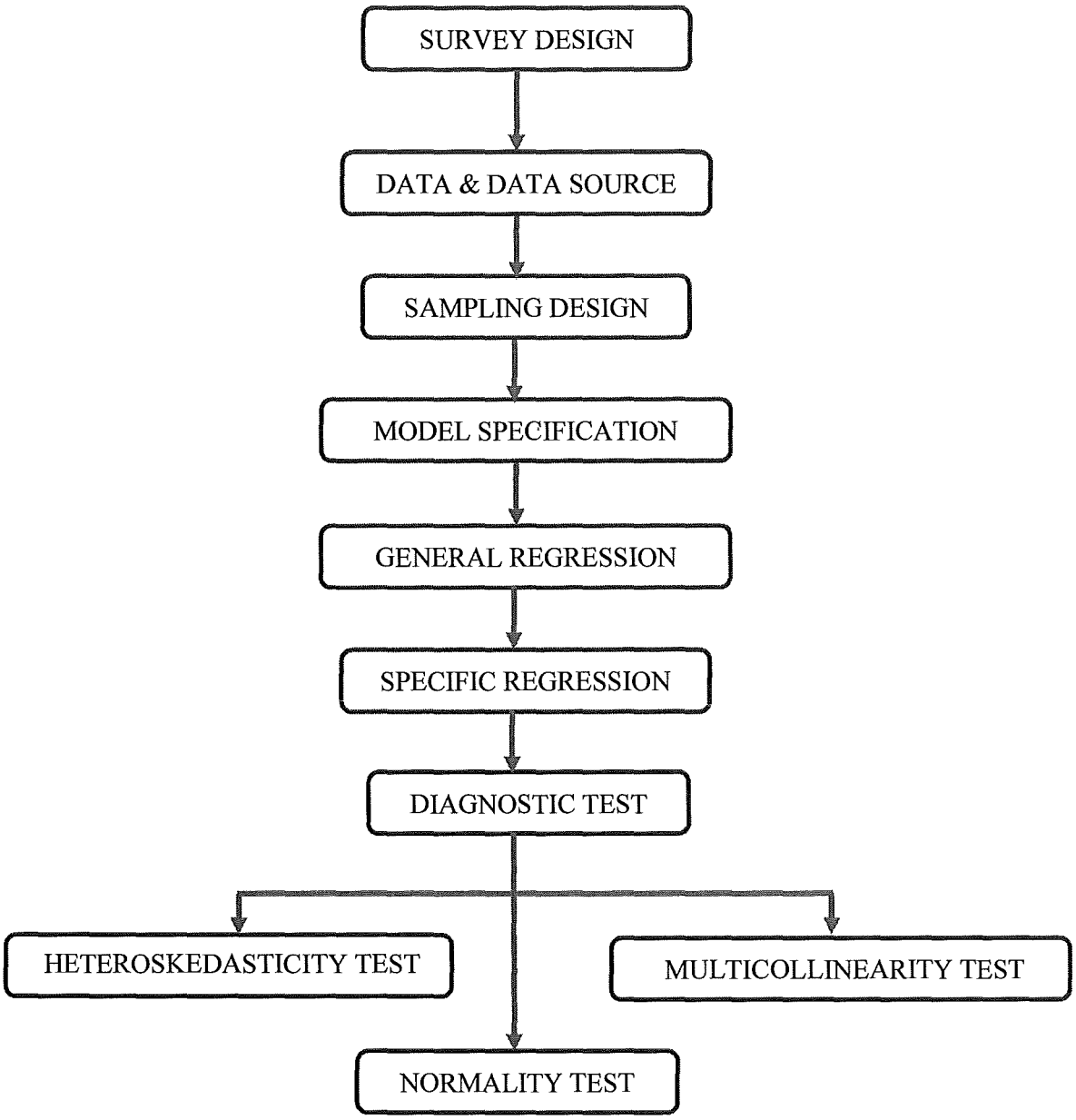


Figure 3.1 A FLOW CHART OF RESEARCH METHODOLOGY

CHAPTER 4

RESULTS

"There are so many men who can figure costs, and so few who can measure values". – Thorstein Veblen

4.1 INTRODUCTION

The former chapter presented the research methodology and the rationale for undertaking the research using a quantitative approach, particularly surveys of documentary analysis. This chapter presents the results and analysis of the findings on the impacts of WCM on corporate profitability. In this chapter, the outcomes of the different methods adopted are presented independently. The research hypotheses are addressed by jointly analysing the results obtained from the different methods used.

4.2 RESULTS OF SURVEY

The main purpose of this study was to investigate the effect of WCM on firms' profitability. The primary data sources to this end were the surveys of documentary analysis of companies' financial statements particularly income statements and balance sheets. By means of companies' income statements and balance sheets, the subsequent discussion presents the results obtained using various statistical tools. Specifically, Section 4.2.1 presents the summary of descriptive statistics of the study followed by the test results for the assumptions of the classical linear regression model (CLRM) in Section 4.2.2. Section 4.2.3 presents the summary of the significance of the model. Pearson's correlation coefficient in Section 4.2.4 and finally the results of multiple regressions are presented in Section 4.2.5.

4.2.1 Summary of Descriptive Statistics for Selected Companies

Table 4.1 below presents the descriptive statistics of 20 selected manufacturing share companies listed on the JSE for a period of 5 years with a total of 100 observations. It shows the mean, median and standard deviation for both the dependent and independent variables used in the study. The table in addition, presents the minimum and maximum values of each respective variable that imperatively gives an indication of how wide ranging each respective variable can be.

Table 4.1 Descriptive Statistics

Variables	Total Number	Min.	Median	Max.	Mean ($\bar{x}$)	Standard Deviation (∂)
Y	100	–0.350	0.26	1.613	0.172	0.203
ACP	100	15.000	33.56	147.000	61.054	24.571
ITID	100	29.000	41.26	196.000	89.764	32.795
PDP	100	35.000	56.33	232.000	99.593	46.736
CCC	100	–32.000	29.73	328.000	136.261	82.571
CDR	100	0.163	1.55	3.971	1.923	0.812
DTR	100	0.060	0.03	1.700	0.472	0.310
SG	100	–1.500	0.76	0.787	0.214	0.192
S	100	5.780	7.98	9.260	8.232	0.624

Source: SPSS output from annual reports of selected manufacturing companies

CCC, which is used as a proxy to determine the efficiency of WCM, shows a median of approximately 30 days (one month) and an average of 136 days (four and half months). The companies under study have an average collection period (ACP) of just over a month (34 days) and on average two months (61 days) with a standard deviation of 25 days. The descriptive statistics reveal that those companies have a payment deferral period (PDP) of about 56 days (approximately two months and on average 100 days (approximately three and half months). The maximum PDP is 232 days and a minimum of 35 days. The descriptive statistics further show an average of 90 days (three months) for inventory turnover in days (ITID) with a median of 41 days. On average, the companies' current ratio (basic measure of liquidity) is approximately 2.1. The highest current ratio for a company in a particular year is 4, with the lowest at 0.2. The debt ratio for companies is quite modest, with a minimum debt used by a company at 6% of equity, maximum at 170% and an average of 47%. The median

of gross operating profit (GOP) is 26%. The GOP also shows a very wide range with a maximum of 161% and a stretching minimum.

