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**THE MODERATING EFFECT OF ECONOMIC CONDITIONS ON THE
RELATIONSHIP BETWEEN WORKING CAPITAL MANAGEMENT
AND FIRM PERFORMANCE IN NIGERIA**

SIMON SUNDAY



UUM
Universiti Utara Malaysia

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RELATIONSHIP BETWEEN WORKING CAPITAL MANAGEMENT AND
FIRM PERFORMANCE IN NIGERIA**



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In Fulfilment of the Requirements for the Degree of Doctor of Philosophy**



**TUNKU PUTERI INTAN SAFINAZ
SCHOOL OF ACCOUNTANCY
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ABSTRACT

This study adopted the pecking order and contingency theories to determine the moderating effect of inflation and interest rates on the relationship between working capital management (WCM) and firm performance. A panel data of 675 firm-year observations obtained from non-financial firms listed on the Nigerian stock exchange from 2007 to 2015 was used. The study further conducted in-depth interviews with six managers from these firms. Analysis of the secondary data was performed using the fixed effect model and the STATA statistical software while thematic analysis was employed to analyse data from the in-depth interviews. The quantitative analysis demonstrated that WCM variables (accounts receivable management, accounts payable management, inventory management, cash conversion cycle, and cash conversion efficiency) have inconsistent relationships with firm performance, measured by return on assets, return on equity, and Tobin's Q. Also, inflation and interest rates were found to moderate the relationships between WCM variables and firm performance. Furthermore, the results revealed that the relationships between WCM variables and firm performance have an optimal level of investment that maximises returns. Moreover, the study documented that WCM variables were more significantly affected during the financial crisis period than during the period afterwards. Also, the results of the qualitative data corroborated the findings of the quantitative data. The study concluded by highlighting the practical, methodological and theoretical implications, delineating the negative effects of inflation and interest rates on WCM and establishing that, unlike prior studies, these factors have significant effects on overall firm performance over the medium and long-term periods. The study recommends that firms should be proactive in their treatment of WCM. Also, WCM should be managed and interpreted in relationship to a firm's strategy and its macroeconomic environment.

Keywords: working capital management, inflation rates, interest rates, firm performance, Nigeria

ABSTRAK

Kajian ini mengadaptasi teori *pecking order* dan teori kontigensi untuk menentukan kesan penyederhana kadar inflasi dan kadar faedah terhadap pengurusan modal kerja (WCM) dan prestasi syarikat. Kajian ini menggunakan panel data yang melibatkan pemerhatian terhadap 675 buah firma bukan kewangan yang tersenarai di Bursa Saham Nigeria dari tahun 2007 hingga 2015. Kajian ini turut menjalankan temu bual mendalam dengan enam orang pengurus di syarikat ini. Analisis telah dibuat menggunakan model kesan tetap dan perisian statistik STATA, manakala analisis tematik telah digunakan untuk menganalisis data temu bual. Analisis kuantitatif menunjukkan bahawa pemboleh ubah WCM (pengurusan akaun belum terima, pengurusan akaun belum bayar, pengurusan inventori, kitaran penukaran tunai dan keberkesanan kitaran tunai) mempunyai hubungan yang tidak konsisten dengan prestasi syarikat yang diukur oleh pulangan atas aset, pulangan atas ekuiti, dan *Tobin's Q*. Kadar inflasi dan kadar faedah juga menyederhana hubungan antara pemboleh ubah WCM dan prestasi syarikat. Selain itu, keputusan menunjukkan bahawa hubungan antara pemboleh ubah WCM dan prestasi firma mempunyai tahap pelaburan optimum yang memaksimumkan pulangan. Selain itu, kajian ini menunjukkan bahawa pemboleh ubah WCM lebih banyak terjejas semasa tempoh krisis kewangan berbanding tempoh selepas itu. Juga, hasil data kualitatif menyokong penemuan data kuantitatif. Kajian ini menyimpulkan dengan menonjolkan implikasi praktis, metodologi dan teori, menggambarkan kesan negatif inflasi dan kadar faedah terhadap WCM dan mengesahkan bahawa, tidak seperti kajian terdahulu, faktor-faktor ini mempunyai kesan yang signifikan terhadap keseluruhan prestasi firma dalam jangka sederhana dan jangka panjang. Kajian ini mengesyorkan bahawa firma harus proaktif dalam mengendalikan WCM. Juga, WCM perlu diuruskan dan ditafsirkan dari aspek strategi firma dan persekitaran makroekonominya.

Kata kunci: pengurusan modal kerja, kadar inflasi, kadar faedah, prestasi firma, Nigeria

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LIST OF ABBREVIATIONS

APM	Accounts Payable Management
ARM	Accounts Receivable Management
CBN	Central Bank of Nigeria
CCC	Cash Conversion Cycle
CCE	Cash Conversion Efficiency
ECOWAS	Economic Community of West African States
EOQ	Economic Order Quantity
FE	Fixed Effects
FIFO	First In, First Out
INFLAR	Inflation Rates
INTER	Interest Rates
INVM	Inventory Management
JIT	Just in Time
LIFO	Last In, First Out
NBS	Nigerian Bureau of Statistics
NSE	Nigerian Stock Exchange
OLS	Ordinary Least Square
RE	Random Effects
ROA	Return on Assets
ROE	Return on Equity
TQ	Tobin's Q
WCM	Working Capital Management



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CHAPTER ONE

INTRODUCTION

1.1 Introduction

This study investigates the moderating effect of economic conditions on the relationship between working capital management and firm performance in Nigeria. This study extends beyond the normal relationship between working capital management (WCM) and firm performance to examine the effect of macroeconomic conditions including inflation rates and interest rates on the effectiveness of WCM and firm performance. Drawing insights from different theoretical perspectives and incorporating these macroeconomic variables, that are contingent to the environments in which firms operate, has the potential to help managers improve the quality of their financing decisions and to enhance their financial performance.

This chapter therefore provides an introduction to the study, laying the foundation for the following chapters. It begins with this introduction, followed by an overview of the study's background in section 1.2. Section 1.3 provides a problem statement, leading to the research questions presented in section 1.4, and the research objectives in section 1.5. The study's scope has been presented in section 1.6. Section 1.7 details the study's significance, while a chapter outline has been presented in section 1.8.

1.2 Background of the Study

Firm performance represents a measure of an organization's earnings, profits and appreciation in share value, which arises from the efficient and effective deployment of an organization's resources (Odewale & Kamardin, 2015). It focuses on measuring a firm's performance, against its strategic objectives and using the derived information to assess how a business's different units perform (Stiffler, 2006). Performance has become critical in the twenty-first century to help firms cope effectively with competition, increasingly-sophisticated customer demands, management practices, and accelerating globalization (Atkinson & Brown, 2001). Twenty-first century business firms need to enhance their performance and structures to help meet and satisfy five global stakeholders, which include global employees, investors, customers, society, and the environment (Mirza & Javed, 2013; Roundtable, 1999).

Firm performance is a "centre driver" for any economy's growth and development, as it can increase return on assets and equity to shareholders and can guarantee employees' salaries and wages. Customers view performance as ensuring better, higher-quality product delivery, while the general public can benefit from environmental friendliness and enhanced corporate social responsibility. Likewise, increased performance improves government revenue through taxation, while contributing to the country's gross domestic product (Mirza & Javed, 2013).

However, businesses across the globe face challenges and barriers for achieving this success. For example, in India, studies have revealed that firm performance has declined

over time. This was evident in the Ernst and Young report published by LiveMint (2014). They reported that of the 500 Indian companies examined, reports have shown that Indian companies would have freed-up between Rs 2.7 trillion and Rs 5.3 trillion, or between 6% and 12% of their aggregate sales. However, this was lost due to the inefficient management of working capital. This occurred because of the long conversion period of 67 days. This period is long when compared to the 42 days in the United States, the 41 days in Europe, the 57 days in Japan, and the 39 days in other Asian countries (LiveMint, 2014). Similarly, a PricewaterhouseCoopers (2016) study revealed that in the United Kingdom, poor working capital management costs the national manufacturing industry €141 billion. Along the same line, Hagel, Brown, Samoylova and Lui (2013) have reported that the United States economy has experienced a persistent slowing down of their return on assets, resulting from high costs revealed in Figure 1.1.

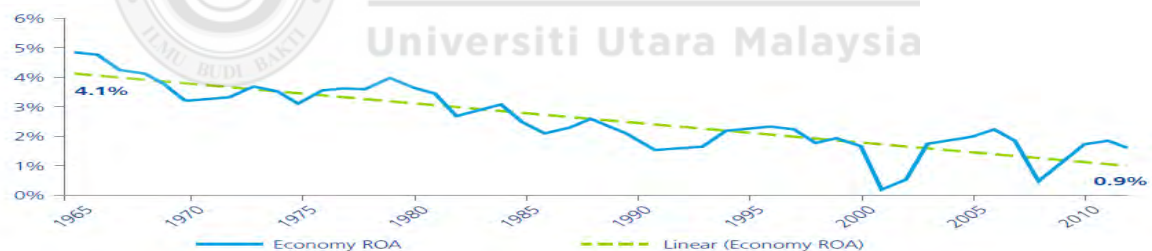


Figure 1.1
The Return on Assets for the US Economy from 1965 to 2012

In Africa, reports have indicated constrained market sizes and limited access to capital as being the major causes of the poor performance of firms (Collier & Gunning, 1999; Eifert, Gelb & Ramachandran, 2005). According to Abiodun (2016), most African countries are facing challenges ranging from very low financial capacity and debt, to very low liquidity

levels. This has been reflected in the number of African countries with a stock market. From a list of about 54 African countries, only 25 countries have stock markets, of which only a few are active, including South Africa, Nigeria, Kenya, Egypt and Morocco. Others are growing at a rudimentary level. By implication, investors and other entrepreneurs on the African continent possess great business ideas, which might not have access to investible capital.

