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The Relationship between Working Capital Management and Profitability for Companies Listed on the Nairobi Stock Exchange

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requirements for the award of a Master of Commerce degree of Strathmore
University

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This research thesis has been submitted with my approval as the University Supervisor.

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Abstract

This study examined the effect of working capital management (WCM) practices on company profitability. Using agency, transactions cost and trade-off theories, the study also sought to establish whether the hypothesized relationships between working capital practices and profitability can be defended from both financial and managerial perspectives.

Data for this study were collected from the annual financial reports and questionnaires from 30 companies listed on the Nairobi Stock Exchange. The financial data covered a 16- year period (1993 to 2008). The variables of interest included various measures of working capital management, profitability and company characteristics. The financial data were analyzed using pooled ordinary least squares, fixed effects and two-stage least squares estimations. Five regression models were run incorporating each of the key independent variables in each model. Data collected from questionnaires were analyzed using frequency tables. Chi-square tests were also performed on the questionnaire data.

Consistent with prior research, this study established that there existed an overall negative relationship between working capital management and profitability. Key findings from the study from both financial and questionnaire data analyses were: (1) a highly significant negative relationship exists between the time it takes companies to collect cash from their customers (accounts collection period) and profitability ($p < 0.01$); (2) there exists a highly significant positive relationship between the time it takes the company to pay its creditors (average payment period) and profitability ($p < 0.01$); (3) there exists a significant negative relationship between the cash conversion cycle and profitability ($p < 0.10$). The only inconsistent result from both analyses was the relationship between inventory conversion period and profitability. This finding was explained by the different ways in which companies manage their inventories.

The main techniques employed by companies in working capital management were: (1) setting credit limits for customers (mean = 4.42, standard deviation (SD) thereafter = 0.70), (2) aging of debtors (mean = 4.40, SD = 1.73), (3) aggressive collection policies (mean = 4.35, SD = 0.81), (4) preparing cash budgets (mean 4.32, SD = 0.96) and (5) negotiating with suppliers (mean 4.25, SD = 0.51). Key challenges identified with regard to working capital management were: (1) difficulty in collecting trade receivables (mean = 3.75, SD = 1.04), (2) cash not readily available when needed (mean = 3.63, SD = 1.21), (3) difficulty in managing bad debts (mean=3.40, SD = 1.02), (4) lack of adequate working capital finance (mean = 3.40, SD = 1.25) and (5) difficulty in identifying working capital risks (mean = 3.30, SD = 1.10). These techniques and challenges further explained the reason as to why companies focused on various WCM components and profitability.

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Dedication

*This thesis is dedicated to my two sisters, Rhoda and Maua and my best friend,
Annastacia.*

Abbreviations

ACP - Accounts Collection Period

APP - Average Payment Period CCC

- Cash Conversion Cycle CMA -

Capital Markets Authority CS -

Company Size

DOAJ - Directory of Open Access Journals

EBSCO - Elton B. Stephens Company

FF AR - Fixed Financial Assets Ratio

GDP - Gross Domestic Product

ICP - Inventory Conversion Period

JSTOR - Journal Storage

LEV - Leverage

NSE - Nairobi Stock Exchange

NTC - Net Trade Cycle

SMEs - Small and Medium Scale Enterprises

SPSS - Statistical Program for Social Sciences

WCCC - Weighted Cash Conversion Cycle WCM

- Working Capital Management

CHAPTER ONE

Introduction

1.1 Background

Working capital management (WCM) and profitability are two key elements of corporate business life. Van Horne and Wachowicz (2005) stressed on the importance of WCM by referring to it as the 'life-blood' of the company. Working capital management, which deals with the management of current assets and current liabilities, is very important in corporate finance because it directly affects the liquidity and profitability of the company (Deloof, 2003; Eljelly, 2004; Raheman and Nasr, 2007; Appuhami, 2008; Christopher and Kamalavalli, 2009; Dash and Ravipati, 2009).

The efficiency of WCM requires proper planning and control over the current assets and current liabilities in a manner that eliminates the risk of inability of a company to meet its short term obligations as and when they are due (i.e., the liquidity risk). Efficient WCM calls for a careful investment in the current assets too (Eljelly, 2004). Deloof (2003) held that the accounts receivables and inventories comprise a substantial percentage of the total assets of a company. This means that excessive investment in current assets can easily result in a company realizing a lower return on its investment. However, those companies with too few current assets may be faced with shortages, higher costs and difficulties in maintaining smooth operations (Van Horne and Wachowicz, 2005).

Managers of small, medium and large companies spend considerable time on day-to-day problems that involve working capital decisions (Garcia-Teruel and Martinez-Solano, 2007; Raheman and Nasr, 2007). As Garcia-Teruel and Martinez-Solano (2007) observed, the time spent in working capital decisions is even more for small business managers. Rao (1989) explained that one of the reasons for this is that being short-lived investments, current assets are continually being converted into other asset types, a task which requires time. With regard to current liabilities (for example, accounts payable), the company is responsible for paying these obligations on a timely basis. This therefore means that those decisions that focus on the level of investment in working capital components become frequent, repetitive and time consuming (Appuhami, 2008).

Joshi (1994) held that working capital management is a very sensitive area in the field of financial management. Joshi (1994) further supported his position by explaining that WCM involves the decision on the amount (or the value) and composition of current assets and the nature and the type of financing for these assets. Raheman and Nasr (2007) defined current assets as those assets which last for a year or less. Smith (1980) and Raheman and Nasr (2007) observed that working capital management is important because of its effects on the company's profitability and risk, and consequently on its value.

The way in which working capital is managed can have a significant impact on both the liquidity and profitability of the company (Deloof, 2003). For instance, in accordance with the emerging working capital theory, those decisions that tend to focus on maximizing profitability tend to minimize liquidity. At the same time, focusing entirely on liquidity has the tendency of reducing the potential profitability of the company (Smith, 1980). Deloof (2003) held that a company with a larger sales volume and a relaxed credit policy faces a longer cash conversion cycle. In this case, the longer cash conversion cycle may result in higher profitability. However, the traditional view of the relationship between the cash conversion cycle and corporate profitability is that, all factors being held constant, a longer cash conversion cycle has a negative impact on the profitability of a company (Smith, 1980; Deloof, 2003; Garcia-Teruel and Martinez-Solano, 2007; Raheman and Nasr, 2007).

1.2 Problem statement

The emerging theory of working capital management suggests that the pursuit of liquidity negatively impacts the profitability of a company (Smith, 1980). Most of the studies carried out to establish the relationship between working capital management and profitability have established a significant negative relationship between working capital management and profitability. For example, Shin and Soenen (1998) found a strong negative relationship between the cash conversion cycle and corporate profitability for a large sample of listed American companies for the period running from 1975 through 1994. Deloof (2003) established a significant negative relationship between gross operating profit and the number of days accounts receivable, inventory days and days accounts payable of Belgian companies. Other studies confirming these findings include: Lazaridis and Tryfonidis (2006), Garcia-Teruel and Martinez-Solano (2007) and Raheman and Nasr (2007). Keasey and Watson (1993) and Howorth and Reber (2003) explained that researchers often make assumptions (and even conclusions) rather than asking the experience from the relevant sources. The main

aim of working capital management is to help internal management in decision making (Howorth and Westhead, 2003).

This study adopted a triangulation approach of the results obtained from annual financial reports with the results obtained from finance managers and/or management accountants of companies in the sample. The study aimed at an examination of the relationship existing between working capital management and profitability for a developing economy, that is, Kenya. A search from the Google Scholar and leading academic repositories and journals (i.e., Blackwell, JSTOR, Emerald, John Wiley and Sons, EBSCO Host, DOAJ, Cambridge Journals, Springer-link, Sage Online, University of Chicago Press and Science Alert) showed that very few studies had been carried out on this subject in the developing world (as of January 2010). In Africa, only one similar study carried out in Nigeria by Falope and Ajilore (2009) was found. As is the case with previous studies, this study failed to connect its findings with the managerial perspectives into the relationship between working capital management and profitability.

To analyze this problem statement, the current study developed some objectives, which were expected to contribute towards a very important aspect of financial management known as working capital management.

1.3 Objectives of the study

This research aimed at examining the relationship between working capital management and profitability of Kenyan listed companies. The specific objectives were:

1. To establish the relationship between working capital management practices and corporate profitability from a financial perspective.
2. To investigate the managerial perspectives with regard to the relationship between working capital management practices and company profitability. This objective aimed at investigating the following sub-objectives:

Sub-Objective 1: To investigate working capital management practices and techniques being used by Kenyan listed companies.

Sub-Objective 2: To examine the managerial perspectives with regard to the relationship between working capital management practices and profitability. Sub-Objective 3: To examine the challenges associated with working capital management by Kenyan listed companies.

1.3.1 Objectives schedule

Table 1.1 shows the sections which address the objectives developed in section 1.3.

Table 1.1: Objectives schedule

Objective/Sub-Objective	Objective is addressed by:			
	Literature Review	Research methodology	Data Analysis	Discussions, conclusions and recommendations
1. To establish the relationship between working capital management components and corporate profitability from a financial perspective.	Sections 2.4 and 2.5.	Sections 3.2, 3.3,3.4,3.5, 3.7 and 3.8.	Sections 4.2 and 4.3	Sections 5.2, 5.3 and 5.4.
2. To investigate the managerial perspectives with regard to the relationship between working capital management and company profitability.	Sub-Objective 1: To investigate working capital management practices and techniques being used by Kenyan listed companies. Sections 2.2 and 2.5.	Section 3.4 and 3.8.1.	Section 4.4.	Sections 5.2, 5.3 and 5.4.
	Sub-Objective 2: To examine the managerial perspectives with regard to the relationship between working capital management practices and profitability. Section 2.2.	Section 3.4 and 3.8.1.	Section 4.4.	Sections 5.2, 5.3 and 5.4.
	Sub-Objective 3: To examine the challenges associated with working capital management by Kenyan listed companies. Section 2.10.	Section 3.4 and 3.8.1.	Section 4.4.	Sections 5.2, 5.3 and 5.4.

1.4 Research questions

The research intended to seek answers for the following research questions:

2. What is the relationship between working capital management practices and corporate profitability?
3. What are the managerial perspectives with regard to the relationship between working capital management and corporate profitability?

Examining this research question involved an investigation into the following subquestions:

Sub-Question 1: What are the working capital management practices and techniques being used by Kenyan listed companies?

Sub-Question 2: What are the managerial perspectives with regard to the relationship between working capital management practices and profitability?

Sub-Question 3: What are the challenges associated with working capital management by Kenyan listed companies?

1.5 Motivation to the study

The motivation behind this study was twofold: Firstly, whether the emerging working capital management theory as earlier postulated by (Smith, 1980) could be defended and supported further. This emerging theory suggested that the pursuit of liquidity threatens the profitability of a company. This emerging working capital management theory was supported by a number of studies such as Shin and Soenen (1998), Deloof (2003), Eljelly (2004), Padachi (2006) and Raheman and Nasr (2007).

Secondly, the study sought to substantiate the findings in support of the emerging working capital management theory by seeking both financial and managerial perspectives into the causal relationship between working capital management and company profitability.

1.6 Delimitations of the study

This study is based on quoted companies only. In order to ensure that a more homogeneous sample was used in this study, certain industries were omitted due to their type of activity. The study limited its sample to include all quoted companies except those listed under finance and investment segment owing to the nature of their business and those companies with missing data for most years under study. In obtaining this data, this study followed the classification of NSE from which banking and financial institutions, insurance, some commercial and service companies and some companies listed under industrial and allied segment were omitted. The study however adopted the methodology adopted by other researchers from other parts of the world (for example, Shin and Soenen, 1998; Deloof, 2003; Lazaridis and Tryfonidis, 2006; Raheman and Nasr, 2007), in addition to incorporating the managerial perspectives.

1.7 Significance of the study

This study provides some insight to Kenyan companies as to the importance of working capital management by examining its effect on company profitability. The findings from the study are useful in that they provide companies with commonly used working capital management practices and techniques and the challenges companies face. This information will be useful especially when companies are designing their competitive strategies with regard to working capital management.

The study is also of help to other researchers and academicians in that it provides a stimulus to carry out further research into the same subject matter or related topics so as to increase the already existing volume of knowledge, especially with regard to the current studies on working capital management and profitability. The suggestions for further research are indicated in chapter five.

1.8 Organization of the thesis

This thesis, with the inclusion of chapter one, is organized into five chapters. The four chapters following this introductory chapter are set out to achieve the two main objectives of the study. Chapter two presents a review of the literature. A review of the theories advising research on working capital management and profitability has been carried out. The chapter also reports on the formulation of the testable hypotheses. Various studies carried out on working capital and profitability have been explored. Chapter three presents the research methodology and the methods employed in the study. The econometrics used in testing the hypotheses have been explained. Chapter four focuses on data analysis and interpretation. A detailed analysis of the data obtained from the financial reports and questionnaires has been carried out in order to achieve the objectives set out in the study. Finally, chapter five presents the discussions, conclusions and recommendations for further research.

CHAPTER TWO

Literature Review and Hypothesis Development

2.1 Introduction

This literature review was arranged as follows: The first section focused on the role of management in working capital management and a review of studies carried out on the relationship between working capital management and corporate profitability. The review identified the research gap to be filled by this study. A critique of previous studies was also presented. A review examining the genesis and development of the theories advising working capital management and profitability was also performed. The discussion on the theories advising this area was followed by a formulation of testable hypotheses for the study. This was followed by a discussion of the variables influencing working capital management and company profitability. A discussion of all dependent, independent, control and dummy variables as postulated by various authorities in the field of working capital management and profitability was also presented. The discussion of the variables is followed by a conceptual framework for the study. The literature review concluded with a discussion of how working capital can be financed and the causal relationship existing between working capital management and profitability.

2.2 The role of management in working capital management

Unlike small and medium-sized companies, large companies have formalized working capital management systems (Howorth and Westhead, 2003). According to Peel and Wilson (1996), this formalization leads to increased profitability and lower probability of a business closing down due to bankruptcy. This current study found that this formalization of procedures regarding working capital management processes is one of the key challenges companies face today.

Compared to small companies, large companies (especially publicly listed companies), are characterized by more informational asymmetries. This is due to the separation of ownership and management control (Westhead, 2001a). Howorth and Westhead (2003) explained that one of the reasons for adopting formalized management systems by large companies is to minimize information asymmetry problems between the companies' principals (i.e., the

shareholders) and the agents (i.e., the management). To ensure viability of companies, managers of large companies are expected to maintain an optimum balance of each working capital component (i.e., trade receivables, inventories and trade payables) as indicated by Filbeck and Krueger (2005). Filbeck and Krueger (2005) observed that striking a balance between risk and efficient working capital management takes most of the managerial effort.

To explain the importance of managing liquidity (which is the subject of working capital management), Loeser (1988) suggested how a company can reduce the cash cycle. Loeser explained that a company can reduce the cash cycle by assessing the interest charge at the prime rate to outstanding accounts receivable and the unbilled revenue. This is meant to encourage responsible employees and departments within companies to put every effort necessary to collect receivables as quickly as possible and thus minimize cash gaps. This same approach was explained by Eljelly (2004) who argued that liquidity and cash gap management begin with a simple task by financial managers in ensuring that their billings, collections and payables systems are operating efficiently. The direct effect of liquidity is not only on the cash position and the troubles it may cause to financial managers, but rather the effects it has on a company's profits (Deloof, 2003; Eljelly, 2004). Unlike previous studies, an attempt was made in this study to examine the effects of working capital management, both from a financial and a managerial perspective, on a company's profitability.

2.3 Theoretical frameworks

The uptake of different working capital management practices has been discussed by various researchers using theories such as agency theory, resource based value proposition, transactions cost theory, trade-off theory, pecking-order theory and incentive theory (Jensen and Meckling, 1976, Smith, 1980; Myers, 1984; Wernerfelt, 1984; Williamson, 1975, 1985; Barney, 1991,2001; Mian and Smith, 1992; Wynczyk et al., 1993; Westhead et al., 2001a; Westhead et al., 2001b; Howorth and Westhead, 2003; Dash and Ravipati, 2009). In this context, three leading theoretical frameworks (i.e., agency, transactions cost and trade-off theories), which have been presented to explain company behaviour, are explained. Of the six theories, these three theories are most dominant (see table 2.1) in explaining why companies consider adopting one working capital practice as opposed to the other.

Table 2.1: Theoretical justification

Theory	The theory has been quoted in [#] :
Agency theory	Ross (1973) [#] ; Jensen and Meckling (1976) [#] ; Fox (1984); Myers (1984); Smith (1987); Eisenhardt (1989); Storey (1994); Berger and Udell (1995); Petersen and Rajan (1997); Dechow and Dichev (2002); Niskanen and Niskanen (2006); Baños-Caballero et al. (2009); Jensen and Erhard (2010).
Transaction costs theory	Coase (1937) [#] ; Schwartz (1974); Williamson (1975; 1979; 1985; 1996, p. 379) [#] ; Blinder and Maccini (1991); Mian and Smith (1992); Soenen (1993); Millet-Reyes (2000); Summers and Wilson (2002); Howorth and Westhead (2003); Frauendorf (2006); Seifert and Seifert (2008); Baños-Caballero et al. (2009).
Trade-off theory	Smith (1980) [#] ; Petersen and Rajan (1997); Smith and Begemann (1997) [#] ; Shin and Soenen (1998); Deloof (2003); Eljelly (2004); Lazaridis and Tryfonidis (2006); Niskanen and Niskanen (2006); Padachi (2006); Garcia-Teruel and Martinez-Solano (2007); Rahman and Nasr (2007); Vishani (2007); Baños-Caballero et al. (2009); Dash and Ravipati

[#]some sources indicate the inception of the theory itself.

2.3.1 Agency theory

The first theory under consideration is agency theory. This theory explains the relationship between the principal and the agent. Jensen and Meckling (1976) defined an agency relationship as:

[An agency relationship is defined as] ... a contract under which one or more persons (the principal(s)) engage another person (the agent) to perform some service on their behalf. This principal-agent relationship also involves delegating some decision making authority to the agent. (p. 308)

In a company's setting, the agent (i.e., the manager) acts on behalf of the principal (i.e., the shareholder) (Ross, 1973; Jensen and Meckling, 1976; Fox, 1984; Eisenhardt, 1989). Agency theorists have focused upon the managerial incentive problems that emerge as a result of the separation of the ownership of a company and managerial decision-making (Jensen and Meckling, 1976). In the context of the company, a major issue is the information asymmetry between managers and shareholders. In this agency relationship, insiders (managers) have information advantage. This means that the owners of the company face moral dilemmas because they cannot accurately evaluate and determine the value of decisions made by the management. While the internal management has all the information regarding working capital aspects of the company, the shareholders rely on this information mainly from the annual financial statements presented either semi-annually or at the end of the year.

This informational asymmetry brings in agency problems whereby the internal management has key information regarding the company's working capital management while the external stakeholders (specifically the shareholders) do not have. As Dechow and Dichev (2002) observed, the management may take advantage of this information and engage in earnings management. Again, the asymmetric information between the insiders of the company and the company's creditors may lead to a company adopting conservative working capital management practices. For example, a company may consider lengthening the average payment period so as to provide an internal and a cheaper source of funds in accordance with the pecking order theory as postulated by Myers (1984). This decision is made before the company considers sourcing externally generated debt or new equity issues. The current thinking with regard to agency theory is that it is all about the integrity that the management of a company upholds in dealing with its stakeholders. Jensen and Erhard (2010) established that there is causal link between integrity and increased performance of the company. This means that, if the management of the company upholds integrity, then there is value creation through improved performance.

2.3.2 Transactions cost theory

The second theory is the transactions cost theory as developed by Coase's (1937) discussion on the nature of the firm. The transactions cost theory can be considered as the basic theoretical framework that analyzes the relation between the service provider (in this case the company) and disposition of the transaction (i.e., the customer). This means that the theory looks at both sides of the process (Frauendorf, 2006), that is, from the point where the transaction begins up to the point where the transactions ends. Williamson (1975; 1979; 1985; 1996, p. 379) focused on Coase's (1937) work by viewing a transaction from where it originates (i.e., the service provider). Williamson (1985) explained that:

.. the transactions cost approach holds that institutions strive to economize on transaction costs as much as possible. (p. 1)

Frauendorf (2006) explained that transaction costs are as a result of a company coordinating its economic activities - both inter- and intra-company activities. This means that transaction costs affect both the company (which is the service provider) and the customer.