4.2.2 Test Results for CLRM Assumption

Three different analyses for the test of CLRM are presented under this subsection. The subsection began with the test results for linearity assumption using the graphic and non-graphic method. This is followed by test results for equal variance (homoscedasticity) and finally, results for the variance inflation factor (multicollinearity) tests.

4.2.2.1 Normality test: graphic and non-graphic

Table 4.2 depicts the non-graphic Kolmogorov-Smirnov (K – S) test and Shapiro-Wilk (S – W) test for normality. The significant levels observed are 0.200 for the K – S test and 0.737 for S – W test. Since both significant levels are greater than 0.05, the sample is normally distributed. The K – S test is based on the empirical distribution function.

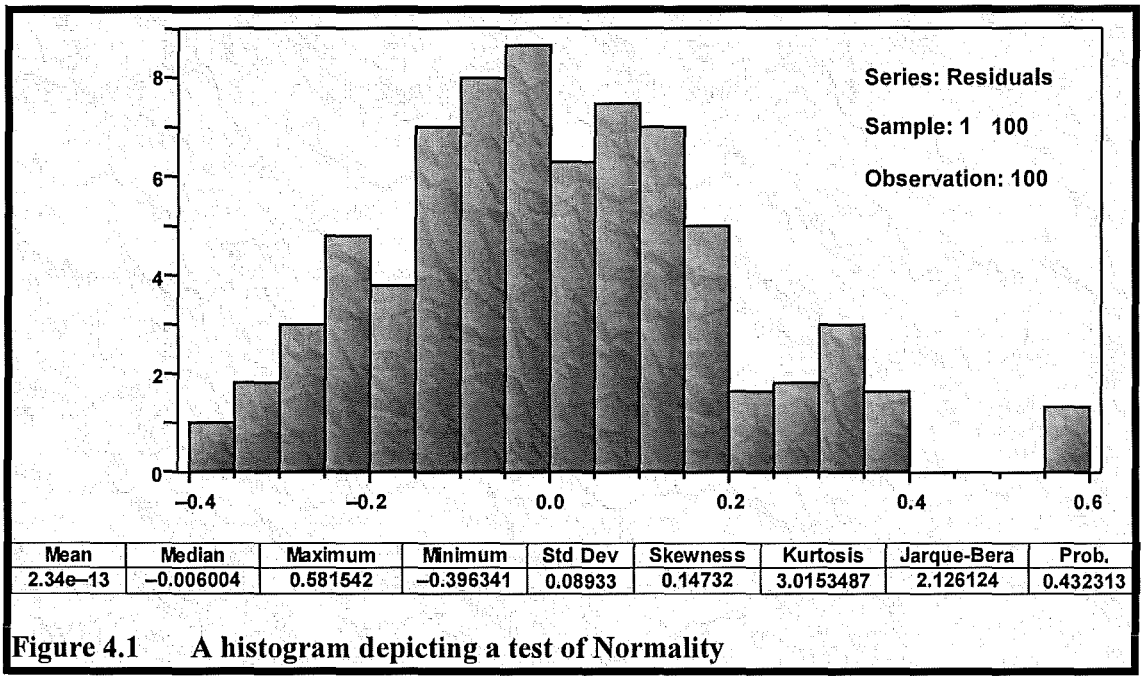
Table 4.2 K – S and S – W Test for Normality

	(K – S)[a]			S – W		
	Statistic	df	Significance	Statistic	Df	Significance
Score	0.075	100	0.200*	0.965	100	0.737

*Lower boundary of the true significance (Lilliefors significance correction)

Source: *Eviews output from 2008 – 2012 annual reports of sample companies*

Figure 4.1 depicts a histogram that assumes a bell-shape. The JB statistic is 2.13 and has a probability of 43.2%. The histogram also shows that both the data and residuals are normally distributed.



Mean	Median	Maximum	Minimum	Std Dev	Skewness	Kurtosis	Jarque-Bera	Prob.
2.34e-13	-0.006004	0.581542	-0.396341	0.08933	0.14732	3.0153487	2.126124	0.432313

Figure 4.1 A histogram depicting a test of Normality

Source: *Eviews output of annual reports of sample firms, 2008 - 2012*

4.2.2.2 Specification test for linearity

Table 4.3 presents the Ramsey's regression equation specification test (RESET). The test gives F-statistic of 1.96 and log likelihood of 2.41. The probability of F-stat is 18.3% and that of chi-square (χ^2) is 14.2 %.

Table 4.3 Ramsey RESET

F-Stat.	1.96	(Prob). F (1.55)	0.183
Log likelihood ratio	2.41	(Prob.) χ^2 (1)	0.142

Source: *Eviews output from annual reports of sample companies, 2008 - 2012*

4.2.2.3 Test results for constant variance errors

As shown in Table 4.4, White's test for heteroskedasticity gives a probability of 19.1% for F-statistic while the probability of *chi-square*(χ^2) for *R-squared* and scaled explained SS are 18.6% and 42.3% respectively.

Table 4.4 White's Test for Heteroskedasticity

F-Stat.	*1.489*	*F-Statistic (Prob.)*	*0.191*
Obs R^2*	*10.032*	*χ^2 (Prob.)*	*0.186*
Scaled exp. SS	*7.248*	*χ^2 (Prob.)*	*0.423*

Source: Eviews output from annual reports of sample companies, 2008 - 2012

In Table 4.5 Breusch-Pagan-Godfrey test for heteroskedasticity gives a probability of 31.4% for F-statistic. The probability of χ^2 for R^2 was 29.1% and that of scaled explained SS is 49.9%.

Table 4.5 Breusch-Pagan-Godfrey Test for Heteroskedasticity

F-Stat.	*1.28*	*F-Stat. (Prob.)*	*0.314*
Obs R^2*	*7.92*	*χ^2 (Prob.)*	*0.291*
Scaled explained SS	*5.47*	*χ^2 (Prob.)*	*0.499*

Source: Eviews output from annual reports of sample companies, 2008 - 2012

4.2.2.4 Multicollinearity test

The multicollinearity test shows that a partial pair wise correlation between the variables lies between ±1. The majority of the variables have pair-wise correlations between – 0.462 and 0.412 as depicted in Table 4.6. In addition, a maximum correlation of 0.403 is between CCC and average collection period (ACP) while a minimum correlation of –0,009 is between current ratio (CDR) and payment deferral period (PDP) with observed current of 0.412.

Table 4.6 Partial Pair Wise Correlation between Variables

Control	Var.	ACP	ITID	PDP	CCC	CDR	DTR	SG	S
Y	ACP	1.000							
	ITID	0.033	1.000						
	PDP	–0.136	0.106	1.000					
	CCC	0.412	0.280	0.044	1.000				
	CDR	0.070	–0.170	–0.462	–0.009	1.000			
	DTR	0.166	0.212	0.220	–0.059	–0.280	1.000		
	SG	–0.158	–0.185	0.122	–0.239	0.081	0.180	1.000	
	S	–0.128	0.432	0.367	–0.352	–0.269	0.382	–0.024	1.000

Numbers rounded to the nearest figure

Source: SPSS output from financial statements of sample companies, 2008 - 2012

In Table 4.7, the payment deferral period (PDP) scores the minimum variance inflation factor (VIF) with a value of 1.22 and a maximum value of 2.72 for VIF is scored by CCC. Likewise, other statistical results of 1.37, 1.49, 1.54, 1.61, 2.01 and 2.37 are recorded respectively for DTR, ITID, SG, CDR, ACP and S.