These challenges have led to the formation of the London Stock Exchange (LSE) advisory group for African countries that is used to tackle low financial capacities, low liquidity, and performance issues that confront African businesses (Abiodun, 2016). Indeed, recent surveys across Africa have indicated that a gap in financing and government support has led to the faltering development of economic growth. Other challenges include social challenges and country risks, which include political, legal and regulatory risks, and infrastructure and currency risks (Luiz, 2006), and Nigeria shares these difficulties.

As one of the world's largest economies and a giant in Africa, Nigeria has also been predisposed to slow performance growth, which has brought about unpredictable failures for some firms. The growth of Nigerian firms has been stunted over the years, and they have grossly underperformed, when compared to their counterparts in countries like Malaysia, India and China (Banjoko, Iwuji & Bagshaw, 2012). This is because Nigeria's significant natural and human resources have not been used effectively to enhance the performance of firms (Baghebo & Atima, 2013; Banjoko et al., 2012; Odularu, 2008; Sanusi, 2010).

An essential point here is that the performance of Nigerian firms has deteriorated (Sanusi, 2010; Banjoko et al., 2012; Mirza & Javed, 2013). Walter (1996) and Ku, Mustapha and Goh (2010), and others have described the high costs of financing operational activities arising from a liquidity squeeze, and the consequential tightening of credits by various financial institutions, as factors which have contributed to the poor performance of firms in Nigeria. In addition, an Orjiako ABC report has revealed that the low performance of Nigerian firms could be attributed to a lack of access to investible capital, low financial capacity and low liquidity, all of which constitute working capital (Abiodun, 2016). Relatively speaking, firm performance can be a measure of profit and its creation. Figure 1.2 below shows the declining performance of some highly-rated Nigerian firms, including Cutix Plc, Forte Plc, Floor Mill Nigeria Plc, Dangote Cement and Presco Plc, which occurred from 2010 to 2014.

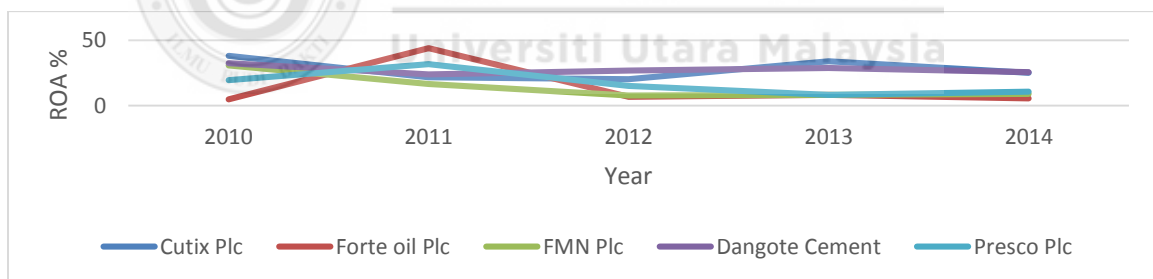


Figure 1.2
ROA Trend of Nigerian Companies

These highly-rated firms have experienced declining profits from the reviewed period and beyond. Generally speaking, the continuous decline of firm performance has been attributed to the poor management of financial resources and to the effect of the country's severe macroeconomic conditions. This has led to high inflation and interest rates, which

have placed considerable constraints on the abilities of firms to acquire raw material for their operations (Ahiuma-Young, 2016; Alli, 2016). This effect has been brought on by changes in oil prices, thereby leading to high rates of borrowing, lower growth rates, the liquidation of external reserves, and declining capital flows (Soludo, 2009). Inflation and interest rates have been on the rise over time, have had an adverse effect on the performance of Nigerian firms, and are above the thresholds prescribed for the Nigerian economy (Fabayo & Ajilore, 2006; Muritala, 2011; Salami & Kelikume, 2010).

Statistics have indicated that inflation and interest rates in Nigeria are above those of countries like Malaysia, Singapore, South Africa, Indonesia, the United States and the United Kingdom (see Table 2.1). This, and many other factors, have informed the present World Bank ranking of Nigeria as being 169 out of 189 countries in its *The Ease of Business Doing* report (World Bank Group, 2016). It shows how Nigerian macroeconomic factors can contribute to the declining performance of firms. Within the same study, Malaysia ranked 18th, Thailand ranked 49th, South Africa ranked 73rd, and Morocco ranked 75th (World Bank Group, 2016).

Several studies have looked at these issues and their impacts on Nigerian economy (Banjoko et al., 2012). The Federal Government of Nigeria has made focused efforts to address Nigeria's poor business performance. The present administration and its president have recently appointed the vice president to head a committee for creating initiatives to address Nigeria's poor business performance. The committee was supervised by the Nigerian Ministry of Industry, Trade and Investment, with the country's vice president,

Yemi Osinbajo, serving as its chairman. The committee was charged with the responsibility of mirroring strategies adopted by Kenya and Rwanda, and many other countries, in enhancing the ease of doing business in Nigeria (Ejiofor, 2016). As part of an effort to revive underperforming firms in Nigeria, the Central Bank of Nigeria (CBN) has also averted the closure of about 200 companies operating in Nigeria, through a recent allocation of forex funds to firms in the affected industries to enable them to acquire raw materials for production (Ahiuma-Young, 2016; Alli, 2016).

The issue here is that the option of supporting firms in acquiring raw materials may be temporary because it will deplete Nigeria's foreign reserves and will make firms dependent on the benevolence of others. Therefore, Eljelly (2004) has stated that such liquidity constraints could be permanently resolved internally through the adequate management of current assets and cash gaps. Thus, investigating working capital management in response to a firm's performance is in dire need. In line with this, Deloof (2003), Raheman and Nasr (2007) and Sharma and Kumar (2011) have all argued that greater commitment to managing the working capital of firms represents a critical internal success factor, serving to enhance the performance and value of firms and reducing their risks. The efficiency with which working capital assets and liabilities are managed can influence purchasing, production and selling activities and can make them cheaper and more flexible in view of the associated high costs of lending rates and other benefits (Baig & Akhter, 2013).

WCM focuses on the investment of firms, taking place over a relatively-short period of time, with a maturity period of less than one year (Abuzayed, 2012). This is because lower

fund costs and lower premiums are associated with these components (Mathuva, 2014). Studies have shown that improvements in working capital efficiency increase the value and performance of financially-constrained firms, as a result of financial crisis or financial instability (Aktas, Croci & Petmezas, 2015; Murthy, 2015; Ng, Smith & Smith, 1999; Wasiuzzaman, 2015).

Owolabi and Alu (2012) have argued that WCM is important to all firms, as it creates value and increases their profitability. Similarly, Sen and Oruc (2009), Charitou, Elfani and Lois (2010) and Mohamad and Saad (2010) have all stated that WCM is important at all times but may be more important when firms face liquidity challenges, especially during periods of financial crisis. The needs of WCM increase during financial crises, when the availability of credit declines and the optimization of WCM becomes complex (Ramiah, Zhao, & Moosa, 2014; Scholleova, 2012). WCM is a critical area of financial management, and its efficiency impacts the performance, value and risks of firms. Therefore, firms can use a mix of aggressive financing policies and conservative financing policies, or a choice of either, as a way of managing working capital components (Ademola, 2014; Maswadeh, 2015; Salawu, 2007; Tauringana & Afrifa, 2013; Tufail, Bilal & Khan, 2013; Toby, 2014; Vahid, Mohsen & Mohammadreza, 2012).

The need to maintain efficient working capital is apparent, arising from the uncertainty of economic conditions that include transaction costs, the scheduling costs of production, and constraints of technology (Akinlo, 2012). Efficient working capital prevents incidents that disrupt production, and it reduces the risk of stock volatility (Deloof, 2003; Garcia-Teruel

& Martinez-Solano, 2007; Mathuva, 2014). It also reduces the effect of supply costs and variations in prices and increases sales (Baños-Caballero, García-Teruel & Martínez-Solano, 2014; Blinder & Maccini, 1991; Deloof, 2003; Mathuva, 2014). This is because WCM involves the planning and controlling of both current assets and current liabilities in a way that eliminates the risk of inability to meet due short-term obligations, and also avoids excessive investment (Eljelly, 2004). WCM is a branch of corporate finance and, more specifically, of investment decision making, but has been neglected over time in favour of long-term financing, capital structure, and the determination of fixed assets (Deloof, 2003; Raheman & Nasr, 2007; Sharma & Kumar, 2011).

The neglect of WCM has occurred because business firms view the determination of working capital variables as being reoccurring and routine in nature (Singh & Kumar, 2014). These routine decisions and activities are reversible over time, unlike capital investment decisions that require equity and debt financing (Pass & Pike, 1984; Smith, 1980; Singh & Kumar, 2014). Pass and Pike (1984) have further stated that such a reason for neglect was inconsequential because effective WCM enhances the growth, value and profitability of firms. They also added that inadequate planning and control of the components of working capital can contribute to business failure over time.

Rao (1989) has described working capital as being short-lived investments that are continually in normal operation and can be converted into other asset types, in order to generate profit and to create wealth for the shareholder. WCM is defined as a difference between investments in cash or instruments readily converted into cash, that are referred

to as current assets and a firm's financial commitments requiring cash payments, often referred to as current liabilities (Filbeck & Krueger, 2005). Efficient working capital also indicates a firm's potential liquidity position and may be defined as current assets, minus the current liabilities of firms (Etiennot, Preve, & Sarria-Allende, 2012; Ramiah et al., 2014; Scholleova, 2012).