Seifert and Seifert (2008) argued that buyers demand trade credit (especially when their bargaining power is higher than the company's) so as to delay payments and thus reduce cash

deficiencies while companies have to offer trade credit because their competitors do so. This forces companies to adopt a less stringent credit policy which has cost implications (i.e., opportunity cost) and this negatively impacts its profitability. A huge investment in working capital has associated opportunity costs which arise as a result of the company forgoing other productive investments (Banos-Caballero et al., 2009).

The entire process of providing or acquiring information so as to satisfy stakeholders' informational needs involves transaction costs (Mian and Smith, 1992). The strategy companies strive to adopt is to cut down transaction costs. This forces companies to adopt strategies whose benefit is perceived to exceed the cost. For instance, in inventory management, companies are keen on reducing the holding and ordering costs. Again, in accounts payable management, companies may opt for cheaper trade credit financing rather than seeking external finance. This means that companies will invest resources where they expect to achieve the greatest marginal returns. This implies that the less the investment in working capital, the less the transaction costs and the better the returns (Howorth and Westhead, 2003).

Conversely, other companies may invest resources in a particular area of working capital management that is perceived to be associated with the highest marginal return (Howorth and Westhead, 2003). This means that those companies which are less constrained in terms of resources may invest in additional areas of working capital management so as to boost profitability. Blinder and Maccini (1991) suggested that companies which hold large amounts of inventories are able to reduce ordering and supply costs. But this means that they have to contend with increased holding costs in case their inventories do not sell fast. The implication of this is that, companies are expected to weigh the costs versus the benefits associated with the take up of any working capital management practice and evaluate its implication on the company's profitability.

In addition to addressing potential agency conflicts related to sourcing external finance, lagging payments to suppliers reduces costs of acquiring external finance for working capital needs (Millet-Reyes, 2000). Using transactions cost theory, Summers and Wilson (2002) explained that trade credit is a cheaper way of financing working capital. Thus, as Soenen (1993) observed, reducing the cash conversion cycle saves the company the opportunity costs of other profitable investments and prevents the company from going bankrupt.

2.3.3 Trade-off theory

The third theory is the liquidity-profitability trade-off theory as postulated by Smith (1980). The study by Smith in 1980 was the first to signal the importance of the trade-off between the dual goals of working capital management (i.e., liquidity and profitability). This theory holds that the pursuit of liquidity has a negative effect on company profitability (Smith, 1980; Shin and Soenen, 1998; Dash and Ravipati, 2009). Smith explains that those decisions focusing on increasing liquidity lead to a decline in profitability. He further explains that focusing on liquidity only negatively impacts profitability of the company. This proposition was confirmed by a current study by Dash and Ravipati (2009). The trade-off theory can be taken to imply that large companies are less likely to fail due to diversification (Banos-Caballero et al., 2009). This is because their main objective is profit maximization and not the pursuit of liquidity. In the case of publicly listed companies, they are exposed to wider sources of finance. Thus, they are capable of granting more trade credit (Petersen and Raj an, 1997; Niskanen and Niskanen, 2006). Large companies are also able to source large inventories on credit and even take as long as they wish to pay their suppliers. Various studies performed on the relationship between working capital management and profitability are in support of the view that the lower the liquidity, the higher the profitability of the company (Shin and Soenen, 1998; Deloof, 2003; Eljelly, 2004; Lazaridis and Tryfonidis, 2006; Garcia-Teruel and Martinez-Solano, 2007; Raheman and Nasr, 2007; Padachi, 2006).

Vishani (2007) held that almost all the textbooks pertaining to financial management and working capital management capitalize on the inverse relationship between liquidity and profitability. This is the main argument advanced in the emerging theory of working capital management as postulated by Smith and Begemann (1997). Eljelly (2004) explained that efficient liquidity management involves planning and controlling current assets and current liabilities in such a manner that eliminates financial risk and avoids excessive investment in these assets.

2.4 Working capital management and profitability studies

Working capital management studies have been approached in various ways. Some researchers have studied the impact of optimum inventory management on performance (Rafuse, 1996; Buzacott and Zhang, 2004) while other researchers focused on the management of accounts receivables in an optimum way that leads to profit maximization (Zinger, 2009). Other studies have focused on accounts payable management (Summers and

Wilson, 2000; Howorth and Reber, 2003). Deloof (2003) held that the way in which working capital is managed has a significant impact on profitability of companies. This view was held by other studies such as Ramachandran and Janakiraman (2009). This result indicates that there is a certain level of working capital requirement which potentially maximizes returns (Deloof, 2003). Other studies linked to working capital management focus on the day-to-day routines employed by companies geared towards improving the company's profits (Lazaridis and Tryfonidis, 2006; Padachi, 2006; Sayaduzzaman, 2007).

Most working capital management studies lay emphasis on the working capital profitability relationship (Shin and Soenen, 1998; Deloof, 2003; Lazaridis and Tryfonidis, 2006; Garcia-Teruel and Martinez-Solano, 2007; Raheman and Nasr, 2007; Vishnani and Shah, 2007). At the same time, studies by Chakraborty (1973), Ricci and Vito (2000), Summers and Wilson (2000), Howorth and Reber (2003), Howorth and Westhead (2003), Armstrong and Drever (2005), Filbeck and Krueger (2005), Garcia-Teruel and MartinezSolano (2008), Zainudin (2008), Banos-Caballero et al. (2009) and Zinger (2009) have focused on one or all components of working capital management. A closer examination of the motives behind working capital management reveals that apart from efficient working capital management, there are other factors that drive corporate profitability. Industry pressure, for instance, competition may also be another factor to consider (Filbeck and Krueger, 2005). A discussion of key studies on the relationship between working capital management and profitability is presented below.

The first study on the relation between working capital and profitability was conducted by Shin and Soenen (1998) who aimed at establishing the relationship between efficient working capital management (as measured by the net trade cycle (which is similar to cash conversion cycle)) and profitability of American companies for a 20-year period (1975 to 1994). The study aimed at establishing whether shortening the net trade cycle boosts corporate profitability. The underpinning theory used in this study was Smith's (1980) trade-off theory. Using correlation and regression analysis, the study established a negative relationship between the net trade cycle and profitability. The study also found that market returns (in terms of capital gains from share prices) is negatively correlated with the company's net trade cycle. The study also found that the use of debt is negatively related with market value. The study by Shin and Soenen in 1998 based its conclusions on purely financial data available from Compustat database. The study did not clearly demonstrate the industry differences between companies that do affect the uptake of various working capital management

practices as pointed out by Hawawini et al. (1986) and Filbeck and Krueger (2005). Shin and Soenen (1998) did not address endogeneity problem that may exist between working capital management and profitability. Endogeneity in this case implies that profitability may also influence how companies manage their working capital and not always the other way round. Again, the study did not employ any parametric tests on the financial data being analyzed.

Next is the study by Deloof (2003). Deloof investigated the relation between working capital management and corporate profitability for listed non-financial companies in Belgium for a five-year period running from 1992 to 1996. Compared to Shin's (1998) study, this time period is short for one to arrive at any conclusions regarding the relationship being investigated. Deloof based his study on agency theory where he held that, compared to Shin's (1998) study, information asymmetries are much more pronounced in Belgian companies than in American companies. Consistent with Shin and Soenen (1998), Deloof (2003) used correlation and regression analysis to analyze the data collected. Deloof extended the analysis further by performing both the pooled and fixed effects regressions so as to bring out any existent company-specific and industry-specific differences. The study found that a negative relationship exists between the cash conversion cycle, number of days accounts receivable, inventory days, accounts payable days and profitability of Belgian companies. As was the case with Shin and Soenen's (1998) study, Deloof's study fails to triangulate the results from financial statements with managerial perspectives. No tests for endogeneity were performed in this study. The study also falls short of parametric tests on the analyzed financial data.

Lazaridis and Tryfonidis (2006) investigated the relationship between working capital management and profitability of companies listed on Athens Stock exchange in Greece for a four-year period (2001 to 2004). This period is very short compared to Shin's (1998) study. The purpose of the study was to establish the relationship between profitability and working capital management components. Although not explicitly stated, Lazaridis and Tryfonidis (2006) pegged their study on the trade-off theory where they held that companies strive to minimize their liquidity levels so as to maximize profitability. The statistical methods used in this study were correlation and pooled ordinary least squares models. The study found that a negative relationship exists between gross operating profit and the cash-conversion cycle. The study also found a negative relationship between days accounts receivable outstanding, days accounts payable outstanding and gross operating profit. Lazaridis and Tryfonidis (2006) concluded by indicating that managers can create more profits for the company by handling correctly the cash-conversion cycle components. The weakness of this study is lack

of parametric tests on the financial data being analyzed. Again, the study does not compare the results of the pooled and fixed-effects regression models which are aimed at bringing out any existent company-specific and industry-specific differences. No controls for endogeneity were used in the study. Lastly, the study based its conclusions on purely financial data.

Following these studies, majority of other similar studies receive similar critique (i.e., reliance on financial information for analysis only, lack of parametric tests on the data being analyzed, lack of controls for possible endogeneity, insufficient regression analysis and insufficient regression model and data validation checks). These studies are: Wang's (2002) study on Japanese and Taiwanese companies for a 12-year period (1985 to 1996); Padachi's (2006) study on Malaysian SMEs for a six-year period 1997 to 2003; Raheman and Nasr (2007) study on Pakistani companies; Samiloglu and Dermigunes (2008) study on Turkish companies for the period 1998 to 2007, Falope and Ajilore (2009) study on selected quoted companies in Nigeria for the 1996 to 2005 and Siddiquee and Khan (2009) study on 83 companies listed on Dhaka Stock Exchange for the period 2003 to 2007.

A rather different study by Garcia- Teruel and Martinez-Solano (2007) focused on the effects of working capital management on small and medium sized enterprises (SME) profitability. This study aimed at examining how SMEs manage working capital, and its effect on profitability. The study used the trade-off theory where it held that managers have to evaluate the trade-off between risk and profitability before determining an optimal investment in working capital. The study deployed correlation and regression analyses for 8,872 SMEs in Spain for a seven-year period (1996 to 2002). Both the fixed-effects and pooled OLS models were used. Controls for endogeneity were used in the study. The study established a negative relationship between profitability and accounts receivable days and inventory days. An overall negative relationship between profitability and cash conversion cycle was also established. The other notable strength of the results from this study is in the use of parametric tests on the financial data being analyzed. As was the case with other studies, this study failed to triangulate its findings with managerial perceptions on the relationship between working capital management and profitability.

2.5 Determinants of working capital management and profitability and hypothesized relationships

2.5.1 Measurement of profitability

Profitability has over time been used as a measure of company performance. Vishnani and Shah (2007) defined profitability as the rate of return on the company's investment. They further explained that a lot of investment in current assets would reduce this rate of return. The purpose of working capital management is to manage the company's current assets optimally so as to attain a desired balance between profitability and risk (Ricci and Vito, 2000). Raheman and Nasr (2007) observed that working capital management is very important in the sense that it has a direct effect on the liquidity and profitability of the company. This means that the profit measurement employed in investigating the relationship between working capital management and profitability has to capture the three key working capital management components as closely as possible.

There seems no agreeable measure of profitability from the various studies performed on this relationship. For instance, Deloof (2003) used the gross operating profit ratio measured as sales less cost of sales add depreciation and amortization scaled by total assets less financial assets. Financial assets are subtracted in the denominator because the financial assets ratio was used as one of the control variables on the right hand-side of the regression equation (see section 2.6.3). Lazaridis and Tryfonidis (2006) used the same approach in computing gross operating profit ratio but they omitted depreciation and amortization in the numerator. Padachi (2006), Garcia-Teruel and Martinez-Solano (2007) and Banos-Caballero et al. (2009) measured profitability as earnings before interest and tax scaled by total assets. These studies referred to this as the return on assets (ROA). The results from the current study (2010) established that 80 per cent of the sampled companies used the operating profit ratio to measure their operational performance.

A review of the literature shows that the measurement of profitability in working capital management studies is dependent on the nature of the company. For example, working capital management and profitability studies on listed companies (which are considered to be relatively larger) use the operating profit ratio. Conversely, studies on SMEs use the return on assets ratio. The argument presented for this is that most listed companies have a larger proportion of fixed and financial assets (Deloof, 2003; Lazaridis and Tryfonidis, 2006) while small and medium enterprises rely mainly on their accounts payable to finance their gross

working capital (Padachi, 2006). Based on the findings from literature, a negative relationship between working capital management and profitability is anticipated.

2.5.2 Accounts receivable **management**

In managing accounts receivable, a number of studies have suggested that companies should strive to collect cash from customers as quickly as possible (Deloof, 2003; Lazaridis and Tryfonidis, 2006; Sayaduzzaman, 2006; Garcia-Teruel and Martinez-Solano, 2007; Raheman and Nasr, 2007; Falope and Ajilore, 2009). These findings are pegged on the belief that shortening the accounts collection period improves company profitability. Companies may also opt to shorten the accounts collection period due to competition. This is as a result of intense competition in the industry where companies are forced to grant discounts to their customers to encourage early payment. Conversely, if the bargaining power of customers is high, then a company may be forced to relax its credit policy by lengthening the time it takes to collect payments from its customers. Zinger (2009) called for a careful and an effective analysis of the credit policy especially during periods of credit crisis.

Raheman and Nasr (2007) found that the coefficient on accounts receivable was negative and highly significant. In order to reduce agency problems, the management of a company may strive to minimize the time it takes to receive cash from customers. Sayaduzzaman (2006) also established that the accounts collection period is negatively correlated with all profitability ratios except the net profit margin although these relationships were not statistically significant. All these results show that there is a negative relationship between profitability and accounts receivables.

Lazaridis and Tryfonidis (2006) explained that these findings show that managers can improve profitability and reduce agency problems by reducing the credit period granted to their customers. These models imply that higher profits should lead to more accounts receivable, because companies with higher profits have more cash to lend to customers. This is confirmed by Deloof and Jegers (1996), who found that Belgian companies with a shortage of cash reduce their investment in accounts receivable. This line of thought leads to the development of the first hypothesis as follows:

H1: A significant negative relationship exists between the accounts collection period and profitability.

The proxy for measuring accounts receivable management was the accounts collection period (ACP) which refers to time taken to collect cash from customers. The ACP is

measured as accounts receivable scaled by sales multiplied by the number of days in a year. Consistent with previous studies, the accounts collection period was used as proxy for the collection policy and as an independent variable (Deloof, 2003; Lazaridis and Tryfonidis, 2006; Garcia-Teruel and Martinez-Solano, 2007; Raheman and Nasr, 2007). From the previous studies, it is expected that a negative relationship exists between the ACP and profitability.

2.5.3 Inventory management

Inventory management is largely affected by macroeconomic factors such as inflation and cyclical changes in the economy. For instance, Blinder and Maccini (1991) found that recessionary periods are associated with a reduction in inventory levels. Gaur et. al (2005) and Gaur and Kesavan (2009) found that the inventory turnover should not be used on its own in performance management. This is because an increase in inventory turnover as a result of unexpected sales volume does not indicate improved capacity to manage inventories well. Flanagan (2005) explained that maintaining large inventory levels strains cash resources of a business. On the contrary, maintaining insufficient inventory levels is associated with lost sales and delays in selling to customers. This means that, in line with the transactions cost theory, the finance manager has to strike a balance when managing inventories such that a company does not hold too much or insufficient inventories.

Deloof (2003), Garcia-Teruel and Martinez-Solano (2007), Samiloglu and Dermigunes (2008) and Falope and Ajilore (2009) found that there is a negative relationship between profitability and inventory conversion period. This implies that the longer the time inventory is tied in the company, the less the amount of working capital available and hence, the lower the profit. At the same time, holding inventories for a longer period of time in the company may lead to increased transaction costs in the form of an increase in holding and related costs. This has a negative effect on the profitability of the company. By holding inventories for too long, agency problems may arise since the company is not maximizing the return on the shareholder's investment. However, Lazaridis and Tryfonidis (2006) found the negative relationship between the inventory period and profitability not being statistically significant. Raheman and Nasr (2007) found that the coefficient of inventory turnover in days is negative and highly significant. They further deduce that if the inventory takes more time to sell, it will adversely affect profitability. Deloof (2003) explained that the negative relation between

inventory and profitability can be caused by declining sales, leading to lower profits and more inventories. This argument leads to the development of hypothesis two as follows:

H₂: A significant negative relationship exists between the inventory conversion period and profitability.

Inventory management was measured by the inventory conversion period (ICP) which refers to the time taken to convert inventory held in the company into sales. The ICP is measured as inventory scaled by cost of sales multiplied by the number of days in a year. Consistent with previous studies such as Deloof, (2003), Lazaridis and Tryfonidis (2006), Garcia-Teruel and Martinez-Solano (2007) and Raheman and Nasr (2007), the inventory conversion period was used as proxy for the inventory policy and as an independent variable in this study. Although these studies provide conflicting results as to the relationship between the ICP and profitability in terms of significance, most of them show that a significant negative relationship exists between the ICP and profitability (Deloof, 2003; Garcia-Teruel and Martinez-Solano, 2007; Samiloglu and Dermigunes, 2008; Falope and Ajilore, 2009). Other studies find that the negative relationship is not significant (Lazaridis and Tryfonidis, 2006). Based on these findings, a negative relationship between the ICP and profitability is anticipated.

2.5.4 Accounts payable management

Accounts payable management has been explored in depth by various studies. Most studies suggest that paying payables closer to the due date is the best practice (Deloof, 2003; Lazaridis and Tryfonidis, 2006; Garcia-Teruel and Martinez-Solano, 2007; Falope and Ajilore, 2009). Hence, companies have formed the habit of delaying their payments. Howorth and Reber (2003) investigated this company behaviour and established a positive relationship between deliberate extension of the payment by companies and difficulty in sourcing finance from banks. Bauer (2007) explained that in managing days accounts payable outstanding, companies have to strike a balance between the benefits of early payment discounts and maximizing the use of the 'float' from delayed payments. The present study (2010) established that regardless of whether suppliers offer discounts or not, companies still delay their payments to them.

Deloof (2003) and Raheman and Nasr (2007) explained that the negative relationship between the number of days accounts payable and profitability is consistent with the view that less profitable companies wait longer to pay their bills. Contrary to the findings by

Raheman and Nasr (2007), Lazaridis and Tryfonidis (2006) observed that there is a positive relationship between net operating profit and accounts payable. This result was highly significant and did make economic sense, since the longer a company delays its payments the higher level of working capital levels it reserves and uses in order to increase profitability. An explanation for the positive relation between accounts payable and net operating income is that individual suppliers and customers can have a powerful influence on the operations of a company. Large suppliers, who have a greater bargaining power, may insist on formal payment procedures (which consumes time) or minimum order quantities (Howorth and Westhead, 2003). To minimize total costs, companies using credit may perceive higher potential benefits from adjusting the timing of payments and the size of stock orders in order to maximize their profits. This may lead to increased formalization of procedures (Wilson et al., 1997). This argument leads to the development of hypothesis three as follows:

H3: A significant relationship exists between the average payment period and profitability.

The average payment period (APP) was used as a measure of accounts payable management. The APP is the time taken to pay company's suppliers. The APP is measured as accounts payable scaled by purchases multiplied by the number of days in a year. Consistent with Deloof (2003), Lazaridis and Tryfonidis (2006), Garcia-Teruel and Martinez-Solano (2007) and Raheman and Nasr (2007), the average payment period was used as proxy for the payment policy and as an independent variable in this study. Based on the previous studies, a positive or a negative relationship is anticipated between the APP and profitability.

2.5.5 Cash conversion cycle

Consistent with Deloof (2003), this study used cash conversion cycle (defined as accounts collection period add inventory conversion period subtract payment deferral period) to control for the cash flow exposure to fluctuations in profitability levels. The cash conversion concept was first introduced by Gitman (1974). This variable is used as a measure of efficiency of a company's working capital management (Soenen, 1993; Deloof, 2003; Lazaridis and Tryfonidis, 2006; Padachi, 2006; Garcia-Teruel and Martinez-Solano, 2007; Banos-Caballero et al., 2009).

While there are alternatives, such as Shin and Soenen's (1998) net trade cycle measure and the weighted cash conversion cycle (WCCC) developed by Gentry et al. (1990), the cash

conversion cycle measure is standard in many corporate finance textbooks and is used in most studies for example: Deloof (2003), REL Working Capital Surveys (2005), Lazaridis and Tryfonidis (2006), Padachi (2006), Raheman and Nasr (2007), Garcia-Teruel and Martinez-Solano (2007) and Banos-Caballero et al. (2009). Johnson and Soenen (2003) demonstrated the strength of using the cash conversion cycle as a comprehensive working capital measure in predicting the success of a company.