Table 4.7 Variance Inflation Factor (VIF)

Variables	Co-linearity Statistics	
	Tolerance	VIF
ACP	0.483	2.01
ITID	0.672	1.49
PDP	0.790	1.22
CCC	0.389	2.72
CDR	0.646	1.61
DTR	0.753	1.37
SG	0.662	1.54
S	0.457	2.37

Source: SPSS from financial statements of sample companies, 2008 - 2012

4.2.3 Test Result for Significance of the Model

The regression model predicts the outcome variables at a significance level of 0.000. The significance of the relationship between the dependent variable and all the other independent variables is explained by 25.169 given on F-statistic. Details of this significant model are indicated in Table 4.8.

Table 4.8 ANOVA Linear Regression for Significant of the Model

Model		ANOVA[b]				
		Sum of square	df	Mean of square	F	Significance
1	Regression	1.979	8	0.253	25.169	0.000[a]
	Residual	0.547	58	0.010		
	Total	2.520	62			

Source: SPSS from financial statements of sample companies, 2008 – 2012

In Table 4.9 the statistical result for Durban-Watson is 1.44. Likewise, R has a value of 89% while adjusted R^2 and R^2 are 75% and 79% respectively.

Table 4.9 Model Summary of Linear Regression

Model Summary[b]					
Model	**R**	**(R^2)**	**Adjusted (R^2)**	**Standard Error of the Estimate**	**Durbin-Watson**
1	0.891[a]	0.792	0.749	0.99407	1.435

Source: SPSS from financial statements of sample companies, 2008 - 2012

4.2.4 Results for Pearson's Correlation Coefficient

If one considers the correlation coefficient between survey variables (dependent and independent), ITID is negatively correlated with GOP (Y) by –0.461. Likewise ACP is also negatively correlated with GOP (Y) by –0.637. Also, there is a negative correlation between the profitability of the companies and the following independent variables: PDP, CCC, CDR and DTR. In contrast to SG and S both re positively correlated with GOP (Y) 0.550 and 0.674. Details of this are shown in Annexure 2.

4.2.4.1 Results for multiple regression

GOP is used as an independent variable in estimating and running the regression. Furthermore, all independent variables are run using average collection periods, inventory turnover in days payment deferral periods and CCC including other control variables. Therefore, this section presents two regression outputs, one for the whole regression including all variables together and the results of each dependent variable regressed by independent variables to see the time impact on the output.

Pooled multiple regression for all independent and control variables simultaneously indicate that, except for sales growth (0.157) and firm' size (0.213), all variables have negative coefficients. At the same time, apart from debt ratio p-value (0.258), all variables re significant at 1% degree of freedom. The value of adjusted R^2 is 75.2% while the Durbin-Watson and F-statistics are 1.47 and 25.81 respectively (Table 4.10).

Table 4.10 Result of Multiple Regressions for Pooled OLS

$Y = -1.060 - 0.002\,ACP - 0.002\,ITID - 0.001\,PDP - 0.005\,CCC - 0.050\,CDR - 0.059\,DTR + 0.157\,SG + 0.213\,S$				
Variable	Coefficient	Standard Error	t-Statistic	Probability
C	–1.060	0.296	–3.576	0.0007**
ACP	–0.002	0.001	–2.695	0.0093**
ITID	–0.002	0.001	–3.665	0.0006**
PDP	–0.001	0.0003	–3.877	0.0003**
CCC	–0.005	0.0002	2.185	0.0330*
CDR	–0.058	0.019	–3.037	0.0036**
DTR	–0.059	0.051	–1.142	0.2581
SG	0.157	0.054	2.910	0.0052**
S	0.212	0.036	5.841	0.0000**
R^2	0.783	Durbin-Watson Statistic		1.47
		F-Statistic		25.198
Adjusted (R^2)	0.752	Probability (F-Statistic)		0.000

The result is rounded, *Regression is significant at the 0.05 level **Regression is significant at the 0.01 level

Source: Eviews output from financial statements of sample companies, 2008 - 2012

The regression analysis for each independent variable in the investigation shows a negative coefficient of –0.002 with a p-value of 0.027 for ACP. Likewise, the current ratio has a p-value of 0.0392 and a negative coefficient of –0.047. Also the debt ratio has a p-value of 0.072 with a negative coefficient –0.111. Contrary, debt ratio and current ratio, sales growth and the size of the business entity both show a p-value of 0.0016 and 0.0001 with a positive coefficient 0.201 and 0.159 respectively. The adjusted R^2 is 63.9%, F-statistic of 23.66 and D-W of 1.08 is depicted on Table 4.11.

Table 4.11 Result of Multiple Regression for Model 1

$Y = -1.863 - 0.002\,ACP - 0.047\,CDR - 0.111\,DTR + 0.201\,SG + 0.15\,S$				
Variable	Coefficient	Standard Error	t-Statistic	Probability
C	–1.863	0.320	–2.695	0.0091**
ACP	–0.002	0.001	–2.257	0.0277*
CDR	–0.047	0.022	–2.109	0.00392*
DTR	–0.111	0.060	–1.828	0.0726
SG	0.201	0.061	3.308	0.0016**
S	0.158	0.039	4.106	0.0001**
R^2	0.667	Durbin-Watson Statistic		1.47
		F-Statistic		25.198
Adjusted (R^2)	0.639	Probability (F-Statistic)		0.000

The result is rounded, *Regression is significant at the 0.05 level **Regression is significant at the 0.01 level

Source: *Eviews output from financial statements of sample companies, 2008 - 2012*

Table 4.12 reveals –0.002 coefficient for inventory turnover in days with a p-value of 0.0013. At the same time there s –0.049 and –0.112 coefficient for current and debt ratio respectively with a p-value of 0.0201 and 0.0488. Sales growth and firms' size have 0.173 and 0.194 coefficient having 0.0046 and 0.0000 p-values respectively. On the same Table there is 67.2% adjusted R^2, 1.18 Durbin-Watson and 27.17 F-statistics.

Table 4.12 Result of Multiple Regression for Model 2

$Y = -1.061 - 0.002\ ITID - 0.049\ CDR - 0.112\ DTR + 0.173\ SG + 0.194\ S$				
Variable	Coefficient	Standard Error	t-Statistic	Probability
C	-1.061	0.278	–3.806	0.0003**
ITID	–0.002	0.0004	–3.383	0.0013**
CDR	–0.049	0.021	–2.388	0.0201*
DTR	–0.112	0.056	–2.011	0.0488*
SG	0.173	0.059	2.945	0.0046**
S	0.194	0.034	5.688	0.0000**
R^2	0.698	Durbin-Watson Statistic		1.18
		F-Statistic		27.17
Adjusted (R^2)	0.672	Probability (F-Statistic)		0.00000

The result is rounded, *Regression is significant at the 0.05 level **Regression is significant at the 0.01 level

Source: *Eviews output from financial statements of sample companies, 2008 - 2012*

The regression result for payment deferral period on Table 4.13 shows that there is –0.001141 coefficient with a p-value of 0.0006. Similarly, current and debt ratios have –0.077 and –0.137 coefficients with a p-value of 0.0006 and 0.0136 respectively. The remaining control variables sales growth and firms' size both have a p-value of 0.0000 with 0.241 and 0.199 coefficient respectively.