Working capital practices and its key drivers have enhanced the viability of firms' operating activities, which are important functions of corporate finance (Etiennot et al., 2012). Therefore it is important to both profit and non-profit organizations and also to small or large businesses (Falope & Ajilore, 2009). The management of working capital is imperative in maintaining adequate liquidity, solvency, profitability, and the value of firms (Deloof, 2003; Shin & Soenen, 1998; Siddiquee & Khan, 2009). The objectives of liquidity and profitability trade-offs can inversely affect firm performance, with respect to either excessive or inadequate working capital. This is because both excessive and inadequate working capital can have several consequences on firms (Samson, Mary, Yemisi & Erekpitan, 2012). The components of working capital must be managed in order to ensure that a mismatch does not occur between current assets and current liabilities and, similarly, between operational efficiency and profitability. This is because a high concentration of one can have an effect on the other (Eljelly, 2004; Abuzayed, 2012; Raheman & Nasr, 2007).

Working capital efficiency can therefore help mitigate against financial difficulties that may arise due to liquidity crises or may enhance firm profitability (Deloof, 2003; Eljelly,

2004; Ramiah et al., 2014; Smith, 1980). Filbeck and Krueger (2005) have argued that a firm's viability depends on its ability to effectively manage the components of working capital, including receivables, payables and inventory. Banos-Caballero et al. (2012) has cautioned that finance managers should be aware of the costs of over-investment and under-investment within working capital. Both high and low WCM investment levels have implications that are associated with balancing costs and benefits (Deloof, 2003; Banos-Caballero et al., 2013; Taurigana & Afrifa, 2013). This means that a level exists at which profitability is maximized.

When balancing such levels, recent studies have indicated that the relationship between working capital and firm performance is concave, rather than linear (Afrifa & Padachi, 2016; Garcia-Teruel & Martineze-Solano, 2007). Therefore, an optimal level exists that balances the costs and benefits of investment in working capital, while maximizing profitability (Afrifa & Padachi, 2016; Banos-Caballero et al., 2012; Banos-Caballero et al., 2013; Nha & Loan, 2015). Hence, firms are encouraged to maintain an optimal level since deviation affects firm performance. Deloof (2003), Eljelly (2004) and Akinlo (2012) have concluded that a firm's performance will decline and might consequently go bankrupt should working capital be poorly managed. This study has therefore focused on contributing to the WCM discourse, using listed companies on the Nigerian Stock Exchange.

1.3 Problem Statement

Firm performance is one index often used by investors to evaluate the prospects of companies, thereby enabling them to make investment decisions (Odewale & Kamardin, 2015). Meanwhile, Nigeria's firms have not fared well over the years. Chete, Adeoti, Adeyinka, and Ogundele (2014) have stated that declining profits and low GDP contributions by firms have been a result of non-performance. Additionally, many stakeholders have articulated factors, which include infrastructure, funding, unfavourable government policies, poor electricity, transportation, high transaction costs, raw material costs, security, high taxes and inaccessible funds as been responsible for the declining firm performance in Nigeria (Akinlo, 2012; Barine, 2012; Olusegun, 2013; Ojo & Ololade, 2014; Kola, 2014; Edith, 2015).

In the same regard, Akinbuli (2006) has bemoaned that poor management constitutes the main reason why businesses experience declining performance, leading to liquidation and bankruptcy in some firms. Meanwhile, Ademola (2014) has attributed business failure to the lack of management of working capital. This is evident in situations that involve poor funding, high material costs, and the inaccessibility of funds among firms operating in Nigeria. However, previous researchers have not paid real attention to the issue of WCM and its impact on firm performance in Nigeria. This study has therefore set out to examine how WCM enhances the performance of Nigerian firms.

A significant amount of research has been undertaken in determining the relationship between WCM and firm profitability. However, the existing literature has mostly focused

on developing economies and practices used by multinational enterprises in developed markets (Zapalska, Clark & Shao, 2004). Abuzayed (2012) and Akinlo (2012) have argued that working capital is critical not only to firms of all sizes, including those from developed and developing countries, but also for businesses that exist in emerging markets or in underdeveloped countries because of challenges related to access to capital and market size which characterise operations, like those in Nigeria's case.

Besides the work of Akinlo (2012), only limited research has been undertaken within the Nigerian business context, considering the enormous importance of WCM (Takon & Atseye, 2015; Kurawa & Garba, 2014; Ogundipe, Idowu, & Ogundipe 2012; Aileman & Folashade, 2014). Amongst these studies undertaken, a substantial number have been conducted regarding the manufacturing sector, and limited samples have been considered within a short period of time. A few others have focused on small samples from within other sectors. Therefore, existing studies in Nigeria have been constrained by methodological limitations, which have undermined their findings. In other words, these limitations have naturally limited the generalization of findings to the manufacturing sector alone. Therefore, this study has furthered the discussions regarding the relationship between WCM and firm performance by incorporating all WCM measures and by considering a larger sample size.

Furthermore, Wasiuzzaman (2015) and Murthy (2015) have argued that WCM has gained academic interest more than ever before during the economic crisis from 2007 to 2008. They stated that WCM has been considered more effective for financially constrained

firms, while it is insignificant for unconstrained firms. Pervon and Visic (2012) have argued that seeking performance through WCM represents a continuous process because firms exist and operate within changing environments. Moreover, Sen and Oruc (2009), Charitou et al. (2010), and Mohamad and Saad (2010) have all stated that working capital intervenes at all times but may be more important when firms face liquidity challenges, especially during economic crises. The problem is that these assertions have not been comprehensively investigated.

In addition, previous studies regarding WCM and profitability relationships have resulted in mixed and inconsistent findings (Salman, Folajin, & Oriowo, 2014; Sharma & Kumar, 2011; Makori & Jagongo, 2013; Talonpoika, Monto, Pirtti & Karri, 2014). These mixed findings have implied that either high or low WCM investment levels have had enormous implications for balancing the costs and benefits of investment in WCM (Banos-Caballero et al., 2012; Deloof, 2003; Taurigana & Afrifa, 2013). The suggestion has been made that an optimal investment in WCM exists, which enhances firm performance, whereas deviation from this point could reduce firm performance (Afrifa & Padachi, 2016). This means that levels of investment in WCM can vary quite significantly.

The argument is that most existing studies regarding WCM have determined a linear relationship between WCM and firm profitability (Deloof, 2003; Nha & Loan, 2015, Afrifa & Padachi, 2016; Garcia-Teruel & Martinez-Salano, 2007; Shin & Seonen, 1998). However, another school of thought has argued that the relationship between WCM and profitability may be either non-linear (concave) or quadratic from which a deviation may

be significant (Nha & Loan, 2015; Pais & Gama, 2015; Afrifa & Padachi, 2016). Though, this assertion has not been confirmed comprehensively through using all WCM measures, especially within the context of the Nigerian economy. Therefore, this study employs a comprehensive approach to discerning the quadratic nature of the relationship between WCM and firm performance. The term “quadratic” has been borrowed from economics and is used to explain a relationship that is rarely linear. In other words, the “quadratic” term has been employed in this study to describe the type of investment in working capital which is non-sequential, and which harbors the propensity to deviate.

Another issue is that the extant studies on WCM and firm performance have failed to incorporate the effects of macroeconomic factors, including inflation and interest rates, as the function of the external operating environments of firms (Zingwiro, 2006; Ali & Khan, 2011; Mathuva, 2014; Mirza & Javed, 2013; Onodje, 2014; Wasiuzzaman & Arumungum, 2013; Smith, N’Cho-Oguie, Murray & Blakley, 2003). Meanwhile, it has been reported that a high inflation rate has a significant impact on firm profitability (Bakare, Kareem & Oyelekan, 2015; Umaru & Zubairu, 2012). However, low-interest rates have been found to propel economies and enhance firm profitability (James, Richard & Victor, 2013; Obamuyi, 2009; Obansa, Okoroafor, Aluko & Eze, 2013). Furthermore, these macroeconomic factors have been revealed within other studies as being the determinants of efficient WCM (Filbeck & Krueger, 2005; Mathuva, 2014; Mirza & Javed, 2013; Wasiuzzaman & Arumugum, 2012). Despite the demonstrated importance of both inflation rates and interest rates on firm performance and WCM, researchers in this field have not considered investigating the possible interaction of macroeconomic variables on the

relationship between WCM and the firm's performance (Filbeck & Krueger, 2005). Therefore, following the argument proffered by Baron and Kenny (1986) and Hayes (2009), in circumstances of mixed results a moderating variable can be introduced. This current study therefore examines the moderating effect of macroeconomic conditions, including interest rates and inflation rates, on the relationship between WCM and the performance of Nigerian firms (Filbeck & Krueger, 2005; Mathuva, 2014; Zeithaml, Varadarajan & Zeithaml, 1988).

In line with the gaps reviewed above, this study has adopted a holistic approach through considering the whole dimensions of WCM. These include accounts receivable management, accounts payable management, inventory management, cash conversion cycles, and cash conversion efficiency. It also combines both the accounting and market measures of firm performance, which include return on assets, return on equity and Tobin's Q in examining the relationship between WCM and firm performance in Nigeria. In addition, the linear or quadratic controversy and mixed literature findings are also advanced, through considering the WCM's quadratic nature and the firm performance relationship, as well as the moderating effect of inflation and interest rates on the relationship between WCM and firm performance.

1.4 Research Questions

This study has been designed to answer questions that relate to the moderating effect of economic conditions on the relationship between WCM and firm performance in Nigeria.