Gentry's WCCC captures both the amount of funds and the number of days funds are tied in working capital components. The challenge of using the WCCC is that it requires one to analyze the various inventory types separately (i.e., raw-materials, work-in-progress and finished goods). Decomposing inventories into the three separate categories can be challenging because this information may not be readily available. Again, not all companies in the study have all these categories of inventories. These technicalities of using WCCC were also highlighted by Shin and Soenen (1998) and Deloof (2003). The CCC is accrualbased and it has an indirect relationship with company value. A short CCC implies that companies collect receivables as early as possible and delay payables. The effect of this is a higher net present value of the company's cash flows and a higher company value (Gentry et al., 1990; Shin and Soenen, 1998). Thus, the cash conversion cycle was adopted as a measure of working capital management in this study.

Other studies have defined and studied working capital in different ways. According to Kerr (1997), working capital management is one of the key financing decisions of a financial manager of any company. Belt (1991) defined "gross working capital" as the current assets used in operating the business in the form of cash, accounts receivable and inventories. Belt (1991) also defined "net working capital" (NWC) as the absolute difference between current assets (CA) and current liabilities (CL). Other liquidity measures such as the current ratio and the quick ratio have been omitted due to their static nature. In addition to this, Emery (1984) and Kamath (1989) questioned the applicability of these current and quick ratios in measuring working capital management for a company.

Deloof (2003) generalized working capital management as the cash conversion cycle (i.e., the time span between the expenditure for the purchases of raw materials and the collection of sales of finished goods). Deloof held that a longer cash conversion cycle is associated with a larger investment in working capital. In the conclusion from his 2003 study, Deloof seemed to support the view that companies should strive to minimize the cash conversion

cycle. Deloof however gave a disclaimer that a longer cash conversion cycle might increase profitability because it leads to a higher level of sales.

Shin and Soenen (1998) held a similar definition of working capital as the time lag between the expenditure for the purchase of raw materials and the collection for the sale of finished products. However, a number of studies hold that corporate profitability might also decrease with cash conversion cycle. This usually arises if the costs of higher investment in working capital rise faster than the benefits of holding more inventories and/or granting more trade credit to customers (Kieschnick et al., 2006; Raheman and Nasr, 2007). Taking the cash conversion cycle as the overall measure of a company's working capital management, Raheman and Nasr (2007) found that the coefficient of cash conversion cycle is significantly negative and implies that the increase or decrease, in the cash conversion period affects profitability of the company.

Similarly, Deloof (2003), Lazaridis and Tryfonidis (2006), Garcia-Teruel and MartinezSolano (2007) and Falope and Ajilore (2009) found that a negative relationship exists between the cash conversion cycle and profitability. This is consistent with the view that a decrease in the cash conversion cycle will generate more profits for a company. Deloof (2003) argued that it cannot be ruled out that the negative relation between the cash conversion cycle and profitability is to some extent as a consequence of profitability affecting the cash conversion cycle and not vice versa. From these previous studies, it is evident that companies strive to reduce the cash conversion cycle to its minimum in order to maximize profitability. This argument leads to the formulation of hypothesis four as follows:

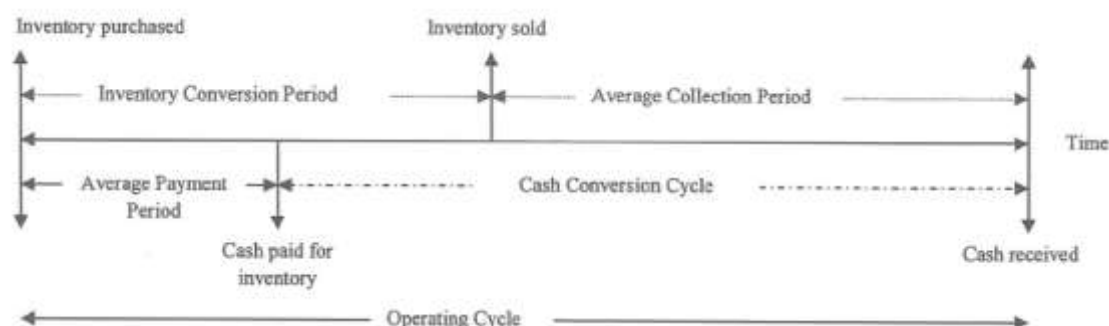
H₄: A significant negative relationship exists between cash conversion cycle and profitability.

The basic focus in managing working capital should be to optimize the company's investment in both current assets and current liabilities. An expert in financial management is of the opinion that the problem of working capital is one of the factors responsible for the low profitability in the manufacturing sector as observed by Eljelly (2004). Sayaduzzaman (2006) explained that better planning and control of working capital leads to an increase in the earning power of the company. There are a number of other techniques that have been suggested to improve liquidity and cash positions. The intention is to increase the efficiency of liquidity management and in turn profitability. These include insuring credit as proposed by Brealey and Myers (1996), Unsworth (2000) and Raspanti (2000). The other alternative

offered was factoring receivables as suggested by Brealey and Myers (1996) and Summers and Wilson (2000). Based on the findings from the previous studies, a negative relationship between cash conversion cycle and profitability was anticipated. The interrelationships among various working capital components can be illustrated in figure 2.1:

Figure 2.1: Operating and cash conversion cycles.

From *Fundamentals of Corporate Finance* (p. 167) by S.A. Ross et al., 2003, New York: Irwin Publications, McGraw-Hill.



All these results can be explained by the fact that there are industry benchmarks to which companies adhere to when setting their working capital investment policies as explained by Hawawini et al. (1986). Thus, companies can increase their profitability by reducing their investment on accounts receivable days and days inventories outstanding to a reasonable minimum, as indicated by the benchmarks set by industry peers. Companies can also maximize profitability by extending the period they take to pay their accounts payable. The overall effect of all these is a reduction in the cash conversion cycle and an increase in company profitability.

2.6 Company characteristics influencing working capital management and profitability

Other control variables for instance company size, leverage, fixed financial assets ratio, variability of net operating income, GDP growth rate, age of the company and industry affiliation were used as they too had a significant or contributory effect on the dependent and independent variables (Deloof, 2003; Lazaridis and Tryfonidis, 2006, Padachi, 2006; GarciaTeruel and Marinez-Solano, 2007).

2.6.1 Company size

Company size may affect the ability of a company to acquire more debt (Deloof, 2003). This debt can be used to finance the company's working capital. Thus, company size is likely to influence the efficiency of a company's working capital management, although the direction of the effect is an open question as observed by Kieschnick et al. (2006). Alternatively, larger companies may take advantage of their size to forge relationships with suppliers that are necessary for a reduction of their investment in working capital. Company size has been measured differently by various studies. Studies focusing on company performance suggest that employment size and sales revenues variables are highly correlated (Storey, 1994). Howorth and Westhead (2003) used total employment size in measuring company size.

Other studies for instance, Deloof (2003), Lazaridis and Tryfonidis (2006), Padachi (2006), Garcia- Teruel and Martinez-Solano (2007) and Falope and Ajilore (2009), used the natural logarithm of sales in measuring company size. Banos-Caballero et al. (2009) used the natural logarithm of assets as proxy for company size. In some cases, policy-makers and practitioners allocate resources to companies with regard to their employment size (Bridge et al., 1998). While most studies focusing on the relationship between working capital and profitability have used the natural logarithm of sales as proxy for company size, this study follows the same approach. This is because sales are a direct result of working capital management as opposed to total assets or employment size. Chiou et al. (2006) provided some evidence that working capital needs increase with company size. Deloof (2003), Lazaridis and Tryfonidis (2006), Padachi (2006) and Garcia- Teruel and Martinez-Solano (2007) found a positive relationship between company size and profitability. Hence, it was anticipated that a positive relationship between size and profitability existed.

2.6.2 Leverage

The leverage ratio was taken as a control variable because debt can sometimes be used to finance short-term and long-term working capital needs of the company (Deloof, 2003). Various studies have measured leverage as total debt to total assets (Deloof, 2003; Padachi, 2006; Lazaridis and Tryfonidis, 2006; Banos-Caballero et al., 2009). Garcia-Teruel and Martinez-Solano (2007) measured leverage as the ratio of total debt to total liabilities. Falope and Ajilore (2009) used the ratio of long-term debt to assets to measure leverage. This study measured leverage using total debt (both short-term and long-term) to assets ratio. Lazaridis

and Tryfonidis (2006), Garcia- Teruel and Martinez-Solano (2007) and Banos-Caballero et al. (2009) established a negative relationship between leverage and the cash conversion cycle. Deloof (2003) found the contrary, that is, a negative relationship between leverage and profitability. This means that a negative or a positive relationship was anticipated between leverage and profitability.

2.6.3 Financial assets influence

For a number of listed companies in the sample, financial assets, which are mainly shares in other companies, comprise a significant part of the total assets. In this case, the fixed financial assets ratio was also used as a control variable. Consistent with Lazaridis and Tryfonidis (2006) and Deloof (2003), shares and participation to other companies (mainly affiliated companies) are considered as fixed financial assets. Since this study is based on the listed companies on the NSE, for a number of companies in the sample, a large proportion of total assets are fixed financial assets, which might influence the results. In both studies, the fixed financial assets ratio was measured by calculating the ratio of financial assets to total assets. Both studies found a positive relationship between the fixed financial assets ratio and profitability. Thus, a positive relationship between the fixed financial assets ratio and profitability was anticipated.

2.6.4 Variability

The variability of net operating income has been used to control for variations in a company's profitability. Variability is measured by computing the standard deviation of net operating profit. This variable was used by Deloof (2003). Deloof (2003) found a positive relationship between variability and profitability. Thus, a positive relationship between variability of the net operating profit and profitability was anticipated.

2.6.5 Age

Banos-Caballero et al. (2009) found that the age of a company has some association with a company's ability to obtain external finance for its working capital needs. The same proposition is held by Niskanen and Niskanen (2006) who held that the age of a company determines its creditworthiness with suppliers of both debt and equity. Age has been used to control for the length of a company's existence in the industry (Howorth and Westhead, 2003). Age can also be used to explain the time the company has known its customers. It also tells about the company's sustained reputation owing to the quality of its products as

explained by Petersen and Rajan (1997). Chiou et al. (2006) explained that more established companies (in terms of age) are able to acquire external financing more easily and under less stringent conditions. This translates to a lower cost of funds for these companies hence more profitability. Therefore, it was anticipated that a positive relationship existed between the age of a company and profitability.

2.6.6 Economic conditions

In line with Lamberson (1995), Garcia-Teruel and Martinez-Solano (2007), BafiosCaballero et al. (2009) and Falope and Ajilore (2009), since the nature of economic conditions are usually reflected in the profitability of a company, the growth rate in Gross Domestic Product (GDP) was also incorporated. This is backed by Smith (1987) and Walker (1999) who argued that the state of the economy has an effect on the accounts receivable and inventories. Similarly, Blinder and Maccini (1991) found that recessions lead to a drastic reduction in inventories. Similar findings by Carpenter et al. (1994) and Kashyap et al. (1994) confirmed that the rate of growth in GDP affects working capital. Since prior research find different directions of relationship between the GDP growth rate and profitability, a positive or a negative relationship was anticipated.

2.6.7 Industry affiliation

Hawawini et al. (1986) suggested that industry practices are significant determinants of a company's working capital management practices. The working capital policies for instance, of software companies are quite different from those of either a manufacturing or a retailing company. Consequently, it is important to control for the influence of industry practices on a company's working capital practices (Storey, 1994; Filbeck and Krueger, 2005; Kieschnick et al., 2006; Lazaridis and Tryfonidis, 2006). Storey (1994) held that the main industrial activity of a company may impact on business performance. Howorth and Westhead (2003) asserted that although industry specific characteristics may impact on the adoption of working capital management routines, it is expected that these industry influences are dependent on the length of the production cycle and industry norms, and trade credit period extended and taken. These relationships are captured in earlier hypotheses.

2.7 Dummy variables

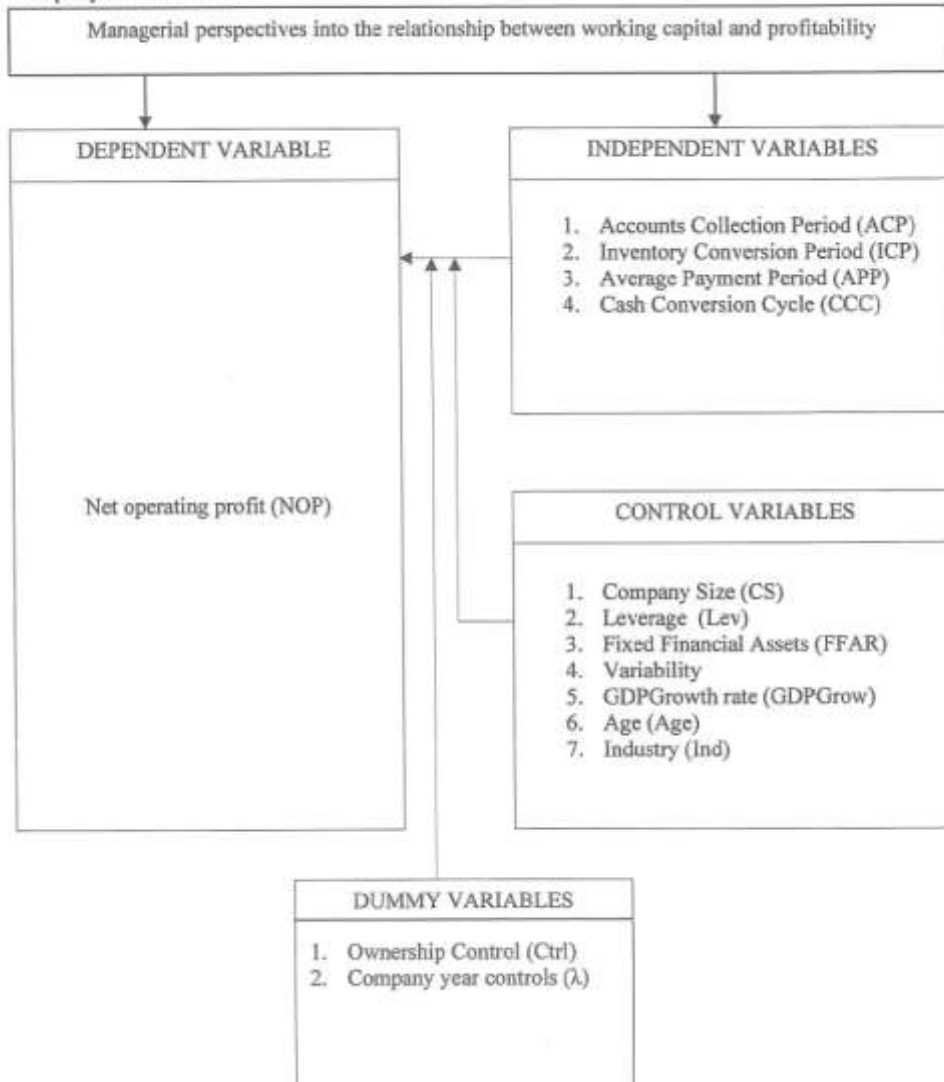
Two dummy variables - that is, ownership control and company year controls - were also factored in the regression models. Ownership control may affect a company's exposure to

various sources of funds. Consistent with Deloof (2003), Lazaridis and Tryfonidis (2006), Garcia- Teruel and Martinez-Solano (2007) and Banos-Caballero et al. (2009), company year controls were incorporated to control for changes in the economy over time.

2.8 Conceptual framework

Following a discussion on the measures of profitability, working capital management components and other company characteristics influencing working capital management, the conceptual framework for this study was developed from a review of prior research. The dependent variable for this study was the net operating profit scaled by total assets less fixed financial assets. This variable was used as a measure of the operating success or failure of a company. A company's operating success is measured by its ability to realize sales that are able to cover all its operating costs. These sales are driven by assets. This therefore means that the operating profit is in a way driven by the asset backing of a company. Assets here excluded financial assets which include assets like investment is associate companies or affiliates (Deloof, 2003). Figure 2.2 shows a summary of the conceptual framework for this study.

Figure 2.2: Conceptual model of the relationships among profitability, working capital and company characteristics.



2.9 Financing working capital

Summers and Wilson (2002) identified trade credit as one major source of short-term working capital finance. Trade credit, according to Summers and Wilson (2002), is obtained through delaying payment to suppliers. It can be used by small enterprises and those growing companies with limited access to funds from institutional lenders. Cufiat (2007) suggested that trade credit is mainly beneficial to companies experiencing high growth. Schwartz (1974) argued that those companies that are able to obtain funds at a low cost (probably due to more bargaining power) will offer trade credit to companies facing higher financing costs.

Mian and Smith (1992) observed that the existence of trade credit is prevalent in markets with imperfect information. Petersen and Rajan (1997) explained that this occurs where the seller is in doubt over buyer's creditworthiness and the buyer is also in doubt as to the quality of goods offered. Flanagan (2005) explained that companies can negotiate new terms with suppliers (e.g., requesting suppliers to grant them longer credit period or increased credit limit). According to Summers and Wilson (2002), one advantage of trade credit is that it helps in reducing transaction costs. Emery (1984) saw trade credit as a way of increasing sales levels in low demand periods and also a more profitable short term investment than marketable securities. Fisman and Love (2003) argued that trade credit is a better source of finance in mitigating weak creditor protection and imperfect information compared to formal borrowing from financial institutions.

In addition to trade credit, Flanagan (2005) suggested new equity or loans from shareholders, bank overdrafts or lines of credit and long term loans as other possible sources of working capital financing. Buzacott and Zhang (2004) explained that inventory can be financed through an increase in payables, decreasing receivables by accelerating customer payments or factoring receivables, increasing gross profit, increasing equity and borrowing. Howorth and Westhead (2003) identified five external sources that require companies to maintain good credit rating by efficiently managing their working capital. These sources were: bank overdraft, short-term loans, medium term loans, long-term loans and venture capital. Howorth and Westhead (2003) found that companies which focus on cash management require less external finance compared to companies which focus on working capital management. Compared to SMEs, large companies have more alternative sources of external finance. Therefore, these companies do not depend on short-term finance sources only (Banos-Caballero et al., 2009). But as revealed by the current study (2010), large

companies opt for short-term (bank-overdraft) or internal finance sources (cash from operations) because external long-term debt or new equity issues are usually more expensive.

Agency theory suggests that managers may manage working capital towards set targets hence deceiving the shareholders of the company. Again, as Deloof (2003) observed, developing countries have underdeveloped capital markets in the sense that information and agency problems are very evident. La Porta et al. (1997), who found that countries with poorer investor protection have smaller and narrower external capital markets, show that a developing country has weak legal protection of corporate shareholders and creditors. This makes obtaining finance from banks and informal trade credit more attractive. Fisman and Love (2003) found that companies in countries with less developed financial markets use informal credit provided by their suppliers to finance growth.

2.10 Working capital management and profitability: what drives the other?

Deloof (2003) presented a discussion on whether working capital management drives profitability or vice versa. He pointed out that profitability may also influence how companies manage their working capital, and not always the other way round. Shin and Soenen (1998) explained that the difference in profitability for American companies can be explained by the difference in the cash conversion cycle. This proposition suggests that cash conversion cycle drives profitability.

One argument supporting this proposition could be the fact that collecting cash from customers within the shortest time possible leads to higher sales level, hence more profitability. Shortening accounts receivable days leads to a reduction in the cash conversion cycle *ceteris paribus*. A shorter inventory conversion period implies that the rate of inventory movement out of the company is high. When companies sell inventories faster, less holding costs are incurred and more sales are realized. The problem with this is that there is an increase in ordering costs and this becomes even worse when most of these sales are on credit. Although a shorter inventory conversion period leads to a shorter cash conversion cycle, the effect of shortening this cycle may be an increase or a decrease in profitability depending on the circumstances faced by a company.

Lengthening accounts payable days means that the company can take advantage of the delay to generate more returns. A longer accounts payable days leads to a shorter cash conversion cycle, which may lead to increased profitability. Banos-Caballero et al. (2009)

suggested that a longer cash conversion leads to an increase in company sales hence an increase in its profitability. Soenen (1993) explained that companies with long cash conversion cycles face the risk of going bankrupt. This implies that long cash conversion cycles are detrimental to a company.