Table 4.13 Result of Multiple Regression for Model 3

$Y = -1.082 - 0.001\ PDP - 0.077\ CDR - 0.137\ DTR + 0.241\ SG + 0.199\ S$				
Variable	Coefficient	Standard Error	t-Statistic	Probability
C	–1.082	0.274	–3.939	0.0002**
PDP	–0.001	0.0003	–3.637	0.0006**
CDR	–0.077	0.021	–3.638	0.0006**
DTR	–0.137	0.054	–2.545	0.0136**
SG	0.241	0.053	4.528	0.0000**
S	0.199	0.034	5.908	0.0000**
R-Squared (R^2)	0.704	Durbin-Watson Statistic		1.02
		F-Statistic		28.16
Adjusted (R^2)	0.679	Probability (F-Statistic)		0.00000

The result is rounded, *Regression is significant at the 0.05 level **Regression is significant at the 0.01 level

Source: *Eviews output from financial statements of sample companies, 2008 – 2012*

A compressive measure of firms' WCM, CCC has a coefficient of –0.002 and a p-value of 0.0500. Of the four control variables current and debt ratio has –0.058 and –0.149 coefficients respectively with a p-value of 0.0143 and 0.0147. The remaining control variables sales growth and firms' size have 0.229 and 0.171 coefficient with a p-value of 0.0006 and 0.0002 respectively.

Table 4.14 Result of Multiple Regression for Model 4

$Y = -0.986 - 0.0022\,CCC - 0.057\,CDR - 0.149\,DTR + 0.229\,SG + 0.171\,S$				
Variable	Coefficient	Standard Error	t-Statistic	Probability
C	–0.986	0.359	–2.748	0.0079**
CCC	–0.002	0.002	–0.931	0.0500*
CDR	–0.057	0.022	–2.525	0.0143*
DTR	–0.149	0.059	–2.514	0.0147*
SG	0.229	0.063	3.625	0.0006**
S	0.171	0.043	3.997	0.0002**
R-Squared (R^2)	0.644	Durbin-Watson Statistic		0.943
		F-Statistic		21.32
Adjusted (R^2)	0.614	Probability (F-Statistic)		0.0000

The result is rounded, *Regression is significant at the 0.05 level **Regression is significant at the 0.01 level

Source: Eviews output from financial statements of sample companies, 2008 – 2012

4.3 ANALYSIS OF DESCRIPTIVE STATISTICS

Table 4.1 presents descriptive statistics for 20 companies listed on JSE for an interval of five years (2008 to 2012) with a total of 100 observations. The GOP scores an average of 17.2% of total assets with a standard deviation 20.3%. This implies that profitability can deviate from the average to both sides by 20.3%. Thus, the deviation can be either an increase or a decrease in GOP. The maximum value of GOP for a firm in a year is 61.3% while the minimum is –3.5%. On the average, CCC used as a proxy to check the efficiency in WCM is 136 days with standard deviation of 83 days approximately.

Companies have a maximum of 328 days for converting their overall activities, which is very large. A minimum time of –32 days was recorded for such conversion; this is unrealistic. On average, the period taken for companies to receive payments from the outcome sales is 61 days with a standard deviation of 20 days. This implies that ACP can be shortened by 20 days or in certain instances increased by 20 days. The minimum period for this same purpose is 15 while the maximum is 147 days. In selling inventory, a firm takes an average of 90 days with a standard deviation of 33 days. The firm takes a minimum of 29 days (fairly small) and a maximum 196 days. Likewise, business entities take an average of 100 days to settle their

purchases with a standard deviation of 47 days. The minimum waiting period is 35 days and this is usual for a 30 day credit period. The maximum period is 196 days.

Current ratio, a traditional measure of liquidity is used to assess the liquidity of the firms. The results show a maximum current ratio of 4:1 for a particular year and a minimum of 0.2:1. The average current ratio recorded is 1.9:1 with a standard deviation of 0.8:1 for manufacturing firms listed on JSE. An acceptable current ratio varies from industry to industry, but a current ratio of 2:1 is generally regarded as an acceptable norm for all entities. If a firm's ratio is in the range of 2:1, it is considered as a good short-term financial prospect. Therefore, the average current ratio of 1.9:1 for a particular year is slightly lower thanthe accepted ratio.

Conversely, the debt-equity ratio in relation to profitability used as a control variable scores an average of 47.2% with a standard deviation of 31%. The maximum debt-equity ratio is 170%, which is unusual because of debts being greater than assets. However, there is the possibility of the equity of the company being negative. The minimum level of the debt-equity ratio is 6%. This means that the firm uses a little debt as compared to equity in its operation. A debt-equity ratio of over 100% means that an entity has used more borrowed funds than equity to finance its assets. A larger portion of debt financing may affect the solvency of a company in times of rising interest rates, as an entity may be unable to generate profits to cover interest obligations (Sinha, 2009). The reverse is also true.

The sales growth (S) used as a control variable gives an average growth rate of 21.4% with a standard deviation of 19.2% (Table 4.1). The minimum and maximum values of sales growth recorded are –15% and 78.7% respectively. Finally, checking firms' size against profitability, natural logarithm of sales is used as a control variable. The mean value of log of sales is 8.23 and standard deviation of 0.62. The minimum value of log of sales for a business entity in a year is 5.78 and a maximum value is 9.26 (Table 4.1).

4.4 ANALYSES FOR THE TEST OF CLRM ASSUMPTIONS

Four tests for CLRM assumptions were analysed in this study. These are tests for normal errors, linearity, homoscedasticity and multicollinearity.

4.4.1 Test for Normal Errors

In Figure 4.1, a greater number of the distributions is within the borders of the bell-shaped histogram with a mean of 2.34×10^{-13} and standard deviation 0.089. Therefore, the Jarque-Bera statistic of 2.13 is insignificant. This implies that the error terms are normally distributed. The p-value on the normality test is bigger than 5%. This signifies that the null of normality is not to be rejected at a 5% level. For both the Kolmogorov-Smirnov (K-S) and Shapiro-Wilk (S-W) tests, if the test is not significant or above 0.05, the data is normal. With the K-S test, the p-value of 20% is quite above the standard 5% level of significance. This shows a normal distributed data. Further, the 73.7% p-value for the S-W test implies that the error terms are normally distributed and the data is normal.

4.4.2 Linearity Test

Table 4.3 F and the chi-square versions of the linearity test show that there is no apparent non-linearity in the regression equation as the test results of each is greater than 5%. The F-statistic scores a value of 18.3% and that of chi-square is 14.2%. As a result of the above scores, the researcher concluded that the linear model for the study is suitable.