Other specific questions include:

1. Is there a relationship between WCM and firm performance in Nigeria?
2. Do economic conditions moderate the relationship between WCM and firm performance in Nigeria?
3. Is the relationship between WCM and firm performance in Nigeria quadratic?
4. Is there a difference in the relationship between WCM and firm performance in Nigeria during and after the financial crisis of 2007-2008?
5. How do managers perceive the effectiveness of WCM practices on firm performance in Nigeria?

1.5 Research Objectives

Consistent with the main research question posed above, this study aims to evaluate the moderating effect of economic conditions on the relationship between WCM and firm performance in Nigeria. Other specific objectives that are consistent with this aim include the following:

1. To determine the relationship between WCM and firm performance in Nigeria.
2. To determine the moderating effect of economic conditions on the relationship between WCM and firm performance in Nigeria.

3. To determine the quadratic relationship between WCM and firm performance in Nigeria.
4. To determine the difference in the relationship between WCM and firm performance in Nigeria during and after the financial crisis of 2007-2008.
5. To understand managers perception on the effectiveness of WCM practices on firm performance in Nigeria.

1.6 Scope of the Study

This study evaluates the moderating effect of economic conditions on the relationship between WCM and the performance of Nigerian firms. This includes determining the effect of both inflation and interest rates on WCM and firm performance. It focuses on non-financial firms as listed on the Nigerian Stock Exchange for the period between 2007 and 2015. The choice of listed firms guarantees the availability and reliability of data collection through annual financial statements, as subjected to mandatory audits (Lazaridis & Tryfonidis, 2006; Mathuva, 2010). Financial firms were omitted in favour of non-financial firms because financial firms have reporting requirements and definitions of working capital different from the definitions that the present study adopts (Deloof, 2003; Lazaridis & Tryfonidis, 2006; Mathuva, 2010).

In addition, this study has employed the mixed method approach where in-depth interviews were conducted in order to support quantitative findings. These interviews were conducted with finance directors and the managers of six companies.

1.7 Significance of the Study

This study has made significant contributions, both practically and theoretically, through the following ways:

1.7.1 Practical Significance

First, firms operating in Nigeria and beyond can benefit from this study's outcomes through the ability to improve their performance by following its recommendations. One critical way in which this study's outcomes can positively impact these firms is by helping their managers to improve the quality of their financing decisions and, thereby, enhancing their performance.

Understanding this study can reduce the over-dependency of firms on external financing and can help firms become liquid enough to be able to respond to and withstand external shocks, as liquidity crisis can be overcome through efficient WCM (Akoto, Awunyo-Victor & Angmor, 2013). This is due to the fact that, in some measures, most businesses fail because of their inability to adequately manage their WCM (Ademola, 2014). Similarly, the constrained situation of firms has been attributed to poor WCM and to the poor administration of credit and debt (Rafuse, 1996). This has resulted in bad debts and wastages and has reduced a firm's value. Therefore, the methods demonstrated in this study, if adopted, can help enhance quality management within all areas of a firm's operation. That is because the study identifies inefficient businesses practices that must be rectified. Its results can help reduce erroneous transactions that neither add value to a firm

nor guarantee more sales because efficient WCM exposes an organization's production-hidden funds (Kaddumi & Ramadan, 2012).

The study can also help business managers to identify various macroeconomic conditions and other contingencies that may affect their businesses and may help them align business strategies to these contingencies in order to create a strong condition that enhances firm performance. The contingency theory holds that, when a firm's strategy does not fit with its environment's contingencies, the result is lower performance (Donaldson, 2001). Therefore, this study details mechanisms that can help create adequate liquidity, allowing firms to operate while also guaranteeing their sustainable growth.

Because high performance leads to high tax liabilities from which governments can benefit, this study can therefore motivate governments to create environments in which businesses can thrive. This is imperative, as the World Bank Group (2016) has reported that governments must provide the wherewithal to make their national business environments conducive to success, while also reducing high transaction costs faced by firms and by implementing policies that reduce both inflation and interest rates to a moderate level. This can result in creating more financing windows and helping firms to become more self-reliant (Frank, 2015). This is because high inflation has a significant effect on a firm's operations and profitability (Bakare et al., 2015; Umaru & Zubairu, 2012). Low-interest rates can also propel economies and can enhance firm profitability through various approaches (James et al., 2013; Obamuyi, 2009; Obansa et al., 2013).

1.7.2 Theoretical Significance

Theoretically, this study adds to the body of literature regarding WCM and finance theories, as it argues that the relationship between WCM and firm performance is contingent on the moderating effects of inflation and interest rates. This study's framework, which introduces moderators, is original and can usher in a fresh research dimension for WCM practices because the existing literature has only evaluated the direct relationship between WCM and firm profitability. The present argument has been supported by the pecking order theory and contingency theory and has further revealed that a firm's performance is contingent on several factors, not on WCM efficiency alone.

The various assumptions of theories underpinning and supporting this study have been tested in order to resolve the identified problems. Testing these theories helps add to their acceptability, reliability and generalization because the more a theory is tested, the more reliable and stronger it becomes. Therefore, the present study has confirmed the hypotheses upon which these theories have been built for generalization purposes. To ensure the greater reliability and robustness of its findings, this study has employed a mixed method approach. The combination of the quantitative method (regression) and the qualitative method (interviews technique) offers more insights to the study and presents a methodological extension to research in WCM. In other words, this method has been rarely adopted by WCM studies and has therefore made this study unique in terms of its approach.

1.8 Chapter Outline

There are six chapters in this thesis. Chapter One contains the thesis's introduction and outlines its background, the statement of problem, the research questions and objectives, the study scope and significance, and the chapter outline. Chapter Two is the literature review, which provides a discussion of the firm performance concept, the underpinning and supporting theories, an overview of WCM, the relationship between WCM and firm performance, the specifics of WCM in Nigeria, and the related control variables. The literature review also provides a summary of previous research, the limitations of existing studies, the identified research gap, and a chapter summary.

Chapter Three discusses the research methodology applied in this study. The chapter provided a justification for adopting a mix of quantitative and qualitative approaches. Specifically, it comprises the research framework, the hypotheses formulation, the research design, the operationalization and definition of variables, population and sampling techniques, the details of the quantitative and qualitative methods used to collect data, and the analysis techniques. Chapter Four presents the study's results and discusses the quantitative analysis conducted, while Chapter Five presents and discusses the results of the qualitative analysis involving interviews.

Finally, Chapter Six discusses, in an embedded form, the results obtained from the quantitative and qualitative analyses presented in chapters four and five respectively. In addition, it offers details about the implications of quantitative and qualitative findings and makes necessary conclusions about research objectives. The study's contributions to

various aspects are also highlighted and are followed with recommendations for future research, and with relevant conclusions.



CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter of the research presents a discourse on the recent trends in WCM, economic conditions and firm performance in Nigeria. The study is undertaken against a backdrop in which a variety of macroeconomic conditions and other contingencies have created a climate wherein working capital efficiency requires major restructuring to predict adequately firm performance in Nigeria. It offers better and more efficient ways of improving and maximizing business processes to enhance the performance of firms in Nigeria. The study posits that performance can be achieved by creating fit conditions in which firms can thrive by aligning firm strategies with the contingencies of their operating environments.

To understand these concepts, the chapter is further sub-divided into eleven sections to acquaint readers with the previous studies undertaken in this area and give direction to subsequent chapters. The rest of this chapter, therefore, is organized as follows: Section 2.2 introduces the concept of firm performance. Section 2.3 provides the underpinning and supporting theories. Section 2.4 provides the overview of WCM while Section 2.5 discusses the relationship between the various components of WCM and firm profitability. Section 2.6 presents the peculiarities of WCM in the Nigerian context, and Section 2.7 explains the economic conditions. Section 2.8 gives a brief discussion of the various control variables that supported the research hypotheses equations. Section 2.9 summarizes, in an

all-encompassing manner, the related literature on WCM. Section 2.10 provides the research gap while Section 2.11 gives the chapter summary.

2.2 Firm Performance

Every firm exists to achieve an objective or goal (Popova & Sharpanskykh, 2010). These objectives vary according to the formation and purpose of their establishment and are prerequisites that must be aligned with the various organizational entities (Stiffer, 2006). To guarantee maximum success, alignment and achievement must be measured frequently to respond to changes in the business environment and the associated challenges. The performance measurement requirement steers firms into adopting strategic and efficient operational systems to achieve success. These objectives often revolve around increasing firm value and shareholder wealth and play a key role in developing a nation (George, Lydia, & Franklin, 2002).

The objectives of firms require the synchronization of the various determinants of performance to satisfy the curiosity of the stakeholders because performance is dependent on a firm's operating efficiency. Firm performance dominates significantly strategic management literature and has become an important phenomenon (Richards, Devinney, Yip & Johnson, 2009; Dess & Robinson, 1984). Performance measurement is critical because, throughout history, it has been used to assess the success of business firms (Kennerley & Neely, 2003). Firms have used performance measurements, but the metrics to do so have rarely been defined consistently (Neely, Gregory & Platts, 1995).

Carton (2004) revealed that some researchers view firm performance from the value it creates to the various stakeholders while others view it from the perspective of achieving a firm's objectives. Robert and Charles (2006) stated that performance is a proportion or a measure of the difference in the financial position of a firm or financial outcome resulting from efficient management of an organization's resources. They also noted that the crux of performance is aimed at creating value. Lebas and Euske (2006) and Kaplan and Norton (1992) posited that performance could result from financial and non-financial indicators that provide adequate information on the extent to which an organization's objectives are achieved.