On the other hand, profitability can also drive working capital management. For instance, Deloof (2003) and Lazaridis and Tryfonidis (2006) argued that less profitable companies take long to pay their bills. This may be due to the fact that they have insufficient funds to pay their bills or the delay in making payments is calculated so as to take advantage of the delayed funds in boosting their profitability. A counter argument to this would be that more profitable companies take long to pay their accounts payable. The explanation to this would be that since these companies are more profitable, they may exert a higher bargaining power over their suppliers and other creditors. Again, more profitable companies tend to have formalized management systems (Howorth and Westhead, 2003); this means that the payment process tends to be quite long, hence causing delays. Deloof and Jegers (1996) found that more profitable companies take long to collect cash from their customers. The explanation they provided for this was that more profitable companies have adequate cash. In this case, they are able to lend to their customers for a long period of time without affecting their operations. In addressing the direction of causality in this study, the possibility of endogeneity in the variables being investigated was taken care of by performing a two-stage least squares regression. The results from these regressions were consistent with the results from both the pooled OLS and fixed effects estimations.

2.11 Chapter summary

Chapter two presented a literature review on prior research carried out on working capital management and profitability. It also presented the theoretical and conceptual frameworks to be adopted in this study. Since previous researchers have based their findings on the relationship between working capital management and profitability studies in other countries, this study laid special emphasis on both financial and managerial perspectives into the relationship between working capital management and profitability. Using agency, transactions cost and the trade-off theories, the study used data collected to determine what relationship existed between working capital components and profitability and whether the results from the financial statements are consistent with the responses from the finance managers and or management accountants of the sampled companies.

CHAPTER THREE

Research Methodology

3.1 Introduction

The purpose of this study was to investigate the relationship between working capital management and company profitability. This chapter discusses the companies and variables included in the study and the statistical techniques to applied in investigating this phenomenon. In this section, a description of different measures of corporate working capital and corporate profitability is carried out. The chapter also discusses various econometric tests on the robustness of the data analysis techniques used.

To determine whether there was a relationship between the variables of interest, a combined set of quantitative design elements and procedures from both annual financial reports and the questionnaire were used. The relationships among study variables were explored using correlation, measures of frequency percentages and multivariate regression methods.

3.2 Research design

The research design for this study was selected due to the following reasons: firstly, the study used panel data for the last sixteen years (1993-2008). Analyzing this panel data required the use of multivariate analysis in order to establish the causal relationships existent amongst the variables being investigated (Deloof, 2003; Lazaridis and Tryfonidis, 2006). This called for cross sectional and longitudinal analyses to fmd out the relationships existent amongst the variables under study over a given time period (Huang et aI., 2008).

Secondly, the study aimed at an examination of the managerial perspectives into the relationship between working capital practices and profitability. This required the researcher to triangulate the results obtained from the panel financial data with data from the questionnaires. This triangulation approach of financial data from annual financial reports and questionnaires provided an opportunity to develop a broad-based understanding of the relationship between working capital management practices and corporate profitability in the sampled companies (Denzin, 1970; Bryman, 2006).

3.3 Target population

The target population for this study was companies listed under agricultural, commercial and services, industrial and allied and alternative investment segments on the NSE. The units of analysis were the companies and the target respondents were the finance managers and or management accountants of the sampled companies. Certain industries were omitted from the total 56 companies listed on the Nairobi Stock Exchange (as of 31st December 2008) due to their type of activity. This study followed the classification of NSE from which all companies listed under finance and investment segment (i.e., banks, investment companies and insurance companies) were omitted.

This is because the definition of working capital for banks and insurance companies is different from the definition being investigated in this study. For instance, the definition of working capital for East African Breweries is quite different from, say Kenya Commercial Bank (KCB), Centum Investment Company or Kenya Re-insurance Company. Owing to in availability of data, some companies listed under commercial and service segment and industrial and allied segment were omitted. This is consistent with Deloof (2003), Padachi (2006), Lazaridis and Tryfonidis (2006) and Garcia- Teruel and Martinez-Solano (2007). Of the 36 companies in the selected population, the final sample contained 30 companies (see appendix 4). The reduction in the number of companies studied is primarily due to in availability of financial information for most periods covered in the study.

Data used in this study were obtained from the Kenya Capital Markets Authority library, internet and web sites of the NSE and the sampled companies. Data were obtained from the financial statements for a selected sample of Kenyan companies listed on the NSE for a period of sixteen years (1993 through 2008). Questionnaires were also used to collect data from the finance managers and or management accountants of the sampled companies. The choice of finance managers and or management accountants is informed by the fact that the dynamics of working capital management are better understood by these personnel. For each selected company, one questionnaire was sent to the finance manager and or management accountant.

3.4 Data collection instrument

In this study, portions of the data were obtained from annual financial statements and notes. Data were obtained mainly from the CMA library while other data were collected from

internet and websites of sampled companies. Other financial data were also obtained from major newspapers in the country. In order to increase reliability of the findings, a combination of data from annual financial reports and questionnaires was used. The study adopted a triangulation approach as proposed by Denzin (1970). In doing so, the findings from annual financial reports were used to corroborate and augment evidence obtained from the questionnaires.

Managerial perspectives with regard to working capital management and performance were derived from the questionnaire developed from previous studies by Saunders and Wilson (2000), Howorth and Reber (2003) and Howorth and Westhead (2003). The researcher modified some of the questions in order to achieve the objectives set out in the study.

The questionnaire survey sought to gather data on working capital management practices, industry and financial characteristics. The questionnaire was divided as follows:

Part A sought to obtain general information regarding the respondent's job title and the industry in which the company operates in. Part B focused on working capital management practices while Part C investigated common sources of working capital financing used by companies. Part D examined working capital management challenges faced by companies. Lastly, Part E examined measures used by companies in assessing operational performance and the perceived effect of working capital management practices on the performance of the company.

3.5 Reliability

Reliability was defined by Joppe (2000) as:

[Reliability is] ... the extent to which there is some consistency in research results over time. Again, reliability means that the results can be generalized to the entire population. Reliability implies that if the same results can be produced in another research using similar methodology, then the research instrument is considered to be reliable. (p. 1)

Gill and Johnson (1997) extended the definition of reliability to mean the consistency of research results over time allowing other researchers to replicate the original study. As Crocker and Algina (1986) suggested, in testing for internal reliability of the instrument, the questionnaire was pilot tested and Cronbach's Alpha Coefficients used to confirm the

reliability of the measured variables (Howorth and Westhead, 2003; Cheng and Pike, 2003). The Cronbach's Alpha for the questionnaire used in this study was 0.925 as shown in table 3.1 below:

Table 3.1: Cronbach's Alpha for the questionnaire

Reliability Statistics^a		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	Number of Items
0.925	0.927	19

^aobtained using SPSS

3.6 Validity of the instrument

As Winter (2000) pointed out, the concept of validity originates from a positivist tradition which was characterized by empirical propositions such as universal laws, deduction and mathematical data. As Joppe (2000) explained, validity explains whether the research measures what it aimed to measure. Gill and Johnson (1997) distinguished between two types of research validity: internal validity where the researcher is assured that the 'cause' produces the 'effect' and external validity whereby the research is generalizable, i.e., from the sample to the population or from a social context to other contexts. Joppe (2000) explained further that researchers can determine validity by using questions in the questionnaire and looking for answers in other literature.

In developing the questionnaire, the researcher used previous literature such as Saunders and Wilson (2000), Howorth and Reber (2003) and Howorth and Westhead (2003) in addition to other literature related to working capital management. In ensuring validity for the annual financial reports, the researcher ensured that the financial statements used were audited by the big four audit firms.

Golafshani (2003) explained that triangulation is one of the ways of ensuring validity of the results from a quantitative study. Patton (2001) stressed on the strength of triangulation through the use of combined methods. This study used a triangulation approach whereby the results from annual financial data were compared with the results obtained from questionnaires sent to the responding companies. Pilot testing the questionnaire also helped to ensure that the final questionnaire developed measured exactly what it was intended to measure.

3.7 Data collection procedures

Data for this study were collected from both primary (i.e., from questionnaires) and secondary sources (i.e., from annual financial statements). Robson (1993, p. 243) observed that one limitation of self-completed questionnaires was that, apart from being very efficient in terms of saving researcher's time and effort, self-completed questionnaires can also be superficial. Robson (1993) explained that it is advisable to send out a preliminary notification before the actual survey questionnaire is sent. This helps in gaining access to the organization easily since it prepares the organization for the survey and is likely to yield a higher response rate. A letter of introduction from Strathmore University (Appendix 1) was also sent out.

Financial data for this study were collected from listed companies on the NSE Market. The reason as to why this market was chosen is primarily due to the availability and reliability of the financial statements in that they are subject to mandatory audit by internationally recognized audit companies (i.e., the big four). As Lazaridis and Tryfonidis (2006) noted, those companies listed on the stock exchange market are motivated to present profits if those exist in order to boost the share price. Robson (1993, p. 280) observed that the use of secondary data is a rather 'obtrusive' data collection technique in that the researcher does not have to interrupt the organization's day to day operations.

Thirty questionnaires were dropped by the researcher and a trained assistant or posted one week after the preliminary notification, with a cover letter addressed to the finance manager and or the management accountant of all the 30 companies in the sample. They were to be picked at a later time. The cover letter explained to the respondents what the survey was about, why the respondent's contribution was important and it also assured the recipient of confidentiality. The study aimed at a 50% response rate. If this was not achieved, respondents would be contacted through phone or e-mail. Alternatively, another questionnaire was sent out. In order to encourage participation, respondents were promised a summary of the findings and recognition of their organization's contribution in the final report of the study. The cover letter informed the recipients whom to contact in case of any questions.

The chi-square tests were performed on the collected data for any response bias between respondents and non-respondents. In order to ensure reliability, the questionnaire was pilot tested and Cronbach's Alpha Coefficients were used to confirm the reliability of the

measured variables. Using results from the two sources, the four hypotheses developed in chapter two were tested statistically to arrive at conclusions and policy implications.

3.8 Data analysis and variable measurement

The quantitative data from annual financial reports were first checked for errors in the entries, outlying values and any unexpected values. It was then analyzed using both Stata and Statistical Program for Social Sciences (SPSS). The analyzed data was also tested for significance of the relationships among variables of interest in the study. The results from the annual financial reports were presented in tables. Consistent with Deloof (2003) and Garcia Teruel and Martinez-Solano (2007), the pooled overall least squares (OLS) and the fixed effects regressions were used in performing multiple regressions on financial data collected from annual financial reports. In arriving at conclusions, the results from the pooled OLS were used.

This method was preferred due to three reasons: first, this method has been used by majority of previous similar studies. Second, the approach helps in explaining the causality in the relationships among the various variables used in a more efficient manner as explained by Padachi (2006). Third, although the fixed effects estimation model was also used, the pooled regression model brings out the differences that exist between companies (Deloof, 2003; Padachi, 2006; Rahman and Nasr, 2007), hence making it superior for the analysis required in this study. The F-test was also useful in determining the significance and the strength of the models developed in this study. The p-values and t-values were used to denote the significance of the various working capital components. Two-stage linear regression checks for endogeneity were also performed with results being similar to those of the pooled and fixed effects regression models. In order to check whether multicollinearity was a problem among the collected variables, the variance inflation factors (VIFs) were used.

3.8.1 Summary of tests of research objectives and hypotheses

The analysis of financial data was then followed by an analysis of quantitative data from the questionnaires. Consistent with Howorth and Reber (2003), significance tests on both continuous and non-continuous variables from the questionnaire were performed. Tables 3.2a and 3.2b show an outline of the objectives of the study vis a vis the research hypotheses and research questions. The tables also indicate the type of analysis and an interpretation of the results. The variables measured took the form of continuous, ordinal and binary. The Likert's

five point rating scales were also used for the ordinal variables. The Likert scale system is an ordinal scale that focuses on the subject (respondents). Cooper and Emory (1995) explained that such scales are interval scales and the appropriate tests are parametric and nonparametric tests such as the Pearson's product moment correlation, Spearman's rank coefficients and multiple regression techniques. Bryman and Cramer (1990) also noted that Likert scales are increasingly being used since they have data qualities similar to interval scales.

Using results from the two sources, the four hypotheses developed in chapter two were tested statistically to arrive at conclusions.

Table 3.2a: Summary of tests for research objective one

Overall objective	Specific objective	Research Hypothesis	Analysis	Interpretation of results
1. To establish the relationship between working capital management and corporate profitability	1. To establish the relationship between accounts receivable period and corporate profitability	H₀: There is no significant relationship between accounts receivable period and corporate profitability H₁: A significant negative relationship exists between accounts receivable period and corporate profitability	Correlation coefficients and regression analysis: The use of the parametric Pearson's product moment correlation coefficient (<i>r</i>) and <i>p</i>-values to measure the nature and significance of the relationship respectively. The use of both pooled and fixed effects regression analysis to provide a better cause-and-effect on the relationship $NOP_e = \alpha_0 + \beta_1 X_1 + \sum_{i=1}^n \beta_i X_n + \varepsilon_i$	The parametric Pearson correlation coefficient (<i>r</i>) ranges between $-1 \leq r \leq +1$ Where: <i>r</i> = +1.000 represents a perfectly positive relationship, <i>r</i> = -1.000 represents a perfectly negative relationship and <i>r</i> = 0.000 represents no relationship at all. In the regression analysis, the significance of beta coefficient was tested by the t-values and the p-values. The F-value and
	2. To establish the relationship between inventory conversion period and corporate profitability	H₀: The inventory conversion period has no significant relationship with corporate profitability H₂: Inventory conversion period has a significant negative relationship with corporate profitability.	Correlation coefficients and regression analysis: The use of the parametric Pearson's product moment correlation coefficient and <i>p</i>-values to measure the nature and significance of the relationship respectively. The use of both pooled and fixed effects regression analysis to provide a better cause-and-effect on the relationship $= \alpha_0 + \beta_2 X_2 + \sum_{i=1}^n \beta_i X_n + \varepsilon_i$	

	3. To establish the relationship between accounts payable period and corporate profitability	H₀: Accounts payable period has no significant relationship with corporate profitability H₁: Accounts payable period has a significant relationship with corporate profitability.	Correlation coefficients and regression analysis: The use of the parametric Pearson's product moment correlation coefficient and <i>p</i>-values to measure the nature and significance of the relationship respectively. The use of both pooled and fixed effects regression analysis to provide a better cause-and-effect on the relationship $NOP_{it} = \alpha_0 + \beta_1 X_{1it} + \sum_{i=1}^n \beta_i X_{it} + \varepsilon_i$	the adjusted coefficient of determination, adjusted R ² , tested for the strength of the model used. The level of significance was measured by p-values at the 10, 5 and 1 percent levels.
	4. To establish the relationship between cash conversion cycle and corporate profitability	H₀: There is no relationship between cash conversion cycle and profitability H₁: A significant negative relationship between cash conversion cycle and profitability exists	Correlation coefficients and regression analysis: The use of the parametric Pearson's product moment correlation coefficient and <i>p</i>-values to measure the nature and significance of the relationship respectively. The use of both pooled and fixed effects regression analysis to provide a better cause-and-effect on the relationship $NOP_{it} = \alpha_0 + \beta_1 X_{1it} + \sum_{i=1}^n \beta_i X_{it} + \varepsilon_i$	

Table 3.2b: Summary of tests for research objective two

Main objective 2	Sub-Objective	Research question	Analysis	Interpretation of results
2. To investigate the managerial perspectives with regard to the relationship between working capital management and company profitability.	Sub-Objective 1: To investigate working capital management practices and techniques being used by Kenyan listed companies.	Sub-Question 1: What are the working capital management practices and techniques being used by Kenyan listed companies?	Computation of measures of frequency (i.e., percentages) and the use of non-parametric Chi square Tests.	A comparison of the frequencies for each parameter.
	Sub-Objective 2: To examine the managerial perspectives with regard to the relationship between working capital management and profitability.	Sub-Question 2: What are the managerial perspectives with regard to the relationship between working capital management and profitability?	Computation of measures of frequency (i.e., percentages) and the use of non-parametric Chi square Tests.	A comparison of the frequencies for each parameter.
	Sub-Objective 3: To examine the challenges associated with working capital management by Kenyan listed companies.	Sub-Question 3: What are the challenges associated with working capital management by Kenyan listed companies?	Computation of measures of frequency (i.e., percentages) and use of non-parametric Chi square Tests.	A comparison of the frequencies for each parameter.

3.8.2 Variables and operational definitions

This study undertook the issue of identifying key variables that influence the relationship between working capital management and profitability of Kenyan listed companies. The choice of the variables was influenced by the previous studies on the relationship between working capital management and profitability as discussed under section 2.5 in this thesis. All the variables were used to test the hypotheses under the study. They included the dependent, independent, control and dummy variables as presented in tables 3.3, 3.4 and 3.5 below:

Table 3.3: Dependent and independent variables

Variable	Definition	Rationale	Source
Dependent variable			
Net operating profit ratio (NOP)	(Operating profit before interest and taxes + depreciation)/(Total assets – Financial assets)	Used as a measure of profitability that measures operating success or failure of the company.	Lazaridis and Tryfonidis (2006), Raheman and Nasr (2007), Ramachandran and Janakiraman (2009).
Independent variables			
Accounts collection period (ACP)	$(\text{Accounts receivable}/\text{Sales}) \times 365$	Used as the proxy for the period taken to collect cash from the company's debtors	Deloof and Jegers (1996), Shin and Soenen (1998), Deloof (2003), Padachi (2006), Raheman and Nasr (2007), Ramachandran and Janakiraman (2009).
Inventory conversion period (ICP)	$(\text{Inventory}/\text{Cost of goods sold}) \times 365$	Used as the proxy for the period the company takes to convert inventory into sales	Deloof and Jegers (1996), Shin and Soenen (1998), Deloof (2003), Raheman and Nasr (2007), Padachi (2006), Ramachandran and Janakiraman (2009).
Average payment period (APP)	$(\text{Accounts payable}/\text{Purchases}) \times 365$	Used as the proxy for the period taken to pay the company's creditors	Deloof and Jegers (1996), Shin and Soenen (1998), Deloof (2003), Raheman and Nasr (2007), Padachi (2006), Ramachandran and Janakiraman (2009).
Cash conversion cycle (CCC)	$ACP + ICP - APP$	Used as a comprehensive measure of working capital management.	Deloof and Jegers (1996), Shin and Soenen (1998), Deloof (2003), Padachi (2006), Raheman and Nasr (2007), Ramachandran and Janakiraman (2009).

Table 3.4: Control variables

Control variables	Definition	Rationale	Source
Company size (CS)	Natural logarithm of sales	Used as a control for the size of the company.	Deloof (2003), Kieschnick et al. (2006), Raheman and Nasr (2007).
Leverage (Lev)	(Short term loans + Long term loans)/Total assets	Used as a control for the company's use of debt.	Raheman and Nasr (2007), Huang et al. (2008), Ramachandran and Janakiraman (2009).
Fixed financial assets ratio (FFAR)	Fixed financial assets/Total assets	Used to control for the possibility of fixed financial assets having an influence on the relationship being investigated.	Deloof (2003), Raheman and Nasr (2007).
Variability	Variability is the standard deviation of net operating income	Used as a control for changes in the net operating income.	Deloof (2003).
GDPGrow	Annual GDP growth rate	Controls for the effect of the economic cycle on the levels invested in working capital.	Garcia-Teruel and Martinez-Solano (2007), Baños-Caballero et al. (2009).
Age	Natural logarithm of years	Used as a control for the length of existence of the company.	Petersen and Rajan (1997).
Industry [#]	1 – Agricultural company; 0 – Otherwise.	Used due to the fact that significant industry effects exist on a company's investment in working capital (Shin and Soenen, 1998).	Kieschnick et al. (2006), Shin and Soenen (1998), Hawawini et al. (1986), Lazaridis and Tryfonidis (2006), Filbeck and Krueger (2005).
	1 – Commercial and service company; 0 – Otherwise.		
	1 – Industrial and allied company; 0 – Otherwise.		
	1 – Alternative Investment Segment company 0 – Otherwise.		

[#]to avoid the dummy variable trap, only three industry controls were incorporated in the regression models.

Table 3.5: Dummy variables

Dummy variable	Definition	Rationale	Source
Company control	1 – Local ownership; 0 –Foreign ownership	Used as a control for the company's nature of ownership	Berger and Udell (1995)
Company-years control	Each specific year was assigned 1 for a given year and 0 otherwise.	Used as a control for possible changes in the economic environment during the period under study.	Deloof (2003), Garcia-Teruel and Martinez-Solano (2007), Huang et al. (2008).