4.4.3 Analysis of Test of Constant Variance Errors

Two approaches were used to test for homoscedasticity. These are White's and the Breusch-Pagan (B-P) test for homoscedasticity. Three different types of tests for heteroskedasticity were presented using White's test (Table 4.4). The chi–square and F versions of the test statistic give the same conclusion in each case. The p–values are considerably in excess of 5%. This is an indication of no evidence of the presence of heteroskedasticity (Larsen & David, 2004). Conversely, the B–P test indicates that both the F and Chi–Square test statistics arrive at a similar conclusion (Table 4.5). Again, Table 4.5 shows that there is no evidence for the presence of heteroskedasticity, since the P–values are appreciable in excess of 5%. Further, the p–value of 31.4%, 29.1% and 49.9% respectively for F–stat, R^2 and scaled explained SS shows that the regression of the residuals on the anticipated values reveals insignificant heteroskedasticity at 1.5 and 10 % significance levels.

4.4.4 Multicollinearity

Using partial pair wise correlation, the test for multicollinearity revealed that there is no correlation coefficient above ± 50%. The correlation of –46.2% observed is between current ratio and the payment deferral period was the only highest correlation observed (Table 4.6).

However, this is not an austere issue, when compared to the standard of more than 80% coefficient (Gujarati 2004). For a stronger affirmation and more efficient technique, the variance inflation factor (VIF) was run (Table 4.7). This test was to verify the absence of multicollinearity since there were no embellished pair wise correlation values of more than 10 score. From the above, it can be deduced that all the tests generally are attestations to the fact that the model used is not sensitive to problems of violation to CLRM assumption.

4.5 TEST OF SIGNIFICANCE OF THE MODEL

ANOVA was used to test the significance of the model. The linear regression adds up to the fact that the regression model presumes the outcome varies significantly with the p-value of (0.000). This shows that the overall model employed is good, in predicting the outcome variable. The R^2 of the GOP (dependent variable) is 79.2% which, explained by its independent variables, is very large. In conclusion, the regression model employed for the study is highly elucidated by the overall model signifying the study.

4.6 ANALYSIS OF PEARSON'S CORRELATION COEFFICIENT

The analysis of correlation results between the ACP and GOP (Annexure 2) indicated a coefficient of –0.659, with p-value of (0.000). This shows that the result is highly significant at $\alpha = 0.01$ level of significance. Thus increasing ACP will negatively influence the profitability of the firm. Correlation between ITID and GOP also gives the same outcome. The value of the correlation coefficient is –0.492 with p-value of (0.000). Likewise, this shows that the result is highly significant at $\alpha = 0.01$ level of significance. The implication is that the company in selling inventory takes more time. These delays adversely affect the profitability of the company.

The same trend of correlation results was indicated PDP. The correlation coefficient is negative – 0.049 with a p-value of 0.723

but insignificant. This shows that the longer the time taken by a company to settle its bills, the less profitable that company will be. Conversely, the negative relationship between PDP and profitability is consistent with the theoretical view. Thus, less profitable business entities wait longer to settle their bills. In that case, PDP policy affects the profitability of a company and vice versa. An alternative explanation for a negative relationship between PDP and profitability could be that firms wait too long to pay their accounts payable. Thus, the entity generally extends this period to be longer than ACP because the cash that is received from

ACP is often used to settle trade payables. The longer the PDP, the more time is available for an entity to generate cash to settle its trade payables. On the other hand, speeding up the settlement of trade payables may increase the profit margins of the business entity. Thus, firms receive a substantial amount of discount as a result of prompt payment of trade payables.

CCC, the most comprehensive measure of WCM, also has a negative correlation coefficient – 0.569 with the p-value of (0.000). Unlike, PDP it is significant at $\alpha = 0.01$. This implies that the profit margins of the company will increase with a decrease in the company's CCC. Generally, for a company to have a good position of liquidity depends upon the company's policy of lowering CCC without increasing cost. By analysing the results, a firm stands a greater chance of managing its working capital efficiently by reducing these time periods. This efficiency will lead to increase in profitability. In summary, the above discussion indicates that lengthening the period to settle trade payables, keeping products in stock for a shorter period and collecting payments from customers earlier will lead to an increase in the company's profitability.

The traditional measure of liquidity, current ratio has a significantly negative relationship with profitability as measured by GOP with the coefficient of correlation of –0.610 and p-value of (0.000). This is significant at $\alpha = 0.01$. This indicates an inverse relationship between liquidity and profitability. Therefore, manufacturing companies need to ensure a trade-off between these two measures. Meanwhile, with DTR used as a proxy for leverage of the firm, The Pearson correlation analysis indicates a positive relationship between GOP and DTR with a correlation coefficient of 0.043. However, the p-value is insignificant.

With reference to the control variables, SG and S of the company are significant. Corporate profitability is positively associated with SG of a business entity. The coefficient of correlation is 0.580 with p-value of (0.000) which is highly significant at $\alpha = 0.01$. This implies that the profitability of the firm increases as SG increases. Ignoring the positive significant association that exists between GOP and logarithm of sales (the measures of size) can be detrimental. Hence, the result does not change if the logarithm of sales is used to measure the size. The coefficient of correlation is 0.652 with a p-value of (0.000) and the result is highly significant at $\alpha = 0.01$ (Table 4.10). This is in line with the theoretical view that increasing sales generates higher profit margins. In summing up, the above analysis

shows that, significantly, sales growth and size of the firm are ascendant factors of corporate profitability.

Conversely, Pearson's correlations reveals a significant positive association between ACP and CCC with a correlation coefficient of 0.627 and a p-value of (0.000) (Table 4.10). This ratio is slightly significant at $\alpha = 0.01$, which means that if a company takes more time to collect proceeds from credit sales due flexible credit policies, it will increase its CCC. There is also a positive association between ITID and CCC, which means that CCC will increase as well if the firm takes long selling its inventory. The correlation coefficient is 0.475 with the p-value of (0.000) showing highly significant at $\alpha = 0.01$a. This implies that CCC will decrease accordingly if a firm lowers the time to convert raw materials and goods in process to finished goods. Unlike the above output, PDP and CCC have a negative association. The coefficient of correlation is –0.063 with a p-value of (0.060) which is highly significant at $\alpha = 0.10$. This implies that if a firm takes more time to settle its trade payables than the time taken to collect and to sell inventory, CCC will decreased.

In general, these negative associations between CCC, ACP, PDP and ITID with the profitability of firms are consistent with the literature review and have significant impact on the profitability of firms (Mathuva, 2010). The results of the correlation analysis indicate that, as far as manufacturing companies listed on JSE are concerned; WCM strongly and significantly affects their profitability.

4.6.1 Analysis of Multiple Regression

Two regression outputs are analysed under this section. The first part consists of the whole regression that includes all variables together. The second part is made up of separate analysis on the results of each dependent variable regressed by independent variables to see the time impact on the output and possible associations existing between the variables. The overall regression equation shows negative association between ACP, ITID, PDP and CCC with profit margin measured by GOP (Table 4.11). This relationship is in line with the literature that a decline in the working capital component including CCC generates more profits for a firm. All the independent variables have a negative coefficient of correlation and the result is highly significant for ACP, ITID, PDP and CCC at $\alpha = 0.01$ level of significance. Therefore reducing the components of working capital increases profitability as a measure of efficiency CCC (Weston & Brigham 1977:690; Chiou et al. 2006; Sinha 2009:419).