Shedding more light on the subject, McGivern and Tvorik (1997) and Gary and Birger (1989) categorized two streams of firm performance measurement originating from business literature. These included: 1) the economic perspective, which emphasizes the evaluation of external market factors and 2) the organizational perspective, which evaluates the behavioural and sociological patterns and how they are aligned to fit the environment in which they operate. Gary and Birger (1989) further categorized the factors that could increase performance into three. They are: 1) the characteristics of the context in which a firm operates and compete, 2) a firm's strength and advantages over its competitors, and 3) the quantity and quality of financial resources of a firm.

Generally, firm performance is determined through a synergy between organizational and economic factors. Richard, Devinney, Yip, and Johnson (2009) viewed organizational performance as an expression of three different metrics. The first relates to financial

performance and measures the profits and returns on both assets and investment of the organization, which results from its operational activities and is accounting determined. The second is product market performance, which also measures the market performance and specifically evaluates sales growth and market share value. This is also known as shareholders' return. Shareholder's return measures the returns accruable to the shareholders, and third is the economic value-added arising from the operational activities of the organization.

Performance is firm specific because firms adopt strategic measures that enhance their performance. Richard et al. (2009) found that the relationship between performance and its determinants is influenced by the efficiency and effectiveness of the internal structure and control system adopted by the firm. In a like manner, Shahzad, Luqman, Khan, and Shabbir (2012) argued that organizational performance shows how effective and efficient organizational objectives can be achieved using the resources within their control. Performance measurement, therefore, is the process of quantifying the efficiency and effectiveness of action (Neely et al., 1995). All firms desire good performance as they work towards the achievement of their objectives. They craft strategies to grow and contribute meaningfully to the economic development of society. Because management studies offer no single measure of organizational performance, this section focuses on the diverse characteristics of the determinants of firm performance.

2.2.1 Diverse Nature of Firm Performance

De-Loecker (2013) claimed that firm performance could be measured in different ways, and researchers apply different measurements in evaluating firm performance suitable to their studies (Rauch, Wiklund, Lumpkin & Frese, 2009). Measuring performance plays a key role in accomplishing a firm's objectives. The evaluation of performance is based on appraising the values of quantitative and qualitative indicators of performance (Popova & Sharpanskykh, 2010). Performance can also be measured using both financial and non-financial measures (Keh, Nguyen & Ng, 2007, Santo & Brito, 2009; Rauch et al., 2009). Further classifications of performance have included objective and subjective measures (Keh et al., 2007; Santo & Brito, 2012). The difference in classification as financial and non-financial or objective and subjective originates from the sources of data used (secondary and primary respectively) (Keh et al., 2007; Santo & Brito, 2012).

Richard et al. (2009) opined that performance serves as a dependent variable for research in the management field. The construct is important and guides researchers to appraise firm performance through time and make comparisons of firms. Research incorporating performance measurement should address two essential issues: 1) the selection of conceptual framework to define firm performance, and 2) the establishment of accurate and available metrics to operationalize firm performance. This is in view of the complex and multi-dimensional nature of performance (Dess & Robinson, 1984; Glick, Washburn, & Miller, 2005). They further noted that operationalizing performance is inherently problematic, as researchers have often found difficulty in obtaining economic performance data, especially from privately owned firms and multi-industry firms.

Thus, the study of performance seems to be complex and endless because no one single way exists to measure performance, and firms keep changing their strategies in response to changes in their business environment. Santos and Brito (2012) stressed that some studies evaluate performance using a single indicator (uni-dimensional). Conversely, Dess and Robinson (1984) and Glick, Washburn and Miller (2005) argued that performance is a multi-dimensional construct. Because several dimensions exist, researchers are encouraged to select an appropriate dimension that is most relevant and represents the outcomes of their research (Richard et al., 2009). Neely et al. (1995) concluded that measures of performance are metrics used to express and quantify the efficiency and effectiveness of a firm's actions.

Several measures have been advanced for measuring performance dimensions. They include: efficiency, profitability, growth, leverage, size/liquidity, and market share, among others (Carton, 2004; Murphy, Trailer & Hill, 1996). They classified measures of performance into return on investment, return on assets, return on equity, return on net worth, and gross revenue per employee. The growth measures include: changes in sales, changes in employee growth, market share growth, and changes in net income margin, changes in CEO compensation and changes in labour expenses relative to revenue. Profitability measures include: return on sales, net profits margin, gross profit margin, net profit level, pre-tax and net profits from operations and others.

Size and liquidity measures also include sales level, current ratio, cash flow level, the quick ratio, ability to fund growth, total asset turnover and cash-flow to investment percentage.

Market share measures may include the assessment of the firm in relationship to other firms within the same industry while leverage measures include the debt-to-equity ratio and times interest earned ratio. Similarly, several proxies of non-financial measures of performance exist and include factors related to perception. They are: service quality, shareholder satisfaction, employee satisfaction and remuneration, among others (Agarwal, Erramilli, & Dev, 2003). Given the multidimensional nature of firm performance constructs, this current study considers some of the financial performance measures in evaluating listed firms in Nigeria, noting the impracticability of studying all the dimensions of firm performance.

2.3 Underpinning and Supporting Theories

This section presents the theoretical perspectives of the pecking order theory and contingency theory. These theories are discussed to provide theoretical underpinning and supporting framework for this study. The following subsections presents the discussions on the pecking order theory and contingency theory.

2.3.1 Pecking Order Theory

Donaldson (1961) suggested the pecking order theory in 1961. Donaldson noted the importance of economic choice in financing for firms and said that the choice of the source of capital had a direct effect on a firm's management, its solvency, exposure to risk and profitability (Donaldson, 1961). Dimitrios, Eriotis and Daskalakis (2009) posited that financing procedures determined the viability and the financial strength of firms, adding that inappropriate decisions with respect to funding or capital structure could cause distress or even bankruptcy to firms.

Myers and Majluf (1984) added to Donaldson's ideas, concluding that firms would prefer internal financing to external funding. The two reasons advanced for this preference were that: 1) external funding is associated with processing and other costs, and 2) the resultant information asymmetry that exists amongst the various drivers and the financing choices. The pecking order theory assumed that firms should first finance existing investments using internal sources and, when this becomes insufficient, debt can follow and finally equity can be issued as the last option.

This assumption is premised on the fact that the processing costs of obtaining external funds or financing greatly impacts the value of capital while the preferred internal source bears no processing or transaction costs, and it is risk free (Dimitrios et al., 2009). The processing and costs of debt are more considerable and have fewer effects on the capital structure than does equity (Emery & Finnerty, 1997). Present among the assumptions of this theory is that the efficient use of internal resources can best result in an appropriate financing option in view of the related high costs of capital that Nigerian firms' experience. Working capital components, which are internal, possesses no interest rate and no associated risks and are also free from transaction and processing costs. Based on insights from the theory, this current study employed optimal WCM as the financing option most suitable for enhancing the performance of listed firms in Nigeria.

2.3.2 Contingency Theory

The theory attributes organizational success to the ability to cope effectively and interact with environmental demands (Burrell & Morgan, 1979). The theory has offered various

explanations on organizational interrelationship and structure. Contingency theory assumes that the operational structure of the firm needs to fit with the contingent business environment to remain viable. Contingency theory traces its origins to a sociological perspective and was advanced by Thompson (1967). Thompson proposed that differences arising from technological and environmental elements influence the structure and strategies to be adopted in achieving organizational objectives/performance.

Contingency theory offers an implicit model that attributes firm performance to the effective alignment of organizational structure to its organizational contingencies (Donaldson, 2001). The theory holds that the way in which organizations design their structures to deal with the contingent issues of their business environmental uncertainties, technology and size and others determines their performance. A good fit of an operational structure of an organization with its contingencies causes organizational performance to increase. Consequently, organizations strive to retain a fit that enhances their performance. However, no universal appropriate structure answers all peculiarities of business environmental factors. The theory steps above other organizational theories to emphasize that organizations must align their operating structures to adapt to the uncertainty of their external environments for them to enhance their performance and add value. Hayes (1977) amongst others, suggested that organizations should adjust their strategies to accommodate these environmental contingencies because they directly affect performance.

Firm structures may be examined using three factors. The first factor examines the association between the various contingency factors and the operational structure of the

business organization. The second factor establishes the change in organizational structure resulting from the effects of contingency factors on the existing structure, while the final factor evaluates the fit occasioned by the change in an organizational structure due to the contingencies and the consequent increase in performance (Donaldson, 2001). Several performance studies in management accounting have used contingency theory, including Otley (1980), Hayes (1977) and Alrawi and Thomas (2007) and in marketing (Zeithaml, Varadarajan, & Veithaml, 1988). These authors found that environment, technology, structure and organization's strategy and size were contingent factors affecting business organization operations. The studies of Otley (1980), Hayes (1977), Alrawi and Thomas (2007) and Zeithaml et al. (1988) confirmed the theory's assumption that no general variable applies to all organizations in all business circumstances, but that organizations must adopt contingent factors peculiar to their business organization.

The environment in which a business operates plays a vital role in determining the structure and strategy it adopts to achieve its desired goals (Donaldson, 2001). This determines whether the firm will remain fit or not. Ghofar and Islam (2015) and Thompson, Strickland, & Gamble (2010) posited that maintaining a fit position comes with several challenges because the business environment is dynamic in nature. Emery and Triest (1965), Lawrence and Lorsch (1967), Thompson (1967), Woodward (1965), and Zeithamal et al. (1988) adopted organizational environment, characteristics, and structure and confirmed that creating a fit condition enhances the performance of a firm.