3.8.3 Regression model specification

A step-wise pooled OLS regression was performed on the collected data from the financial statements. The step-wise regression analysis was performed in order to deal with the problem of multicollinearity which was found to exist among the key independent variables. Since the independent variables in the study were highly collineated (as shown by the variance inflation factors), each independent variable was regressed at a time in addition to all control and dummy variables. In the final regression, all the first three independent variables (i.e., ACP, ICP and APP) were included. CCC was left out since its inclusion led to a very high level of multicollinearity. This methodology is consistent with previous studies (Deloof, 2003; Lazaridis and Tryfonidis, 2006; Padachi, 2006; Garcia-Teruel and MartinezSolano, 2007). The general form of the ordinary least squares regression model is as follows:

$$NOP_{it} = \alpha_0 + \sum_{t=1}^n \beta_t X_{it} + \varepsilon_i \quad \text{(Equation 1)}$$

NOP_{it} : the net operating profit ratio of company i at time t ; $i = 1, 2, 3, \dots, 30$ companies,

α_0 : the intercept of the equation,

β_t : the coefficients of X ; variables,

X_{it} : the different independent, control and dummy variables for working capital management of company i at time t ,

t : the time period where $t = 1, 2, \dots, 16$ years and

ε_i : the error term associated with any regression equation.

The estimable (reduced form) equation of the general model is as follows:

$$NOP_u = \alpha_0 + \beta_1 ACP_u + \beta_2 ICP_u + \beta_3 APP_u + \beta_4 CCC_u + \beta_5 CS_u + \beta_6 Lev_u + \beta_7 FFAR_u + \beta_8 Variability_u + \beta_9 GDPGrow_u + \beta_{10} Age_u + \beta_{11} Ind_u + \beta_{12} Ctrl_u + \beta_{13} \lambda_u + \varepsilon_i$$

(Equation 2)

Where:

NOP: the net operating profit which is a function of:

ACP: accounts collection period,

ICP: inventory conversion period,

APP: average payment period,

CCC: cash conversion cycle,

CS: company size,

Lev: leverage,

FF AR: fixed financial assets ratio,

Variability: the variability of the NOP,

GDP Grow: the GDP growth rate,

Age: age of the company,

Ind: industry,

Ctrl: company control and

A: Company year control dummies.

3.8.4 Test for the regression models' reliability and robustness

In order to control for multicollinearity, the variance inflation factors (VIFs) were used.

All regression models were tested for multicollinearity. The variance inflation factors (VIFs) (not disclosed) were used to detect whether one predictor had a strong linear association with the remaining predictors (the presence of multicollinearity among the predictors) (Lazaridis and Tryfonidis, 2006). A variance inflation indicator (VIF) measures how much the variance of an estimated regression coefficient increases if the predictors are correlated (multicollinear). The largest VIF among all predictors is often used as an indicator of severe multicollinearity. Montgomery and Peck (1982) suggested that when the VIF is greater than

5-10, then the regression coefficients are poorly estimated (also Chartlergee and Price, 1977).

In all regression models, the VIFs ranged 1-5, implying absence of multicollinearity amongst observed variables.

In order to address endogeneity, two-stage linear regressions were performed. The results from the 2SLS were not statistically different from those of the pooled OLS and fixed effects estimations. Both the pooled OLS and fixed effects regressions were performed in order to confirm the consistency and efficiency of the results from the panel data. This is consistent with Deloof (2003), Garcia-Teruel and Martinez-Solano (2007) and Padachi (2006). The strength of the overall model was tested using the significance of F-test and all models were found to be highly significant at $p < 0.01$. The Durbin-Watson (d) coefficient was used to test for independence of observations. In all regressions, the values for d ranged between 1.3 and 2.4. This meant that there was independence of observations.

3.7 Chapter summary

Chapter three presented a discussion of the research methodology, research design, target population, data sources, data collection procedures and data analysis used to address the four research hypotheses. Chapter four describes data analysis in detail and the statistical and analytical techniques used. The analyses are based both on the financial data obtained from the listed companies on the NSE for the 1993 – 2008 period and data gathered from questionnaires.

CHAPTER FOUR

Presentation of Research Findings

4.1 Introduction

In this chapter, the data analysis and a report on the results of the study are presented. The main issues covered are divided into two sections. Section A covers the results based on the existing relationship between working capital management and profitability from the financial data analysis (i.e., objective 1) and Section B covers the results obtained from questionnaires on managerial perspectives with regard to working capital practices and profitability (i.e., objective 2).

Section A: Financial perspectives into the relationship between WCM and profitability

4.2 Initial data analysis (financial data analysis)

4.2.1 Sample representation

Of the 36 companies in the population, the final sample contains 30 companies (see appendix 4). The reduction in the number of companies studied is primarily due to in availability of financial information for most periods covered in the study. In order to ensure accuracy of the collected data, a number of filters were applied. Observations of companies with anomalies such as negative values in their total assets, current assets, fixed assets, capital, depreciation and the interest paid were eliminated.

Since the panel data being analyzed had the potential of having influential observations and data errors as pointed out by Fama and French (1998), each year was treated as having missing values 1 % of the observations in each tail of the distribution for each variable. This is consistent with previous studies (Shin and Soenen, 1998; Deloof, 2003; Raheman and Nasr, 2007; Garcia-Teruel and Martinez-Solano, 2007). As a result of applying these filters, the final sample of 468 company-year observations over the period from 1993 through 2008 was arrived at. This represents approximately 70% of the total 480 expected company year observations. Table 4.1 summarizes the details on the companies included in the sample.

Table 4.1: Sample representation

Industry/segment	Number of listed companies ^a	Number of companies included in the sample	Number of company-year observations	Percentage of responding companies
Agricultural companies	4	4	64	100%
Commercial and service companies	12	6	96	50%
Industrial and allied companies	18	13	208	72%
Alternative Investment Segment	8	7	112	88%
Total	42	30	408 ^b	

Notes: ^aincludes companies listed on the NSE as of 31st December 2008. ^bThe number of company-year observations was reduced to 468 as a result of applying the filters.

Source: 1993 – 2008 survey data

4.2.2 Summary statistics

As noted by Hawawini et al. (1986), the type of industry in which a company operates in has an effect on its working capital management practices. Thus, table 4.2a reports the net operating profit ratio and the number of days accounts receivable outstanding, days of inventory and the days accounts payable are outstanding by industry sector according to NSE classification. The commercial and services sector and the industrial and allied sector are two sectors with the highest net operating profit ratios, with a value of 44 percent and 46 per cent respectively. It is interesting to note that these two industry segments are still the ones with the longest days of inventory and days accounts payable are outstanding.

Companies that are dedicated to agriculture and those companies listed under the alternative investment segment lag behind with an NOP of 19.36 per cent and 27.05 per cent respectively. Agricultural companies have the lowest ACP and APP. This is probably owing to the nature of their business. The lowest mean cash conversion cycle is shown by companies listed under the commercial and services segment (i.e., 41.59 days).

Table 4.2a: Summary statistics: Mean values by industry

Industry sector	NOP	ACP	ICP	APP	CCC
Agriculture	0.19	50.80	83.22	73.4	60.57
Commercial and Services	0.44	77.04	108.81	144.	41.59
Industrial and Allied	0.46	58.83	129.07	87.8	100.05
Alternative Investment	0.27	77.90	50.37	77.7	66.66

Notes: NOP - Net operating profit ratio, ACP - Accounts collection period, ICP - Inventory conversion period, APP - Average payment period, CCC - Cash conversion cycle

Source: 1993 - 2008 survey data, author's computation

In table 4.2b, the summary statistics of the variables included in the regression models are presented. The mean values for ACP, ICP, APP and CCC range between two months to approximately three months. Generally, a typical company is keen on reducing its days accounts receivable outstanding and the cash conversion cycle All variables share a common sample size of 468 company-years.

Table 4.2b: Summary statistics: Descriptive statistics across all companies

Variable	Mean	25%	Median	75%	StDev.
NOP	0.382	0.162	0.275	0.442	0.576
ACP	64.680	41.180	65.230	83.330	33.920
rcr	97.260	40.630	82.170	138.590	73.100
APP	95.580	53.970	81.130	121.740	68.~20
CCC	69.350	19.900	63.660	115.080	82.030
CS	7.637	6.548	7.608	8.858	1.906
LEV	0.127	0.000	0.073	0.213	0.166
FFAR	0.016	0.000	0.000	0.007	0.057
Variability	0.120	0.017	0.040	0.086	0.382
GDPGrow	3.276	1.675	3.330	4.726	2.216
Age	2.052	1.750	2.284	2.479	0.816

Notes: 25% is the lower quartile, 75% is the upper quartile and StDev. is the standard deviation.

Source: 1993 - 2008 survey data, author's computation

4.2.3 Pearson correlations

Consistent with Shin and Soenen (1998), table 4.3 presents the Pearson correlations among the observed variables. Table 4.3 shows that the NOP is negatively related to the ACP. The negative relation between the NOP and the ACP is consistent with the view that the less the time taken by customers to pay their bills, the more cash is available to replenish the inventory hence leading to more sales which results to an increase in profitability. The table also shows that the NOP is positively related to the ICP and the APP. The positive relationship between the NOP and the ICP can be explained by the fact that companies which maintain high inventory levels reduce the costs of possible interruptions in the production process. This helps in preventing loss of business due to the scarcity of products and reducing the cost of supplying the goods. In so doing, companies are protected against fluctuations in the prices of goods.

The positive relationship between the NOP and the APP can be explained by the fact that lagging payments to suppliers and other creditors ensures that the company has some cash to purchase more inventory for sale. This leads to an increment in its sales levels hence boosting the company's profits. The negative relationship between the NOP and the CCC is consistent with the view that decreasing the time lag between the expenditure for purchases of inventories and the collection of sales of sold goods increases profitability.

Although the Pearson linear correlations give proof of an inverse relationship between the CCC and profitability, these measures do not allow the researcher to identify *causes* from *consequences* as pointed out by Shin and Soenen (1998) and Deloof (2003). It is difficult to infer whether a shorter cash conversion cycle leads to higher profitability or higher profitability is as a result of the short cash conversion cycle from a simple bi-variate analysis. The implication of this is that, care needs to be exercised when interpreting the Pearson correlation coefficients because they cannot provide a reliable indicator of the association in a manner which controls for additional explanatory variables. Therefore, the examination of a simple bivariate correlation in a conventional matrix (i.e., Pearson matrix in this case) does not take into account each variable's correlation with *all* the other explanatory variables (Padachi, 2006). In this case, the main analysis should be derived from the appropriate multivariate models estimated using the overall least squares regression models.

Table 4.3: Pearson correlation coefficients

	NOP	ACP	ICP	APP	CCC	CS	LEV	FFAR	Variability	GDPGrow
ACP	-0.154***									
ICP	0.120***	0.086**								
APP	0.194***	0.228***	0.382***							
CCC	-0.135***	0.312***	0.589***	-0.379***						
CS	0.231***	-0.247***	-0.015	0.017	-0.090**					
LEV	-0.048*	0.008	-0.067*	0.033	-0.071*	0.193***				
FFAR	0.652***	-0.033	-0.105**	-0.019	-0.101**	0.126***	-0.027			
Variability	0.484***	-0.071*	0.005	0.029	-0.057*	0.052*	0.053*	0.380***		
GDPGrow	0.014	0.068*	-0.039	-0.009	0.001	0.099**	0.057*	0.048*	-0.087**	
AGE	0.016	0.006	0.012	-0.114***	0.061*	-0.019	-0.076**	-0.117***	-0.027	-0.002

The significance of the coefficients is obtained using p-values with *, ** and *** denoting significance at the 10%, 5% and 1% levels respectively. The industry, ownership control and company - year dummy variables were estimated but not reported.

Source: 1993 – 2008 survey data, author's computation

4.3 Empirical findings

4.3.1 Data and estimation of working capital management and profitability

In order to assess the effects of working capital management on company's profitability, the company's profitability is modeled as a function of the three core working capital management components in addition to other company characteristics. Consistent with Deloof (2003) and Rahman and Nasr (2007), the NOP ratio was used as a proxy for the company's profitability. The NOP ratio is defined as the ratio of the net operating profit add depreciation scaled by total assets less any financial assets.

Table 4.2 reports that the mean NOP in the sample is 0.382 (38.2%), which is greater than the median NOP of 0.275 (27.5%), suggesting that the distribution of NOP is skewed to the left. To control for this skewness, the variability in the NOP and the natural logarithm of turnover (as represented by CS) were incorporated in the least squares estimations. This is consistent with Huang et al. (2008). Five regression models have been run and the results represented in a tabular form. Consistent with previous studies, the impact of working capital management on profitability was modeled using the following regression equations:

$$NOP = f(ACP, ICP, APP, CCC, CS, Lev, FFAR, Variability, GDPGrow, Age, Ind, Ctrl, \lambda)$$

(Equation 3)

$$NOP_{it} = \alpha_0 + \beta_1 ACP_{it} + \beta_2 CS_{it} + \beta_3 Lev_{it} + \beta_4 FFAR_{it} + \beta_5 Variability_{it} + \beta_6 GDPGrow_{it} + \beta_7 Age_{it} + \beta_8 Ind_{it} + \beta_9 Ctrl_{it} + \beta_{10} \lambda_{it} + \varepsilon_i$$

(Model 1)

$$NOP_{it} = \alpha_0 + \beta_1 ICP_{it} + \beta_2 CS_{it} + \beta_3 Lev_{it} + \beta_4 FFAR_{it} + \beta_5 Variability_{it} + \beta_6 GDPGrow_{it} + \beta_7 Age_{it} + \beta_8 Ind_{it} + \beta_9 Ctrl_{it} + \beta_{10} \lambda_{it} + \varepsilon_i$$

(Model 2)

$$NOP_{it} = \alpha_0 + \beta_1 APP_{it} + \beta_2 CS_{it} + \beta_3 Lev_{it} + \beta_4 FFAR_{it} + \beta_5 Variability_{it} + \beta_6 GDPGrow_{it} + \beta_7 Age_{it} + \beta_8 Ind_{it} + \beta_9 Ctrl_{it} + \beta_{10} \lambda_{it} + \varepsilon_i$$

(Model 3)

$$NOP_{it} = \alpha_0 + \beta_1 CCC_{it} + \beta_2 CS_{it} + \beta_3 Lev_{it} + \beta_4 FFAR_{it} + \beta_5 Variability_{it} + \beta_6 GDPGrow_{it} + \beta_7 Age_{it} + \beta_8 Ind_{it} + \beta_9 Ctrl_{it} + \beta_{10} \lambda_{it} + \varepsilon_i$$

(Model 4)

$$NOP_{it} = a_0 + f1ACP_{it} + f2CP_{it} + f3IAPP_{it} + f4CS_{it} + f5Lev_{it} + f6FFAR_{it} + f7Variability_{it} + f8GDPGrowth_{it} + f9Age_{it} + f10Ind_{it} + f11Ctrl_{it} + f12A_{it} + e_{it}$$

(Model 5)

Where *NOP* denotes the net operating profit ratio, *ACP* is the accounts collection period, *I*CP is the inventory conversion period, *AP P* is the average payment period, *CS* is the company (company) size, *Lev* is the leverage ratio, *FFAR* is the fixed financial assets ratio, *Variability* represents the variability of the *NOP*, *GDPGrowth* is the nominal GDP growth rate, *Age* is the age of the company, *Ind* is the industry control, *Ctrl* is the ownership dummy and

A denotes company year controls. Subscript *i* denotes company-years (cross-section dimension) ranging from 1 to 468 and *t* denotes years (time-series dimension) ranging from 1 to 16.

Consistent with Deloof (2003) and Garcia-Teruel and Martinez-Solano (2007), the determinants of corporate profitability are estimated both with the pooled OLS and the fixed effects models. These two models were used for comparison purposes. The fixed effects model does not take into consideration variables that are time invariant from the model

(Deloof, 2003). The pooled OLS-model includes all the variables of the fixed effects model in addition to the dummy variables. This means that the fixed effects model explains the variations in profitability *within* companies while the pooled OLS explain the variations in profitability *between* companies.

In line with Garcia-Teruel and Martinez-Solano (2007), the use of the pooled OLS presents important benefits. These include the fact that panel data methodology assumes that individuals, companies, states or countries are not homogeneous. If the time-series and crosssection data do not control for this observable heterogeneity, they run the risk of obtaining biased results. In addition, panel data gives more informative data, more variability among variables, less collinearity among variables, more degrees of freedom and more efficiency (Baltagi, 2001). The process of estimating models from panel data requires the researchers to determine first whether there is a correlation between the unobservable heterogeneity of each company and the explanatory variables of the model (through a simple bi-variate analysis). If there is a correlation, further analysis needs to be carried out using the multivariate regression models to confirm and substantiate the results obtained through the correlational analysis.

In the first regression model, the ACP was regressed against the NOP. In the second regression model, the ICP was regressed against the NOP. The third regression model involved a regression of the APP against the NOP. In the fourth regression model, the CCC was regressed against the NOP. Finally, the three working capital measures (ACP, ICP and APP) were regressed together against the NOP. The CCC was not included in the last regression model because its inclusion resulted to a high degree of multicollinearity among the working capital management variables as shown by the variance inflation factors (VIFs).

Because a company's working capital management practices are affected by the macroeconomic factors, the growth in the Gross Domestic Product (in its nominal terms) was included. The fact that economic conditions tend to be reflected in a company's profitability led to the inclusion of controls for the changes in the economic cycle as explained by Lamberson (1995), Garcia-Teruel and Martinez-Solano (2007), Bafios-Caballero et al. (2009) and Falope and Ajilore (2009). The variable also controlled for other economic changes in the macroeconomic environment that affect the key components of working capital management. Company size (CS), leverage (Lev), fixed financial assets ratio (FF AR), variability in net operating profit (Variability) and the natural logarithm of company years of existence (Age) were incorporated to control for company characteristics.

Finally, controls for industry, ownership and time effects (not reported) using indicator variables were also incorporated in all regression models. The variance inflation factors (VIFs) (a check for multicollinearity) were calculated for all regression models but not disclosed. Tables 4.4a, 4.4b and 4.4c report the results of the overall relationship which exists between WCM and profitability.

a) Company-wide regression results

Table 4.4a shows the results obtained after regressing financial data for each of the 30 companies included in the sample.

Table 4.4a: Company-wide regression results

Nature of the relationship	ACP	ICP	APP	CCC
Insignificant positive relationship with profitability	27%	43%	30%	50%
Insignificant negative relationship with profitability	33%	30%	30%	33%
Significant positive relationship with profitability	20%	17%	24%	3%
Significant negative relationship with profitability	17%	7%	13%	11%
Insufficient data	3%	3%	3%	3%
<u>Total</u>	<u>100%</u>	<u>100%</u>	<u>100%</u>	<u>100%</u>

The level of significance ranges between 1 to 10 percent. Profitability was measured by the net operating profit ratio. The control and dummy variables were incorporated in all regression equations. All models were tested for multicollinearity using the variance inflation indicators (not disclosed). The results were obtained using the pooled OLS estimation model.

Source: 1993 - 2008 survey data, author's computation

Table 4.4a shows that at the company-level, 20% of the sampled companies exhibited a significant positive relationship between ACP and profitability. This is higher compared to the number of companies exhibiting a significant negative relation between the ACP and profitability (17%). Although 33% of the sampled companies had an insignificant negative relationship between ACP and profitability, the overall results (as shown by tables 4.4.b, 4.4c and 4.5) suggest that companies strive to shorten their ACP in order to boost their profitability. Table 4.4a shows that 17% of the sampled companies exhibited a significant positive relationship between ICP and profitability. This finding is consistent with the overall regression results shown in table 4.4c. The company-wide regressions also indicated that a significant positive relationship between APP and profitability existed for most companies (24% of the sampled companies). This is consistent with the overall results presented on table 4.4c. Finally, the company-wide regressions showed that 11 % of the sampled companies exhibited a significant negative relationship between the CCC and profitability. This was higher compared to the 3% of the sampled companies which indicated that a positive relation existed between CCC and profitability.

b) Industry-wide regression results

Wernerfelt (1984) argued that in line with resource-based view of the firm, some firm effects exist on strategies and performance levels by companies in the same industry. This proposition necessitated industry-wide analysis of the results. Table 4.4b reports the regression results obtained from industry-wide regressions.