Further analysis of the overall regression indicates that companies with higher levels of liquidity (current ratio) are expected to post low levels of profitability with a very high level of significance. The reverse is also true. The coefficient of correlation is –0.053 with a p-value 0.0038 which is highly significant at $\alpha = 0.01$. This indicates that a company's profitability has a negative relationship with liquidity. Relating to the above analysis, Arnold (2008) asserts that liquidity and companies' profitability have a negative relationship.

However, he further laments that choosing between these two extremes is a difficult task for financial managers. Unlike CDR, regressing DTR as a measure of companies' leverage reveals that increasing a firm's debt causes a decline in the profitability of the firm. Although the regression coefficient is –0.056, the p-value indicates the result is insignificant. However, Deloof (2003) is of the view that when the leverage of a firm increases; it adversely affects its profitability when financial DTR is used as a proxy in determining the leverage of the firm. Meanwhile, for the sample of manufacturing companies listed on JSE, the result is statistically insignificant.

Likewise, the regression indicates that the larger the company (measured using natural logarithm of sales) the higher the profitability with a very high level of significance. The regression produces a correlation coefficient of 0.312 with a p-value of (0.000) which is strongly significant at $\alpha = 0.01$. The coefficient (0.312) is higher from all the output and this signifies that the size of the business entity plays a vital role in determining the firm's profitability. This affirms the theoretical view of the larger the firm, the higher the economics of scale and good will in the market. Applying these market diversifications is the right avenue as they increase sales and maximize profitability. Conversely, SG is statistically significant where GOP rises as sales increase (Table 4.11). The result indicates that SG has a positive correlation coefficient of 0.161 with a p-value of 0.0052 at $\alpha = 0.01$ level of significance.

Generally, the outcome of the regression makes economic sense since if all coefficients are zero then a company would have negative results, that is, gross GOP = –1.070. The coefficient of multiple determinations (adjusted R^2) is the percentage of the variance in the dependent explained separately or jointly by the independent variables and is 74.7%. C is the intercept of the y-axis, which is equal to the amount the dependent (y) will be when all the

independent variables are zero. The value of C is –1.070; the probability of the coefficient is significant with a p-value of 0.0007. The F statistic was used to test the significance of R. The results from Table 4.10 indicate that the model is fit with F-statistics 26.30 with a p-value of 0.000 which is highly significant at $\alpha = 0.01$. From the above information, the researcher concludes that at least all of ACP, CDR, DTR, SG and S (log of sales) is related to GOP (ϒ).

The outcome of regression model 1 is presented in Table 4.11. It shows that the coefficient of ACP is –0.003 with a p-value of 0.0277 which is significant at $\alpha = 0.01$. This implies that the rise or decline in ACP will significantly affect profit margin of the company. The above analysis is consistent with the work of Peterson and Fabozzi (2003) who lament that increasing ACP has an opportunity cost and credit loss, while increasing the sales of a firm. Therefore, it is wise to say, increasing ACP increases credit losses which in turn reduce profitability and vice versa. Likewise, the finding is consistent with that of previous researchers who f negative relationship between accounts receivables and corporate profitability (Akoto et al 2013; Amarjit et al. 2010; Deloof, 2003; Raheman & Nasr, 2007; Lazaridis & Tryfonidis, 2006; Falope & Ajilore 2009). The outcome of the regression for CDR (liquidity measure) has a correlation coefficient –0.057. This indicates a negative association between CDR and profitability. The p-value 0.0392 shows that the coefficient is significant at $\alpha = 0.01$.

Table 4.11 again shows that DTR, which is used as a proxy for leverage; from analysis of regression is negatively related with GOP. The correlation of coefficient is –0.121 with a p-value 0.073, but only marginally significant at $\alpha = 0.01$. This means that increasing DTR results in a decline in the profitability of the company. Likewise, log of sales used as a proxy for the size of a company shows a significant positive association with profitability. This means that the bigger the company the more profitable the company as compared to companies of a smaller size with the coefficient of correlation and a p-value of 0.231 and 0.0017 respectively. In general, having the above coefficient, the regression equation makes ϒ have a value of –0.673 and –0.871 if all coefficients on variables are constant and zero respectively. This indicates that the result of the regression has economic meaning for the profitability of a company. Table 4.12 shows that the intercept, C, has a value of –1.071 that is also highly significant.

The coefficient for ITID is negative and highly significant at $\alpha = 0.01$ with the coefficient of – 0.003 and a p value of (0.003). The implication of the coefficient is that the increase or decline in ITID significantly affects the profitability of a company. The interpretation is that, taking too much time to sell inventory adversely affects the profitability of a firm. The outcome is consistent with the previous studies, Raheman & Nasr (2007) and Garcia & Martinez (2007). Moreover, all the other variables significantly affect profitability as in the case of the first model of regression. However, the first regression model gives – 0.114 with a p-value of 0.0488 which is significant at $\alpha = 0.01$. Whereas increase in sales increases the profitability of the firm, other control variables such as CDR and SG have a significantly negative and positive effect on the profitability of a firm respectively.

Table 4.13 reveals a negative relationship between GOP and PDP. The coefficient PDP and the intercept, C is – 0.001 and –1.078 respectively. The coefficient is negatively and highly significant at $\alpha = 0.01$. This implies that an increase or decrease in PDP significantly affects the profitability of a company. However, this finding is inconsistent with the work of Lazaridis and Tryfonidis (2006) who indicate that there is a positive relationship between PDP and profitability. Although, the finding of this work differs from the work Lazaridis & Tryfonidis (2006), it is similar to that of Mathuva (2009), Karaduman et al. (2010) and Eljelly (2004) who find a strong negative relationship between PDP and profitability. The negative relationship between PDP and profitability indicates that the less profitable companies have longer PDP. Similarly, all other variables significantly affect the entity's profitability. All of the variables are significant at $\alpha = 0.01$. However, SG and size (log of sales) positively affect the company's profitability while other control variable like CDR and DTR negatively affect profitability which is strongly significant at $\alpha = 0.01$.

The variable used as a popular measure of efficiency of WCM is CCC. In regression model 4, CCC is the independent variable, and the result in Table 4.15 indicates that CCC has a negative coefficient of correlation at a significance level of $\alpha = 0.05$. This is an indication of a negative relationship between CCC and companies' profitability. This outcome is balanced against the preview studies of one African country (Nigeria) where the findings of Garcia and Martinez (2007) reveal a strong negative association between profitability and CCC as a measure of WCM efficiency. However, the finding of this study differs from the outcome of Amarjit et al. (2010). Their work shows a positive relationship between CCC and profitability. All the other variables, CDR, DTR, SG and size significantly affect firms'

profitability at 0.01 levels of significance. The correlation coefficient of CCC is –0.002 with a p-value 0.05, highly significant at $\alpha = 0.05$. This implies that the increase or decrease in the CCC significantly affects a firm's profitability.