Contingency theory posits that organizational performance is dependent on applying matching concepts to generate a new structure. This can be achieved by identifying the various contingencies associated with the business organization and determining an effective internal structure that can respond to such variables. Donaldson (2001) further categorized them into three variables: the contingency, response and performance variables. Contingent variables have characteristics that have environmental effects on the organization and are not easily manipulated by the organization. The response variables represent actions and inactions taken by the organization to control such variables and mitigate re-occurrence, and the variable performance measures the fit of the organization to enhance its performance. Hence, the contingency theory is adopted in this current study to explain the effects of inflation and interest rates on WCM efficiency and firm performance in Nigeria.

2.4 Overview of WCM

Financial planning requires that business organizations be structured in a way that identifies and selects present and future capital investment projects and their financing structures. The importance of managing working capital results from its flexible nature, which can be easily neglected or overlooked because it comprises current assets with a short life span and can arise automatically from a firm's operations. WCM creates value through the generation of free cash flow and the impact on the size and riskiness of returns generated by the firm (Lewellen, Halloran, & Lanser, 2000). This is because WCM policy determines how current assets are used and how their mix affects the risk versus returns of firms (Moyer, Mcguigan, & Kretlow, 2003).

Moyer et al. (2003) further stated that not acknowledging the role of WCM in a firm's operational appraisal would result in under-funding and the failure to increase corporate value. This is because business operations can be financed internally by optimizing WCM components for the reason that they are cheaper and can be accessed without additional costs. WCM also increases the solvency and liquidity position of the firm when managed optimally (Eljelly, 2004).

Working capital and its management have been defined in many ways. Guthman and Dougall (1984) and Pandey (2013) viewed working capital as the excess of current assets over current liabilities. Current assets are assets that can be converted into cash within an accounting year while current liabilities are the claims of outsiders, which are expected to mature for payment within one year. Padachi (2006) further explained that working capital is trading capital used by all business organizations not retained in the business for more than one year. This is because investment in working capital changes form and substance in the course of ordinary business operations. Bhalla (2011) defined working capital as the process of controlling and planning the level and mix of current assets of the firm as well as financing these assets. This requires determining the amount of cash and liquid assets a firm holds to enhance its performance and how current assets and current liabilities may be funded. Thus, how working capital is managed will determine its influence on firm performance (Deloof, 2003).

The various definitions of WCM share the same viewpoint. They explain the interrelationship between current assets and current liabilities of firms and how their mix

will guarantee smooth operations. For example, Makori and Jagongo (2013) defined WCM as the ability of an organization to control effectively and efficiently the current assets and current liabilities in a manner that will enhance its return on the capital employed. Therefore, WCM is proportionately critical to all firms (Deloof, 2003; Soni, 2013) because it affects an organization's risk, performance and value (Deloof, 2003; Smith, 1980; Soni, 2013).

WCM practices reduce firm-specific risk and can be strengthened to enhance the performance of firms. As Eljelly (2004) acknowledged, WCM has been used to plan and control a firm's level of liquidity because it can reduce the danger of firms running out of stock or cash, which may be occasioned by liquidity management flaws. Working capital is vital for firms of all sizes. It accounts for a major proportion of the total financial resources upon which other operational activities depend and influences the financial performance of the firms (Deloof, 2003; Soni, 2013). Abuzayed (2012) and Akinlo (2012) added that working capital is important for firms of all sizes and in developed and emerging markets but is more vital for businesses in emerging markets and underdeveloped countries because of the challenges of access to capital and market size that have characterized their operations.

It is imperative that firms review their financing policies and adopt strategies or measures that prevent financing constraints and its consequences. The quest for performance, efficiency, and value creation has encouraged researchers to study WCM and its effects in

optimizing investment in current assets and current liabilities. This insight and definitions advanced by different authors guided the present study.

2.4.1 Objectives of WCM

Markets today are potentially characterized by greater volatility (Shodipo, 2010; Akinlo, 2012), thereby making financial instruments more complex and alienating them from fundamental economic functions. Financial managers face a dilemma about how to maintain growth and ensure the survival of firms because they require funds to keep the day-to-day operations of the firm on going. Lewellen et al. (2000) affirmed that working capital is an indicator of a firm's liquidity. The higher the optimization of working capital, the higher is a firm's liquidity and the lower is the risk of financial distress. Liquidity determines the survival and growth of firms in the long run because it provides adequate cash to meet short-term obligations as they fall due (Eljelly, 2004). Arising from this, Periasamy (2009) outlined five key objectives of working capital financing. They include: availability of adequate funds, minimum cost, matching (balance) between profitability and liquidity, firm flexibility and optimal use of funds.

2.4.2 Significance of WCM

The importance of WCM is enormous. However, before the financial crisis of 2007-2008 and the capital market decline, firms focused greatly on debt and equity as their principal financing mix. Consistent with the idea of much emphasis on equity and debt financing structure, Singh and Kumar (2014) considered that the relative neglect of WCM had occurred previously because business firms view the determination of working capital

variables as reoccurring and routine in nature. These routine decisions and activities can be reversible over time unlike capital investment decisions requiring equity and debt financing. The various circumstances in 2007 and 2008 that brought the financial crisis, capital market decline, and currency depreciation, all delivered painful social and economic chain reactions (Shodipo, 2010). On this account, business firms were pressured to determine practices that would recover and improve profitability, reduce transaction costs and guarantee efficient operations (Sagner, 2011).

Efficient WCM serves as an index of a sound liquidity position for a firm. Business firms need liquidity to earn sufficient income through efficient operational activities, fund growth strategies and maintain long-term business dominance over their competitors. Liquidity also keeps a firm fit to respond to the ever-changing business environment and other contingencies (Mandal, Mahavidyalaye, & Goswam, 2010). For firms that seek growth eagerly and wish to remain economically viable, liquidity is key and can best be generated cheaply through WCM. This is because liquidity ensures that firms acquire the raw materials needed at the right time and manage internal operations efficiently until cash is recovered from sales. Eljelly (2014) noted that efficient liquidity management depends upon the way working capital is managed. A sound liquidity position, therefore, guarantees sufficient funds to finance raw materials acquisition and pay operating and sales expenses.

In a situation in which cash discounts are enjoyed for prompt payment, firms with wide-ranging working capital will obtain a favourable advantage of the cash discounts that are offered. A sufficient level of working capital influences a firm's attitude about prompt

payment to both suppliers and employees who may have different inclusion criteria. This inclination builds goodwill for the business, and goodwill in accounting is an asset that advances reputation and improves loyalty with employees and customers. All these translate into better opportunities for business firms to engage in better negotiations and improve their performance.

Pandey (2005) posited that adequate working capital facilitates business operations unlike bank loans and advances because banks and other lending institutions consider the current asset ratios of firms before granting them loans. This becomes noteworthy in guaranteeing repayment (Eljelly, 2004). Altman (1968) added that operations and financial difficulties of firms are reflected in their current ratios and are potentially used to predict the likelihood of a firm going bankrupt. Measures of WCM build confidence in investors and other loan providers because a favourable liquidity position demonstrates stable operation and efficiency. A substantial improvement in a firm's operations decreases the negative environmental impact on the firm because WCM solves a firm's liquidity crisis and guarantees that a firm will continue to operate as a going concern (Ukaegbu, 2014).

WCM also performs a substantial role in maximizing shareholder value (Smith, 1980; Ukaegbu, 2014). Smith (1980) and Aileman and Folashede (2014) said that, to maximize shareholder value, management must enhance economic profit from its operational activities. Economic profit consequently depends on the efficiency with which firms generate enough operating cash flow to finance operations and promote the efficient allocation of such resources. The traditional measures of WCM are inclined to maximize

the operational activities that are expected to grow the future cash flows of the firm. Hence, measures of WCM that grow a firm's cash flow also maximize shareholder wealth (Anna-Maria, Sari, Miia, & Timo, 2014, Makori & Jangongo, 2013; Sharma & Kumar, 2011).

Firms without adequate working capital may have their operations hindered greatly and have reduced growth opportunities. Samson, Marry, Yemisi, and Erekpitan, (2012) noted that insufficient working capital would lead to stagnation of growth, loss of cash discounts, loss of goodwill and organizational control by creditors. These hinder the implementations of operating plans, and a cash crisis may erupt due to the paucity of working capital funds. The working capital components (cash conversion cycle, inventory, accounts payable and receivables) are significant and key operational domains of every business firm. These key liquidity and operational efficiency indicators help identify areas that are deficient and require focus. Redirecting focus on these areas will greatly add to a firm's efficiency and enhance its performance.

2.4.3 Composition of WCM

WCM deals with the financing of current assets and current liabilities of firms. It is important in financing the day-to-day operations of a firm and meeting other short-term financial obligations of a firm. Padachi (2006) noted that the funds invested in working capital change in form and substance through time. Pandey (2005) gave two perspectives on WCM; they included: gross working capital and the net working capital. Gross working capital refers to the total amount of a firm's investment in current assets. These assets have the characteristics of being able to be converted to cash within one accounting year and

include cash, short-term securities, debt (account receivables and bad debt), and bills receivables and stock (inventory).

Net working capital represents the difference between current assets and current liabilities. Current liabilities comprise claims of outsiders with a maturity date falling within one accounting year. They include creditors (accounts payable), bills payable, dividends, tax payable and other outstanding expenses. An excess of current assets over current liabilities clearly indicates a good liquidity position. Pandey (2005) suggested an optimum ratio of 2:1 for current assets/current liabilities. This may be either positive or negative. Positive net working capital is experienced when current assets exceed current liabilities while negative working capital is experienced when current liabilities exceed current assets. Management must optimize the choice between these two because a strong ratio is an indication of adequate liquidity, which translates to idle investment while a low ratio similarly indicates a weak liquidity position and may be disastrous for firms. Appuhami (2008) noted that firms stimulate growth, improve financial performance and react positively to changes in economic contingencies with adequate free cash flow arising from WCM.