Table 4.4b: Industry-wide regression results

Dependent variable = Net Operating Profit Ratio

NSE Classification	ACP	ICP	APP	CCC
Agricultural				
Coefficient	-0.002 (0.089)* (-1.74)	0.000(0.040)** (2.13)	-0.001(0.03)*** (-3.35)	0.002(0.000)*** (0.019)
Adjusted R ²	4.3%	7.6%	19.9%	49.3%
F-value	1.13	1.24	1.73	3.89
P-value	0.359	0.274	0.070	0.000
Commercial and services				
Coefficient	-0.002 (0.041)** (-2.07)	-0.002(0.000)*** (-4.48)	0.002(0.000)*** (4.79)	-0.002(0.000)*** (-8.47)
Adjusted R ²	31.7%	42.9%	44.6%	62.9%
F-value	3.15	4.48	4.72	8.83
P-value	0.000	0.000	0.000	0.000
Industrial and allied				
Coefficient	-0.005(0.072)* (-1.82)	0.003(0.000)*** (5.31)	0.003(0.001)*** (3.56)	-0.003(0.002)*** (3.23)
Adjusted R ²	81.2%	85.6%	83.1%	82.7%
F-value	21.09	28.77	23.98	23.29
P-value	0.000	0.000	0.000	0.000
Alternative investment segment				
Coefficient	-0.002(0.001)*** (-3.58)	-0.001 (0.080)* (-1.78)	-0.001(0.35) (0.94)	-0.001(0.001)*** (-3.58)
Adjusted R ²	30.9%	20.0%	16.9%	30.9%
F-value	2.63	1.91	1.74	2.62
P-value	0.002	0.026	0.048	0.002

The coefficient p-values are in parentheses with *, ** and *** denoting significance at the 10, 5 and 1 percent levels respectively. T-values are also in parentheses just below the p-values. All regressions incorporated all control and dummy variables (not disclosed). All models were tested for multicollinearity using variance inflation indicators (not disclosed). The results were obtained using the pooled OLS estimation model.

Source: 1993 – 2008 survey data, author's computation

The industry-wide regressions results showed that agricultural companies exhibited a significant negative relationship between ACP and profitability ($p < 0.10$), a positive relationship between ICP and profitability ($p < 0.05$) and a negative relationship between APP and profitability ($p < 0.01$). These results imply that agricultural companies take the shortest

time possible to collect cash from customers and pay their suppliers. The positive relationship between the ICP and profitability imply that agricultural companies maintain sufficiently higher inventories (for example tea, tea and coffee nurseries and estate stores) so as to increase profitability. The negative coefficient on the APP implies that agricultural companies do not take long to pay their suppliers. The positive relationship between CCC and profitability can be explained by the shorter period taken by agricultural companies to pay their suppliers.

Table 4.4b shows that commercial and services companies have a significant negative relationship between ACP and profitability ($p < 0.05$), a significant negative relationship between ICP and profitability ($p < 0.01$) and a significant positive relationship between APP and profitability ($p < 0.01$). These results suggest that companies listed under commercial and services segment collect cash from their customers as quickly as possible - meaning that majority of their sales may probably be in cash. Being in the commercial and services sector, these companies take the shortest time possible to sell their inventories. The positive relationship between APP and profitability can be explained by the fact that these companies may opt to lag their payment to suppliers so as to use the delayed cash to finance their working capital. These companies have a significant negative relationship between the CCC and profitability ($p < 0.01$). This means that a shorter cash conversion cycle boosts profitability of these companies.

Industrial and allied segment companies demonstrated that a significant negative relationship exists between the ACP ($p < 0.10$), a significant positive relationship existed between ICP and profitability ($p < 0.01$) and a significant positive relationship exists between APP and profitability ($p < 0.01$). These results suggest that companies listed under industrial and allied segment take the shortest time possible to collect cash from their customers, maintain sufficiently higher inventory levels and delay paying their bills. The end result of these working capital management practices is a reduction in the cash conversion cycle. This is explained by the observed highly significant negative relationship between the CCC and profitability ($p < 0.01$).

Finally, those companies listed under the alternative investment segment (AIS) exhibited a significant negative relationship between ACP and profitability ($p < 0.01$) and a significant negative relationship between ICP and profitability ($p < 0.10$). These results suggest that these companies take the shortest time possible to collect cash from their customers. They also take

the shortest time possible to sell their inventories in order to boot their profitability. The results also indicate that a negative relationship exists between the CCC and profitability.

c) Overall regression results

Table 4.4c presents the results obtained from pooled OLS estimation.

Table 4.4c: Relationship between WCM and profitability (1993 – 2008): Pooled OLS models

Independent variables	Dependent variable = Net Operating Profit (NOP)				
	Model 1	Model 2	Model 3	Model 4	Model 5
Intercept	0.108 (0.500) (0.67)	-0.283 (0.039)** (-2.07)	-0.379 (0.006)*** (-2.75)	-0.086 (0.543) (-0.67)	-0.095 (0.528) (-0.63)
ACP	-0.002 (0.003)*** (-2.99)				-0.003 (0.000)*** (-4.68)
ICP		0.002 (0.000)*** (5.96)			0.011 (0.000)*** (3.95)
APP			0.002 (0.000)*** (6.92)		0.002 (0.000)*** (5.42)
CCC				-0.001 (0.083)* (-1.74)	
CS	0.033 (0.004)*** (2.89)	0.050 (0.000)*** (4.63)	0.044 (0.000)*** (4.22)	0.039 (0.000)*** (3.56)	0.037 (0.001)*** (3.48)
Lev	-0.255 (0.031)** (-2.17)	-0.207 (0.071)* (-1.81)	-0.211 (0.056)** (-1.92)	-0.2677 (0.024)** (-2.26)	-0.160 (0.144)* (-1.46)
FFAR	5.247 (0.000)*** (14.39)	5.620 (0.000)*** (15.72)	5.656 (0.000)*** (16.03)	5.277 (0.000)*** (14.39)	5.728 (0.000)*** (16.74)
Variability	0.435 (0.000)*** (7.96)	0.430 (0.000)*** (8.09)	0.392 (0.000)*** (7.41)	0.429 (0.000)*** (7.75)	0.393 (0.000)*** (7.68)
GDPGrow	-0.013 (0.423) (-0.80)	-0.012 (0.515) (-0.65)	-0.007 (0.704) (-0.38)	-0.012 (0.526) (-0.64)	-0.011 (0.527) (-0.63)
Age	0.060 (0.009)*** (2.64)	0.062 (0.000)*** (2.80)	0.077 (0.001)*** (3.47)	0.060 (0.009)*** (2.63)	0.077 (0.000)*** (3.60)
Adjusted R ²	53.00%	55.60%	56.80%	52.40%	59.70%
F-value	22.08	24.83	25.52	21.56	26.64
P-value	0.000	0.000	0.000	0.000	0.000
Durbin Watson	1.213	1.256	1.365	1.220	1.383

P-values are in parentheses with *, ** and *** denoting significance at the 10%, 5% and 1% levels respectively. The t-values are also in parentheses just below the p-values. All models were tested for multicollinearity using variance inflation indicators (not disclosed). Industry controls, ownership control and company - year dummy variables were estimated but not reported. The results were obtained using the pooled OLS estimation model.

Source: 1993 - 2008 survey data, author's computation

(i) Relationship between accounts collection period (ACP) and profitability

Consistent with prior findings by Shin and Soenen (1998), Deloof (2003) and Raheman and Nasr (2007) a negative relationship exists between the ACP and profitability, significant at 1 % level. The coefficients on the other variables are significant. The model shows that the net operating profit increases with company size (as measured by natural logarithm of sales)

and this is highly significant at 1 % level. The NOP increases with an increase in the variability of net operating profit ($p < 0.01$). Net operating profit decreases with an increase in leverage ($p < 0.05$). Consistent with Deloof (2003), net operating profit also increases with fixed financial assets ($p < 0.01$). Again, net operating profit increases with an increase in a company's age (as measured by the natural logarithm of years of existence) ($p < 0.01$). The model's adjusted R^2 is 53% with an F-value of 22.08 which is highly significant ($p < 0.01$).

(ii) Relationship between inventory conversion period (ICP) and profitability

In model 2, the coefficient on the inventory conversion period is positive and highly significant at 1 %. This means that there exists a positive relationship between the ICP and profitability. The other variables in model 2 are also significant. The company size is positively related to profitability and this is highly significant at 1 %. The use of leverage is negatively related to company's profitability ($p < 0.10$). The fixed financial assets ratio is positively related to the company's profitability and is highly significant at 1%. Both the variability of net operating profit and the age of the company (as measured by the natural logarithm of sales) are positively related to company's profitability at 1 %. The model's adjusted R^2 is 55.6% with an F-value of 24.43 which is highly significant ($p < 0.01$).

(iii) Relationship between the average payment (APP) and profitability

In model 3, the coefficient on the average payment period is positive and highly significant at 1 %. This suggests that an increase in the number of days accounts payable by 1 day is associated with an increase in profitability. This finding is consistent with previous studies. The other variables in the model are significant with company size being positively related to profitability ($p < 0.01$). At the same time, an increase in the use of debt decreases profitability ($p < 0.05$). The fixed financial assets ratio is positively related with profitability and this is highly significant at 1 % level. The company's profitability is positively related to both the variability of the net operating profit and the age of the company at 1 % level of significance. The model's adjusted R^2 is 56.8% with an F-value of 25.52 which is highly significant ($p < 0.01$).

(iv) Relationship between the cash conversion cycle (**Ccq**) and profitability

In model 4, there exists a negative relationship between the cash conversion cycle and profitability. This finding is significant at 10% level. This supports the notion that the cash conversion cycle is negatively related with profitability. This finding is in support of hypothesis 4. The other variables in the model are also statistically significant. The company size is positively related to profitability and this is highly significant at 1 %. The use of leverage is negatively related to the company's profitability ($p < 0.05$). The fixed financial assets ratio is positively related with profitability and it is highly significant at 1 %. Both the variability of net operating profit and the age of the company (as measured by the natural logarithm of sales) are positively related to the company's profitability at 1 %. The model's adjusted R^2 is 52.4% with an F-value of 21.56 which is highly significant ($p < 0.01$).

Model 5 acts as a 'control' model for the variables under study. The model was run so as to provide an indicator as to the most significant variables affecting the study. The model shows that all the variables included are highly significant at 1 % level with an exception of leverage (significant at 10%) and the GDP Growth rate which is not significant. In this model, the ACP, leverage and GDP growth rate are negatively related with the company's profitability while all the other variables exhibit a positive relationship. The model's adjusted R^2 is 59.7% with an F-value of 26.64 which is highly significant ($p < 0.01$).

Tables 4.5a and 4.5b present the fixed effects estimation and two-stage linear squares (2SLS) results for comparison purposes. The 2SLS estimations were run to address endogeneity problems. Consistent with Garcia-Teruel and Martinez-Solano (2007) the variables ACP, ICP, APP and CCC were used as instruments in the five regression models. In general, there were no notable differences from the results of both the pooled OLS and fixed effects estimation models.

Table 4.5a: Relationship between WCM and profitability (1993 – 2008): Fixed effects models

Independent variables	Dependent variable = Net Operating Profit (NOP)				
	Model 1	Model 2	Model 3	Model 4	Model 5
Intercept	-0.090 (0.397) (-0.85)	-0.364 (0.000)*** (-3.91)	-0.418 (0.000)*** (-4.50)	-0.186 (0.050)** (-1.97)	-0.398 (0.052)** (-1.95)
ACP	-0.001 (0.013)*** (-2.49)				-0.003 (0.000)*** (-4.62)
ICP		0.001 (0.000)*** (5.54)			0.001 (0.000)*** (4.01)
APP			0.002 (0.000)*** (6.74)		0.002 (0.000)*** (5.60)
CCC				-0.001 (0.055)* (-1.93)	
CS	0.043 (0.000)*** (4.20)	0.049 (0.000)*** (5.06)	0.049 (0.000)*** (5.12)	0.049 (0.000)*** (4.86)	0.047 (0.000)*** (4.09)
Lev	-0.241 (0.036)** (-2.11)	-0.212 (0.058)* (-1.90)	-0.271 (0.014)*** (-2.47)	-0.270 (0.019)** (-2.36)	-0.124 (0.000)*** (-1.12)
FFAR	5.382 (0.000)*** (15.17)	5.590 (0.000)*** (16.05)	5.470 (0.000)*** (16.04)	5.311 (0.000)*** (14.89)	5.694 (0.000)*** (16.69)
GDPGrow	0.002 (0.808) (7.87)	0.001 (0.868) (7.95)	0.001 (0.950) (8.08)	0.001 (0.958) (7.98)	-0.010 (0.554) (7.68)
Age	0.059 (0.009)*** (0.24)	0.060 (0.007)*** (0.17)	0.076 (0.001)*** (0.06)	0.061 (0.008)*** (0.05)	0.064 (0.004)*** (-0.59)
Adjusted R ²	52.40%	54.80%	56.10%	52.20%	60.10%
F-value	74.55	81.93	86.37	73.81	26.08
P-value	0.000	0.000	0.000	0.000	0.000
Durbin	1.204	1.255	1.353	1.221	1.401

P-values are in parentheses with *, ** and *** denoting significance at the 10%, 5% and 1 % levels respectively. The t-values are also in parentheses just below the p-values. All models were tested for multicollinearity using variance inflation indicators (not disclosed). Industry controls, ownership control and company - year dummy variables are estimated but not reported. Consistent with Deloof (2003), the results were obtained using the fixed effects estimation model.

Source: 1993 - 2008 survey data, author's computation

Table 4.5b: Relationship between WCM and profitability (1993 – 2008): 2SLS estimation using instrumental variables

Independent variables	Dependent variable = Net Operating Profit (NOP)				
	Model 1	Model 2	Model 3	Model 4	Model 5
Intercept	-0.198(0.185) (-1.37)	-0.458(0.001)*** (-3.45)	-0.506(0.000)*** (-3.71)	-3.250(0.012)*** (-2.42)	-3.338(0.023)** (-2.28)
ACP	-0.001(0.101)* (-1.64)				-0.002(0.001)*** (-3.31)
ICP		0.002(0.000)*** (4.10)			0.001(0.001)*** (3.29)
APP			0.002(0.000)*** (4.86)		0.002(0.000)*** (4.78)
CCC				-0.001(0.059)* (-1.54)	
CS	0.067(0.001)*** (3.38)	0.087(0.000)*** (4.72)	0.082(0.000)*** (4.67)	0.077(0.000)*** (3.86)	0.073(0.000)*** (3.83)
Lev	-0.362(0.001)*** (-3.28)	-0.308(0.005)*** (-2.78)	-0.332(0.002)*** (-3.19)	-0.385(0.000)*** (-3.57)	-0.240(0.030)*** (-2.18)
FFAR	5.207(0.002)*** (3.12)	5.557(0.001)*** (3.44)	5.450(0.001)*** (3.34)	5.216(0.002)*** (3.12)	5.664(0.000)*** (3.54)
Variability	0.422(0.000)*** (7.54)	0.342(0.011)*** (8.12)	0.347(0.001)*** (7.42)	0.418(0.000)*** (7.47)	0.382(0.000)*** (7.56)
GDPGrowth	0.001(0.897) (0.13)	-0.001(0.855) (-0.18)	-0.004(0.640) (-0.47)	-0.001(0.873) (-0.16)	0.001(0.874) (0.16)
Age	0.047(0.015)** (2.44)	0.044(0.026)** (2.23)	0.057(0.004)*** (2.89)	0.044(0.026)** (2.24)	0.057(0.004)*** (2.89)
Adjusted R ²	54.20%	58.74%	58.63%	54.00%	61.78%
F-value	9.110	11.450	9.970	9.450	9.760
P-value	0.000	0.000	0.000	0.000	0.000

P-values are in parentheses with *, ** and *** denoting significance at the 10%, 5% and 1% levels respectively. The t-values are also in parentheses just below the p-values. All models were tested for multicollinearity using variance inflation indicators (not disclosed). Industry controls, ownership control and company - year dummy variables were estimated but not reported. Consistent with Garcia-Teruel and Martinez-Solano (2007), the estimation results were obtained using the two-stage linear squares estimation model using instrumental variables ACP, ICP, APP and CCC.

Source: 1993 - 2008 survey data, author's computation

4.3.2 Summary findings from financial data analysis

Table 4.6 shows the summary results of the expected signs from the study and the observed sign developed from the financial data analyses.

Table 4.6: Summary findings – financial data analyses

Variable	Company profitability as measured by NOP			
	Expected sign		Observed sign ^a	
	Coefficient	Significant?	Coefficient	Significant?
Intercept	-	Yes	-	?
ACP (accounts collection period)	-	Yes	-	Yes***
ICP (inventory conversion period)	-	?	+	Yes***
APP (average payment period)	+/-	?	+	Yes***
CCC (cash conversion cycle)	-	Yes	-	Yes*
CS (size)	+	Yes	+	Yes***
Lev (leverage)	-	Yes	-	Yes*
FFAR (fixed financial assets)	+	Yes	+	Yes***
Variability (variability in profit)	+	Yes	+	Yes***
GDPGrow (GDP growth rate)	+/-	No	-	No
Age (age of the company)	+	No	+	Yes***

^aRepresents the observed coefficient sign from financial data regression results. Significance levels for all variables in table 4.6 ranged from 1% to 10%. *, ** and *** represent significance at the 10%, 5% and 1% respectively. All comparisons were obtained from the pooled OLS models.

Source: 1993 – 2008 survey data, author's computation

Section B: Managerial perspectives into the relationship between WCM and profitability

4.4 Initial data analysis (questionnaire data analysis)

Of the 30 questionnaires sent to responding companies, 20 were received. Thus, the response rate was 67 percent. Some sections of the questionnaires received were left unanswered. Some companies had indicated prior to filling in the questionnaires that they would leave out some information which they considered confidential to them. All the 20 companies indicated that working capital management and operational performance were very important aspects. Table 4.7 shows the sample representation.

Table 4.7: Sample representation

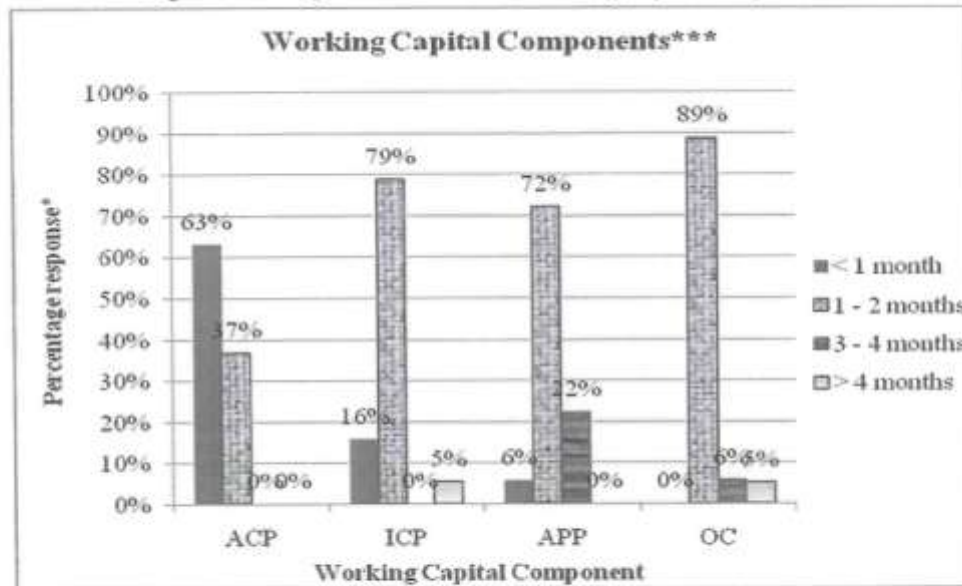
Industry/segment	Number of companies included in the sample	Number of responding companies	Percentage of responding companies
Agricultural	4	2	50%
Commercial and services	6	5	83%
Industrial and allied Alternative	1	1	77%
Investment Market	3	0	43%
Total	30	20	67%

Source: 2010 survey data

4.4.1 Managing working capital components

To find out the length of time companies take to manage their working capital components, respondents were asked how long it takes to manage the various working capital components. Figure 4.1 shows the length of time companies take in managing the various working capital components.

Figure 4.1: Length of time taken on working capital components



Notes: ACP – accounts collection period, ICP – inventory conversion period, APP – average payment period, OC – operating cycle, n = 19.

*One company declined to provide information in this section.

*** Chi-Square Test significance at the 1% level.

Source: 2010 Survey data, author's computation

Figure 4.1 shows that companies minimize their investment in accounts receivable and inventories by reducing their accounts receivable collection period to less than a month (63 per cent, n=12) and by selling their stocks in a relatively shorter period of time (within one and two months - 79 per cent, n=15). The results indicate that companies take relatively long (between one to two months) to pay their accounts payable (72 per cent, n=13). The results indicate also that companies strive to reduce their operating cycle to a maximum of two months (89 per cent, n=16).

4.4.2 Working capital management practices

To establish the key working capital practices, respondents were asked to indicate the frequency with which they manage the various working capital components. Table 4.8 presents the key working capital management practices.