Testing of hypotheses

Regarding the hypotheses of this study, the null hypothesis was accepted based on the following:

- Managing working capital efficiently significantly affects the profitability of firms. The outcome of the analysis of results supports the null hypothesis that managing ACP, ITID and PDP efficiently to barest minimum or reasonable range increases profitability. Likewise, there is a negative relationship between CCC and the profitability of a firm. The combined and independent regression model of CCC supports that it is negatively associated with corporate profitability with a highly significant p-value.

- Second, with the control variables, it is found there is a negative relationship between the liquidity and profitability of a firm. CDR, the most important and traditional measure of liquidity, affects profitability and there is a strongly negative relation between CDR and profitability. Therefore, it is important for the sample firms to set a trade-off between these two components so that neither the liquidity nor the profitability suffers. Also as the size (natural logarithm of sales) increases, it leads to a rise in the profitability of the firm. Here the regression output and the p-value are very highly significant for all cases implying that manufacturing companies listed on JSE have their profit margins highly influenced by the size of the companies.

- However, concerning DTR, even though the first combined regression model indicates negative correlation coefficient, which signifies that, when the debt financing increases, profitability goes down, the p-value that measures the significance level of the coefficient is almost zero. Meanwhile, with the help of the individual regression output, the study fully accepts that companies' profitability would decline while companies' leverage increases with a strong significance level. The implication is that the cost of debts increases in accordance with increasing debt financing. As a result, the profit margins of the companies decline. This is in conformity with the work of Salawu (2009) who indicates that the negative association between DTR and profitability has

implications on a company's financial stability as higher DTR ratio makes the corporate sector more vulnerable to change conditions and may lead to wide economic impacts of financial meltdowns.

4.7 CONCLUSION

This study explored the effect of WCM on profitability given the dilemma that exists between liquidity preservation and profitability. This perplexity is that increasing the length of CCC may increase a firm's profit margins provided it leads to an increase in sales. Basically, a flexible trade credit policy that allows customers to assess product quality before paying and the reduction in risk of out-of-stock, which decreases the risk of business operation interruption, a firm's profitability may, however, decline as the length of CCC elongates. These may occur particularly in instances where the rate of costs of higher investment in working capital increases faster than the benefits of holding more inventories and/or granting more trade credit to customers. Thus, in examining how South African firms are impacted by WCM components, corporate managers will be better equipped in designing policies that ensure the enhancement of their firm's profitability.

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

"Research can only present data about the past. No one seriously believes that people's answers to hypothetical questions about the future accurately represent future behaviour; they merely represent a current attitude, which may or may not be translated into future behaviour". - Stephen King

5.1 CONCLUSIONS

In terms of the normal operations of a business entity, most managers pay less attention to WCM than to capital budget and capital structure in financial management. WCM relates to the source and application of short-term capital. Improper management of working capital by allocating too much of it reduces the benefits of short-term investment. However, inadequate working capital may cause the company to miss profitable investment opportunities and/or suffer short-term liquidity crises. This may also lead to the degradation of company credit, as it cannot respond effectively to temporary capital requirements. Exactly how much working capital a firm should reserve to strike a balance between meeting unforeseen capital requirements and avoiding inefficient management of capital is determined not only by its own characteristics but also by various outside factors. Many such factors have been rarely discussed in the literature about how business indicator, industry effect and company characteristics such as debt-equity ratio, size of company, growth, operating cash flow, and performance of the company may affect WCM.

The objective of this study was to examine the statistical significance between firms' WCM and profitability. In light of this objective, a quantitative research method was adopted to test the series of hypotheses. To be more precise, a survey of documentary reviews of companies' audited financial statements was used. A stratified sampling design was adopted based on the turnover and nature of business entities. In order to avoid biases and also represent firms from

each sub-classification (stratum) within the manufacturing sector, firms were chosen based on a simple random sampling method from each stratum.

Consequently, a sample consisting of 20 manufacturing business entities for the period of five years (2008–2012) was selected. This numbered 100 observations. The data was analysed quantitatively using Pearson's correlation and OLS regression analysis. The descriptive statistics gave a fluctuating GOP with its minimum and maximum value of –0.350 and 1.613 respectively. On average, GOP has a value of 0.172 with a standard deviation of 0.203. Used as a comprehensive measure of working capital efficiency, CCC, on average, takes 136 days, with a minimum of –32 days and maximum of 328 days. The minimum value took a negative value whenever PDP overstate was above the sum of both ACP and ITID. The data was stated for the basic CLRM assumptions before it was entered into the regression model. This was vital for the regression in order for the data to fulfil all tested assumptions for OLS.

The study indicated that most manufacturing entities have large amounts of cash invested in working capital. Therefore, it can be expected that the manner in which the working capital is managed will have a significant impact on the profitability of those business entities. The study found a significantly negative association between corporate profitability that is measured by GOP and ACP, ITID, PDP and CCC for a sample of listed manufacturing companies on JSE. Likewise, less profitable firms will pursue a decline of their trade receivables in an attempt to limit the cash gap in their CCC. This is attributed to a negative relationship between accounts receivables and firms' profitability.

The outcome of the study further suggested that managers can create value for their shareholders by decreasing the number of days' ACP and inventories to a realistic minimum level. Furthermore, a sudden decline in sales coupled with mismanagement of inventory will lead to the lock up of excess capital at the expense of profitable operations owing to the negative relationship between ITID and profitability. The negative relationship between PDP and profitability is in conformity with the view that less profitable companies wait longer to settle their trade payables. Conversely, CCC used as a measure of efficient WCM shows that elongating CCC decreases profitability. Hence, managers of business entities can increase their firms' value by decreasing CCC to an optimum level or managers can increase the profit margins of their firms by managing CCC efficiently and keeping each different component (ACP, PDP and ITID) within a reasonable range.

In general, the study adds to existing literature such as that by Shin and Soenan (1998), Deloof (2003), Eljelly (2004), Lazaridis and Tryfonidis (2006), Raheman and Nasr (2007), Falope and Ajilore (2009) and Mathuva (2010) who find a strong negative relationship between the measures of WCM including the average collection period, inventory turnover in days, average payment period and CCC with corporate profitability. Furthermore, and in line with findings by Nasr and Raheman (2007), empirical results of the study show that current ratio has a negative relationship with profitability, showing that an inverse relationship exists between the liquidity and profitability of South African firms. While the study shows that reducing current ratio increases the profitability of South African firms, it must be noted that disregarding liquidity may result in insolvency and bankruptcy. Thus, given the trade-off between profit maximization and liquidity preservation, corporate managers need to minimize current ratio to the extent that it maximizes profits without adversely affecting firm solvency.

Contrary to findings by Brabete and Nimalathasan (2010) and in line with findings by Salawu (2009), the study found that a negative association exists between profitability and debt to equity. This negative relationship between debt to equity ratio and profitability has implications for financial stability as the higher debt to equity ratio makes the corporate sector highly vulnerable to changes in economic conditions and may result in an economy-wide impact of a financial crisis. In essence, what this means is that management should strive to identify the optimal capital structure of the firm and maintain it since it represents the point at which the market value of the firm is maximized.