Operational activities and their decisions are daily and routine in nature. The demands and nature of operational activities give firms no notice for planning because the quest for more finance increases with an increase in inventory, labour, and demand from customers, amongst others. Working capital, therefore, requires careful consideration, bearing in mind its importance (Javid & Zita, 2014). Singh and Kumar (2014) stated that most studies on

WCM have adopted the cash conversion cycle (CCC) and its components as a popular measure. The cash conversion cycle, which is the difference between the times when raw materials are purchased and when they have been processed into finished goods and cash realized, has components such as inventories, accounts receivable, and accounts payables. Working capital has been evaluated using some or all these compositions to determine its influence on profitability. According to Ruback (2003) and Nobanee, Abdullatif, & AlHajjar, (2011), efficient management of working capital practices is the source of competitive advantage for Dell and Wall-Mart. Efficient working capital is premised on the fact that speeding up cash collection as early as possible and adopting an effective policy of delaying disbursement increases a firm's value of cash flow, which leads to high performance. A shorter cash conversion cycle signifies that a firm manages its inventory well, accelerates cash collection arising from the creation of receivables, and slows down cash payments. All these increase the cash flow required to fund internal operations of a firm and lead to high performance.

2.4.4 Profitability versus Liquidity Concept

The concept of liquidity is often used to assess the ability of a firm to pay its debts and finance other operational expenses to remain an on-going concern (Tendai & Enard, 2014). Guaranteeing that a firm is an on-going concern requires adequate planning of the amount of cash-flow expected from both internal and external sources and the anticipated cash flow. Hence, financial managers are charged with the responsibility of ensuring that adequate liquidity is maintained to mitigate against negative influences that may arise due to an illiquidity state. Liquidity constitutes a safety margin for firms in the event of

unexpected cash shortages resulting from operational activities and averts insolvency and other contingent financial needs that may arise (Eljelly, 2004). It gives firms a balanced position and the opportunity to take advantage of discounts offered for prompt payments and other benefits that yield more returns. It also provides the ability to withstand an unexpected financial crisis because insufficient liquidity characterizes a financial crisis (Ramiah, Zhao, & Moosa, 2014).

As important as liquidity may be to firms and management, the ultimate objective of every firm is to maximize profit (Raheman & Nasr, 2007). According to Eljelly (2004), inadequate liquidity negatively influences a firm's profitability while excess liquidity constitutes an idle investment. Because a high liquidity position maintained by firms consequently affects the objective of profitability, business firms are encouraged to optimize these two objectives in a way that enhances the firm's performance (Eljelly, 2004). The profitability and liquidity objectives are of great significance for firms because profitability is required for firms to survive and create value while liquidity management also addresses the problem of insolvency and decreases a firm's chances of going bankrupt.

Thus, it follows that business firms need to maintain a balance between liquidity and profitability while conducting operational activities. Adequate liquidity ensures that the day-to-day business operations are run effectively and efficiently and indicates financial health of business (Eljelly, 2004). Uwuigbe, Uwalomwa and Egbi (2012) gathered that many business organizations have experienced stagnation in growth and others have faced liquidation because of an inability to meet obligations when they fall due. Thair and Imad

(2012) added that the growing pressures business firms have faced because of the cost of funding occasioned by capital market decline have greatly affected their liquidity positions. The pressure of liquidity that affected firms gravely was attributed to the financial crisis of 2007 to 2008 and its consequent adverse effects (Abuzayed, 2012; Ailemen, & Folashade, 2014; Ramiah, et al., 2014; Charitou, Elfani, & Lois, 2010; Osundina, 2014; Pais & Gama, 2015).

Several studies have attempted to evaluate the twin objectives of liquidity and profitability. For example, Eljelly (2004) viewed liquidity management from the working capital perspective and advanced that liquidity involves adequate planning and controlling of current assets and current liabilities in a manner that eliminates the risk of inability to meet a short-term obligation on one hand and avoid excessive investment in these assets on the other hand. He further explained that working capital has been the most striking technique used to plan and control liquidity and at no cost. Bruinshoofd and Kool (2004) ascertained that the quest for liquidity was driven by high and continuous transaction costs experienced by firms and that the determination of cash flow is volatile. They added that, because of the information asymmetry arising from the financial markets and the business firms, complications set in for accessing funds. Similarly, the costs of accessing an external fund are considerably high compared to sourcing an internal fund (Tendai & Enard, 2014). Such an emergency need for finance leads to the precautionary demands for liquidity amongst firms. In a situation of high transaction costs, low opportunity costs and the consequent information asymmetry, liquidity becomes an instrument that responds to the financial needs of a firm (Bruinshoofd & Kool, 2004; Thair & Imad, 2012; Tendai & Enard, 2014).

According to Mandal, Mahavidyakya, and Goswami (2010), liquidity determines the ability of firms to pay maturing short-term obligations arising from operational activities. They further stated that the management of current assets and current liabilities will increase liquidity at no cost and would reduce the risk associated with illiquidity. Firms without profitability may still operate as far as they add value through payment of salaries, payment of taxes and dividends and debtors and other obligations, but firms without liquidity are prone to bankruptcy. Ultimately, these two objectives, however, require a trade-off to create optimal funding and enhance operating performance. Weston and Brigham (1975) reiterated that working capital policy should be designed in ways that guarantee returns more than the costs of capital invested.

WCM has been viewed as an option that guarantees adequate liquidity. Eljelly (2004), Raheman and Nasr (2007) and Mandal et al. (2010), amongst others, have placed great value on the concept of WCM for providing liquidity through its components. Good WCM ensures that a firm will maintain an efficient operation that guarantees profitability. This is because all the components of working capital (cash, inventory, receivables and payables and others) individually play essential roles that impact a business firm's performance. Deloof (2003), Afza and Nasr (2007), Gill, Biger and Mathur (2010) and Owolabi and Alu (2012) concluded that WCM is of great importance in creating value for shareholders. Optimization of profitability and liquidity objectives in a way that one will not have adverse impacts on the other is important. As Eljelly (2004) emphasized, the issue of illiquidity can be overcome through efficient management of working capital.

In contrast to the opinions of various authors regarding how working capital can streamline the twin objectives of liquidity and profitability, Dash and Hanuman (2009) believed that WCM might be deficient in providing adequate liquidity and guaranteeing profitability because of the role the various components of working capital play. For example, delaying payment and altering debtors' and creditors' levels will provide liquidity but affect the patronage of a firm, which occur at the expense of profitability. Mohammed (2011) stated that firms could enhance profitability through efficient stock management using lean management techniques. Dash and Hanuman (2009) concluded that too much concentration on working capital renders fixed assets inoperative. However, the opinion of Dash and Hanuman (2009) may be viewed inconsequential because working capital policies guaranty against such occurrences.

According to Wang (2002), an optimal way to minimize costs, guarantee liquidity and maximize profitability necessitated by purchasing, production, sales and collection and by customers' demands is that more products must be designed. Dash and Hanuman (2009) proposed the goal programming approach, which Agarwal (1988) originally developed. The goal programming approach technique was developed to combine fixed assets with working capital variables to determine the optimal liquidity position of firms that supports the profitability objective. Analyses show that the proposed goal programming approach has no deviance or discrepancy with the traditional working capital approach and notably uses all working capital variables, except the addition of fixed assets components, which the traditional working capital uses as control observations.

The goal programming approach does not consider profitability but only considers the opportunity costs of holding cash, which the traditional notion of working capital does not. Hence, WCM ensures that decisions regarding liquidity and profitability are optimized for the costs and benefits associated with these objectives (Deloof, 2003; Banos-Caballero et al., 2012; Tauringana & Afrifa, 2013). This is dependent upon the fact that liquidity and profitability objectives are interlinked. Thus, WCM policy should be designed in a way that makes an optimal trade-off between the two goals. This is because efficient WCM reduces overdependence on external funds (which poses a challenge to business firms) and achieves both liquidity and profitability objectives of a firm.

2.5 The Relationship between WCM and Firm Performance

WCM has a goal of ensuring that business operations are efficiently run with sufficient funds. Efficient WCM reduces a firm's specific risk arising from the inability to meet short-term obligations whenever they fall due, ensures adequate returns in the form of profitability and creates value for owners (Deloof, 2003). The performance of a firm as indicated in its profitability is essential because it is the concern of most businesses. Firms require profitability to remain in business and continue to operate. Maximizing available cash at the firm's disposal and minimizing the amount of resources needed to conduct its operational activities achieves this. Therefore, WCM is important in this context as it aims at improving the performance of firms. It has been comprehensively measured using the cash conversion cycle (Deloof, 2003; Boanos-Caballero et al., 2010; Garcia-Teruel & Martinez-Solano, 2007; Padachi, 2006; Soenen, 1993; Tauringana & Afrifa, 2013).

2.5.1 Cash Conversion Cycle and Firm Performance

Financial managers have increasingly sought ways to finance business operations with internally generated cash. The most common way to do so that offers adequate liquidity and performance appraisal is the cash conversion cycle (Afrifa & Padachi, 2016). The cash conversion cycle is the period between the time that a firm disburses cash for operations and when cash is finally collected. Deloof (2003) and Vural, Sökmen and Çetenak (2012) further defined the cash conversion cycle as the difference between the time when cash is committed to the firm and when it is realized from sales of finished goods.