Table 4.8: Working capital management practices

Frequency of managing working capital components ^a						
	1	2	3	4	5	
	Never (more than 120 days)	Sometimes (61-120 days)	Quite often (31-60 days)	Often (within a month)	Very often (within a week)	Mean StDev
FREQ_CUSTM_PAY	20	0	35	25	30	3.75 1.08
DEBT_AGING	20	0	0	90	10	4.10 0.34
A/R_POLICY	20	10	5	65	20	3.85 1.22
INV_LEVELS	20	10	20	50	20	3.70 1.21
INV_POLICY	20	10	30	40	0	3.00 1.05
INV_PERIOD	20	25	50	20	0	2.85 0.83
EARLY_PAY A/P 1	20	40	10	25	5	2.55 1.21
EARLY_PAY A/P 2	20	15	25	10	5	2.15 1.03
A/P_POLICY	20	15	25	30	0	2.55 1.25
WCM_FREQ	20	5	25	60	5	3.55 1.97
EXT_FIN*	18	17	22	33	11	3.06 1.34

Notes: FREQ_CUSTM_PAY – frequency of credit customer on-time payment, DEBT_AGING – frequency of aging debtors, A/R_POLICY – frequency of reviewing accounts receivable policy, INV_LEVELS – frequency of reviewing inventory levels, INV_POLICY – frequency of reviewing inventory policies, INV_PERIOD – frequency of selling inventory, EARLY_PAY A/P 1 – frequency of paying suppliers early when discounts are offered, EARLY_PAY A/P 2 – frequency of paying suppliers early when no discounts are offered, A/P_POLICY – frequency of reviewing accounts payable policies, WCM_FREQ – frequency of managing working capital, EXT_FIN – frequency of sourcing external finance for working capital needs, StDev – Standard Deviation.

^aThe figure shown is a percentage of observations for that practice.

*Two companies with-held information.

*** Chi-Square Test significance at the 1% level.

Source: 2010 Survey data, author's computation

Table 4.8 shows that companies are keen on aggressive collection procedures (mean=3.75, standard deviation (SD thereafter)=1.08). The results also indicate that companies are keen on managing accounts receivable as shown by the frequency with which companies age their debtors (mean=4.10, SD=0.34) and the frequency with which they review their accounts receivable policies (mean=3.85, SD=1.22). All these practices are aimed at reducing the accounts receivable period to as minimal as possible so as to improve operational profitability. The results also show that companies are keen on managing their inventories by the manner in which they manage inventory levels (mean=3.70, SD=1.21), how frequent they review their inventory policies (mean=3.00, SD=1.05) and periods (mean=2.85, SD=0.83). These practices can be inferred to imply that companies are keen on minimizing their investment in inventories in order to maximize profitability.

In managing accounts payables, companies are keen on lagging payments as indicated by the frequency with which they delay in paying early when discounts are offered (mean=2.55, SD=1.21) and when no discounts are offered (mean=2.15, SD=1.03). This finding means that companies are keen on lagging their payments to creditors and obtaining a 'cheaper' source of finance for their working capital needs namely, trade credit. This behaviour by companies was noted in Howorth and Reber (2003) in their study on habitual late payment by UK firms. Finally the results indicate that companies frequently manage their working capital (mean=2.55, SD=1.97) and also, companies frequently source external finance for their working capital needs (mean=3.06, SD=1.34).

4.4.3 Key working capital finance sources

Table 4.9 presents the results on the various ways in which working capital can be financed.

Table 4.9: Sources of working capital financing

Source of working capital finance * * *	n=	Frequency of use"					Mean	StDe
		1 Never	2 Sometimes	3 Quite often	4 Often	5 Very often		
Bank overdraft*	19	11	5	5	26	53	4.05	1.35
Short-term loans*	19	21	37	26	16	0	2.37	1.01
Medium term loans*	19	37	53	5	5	0	1.79	0.79
Long-term loans*	19	63	32	5	0	0	1.42	0.61
Venture capital *	19	95	5	0	0	0	1.05	0.23
Cash from operations*	19	0	0	0	11	89	4.89	0.32

bThe figure shown is a percentage of observations for that source.

One company did not provide information in this section.

*** Chi-Square Test significance at the 1% level.

Source: 2010 Survey data, author's computation

Commonly used sources of working capital finance are cash from operations (mean=4.89, SD=0.32) and bank overdraft (mean=4.05, SD=1.35). This finding supports the pecking order theory that holds that companies tend to use internally generated cheap finance first (i.e., cash from operations) before seeking any external finance (for instance, bank overdraft). Cash from operations may be generated from cash collected from customers and or lagging payments to suppliers and other creditors. These are two strategies meant to shorten the cash conversion cycle hence improve the profitability of the company. The findings also show that companies rarely use venture capital (mean=1.05, SD=0.23) and long term loans (mean=1.42, SD=0.61) to finance working capital. The reason for this tendency is probably due to agency considerations where companies do not want to bring in additional shareholders in the form of venture capitalists.

4.4.4 Main working capital techniques and challenges

Table 4.10a shows the results of commonly used working capital management techniques.

The highlighted fields represent the top and bottom three commonly used working capital management techniques.

Table 4.10a: Working capital management techniques

To what extent do you use the following working capital management techniques? ^e							Mean	StDev
		1	2	3	4	5		
Working capital management technique (ranked in order of the frequency of use) ^{***}		n =	Not at all	Seldom	Sometimes	Most Times	Always	
Setting credit limits for customers*		19	0	0	16	26	58	4.42 0.70
Aging of debtors		20	0	0	5	50	45	4.40 1.73
Aggressive collection policies		20	0	0	20	25	55	4.35 0.81
Preparing cash budgets*		19	0	0	11	47	42	4.32 0.96
Negotiating with suppliers		20	0	5	5	50	40	4.25 0.51
Reducing stock levels		20	0	0	45	20	35	3.90 0.93
Analysis of operating and financial leverage		20	0	5	55	5	35	3.70 0.96
Maintaining buffer inventories		20	0	5	55	20	20	3.55 1.27
Performing break even analysis when offering discounts		20	15	15	35	5	30	3.20 0.86
Statistical credit scoring*		19	5	21	42	21	11	3.11 0.70
Sales forecasting		20	0	30	50	5	15	3.05 1.37
Extending the accounts receivable period		20	10	15	75	0	0	2.65 1.06
The use of economic order quantity		20	15	45	15	10	15	2.65 0.97
Invoice discounting and financing		20	45	10	40	5	0	2.05 1.03

^eThe figure shown is a percentage of observations for that technique, StDev – Standard deviation.

*One company did not provide information in this section.

*** Chi-Square Test significance at the 1% level.

Source: 2010 Survey data, author's computation

Table 4.10a shows that main working capital management techniques focus mainly on aggressive collection practices. The effect of these practices targeting credit customers is a reduction in accounts receivable and thus more profits for the company. An interesting observation from the bottom three techniques is that companies strive to lag their payments to suppliers while at the same time; they want their customers to pay as quickly as possible. Setting credit limits for customers and constant review of debtors aging lists are two techniques meant to reduce incidences of bad debts which might negatively impact on company's profitability.

6.

Regarding working capital management challenges, the five most important challenges identified were: (1) difficulty in collecting trade receivables (mean = 3.75, SD=1.04), (2) cash not readily available when needed (mean = 3.63, SD=1.21), (3) difficulty in managing bad debts (mean=3.40, SD=1.02), (4) lack of adequate working capital finance (mean = 3.40, SD=1.25) and (5) difficulty in identifying working capital risks (mean = 3.30, SD=1.10).

The five less and least important challenges were: (1) difficulty in maintaining supplier relations (mean = 2.45, SD=0.84), (2) lack of adequate working capital management skills (mean = 2.45, SD=0.84), (3) difficulty in repaying short-term finance for working capital (= 2.35, SD=0.76), (4) difficulty in paying accounts payable (mean = 2.25, SD=0.71) and (5) negative effect of financial crisis (mean = 2.45, SD=1.02). Table 4.9b presents all the results on working capital management challenges.

Table 4.10b: Working capital management challenges

Working capital challenge (ranked in order of importance)***	n =	1 2 3 4 5					Mean	StDev
		Least Important	Less Important	Important	More Important	Most Important		
Difficulty in collecting accounts receivable	20	5%	5%	30%	35%	25%	3.75	1.04
Cash problems*	19	5%	11%	42%	5%	37%	3.63	1.21
Difficulty in managing bad debts	20	5%	0%	40%	50%	5%	3.40	1.02
Lack of working capital finance*	19	16%	0%	42%	26%	16%	3.36	1.25
Difficulty in identifying WC risks	20	10%	5%	30%	50%	5%	3.30	1.11
Difficulty in managing WC levels*	19	5%	5%	68%	16%	6%	3.26	0.99
Difficulty in managing high inventories	20	0%	10%	55%	35%	0%	3.25	0.87
Too formalized WCM processes	20	5%	15%	55%	10%	15%	3.25	0.88
Insufficient time*	19	5%	0%	79%	11%	5%	3.16	0.76
Inflationary pressures	20	0%	10%	65%	15%	10%	3.15	0.74
Difficulty in managing obsolete inventories	20	5%	20%	55%	10%	10%	3.10	0.87
Difficulty in identifying WC needs	20	10%	25%	40%	15%	10%	3.05	1.08
Focusing on competition and not on WCM	20	5%	20%	40%	25%	10%	3.00	1.13
Focusing on growth and not WCM	20	10%	25%	45%	15%	5%	2.95	0.94
Legal environment regarding debt collection	20	5%	25%	35%	20%	15%	2.95	1.10
Legal environment in dealing with suppliers*	19	10%	26%	42%	11%	11%	2.74	2.74
Problems in cash flow management and forecasting	20	25%	15%	30%	20%	10%	2.70	1.28
Difficulty in identifying WC drivers	20	5%	45%	40%	5%	5%	2.65	1.01
Difficulty in offering customer discounts	20	10%	50%	35%	5%	0%	2.60	0.90
Difficulty in maintaining supplier relations	20	10%	50%	35%	5%	0%	2.45	0.84
Negative effect of financial crisis	20	20%	15%	50%	15%	0%	2.45	0.84
Lack of adequate WCM skills	20	15%	40%	35%	5%	5%	2.45	1.02
Difficulty in repaying short-term finance for WC	20	10%	50%	35%	0%	5%	2.35	0.76
Difficulty in paying accounts payable	20	10%	55%	25%	10%	0%	2.25	0.71

Notes: WC – working capital, WCM – working capital management, StDev – Standard deviation.

*One company did not provide information in this section.

*** Chi-Square Test significance at the 1% level.

Source: 2010 Survey data, author's computation

The difficulty in collecting trade receivables coupled with the difficulty in managing bad debts by companies seem to have impacted negatively on the company's working capital management practices. The effect of this is in availability of cash and inadequate financing for working capital when required. All these challenges negatively impact a company's operational performance due to the fact that they lead to cash being tied up in working capital.

4.4.5 Perceived relationship between WCM and corporate profitability

80 per cent ($n = 16$) of the companies in the survey indicated that they use the operating profit ratio as a measure of operational performance. In the financial data analysis presented in section A of the study, the net operating profit ratio was used and this is supported by this finding. Table 4.11 presents results on the perceived effect of working capital components on operating performance.

Table 4.11: Relationship between working capital components and profitability
How do the following working capital management components affect the company's operating performance?^a

Working capital component***	n =	1 Highly positive	2 Positively	3 No effect	4 Negatively	5 Highly negative	Mean	StDev
Long accounts collection period*	19	0	0	0	89	11	4.11	0.32
Short-accounts collection period*	19	21	63	16	0	0	1.95	0.62
Long inventory days period*	19	0	10	0	79	11	3.89	0.74
Short inventory days period*	19	5	63	32	0	0	2.26	0.56
Delaying payment to creditors *	19	5	53	0	37	5	2.84	1.17
Paying creditors quickly*	19	5	11	21	63	0	3.42	0.90
Long cash conversion period*	19	0	5	0	89	6	3.95	0.52
Long operating cycle*	19	0	0	0	89	11	4.11	0.32

^aThe figure shown is a percentage of observations for that relationship. StDev – Standard deviation.

*One company declined to provide information in this section.

***Chi-Square Test significant at 1% level.

Source: 2010 Survey data, author's computation

Table 4.11 shows that lengthening accounts collection period has a negative effect on operational performance (mean=4.11, SD=0.32) while shortening accounts collection period has a positive effect on operational performance of the company (mean=1.95, SD=0.62). This implies that a negative relationship exists between the accounts receivable period and profitability. These findings are consistent with the working capital management techniques discussed under table 4.10a where the key techniques used by companies focused on aggressive collection policies. This finding is in support of hypothesis one which held that a significant negative relationship exists between ACP and profitability. The results in table 4.11 also show that lengthening the inventory days period has a negative impact on profitability (mean=3.89, SD=0.74). These findings were confirmed by asking the respondents to indicate the effect of a short inventory conversion period on profitability (mean=2.26, SD=0.56). This finding means that, the longer the inventory period, the lower the profitability.

The results in table 4.11 also indicate that delaying payments to suppliers has a positive effect on operating performance of the company (mean=2.84, SD=1.17). This finding is consistent with the findings under working capital management practices presented under table 4.7 where companies indicated that they take long to pay suppliers whether discounts are offered or not. This finding is in support of hypothesis three which held that a significant relationship exists between the average payment period and profitability. Finally, the results indicate that lengthening the operating cycle (mean=4.11, SD=0.32) and cash conversion cycle (mean=3.95, SD=0.52) affect operational performance negatively and to a great extent ($n = 17$). The negative relationship between cash conversion cycle and profitability is in support of hypothesis four which held that a significant negative relationship exists between the CCC and profitability.

4.5 A comparison of the results from financial statements and questionnaire data

Table 4.12 presents a summary of the findings from both financial and questionnaire data analysis. In general, all findings from both the financial data and questionnaires are consistent and in support of the hypotheses developed in chapter two with the exception of the results relating to the relationship between the inventory conversion period and profitability. A further inquiry into this inconsistency is warranted in further research.

Table 4.12: A comparison of the results from financial statements and questionnaire
Relationship between working capital management components and profitability^a

	Results from		Inference	Hypothesis testing
	Financial Statements	Questionnaires		
ACP and profitability	Negative***	Negative***	Consistent	H ₁ supported
ICP and profitability	Positive***	Negative***	Inconsistent	H ₂ not supported
APP and profitability	Positive***	Positive***	Consistent	H ₃ supported
CCC and profitability	Negative*	Negative ***	Consistent	H ₄ supported

^aThe level of significance for all variables in table 4.12 range from 1% to 10%, *, ** and *** represent significance at the 10%, 5% and 1% respectively. The questionnaire response significance was measured using the Chi-Square Test at the 1% level.

Source: 1993 – 2008 survey data, author's computation

4.6 Chapter summary

Chapter four discussed the key findings from the study. The first part on the key findings revealed that a negative relationship existed between working capital management (as measured by the cash conversion cycle) and profitability (as measured by the net operating profit (NOP)). A negative relationship existed between the accounts collection period (ACP) and profitability. The findings also showed that the inventory conversion period and the average payment period were positively related with profitability. The second part of the results provided empirical evidence that the perceived relationships in part one held. A comparison of the two results was presented and any inconsistencies brought out. Chapter five presents a discussion on these findings.

CHAPTER FIVE

Discussions

5.1 Introduction

In this chapter, we focus on the interpretation and the implications of the findings from the study based on the research objectives. First is the issue on the relationship between working capital management and profitability. The focus is on the key components of working capital management. This is accompanied by a discussion on the managerial aspects relating to working capital management.

5.2 Research findings and discussion

In this research, an examination of the relationship between working capital management and corporate profitability was carried out. While prior research documented that managers can create value for their shareholders by reducing the ACP and the ICP to reasonable levels from a financial perspective only (Deloof, 2003; Lazaridis and Tryfonidis, 2006; Padachi, 2006; Garcia-Teruel and Martinez-Solano, 2007; Raheman and Nasr, 2007), this study held that from both a financial and managerial perspective, managers can actually create value for their shareholders by decreasing the ACP.

5.2.1 Relation between the accounts collection period (ACP) and profitability

The negative relation between the ACP and profitability suggested that Kenyan companies can improve their profitability by reducing the number of days accounts receivable are outstanding. The result can also be interpreted as the less the time it takes for customers to pay their bills, the more cash is available to replenish inventory hence the higher the level of sales realized leading to higher profitability of the company. This finding was overwhelmingly significant ($p < 0.01$) for all regression models. This finding was in support of hypothesis 1 and the transactions cost theory.

The implication of this finding is that managers should strive to improve the company's profitability by reducing the credit period granted to their customers. The finding implies that a more restrictive credit policy giving customers less time to make their payments improves performance. Adopting a restrictive credit policy helps in reducing the opportunity costs of

tying up cash in working capital. This means that less transactions costs are incurred and this helps in improving the company's operational performance.

5.2.2 Relation between the inventory conversion period (ICP) and profitability

The results on whether companies can create value by reducing the ICP proved inconsistent in this study. Whereas the financial data indicated that a positive relation exists between the ICP and profitability, the results from questionnaires revealed the contrary-that is, a negative relation.

The financial data results are consistent with studies carried out on conservative working capital policies. Maintaining high inventory levels reduces the costs of un anticipated interruptions in the production process and the loss of business due to scarcity of products. Maintaining high levels of inventories also helps in reducing the cost of supplying the products. It also protects the company against price fluctuations as a result of macroeconomic factors such as inflation. This finding is not in support of hypothesis 2 that the ICP is negatively related to profitability. Most studies have not found the expected negative relationship between the ICP and profitability to be significant for example, Lazaridis and Tryfonidis (2006) and Padachi (2006).

The questionnaire data analysis found the contrary-that is, a negative relationship exists between ICP and profitability. This finding is consistent with prior findings by Deloof (2003) and Garcia-Teruel and Martinez-Solano (2007) that reducing inventories to a reasonable minimum helps in creating value to shareholders. Maintaining less inventories means that the company is realizing sales at a higher rate (as indicated by a high inventory turnover). This helps in maximizing the profits of the company. This finding is in support of hypothesis two which held that a significant negative relationship exists between the ICP and profitability. Below are some comments from four of the 20 respondents who commented on inventory management:

.... any delay of raw material will lead to low production and this will affect sales and then profitability of the company is affected. That is, low sales (due to the delay of raw materials) will lead to a decline in profitability while the company continues paying for fixed costs. (Company A)

... stock optimization to ensure that there are no stock outs. (Company B)

On inventory, we have consignment stocking i.e., vendor stores materials with us then we are charged on usage basis. (Company C)

Stock quantities (EOQ) are determined in the global office during monthly planning periods. (Company D)

A closer examination of the four statements reveals that companies manage the three types of inventory (i.e., raw materials, work-in-progress and finished goods) differently. For example, a delay in raw materials is said to negatively impact on profits and thus some companies have resorted to consignment stocking and stock optimization (companies B, C and D). This ensures constant supply of inventory (raw material) as and when needed. In this way, the production process runs uninterrupted.

With this inconsistency in findings from both financial and questionnaire data analyses, the researcher could not establish the direct causal relationship between the ICP and profitability. A recommendation for further research was put forward so as to investigate further the causal relationship existing between the ICP and profitability.

5.2.3 Relation between the average payment period (APP) and profitability

The positive relationship between the APP and profitability can be explained in two ways. First, contrary to Deloof (2003) and Raheman and Nasr (2007), this finding holds that more profitable companies wait longer to pay their bills. This usually arises since the large companies have a greater bargaining power over their suppliers. Thus, they can withhold their payments to suppliers so as to take advantage of the cash available for their various working capital needs.

Second, this result makes economic sense in that the longer a company delays its payments to its creditors, the higher the level of working capital levels it reserves and uses in order to increase profitability. In line with Deloof (2003), when a company delays payments to its suppliers, it is able to assess the quality of the products bought. In support of hypothesis 3 and the transactions cost theory, this finding means that delaying payments to suppliers can also be a cheap and a flexible source of financing for the company. This finding is in line with the working capital management rule that companies should strive to lag their payments to their creditors as much as possible, taking care not to spoil its business relationships with them.

Contrary to Deloof (2003), the negative relationship between the accounts payable period and profitability negates the view that less profitable companies wait longer to pay their bills. In fact, this study finds the contrary - that companies can take a longer time to pay their suppliers since they have a greater bargaining power.

5.2.4 Relation between the cash conversion cycle (CCC) and profitability

The findings from both financial and questionnaire data analyses established that a significant negative relation exists between the CCC and profitability. While prior research has focused mainly on the relationship between working capital management and profitability, no study has examined the more fundamental question of what the internal management perceives of this relationship.