5.2 RECOMMENDATIONS

As a result of the study findings the researcher recommended the following points:

- The negative relationship between firms' gross operating profit and average collection period will decrease firms' profitability if there is low collection of account receivables. Therefore, companies have to maintain or adopt neither liberal credit nor conservative policies to minimize bad debt and not to lose customers and hence, increase firms' profitability.
- The study showed a negative relationship between inventory turnovers in days' and firms' profitability. Here, higher inventory turnover would have higher costs like storage; carrying, spoilages, insurance, and opportunity cost too. As a result, companies' managers

need to consider proper ways of inventory control techniques like economic order quantity (EOQ) or otherwise depend on the nature of materials they hold. In addition, the researcher recommended that companies' marketing, purchasing and manufacturing departments should create strong linkage and communications to feed one another in firms' operations and thus minimize costs.

- Similar to the above findings, the average payment period negatively relates to firms' profitability. In a wider sense, firms that wait longer to pay their account payables or bills will increase profitability. However, the researcher recommended that firms pay all their debt or bills in time so as not to lose their vendors in the long run.
- Likewise, CCC has a negative relationship with firms' profitability. Therefore, regarding CCC, the researcher recommended that lowering WCC as a measure of efficient WCM is the one to be appraised. However, the policy followed for each component has to be neither tight nor liberal like ACP which loses customers and increases credit losses respectively. Similarly, as recommended above, companies have to manage their inventories (raw materials, working process and finished goods) and account payables efficiently to a minimum level, so as to minimize the overall WC cycle of a firm and increase profitability.
- In general, the above discussions demonstrate that paying suppliers later (not absolutely), collecting payments from customers earlier, and keeping products in stock for shorter times are all associated with an increase in firms' profitability.

5.3 SUGGESTIONS FOR FUTURE RESEARCH DIRECTIONS

Future research should investigate how South African companies through real activities manipulate various WCM components, earnings which alter the timing or structuring of an operation, investment, and/or financing transactions in an effort to influence sales/earnings.

In addition, the scope of further research may be extended to small and medium enterprises and non-listed companies, such as family-owned companies, that may not have as great pressure regarding maximizing their share value. These companies may have much more room for WCM effectiveness which could easily lead to greater profitability and liquidity. Also, a more detailed study of some of the industries mentioned in this work could add value, because of the industry-specific nature of working capital. Industries that may be of interest are inventory and transaction heavy industries such as retail and wholesale.

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APPENDICES

Annexure: 1 Sampling Design

COMPANIES	TYPES OF PRODUCTS		POPULATION		SAMPLE SIZE	
Category (Q)	Chemicals, explosives, fertilizers, yarns & fibres, pharmaceuticals		Freq.	Population	Freq.	Population
			11	**0.2444**	**4**	**0.2000**
	Groupings	X	4	0.3636	2	0.5000
		Y	2	0.1818	1	0.2500
		Z	5	0.4545	1	0.2500
Category (R)	Steel, equipment, plastic, glass & glass products, spare parts, furniture, paper & paper products factories		**12**	**0.2667**	**7**	**0.3500**
	Groupings	X	5	0.4167	4	0.5714
		Y	3	0.2500	1	0.1429
		Z	4	0.3333	2	0.2857
Category (S)	Mineral water, alcoholic & non-alcoholic beverages, soft drink factories		**9**	**0.2000**	**3**	**0.1500**
	Groupings	X	2	0.2222	1	0.3333
		Y	4	0.4444	1	0.3333
		Z	3	0.3333	1	0.3333
Category (T)	Food products, dairy products, agro-industry factories and others		**13**	**0.3111**	**6**	**0.3000**
	Groupings	X	4	0.3077	3	0.5000
		Y	6	0.4615	1	0.1667
		Z	3	0.2307	2	0.3333
TOTAL			**45**	**1.0000**	**20**	**1.0000**

*The data is rounded to the next number

Annexure: 2 Pearson's Correlation Coefficients

		ACP	ITID	PDP	CCC	CDR	DTR	SG	S	Y
ACP	Pearson Correlation	1								
	Sig. (2-tailed)									
	N	100								
ITID	Pearson Correlation	0.310*	1							
	Sig. (2-tailed)	0.012								
	N	100	100							
PDP	Pearson Correlation	-0.066	0.113	1						
	Sig. (2-tailed)	0.061	0.369							
	N	100	100	100						
CCC	Pearson Correlation	0.618**	0.460**	0.063	1					
	Sig. (2-tailed)	0.000	0.000	0.616						
	N	100	100	100	100					
CDR	Pearson Correlation	0.365**	0.114	-0.369**	0.284*	1				
	Sig. (2-tailed)	0.003	0.367	0.003	0.022					
	N	100	100	100	100	100				
DTR	Pearson Correlation	0.089	0.157	0.207	-0.074	-0.256*	1			
	Sig. (2-tailed)	0.481	0.212	0.098	0.555	0.039				
	N	100	100	100	100	100	100			
SG	Pearson Correlation	-0.446**	-0.383**	0.067	-0.484**	-0.230	0.308*	1		
	Sig. (2-tailed)	0.000	0.002	0.595	0.000	0.066				
	N	100	100	100	100	100				
S	Pearson Correlation	-0.492	-0.094	0.254*	-0.591	-0.517**	0.308*	0.355**	1	
	Sig. (2-tailed)	0.000	0.457	0.041	0.000	0.000	0.013	0.004		
	N	100	100	100	65	100	100	100	100	
GOP (Y)	Pearson Correlation	-.0637**	-0.461**	-0.048	-0.569**	-0.510**	-0.049	0.550**	0.674**	1
	Sig. (2-tailed)	0.000	0.000	0.703	0.000	0.000	0.701	0.000	0.000	
	N	100	100	100	100	100	100	100	100	100

Annexure: 3 Fundamental Concepts for Analysis

F-value: *The value of F test explains the overall significance of a model. It explains the significance of the relationship between dependent variables and all the other independent variables. (Brooks 2008)*
T-Value: *T value is used to determine the level of significance of the regression coefficient. It is also known as test of individual significance. It explains the significance of relationship between dependent variables with each of the independent variables. If the t value is less than 3, it supports the null hypothesis and if the t value is greater than 3, it neglects the null hypothesis (Brooks 2008).*
R square: *It explains the total variation in the value ofthe dependent variable. Its value lies between 0 and 1; if the value of R square is closer to 1 it tells that the regression model which is applied on data really supports it (Gujarati 2004).*
P-Value: *It is also used to determine the level of significance of the regression coefficient. It measures whether the data supports the null hypothesis or not. If the P value is greater than 0.05, the null hypothesis can't be rejected and if the value of P is less than .05, it rejects the null hypothesis. Usually we call it significance (Brooks 2008).*
95% confidence interval: *It gives two boundaries where a certain percentage of population is expected to lie e.g. 95% confidence interval means that 95% of the population will lie between the upper boundary and lower boundary and half of the remaining values lie above the upper boundary and half of it lies below the lower boundary (Brooks 2008).*
Correlation: *Correlation explains how two variables react to each other e.g. what change will occur in one variable with the change in the other variable (Gujarati 2004).*
Beta (ß): *The value of beta explains the change in the dependent variable with the per unit change in the independent variable. It also explains the nature and strength of the relationship between the dependent variable and the independent variable (Brooks 2008).*