The findings from both the financial and questionnaire data analyses are consistent with prior studies by Shin and Soenen (1998), Deloof (2003), Padachi (2006), Raheman and Nasr (2007) and Garcia-Teruel and Martinez-Solano (2007). Shin and Soenen (1998) argued that the negative relation between profits and the cash conversion cycle could be explained by greater market power or market share. This means that a shorter CCC may be brought about by the company's higher bargaining power with its suppliers and/or customers as well as the company's higher profitability due to market dominance.

The negative relationship between the company's CCC and profitability can also be explained by the fact that minimizing on the investment in current assets can help in boosting profits. This ensures that liquid cash is not maintained in the business for too long. This finding provides an extension to the emerging working capital management theory as postulated by Smith and Begemann (1997).

5.3 Research implications

This study is expected to be useful to the managers of companies. The different analyses identified key working capital management practices and challenges and these are expected to assist managers in identifying areas where they should focus so as to improve the financial performance of their companies. This includes whether the focus should be on accounts receivable management, inventory management or accounts payable management. The overall intended objective should be to minimize the cash conversion cycle to its minimum. For instance, if a company realizes that it has a substantial investment in accounts receivable, it may be necessary to work some modalities of reducing this investment so as to reduce the

cash conversion cycle hence boost its profitability. By focusing on reducing the cash conversion cycle, the management will be in a position to maximize the profits of the company and thus reduce agency problems.

The results also provided owner-managers (especially owners of small companies) with information regarding the basic financial management practices used by the established companies in relation to working capital management. They can thus replicate the relevant practices in their companies owing to their perceived benefits. The owner-managers of small firms are also able to understand what working capital management practices are used by the big corporations and this helps them in dealing with their big corporate clients. Padachi (2006) held the view that working capital needs of an organization are dynamic in nature and so does the company's internal cash generation rate. As such, small companies should ensure a good synchronization of its assets and liabilities, and more so, when dealing with large companies.

5.4 Chapter summary

Chapter five presented a summary of the overall findings from the study. The discussions provided an overall picture of the existent relationships between working capital components and profitability. The implications of these findings were also discussed. The last chapter concludes this research.

CHAPTER SIX

Conclusions and Recommendations

6.1 Conclusions

This thesis presented a study on the relationship between working capital management and profitability. Managerial perspectives on working capital management were also investigated. Guided by three leading theoretical frameworks and prior research, a conceptual framework was developed to guide the design of the study. The key variables under investigation were the various measures of working capital management (as measured by the average collection period, the inventory conversion period, the average payment period and the cash conversion cycle) and profitability (as measured by the net operating profit ratio). The study was guided by two research objectives and four key hypotheses under investigation.

Key findings from both financial and questionnaire data analyses were: (1) a highly significant negative relationship exists between the time it takes companies to collect cash from their customers (accounts collection period) and profitability ($p < 0.01$). This means that more profitable companies take the shortest time to collect cash from their customers; (2) there exists a highly significant positive relationship between the time it takes the company to pay its creditors (average payment period) and profitability ($p < 0.01$). This implies that the longer a company takes to pay its creditors, the more profitable it is. In delaying payments to creditors, the company is able to effectively acquire a cheap and a flexible source of financing and these funds can be used to generate more profits for the company; (3) there exists a significant negative relationship between the cash conversion cycle and profitability ($p < 0.10$). This means that shortening the cash conversion cycle improves profitability of the company. The only conflicting result from both analyses was the relationship between inventory conversion period and profitability.

The main techniques employed by companies in working capital management were: (1) setting credit limits for customers (mean = 4.42, SD=0.70), (2) aging of debtors (mean = 4.40, SD=1.73), (3) aggressive collection policies (mean = 4.35, SD=0.81), (4) preparing cash budgets (mean 4.32, SD=0.96) and (5) negotiating with suppliers (mean 4.25, SD=0.51). Key challenges identified with regard to working capital management were: (1) difficulty in collecting trade receivables (mean = 3.75, SD=1.04), (2) cash not readily available when needed (mean = 3.63, SD=1.21), (3) difficulty in managing bad debts (mean=3.40, SD=1.02),

(4) lack of adequate working capital finance (mean = 3.40, SD=1.25) and (5) difficulty in identifying working capital risks (mean = 3.30, SD=1.10). The key working capital management techniques related to shortening the ACP. This supported the finding that there exists a negative relation between accounts collection period and profitability. An investigation into the key working capital challenges revealed that the main challenges related to accounts receivable and liquidity management. These findings imply that even though companies should strive to minimize their investment in working capital, they are still face challenges in trying to obtain that objective.

6.2 Recommendations

Based on the above findings and implications, the following recommendations can be made:

- (a) In order to create value for the shareholders, companies should focus more on working capital management by reducing the number of days accounts receivable are outstanding.
- (b) Companies can also take as long as they can with regard to paying their bills and other accounts payable provided that they do not resort to strained relationships with their suppliers and other accounts payables.
- (c) In order to improve operational performance and create value for shareholders, companies should always work towards a careful reduction of the cash conversion cycle.

6.3 Areas of **further** research

The following are some suggestions for further research relating to working capital management:

- (i) Further research focusing on working capital management using additional multivariate statistical studies is required in terms of organizational preferences and industrial contexts to identify a combination of internal and external environmental factors which affect this relationship.
- (ii) Further research could focus deeply on inventory management and on other working capital components for instance, cash and marketable securities.
- (iii) Since all firms listed under finance and investment segment were left out, further research can be conducted focusing on working capital management practices in banks, investment and insurance companies.

(iv) The main focus of this study was the effect of working capital management on corporate profitability. Further research could focus on the relationship between working capital and other factors such as competitive advantage or strategy and operations.

6.4 Limitations of the study

Since there is no research without its own limitations, the limitations which arose in this study were as follows. First, there were control problems. Only a few discernible control variables were adopted in this study. There are other variables (e.g., cross listing or exchange rate fluctuations) that may affect the variables under the study but they were not captured in the methodology. The researcher admits this fact although careful attention was taken on those variables that were key controls in this study.

The other limitation was survivorship bias. The researcher acknowledges some level of survivorship bias. For some companies, data was missing for a substantial period of time. The researcher admits that some companies were omitted from the sample due to inadequate or missing data for most years. This limitation calls for additional longitudinal, qualitative and multivariate statistical evidence as noted by Howorth and Westhead (2003).

Finally, the researcher admits that there were response rate limitations since the study did not achieve the 100% response rate for the questionnaire respondents which would have provided more comprehensive results. The 67 per cent response rate (i.e. 20 out of 30 sampled companies) was not large enough for detailed analysis and specifically performing cross tabulations. This means therefore that there is clearly a need for more research in this area of working capital management before one can obtain a clearer picture of the causal relationships being investigated.

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Appendices

Appendix 1: Introduction letter (from Strathmore University)

STRATHMORE UNIVERSITY



18 February 2010

TO WHOM IT MAY CONCERN

Mailiuvu David - RegN06294

Mr Mathuva David is a postgraduate student in our Master of Commerce (MCom) programme. In partial fulfilment of the MCom degree, students are required to carry out a research project and write a thesis on a contemporary subject within their field of specialisation. Among other activities, the project involves data collection and analysis.

David is requesting to gather information to be used in his research. The information he will obtain from your organization will be used for this academic purpose only and will be kept confidential. The results of the survey will be in summary form and will not disclose any individual, company name or company information in any way.

The research study is entitled "The Focus on Working Capital Management and Profitability of Listed Companies; Financial and Managerial Perspectives."

We hope that your organization can assist by providing information to the above named student.

Yours faithfully,

David Wangombe
Dean, Faculty of Commerce.

Ole Sang'ili Road Third Floor Est. 1st
P.O. Box 59857 00200 City Square
NAIROBI KENYA

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Appendi. 2: Sample letter: Corporate permission

Strathmore University,
P. O. Box 59857 - 00200,
Nairobi.

To:

The Finance Manager,

Dear Sir/Madam,

Monday, February 22, 2010

RE: REQUEST FOR PARTICIPATION IN DATA COLLECTION

I am a Master of Commerce (MCOM) Second Year student at Strathmore University and this semester I am conducting a research on *'The focus of Working capital management', and Profitability in Kenyan listed companies: Financial and managerial perspectives'*. The study will assist me in completing my MCOM thesis at Strathmore University.

Your Company is among the top 30 companies to be included in the study since You are Considered key player in the industry and hence You are better placed to Provide data for this study. The Purpose for the research is to obtain managerial perspectives on the relationship between working capital management and corporate profitability. The study also seeks to find Out the common sources of Working capital and challenges faced by companies When managing Working capital. You are requested to fill in a questionnaire enclosed with this letter.

The questionnaire will require approximately 30 minutes to complete. The researcher has allocated a period of one month with Which to finish Collecting and analyzing data for this study. Information gathered from Your Company Will be treated with utmost confidentiality and Your Company will remain anonymous. No specific reference will be made to the Company or the individual(s) involved in the study.

Let me thank you in advance for Your Participation in this study. My Contact details are David Mathuva, Tel: +254 735 853 810, Email: ~ or ~.

Yours faithfully,



David Mathuva
Strathmore University
Enc. Questionnaire

Appendix 3: Research Questionnaire

The relationship between working capital management and profitability in Kenyan listed companies

Questionnaire

The purpose of this questionnaire is to examine working capital management practices used by Kenyan listed companies and how they affect company profitability. All the information provided in this questionnaire will be treated in strict confidentiality.

Part A: General Information

A1: Job Title:

A2: What is the company's primary industrial activity as specified in the NSE classification? (mark with an 'X' or tick where appropriate)

- ☐ Agricultural
- ☐ Industrial and allied
- ☐ Commercial and Services
- ☐ Alternative investment segment
- ☐ Any other, (Please specify)

Part B: Working capital management practices

The purpose of the section is to examine the working capital management practices of the company.

B1: Please mark with an 'X' or tick where appropriate:

	1	2	3	4	5
	Least important	Less Important	Important	More important	Very important
How important is working capital management to your company?					
How important is operational performance to your company?					

B2: On average, how long does the company take to pay its credit suppliers and other creditors? (mark with an 'X' where appropriate)

- ☐ Less than one month (<30 days)
- ☐ One to two months (30-60 days)
- ☐ Three to four months (61 – 120 days)
- ☐ More than four months (>120 days)

B3: On average, how long does the company take to receive cash from its credit customers? (mark with an 'X' where appropriate)

- ☐ Less than one month (<30 days)
- ☐ One to two months (30-60 days)
- ☐ Three to four months (61 – 120 days)
- ☐ More than four months (>120 days)

B4: On average, how long does the company take to sell its inventory? (mark with an 'X' where appropriate)

- ☐ Less than one month (<30 days)
- ☐ One to two months (30 – 60 days)

☐ Three to four months (61 - 120 days) ☐

More than four months (> 120 days)

B5: On average, what is the length of the company's operating cycle? (*mark with an X' where appropriate*)

☐ Less than one month «30 days)

☐ One to two months (30 - 60 days)

☐ Three to four months (61 - 120 days) ☐

More than four months (> 120 days)

B6: Fill in the table below by marking with an 'X' or a tick where most appropriate:

	1	2	3	4	5
	Never (more than 120 days)	Sometimes (61-120 days)	Quite often (31-60 days)	Often (within a month)	Very often (within a week)
How often do credit customers pay on time?					
How often does the company review its debtors aging schedule?					
How often does the company review its accounts receivable policies?					
How often does the company review its inventory levels?					
How often does the company review its inventory policies?					
How often does the company's inventory (stock) take to sell?					
How often does the company make early payments to suppliers when discounts are offered?					
How often does the company make early payments to suppliers when no discounts are offered?					
How often does the company review its accounts payable policies?					
How often does the company manage its working capital?					
How often does the company source for external financing for its working capital needs?					

Part C: Financing working capital

The purpose of this section is to find out how companies finance their working capital.

C1: To what extent does your company use the following external finance sources to finance its working capital needs? (within a span of 4 months) *(mark with an 'X' where applicable)*

	1	2	3	4	5
	Never (less than once)	Sometimes (1-2 times)	Quite often (3-6 times)	Often (7-10 times)	Very often (more than 10 times)
Bank overdraft					
Short-term loans					
Medium term loans					
Long-term loans					
Venture capital					
Cash from operations					
Any other source (please specify)					

Part D: Working capital management challenges

The purpose of this section is to investigate the challenges companies face when managing working capital.

D1: Kindly rate the following working capital challenges ranging from 1-least important to 5- most important challenge *(mark with an 'X' where appropriate)*

	1	2	3	4	5
Challenge	Least important	Less Important	Important	More important	Most important
Cash is not readily available when needed					
Required financing is readily available when needed					
Insufficient time to manage working capital					
Difficulty in determining right levels of working capital					
Difficulty in identifying risks associated with working capital management					

Challenge	Least important	Less Important	Important	More important	Most important
Difficulty in determining working capital needs for the company					
Focusing more on top-line growth and not working capital					
Focusing more on company's competitiveness strategies and less on liquidity management					
Difficulty in managing high inventory levels (build up)					
Difficulty in collecting trade receivables					
Difficulty in offering customer discounts					
Difficulty in paying trade payables on time					
Difficult in maintaining supplier relations					
Difficulty in cash flow management and forecasting					
Negative impact of financial crisis in managing working capital					
Inflationary pressures					
Difficulty in managing bad debts					
Difficulty in managing obsolete/damaged inventories					
Difficulty in paying short-term working capital sources					
Difficulty in identifying working capital drivers					
Too formalized and bureaucratic working capital management processes					
Lack of working capital management skills					
Negative effects of global financial crisis.					
Legal and regulatory environment in relation to debt collection					
Legal and regulatory environment with regard to dealing with suppliers					

D2: To what extent does the company use the following working capital management tools/techniques? (mark with an 'X' where appropriate)

WCM Technique	Frequency of use				
	1 Not at all	2 Seldom	3 Sometimes	4 Most times	5 Always
Extending payment periods to buyers					
Aggressive collection policies					
Setting credit limits					
Invoice discounting and financing					
Aging of debtors					
Reducing stock levels					
Maintaining buffer inventories					
The use on Economic Quantity Models					
Negotiating credit terms with suppliers					
Projected cash budget					
Breakeven analysis (when issuing discounts)					
Analysis of financial and operating leverage					
Sales forecasting models					
Statistical credit scoring models					
Any other: (Please specify)					

Part E: Measuring Operational Performance

The purpose of this section is to find out how companies measure their operational performance and the effect of working capital management on operational performance.

E1: Which ratio is most used to measure the company's operational performance? (select the most appropriate by marking with an 'X')

☐ Gross profit margin

☐ Operating profit margin ☐

Operating expense ratio ☐

Net operating margin

☐ Any other (please specify)

E2: How do your working capital management practices affect the company's operating performance (profitability)? *(mark with an 'X' where appropriate)*

	1	2	3	4	5
	Highly positive	Positively	No effect	Negatively	Highly negative
Long accounts collection period					
Short-accounts collections period					
Long inventory days period					
Short inventory days period					
Delaying payment to suppliers and other creditors for long					
Paying suppliers and other creditors as quickly as possible					
Long cash conversion period					
Long operating cycle					

E3: Any other comments with regard to working capital management and company profitability? *(Please explain in the space provided).*

THANK YOU

Appendix 4: Listed companies **included** in the sample

NSE Companies as of 31 st December 2008					
A	AGRICULTURAL	Auditor	YearEnd	Year Listed	Year Founded
1	Brooke Bond Ltd Ord 10.00	PWC	31-Dec	1972	1925
2	Kakuzi Ord.5.00	PWC	31-Dec	1951	1927
3	Rea Vipingo Plantations Ltd Ord 5.00	PWC	30-Sep	1996	1995
4	Sasini Tea & Coffee Ltd Ord 5.00	E&Y	30-Sep	1965	1952
B	Commercial and Services				
5	Car & General (K) Ltd Ord 5.00	PWC	30-Sep	1995	1936
6	CMC Holdings Ltd Ord 5.00	PWC	30-Sep	1950	1948
7	Kenya Airways Ltd Ord 5.00	E&Y	31-Mar	1996	1977
8	Nation Media Group Ord. 2.50	PWC	31-Dec	1973	1962
9	TPS Eastern Africa (Serena) Ltd Ord 1.00	PWC	31-Dec	1997	1970
10	Standard Group Ltd Ord 5.00	KPMG	31-Dec	1954	1952
C	Industrial and Allied				
11	Athi River Mining Ord 5.00	D&T	31-Dec	1997	1973
12	Bamburi Cement Ltd Ord 5.00	PWC	31-Dec	1970	1951
13	British American Tobacco Kenya Ltd Ord 10.00	PWC	31-Dec	1969	1952
14	Crown Berger Ltd Ord 5.00	E&Y	31-Dec	1992	1958
15	EA.Cables Ltd Ord 5.00	PWC	31-Dec	1973	1965
16	E.A.Portland Cement Ltd Ord 5.00	D&T	30-Jun	1995	1930s
17	East African Breweries Ltd Ord 10.00	D&TIKPMG	30-Jun	1972	1922
18	Kenya Power & Lighting Ltd Ord 20.00	D&T	30-Jun	1972	1922
19	Sameer Africa Ltd Ord 5.00	PWC	31-Dec	1994	1969
20	Kenya Oil Co Ltd Ord 5.00	PWC	30-Sep	1959	1959
21	Olympia Capital Holdings Ltd Ord 5.00	E&Y	31-Dec		1989
22	Total Kenya Ltd Ord 5.00	PWC	31-Dec	1988	1955
23	Unga Group Ltd Ord 5.00	D&T	30-Jun	1971	1908
D	Alternative Investment Market Segment				
24	A. Baumann & Co. Ltd Ord 5.00	D&T	31-Mar	1948	1926
25	Eaagads Ltd Ord 1.25	D&T	31-Mar	1972	1946
26	Express Ltd Ord 5.00	KPMG	31-Dec	1978	1918
27	William~on Tea Kenya Ltd Ord 5.00	D&T	31-Mar	1972	1952
28	Kapchorua Tea Co. Ltd Ord 5.00	D&T	31-Mar	1972	1948
29	Limuru Tea Co. Ltd Ord 20.00	PWC	31-Dec	1967	1925
30	Carbacid Limited	D&T	31-July	1971	1961

Notes: PWC - PricewaterhouseCoopers, E&Y - Ernst & Young and D&T - Deloitte and Touche.

Source: The NSE website and NSE handbooks

Appendix 5: Research time plan

*Key: S - Supervisor, M - Moderator, R - Researcher, Ra - Research Assistant, SGS - School of Graduate Studies, EE - External Examiner, IE - Internal Examiner, BOE - Board of Examiners

Date		Activity	Responsibility=
1 st October 2008		Compilation of information sources, collect information from at least 50 published journal articles	RIRa
3 rd November 2008		Begin literature review: Perform a detailed and extensive review of extant research and critique the findings of different studies. Identify theoretical underpinnings and methodological approach from previous related studies establish research methods used to collect and analyze data	R
31 st January 2009		Complete chapters 1 and 2 of the proposal	R
31 st March 2009		Complete chapter 3 of the proposal	R
25 th May 2009	(a)	Submit a fully written draft proposal to my supervisor	SIR
31 st July 2009	(b)	Submit a revised proposal with amendments in (a)	SIR
14 th September 2009		First proposal defense at the faculty level	SIMJR
30 th October 2009		Make corrections after faculty defense and resubmit	R
1 st November 2009		Begin data collection	RIRa
31 st December 2009		End data collection	RIRa
1 st January 2010		Data analysis and compilation of final thesis	R
15 th January 2010		Submit completed thesis to my supervisor	R/S
25 th January 2010		Present a seminar on the completed thesis	S/MIR
27 th March 2010		Make corrections on the thesis and submit second draft thesis to SGS for examination	R
29 th March 2010		SGS to send documents to EE and IE	SGSIEE/IE
23 rd April 2010		EE and IE to submit in reports	EEIE
26 th April 2010		EE and IE reports to be sent to the BOE	SGSIBOE
26 th April- 30 th April 2010		Second oral defense of completed thesis	S/MIR
17 th May 2010		Amendments and second submission of corrected	R
11 th - 21 st May 2010		IE to verify that corrections have been implemented	IE
26 th May 2010		Submit corrected thesis again	R
2 nd June 2010		Submission of final thesis	R
4 th June 2010		Submission of results to exams office	SGSIEExams
10 th July 2010		Extract a paper for publication from the thesis	R/S