This measure has been popular since its introduction by Richards and Laughlin (1980) for providing more liquidity and has since been used to predict efficient WCM. They noted that deciding on a uniform application of the cash conversion cycle is relative, as it is defined in the context of what it aims to achieve. The cash conversion cycle explains the ideal time organization takes to realize cash from finished goods, taking cognizance of when cash was committed to purchase raw materials as input and the transformation stages. This measures the cash in, cash out situation and can be associated with a firm's performance through improvements in working capital. Different interpretations have been advanced for its application as a measure of a firm's effectiveness. Nobanee et al. (2011), Shin and Soenen (1998), Vural et al. (2012) and Mathuva (2014) advocated for a shorter cash conversion cycle as an indication of efficient internal operation. They stated that this approach increases the business growth potential and the cash inflows required for operation, which ultimately leads to high performance. This is also interpreted to mean that frequent turnover is occasioned by sound production systems, proven marketing and sales

policies and efficient collection and payment systems. It makes internal funds available and reduces reliance on external borrowing and its consequent impacts on a firm. Cash realized early enough through shortening the conversion cycle, according to Luo, Lee and Hwang (2009), could be re-invested in more viable projects, which increases the value of the firm against its competitors and reduces pressure on external funds and the associated risks. Conversely, Lyroutdi & Lazaridis (2000) and Abuzayed (2012) believe that a longer cash conversion cycle leads to higher sales and profitability. This is because a longer period has the characteristic of preventing production interruption and increasing sales.

Attari and Raza (2012) posited that a cash conversion cycle could either be positive or negative. A positive result specifies the period of days firms source for funds to finance operations while they are waiting to realize the tied-up capital. A negative result indicates the ability of businesses to realize cash early enough to fund operations (Hutchison, Farris II, & Anders, 2007). The principal difference in the negative and positive view of cash conversion cycle is that every business firm owes its owners an obligation to survive and make a profit in the form of value added. Profitability is enshrined in the rate of investment and operational activities. Murugesu (2013) argued that the cash conversion cycle through its measure generates adequate liquidity that mitigate against the risk of too much reliance on external funds. It ensures that the operational activities are smoothly undertaken. Firms that are financially constrained because of a financial crisis and financial instability could be strengthened through comprehensive adherence to measures of cash conversion cycle to exploit value (Murthy, 2015; Ng, Smith & Smith, 1999; Wasiuzzaman, 2015).

The cash conversion cycle provides funds to finance increased production capacity and is measured by: the number of days account receivable + number of days inventory – number of days accounts payable (Deloof, 2003). The direction of the cycle is shown in Figure 2.1 below and indicates that cost minimization strategy to be adopted by firms encompasses the entire process of input and output management.

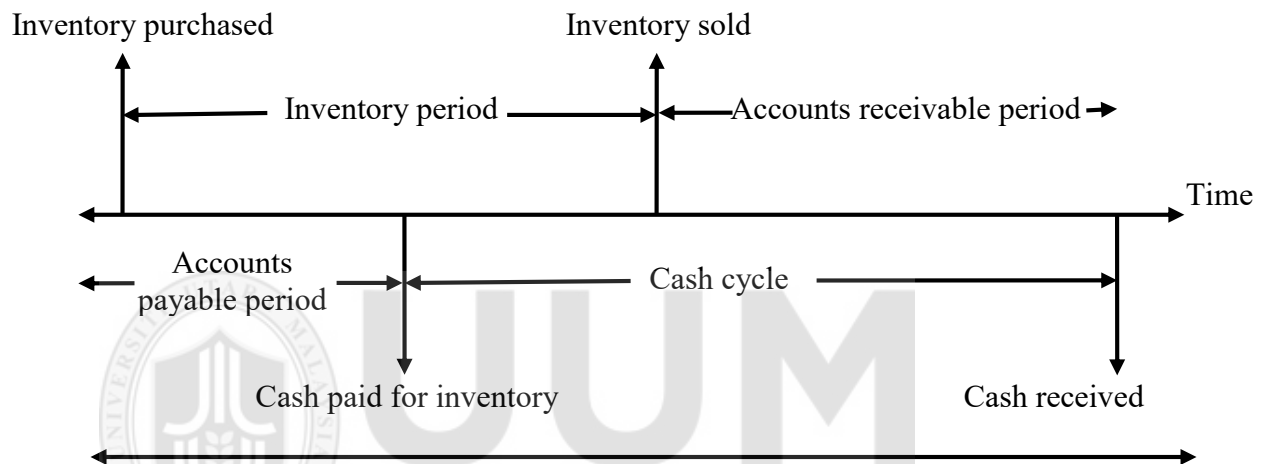


Figure 2.1
Operating Cycle
 Source: Ross, Westerfield, and Jordan (2010, p. 583).

The above operating cycle depicts the typical operational cash cycle of firms. The need for finance is necessitated by the gap between cash inflow and cash outflow. The gap can be filled either by the option of borrowing or of having many liquid or marketable securities. The most efficient managerial option is to shorten the gap by efficiently and effectively changing the period of inventory, receivables and payables. This is because of the costs and the risky nature of other financing options.

Empirical studies undertaken have shown that a greater commitment to the cash conversion cycle will enhance the liquidity position of firms. It increases a firm's flexibility in harnessing opportunities, exploring optimum financing option and increasing their performance. Manyo (2013) examined whether the cash conversion cycle had an impact on the return on assets of 46 Nigerian firms for the period from 2000 to 2009. The study revealed a significant and negative relationship between the cash conversion cycle and the profitability measured by return on assets. He recommended that firms in Nigeria should employ policies that will reduce the period cash is engaged in financing raw materials to the finished goods stage and the final realization of cash from sales. This is because reducing this period makes available more cash to cope with production and for the company to remain viable. As a longer conversion period might cause slow industrial growth and have a negative impact on firm performance.

Shin and Soenen (1998) found a significant and negative relationship between the cash conversion cycle and corporate profitability for firms in the United States, using data from 1975 to 1994. They suggested that managers could increase profitability and create value for their shareholders by appropriately minimizing the length of cash conversion cycle. In line with the findings of Shin and Soenen (1998), Manyo (2013), and Murugesu (2013), Nobanee et al. (2011) determined the effect of the cash conversion cycle on Japanese firms from 1990 to 2004. They examined a sample of 34,771 firms from the Tokyo Stock Exchange and found a negative relationship. The significant and negative relationship and its robustness was attributed to the good financial positions of Japanese firms before the period of study. They recommended that shortening the cash conversion cycle through

efficient inventory systems, proper payment, and receivable policies will provide overwhelming advantages for increasing firm's performance. It is also cost-economical because it prevents firms from facing the high costs of financing using external sources.

Given the importance of shortening a firm's operating conversion cycle, Lazaridis and Tryfonidis (2006) encouraged managers to keep an optimal level of cash conversion cycle as it enhances profitability through its associated economic costs and benefits. They evaluated 131 listed companies on the Athens Stock Exchange for the period from 2001 to 2004. While emphasizing the option of financing that brings efficiency and subsequently lower operating costs, they noted that shortening the cash conversion cycle could be more effective. Garcia-Teruel and Martinez-Solano (2007) confirmed this benefit using 8,872 SMEs in Spain from 1996 to 2002. Their study revealed a significant and negative relationship between the cash conversion cycle and profitability of SMEs in Spain. Garcia-Teruel and Martinez-Soano (2007) were of the opinion that managers of SMEs could make more profits when the cash conversion cycle was shortened.

Deloof (2003) examined whether WCM affected the profitability of Belgian firms using a sample of 1,009 firms for the period from 1992 to 1996. He found a significant and negative relationship between gross operating income as a measure of profitability and the components of the cash conversion cycle. The results of Shin and Soenen (1998), Garcia-Teruel and Martinez-Solano (2007), Manyo (2013), Murugesu (2013) and Nobanee et al. (2011) support this finding. Deloof (2003) noted that profitable firms pay bills promptly rather than deferring payment for a longer period of time. The results from cutting down

the length of period for when cash is committed are enormous. They range from higher-quality service to increased production and lower production cost as well as enhancing a firm's performance. In Pakistan, Attari, and Raza (2012) also found a significant and negative relationship between the cash conversion cycle and profitability. This result was determined using a sample of 31 firms from 2006 to 2010 listed on the Karachi Stock Exchange.

In contrast to the findings above, Muscettola (2014) evaluated the cash conversion cycle and profitability of 4,226 SMEs from Italy for the period 2007 to 2010 and found a positive and significant relationship between the cash conversion cycle and profitability of firms. Supporting the findings of Muscettola (2014), Gill, Biger, and Mathur (2010) also found a positive correlation between the cash conversion cycle and profitability of 88 listed American firms from 2005 to 2007. Abuzayed (2012) also found a significant and positive association between the cash conversion cycle and the profitability of 52 listed firms in Jordan considering the period from 2000 to 2008. In line with findings of Muscettola (2014), Gill et al. (2010) and Abuzayed (2012), Lyroudi and Lazaridis (2000) found a significant and positive relationship between the cash conversion cycle and profitability (measured by return on assets) of 82 listed firms from the Athens Stock Exchange in 1997. The reasons advanced for such positive relationships were several. First, profitable firms have a lax attitude towards managing the cash conversion cycle. Second, deferring accounts payment days deprives the firm of taking advantage of discounts offered, amongst others.

In the determination of the relationship between cash conversion and the performance of firms, mixed findings have been found. Some authors argued for a negative relationship (Shin & Soenen, 1998; Murugesu, 2013; Manyo, 2013; Nobanee et al., 2011; Lazaridis & Tryfonidis, 2006; Garcia-Teruel & Martinez-Solano, 2007; Deloof, 2003; Attari & Raza, 2012). Others offered reasons for a positive relationship (Abuzayed, 2012; Lyrودي & Lazaridis, 2000; Gill et al., 2010; Muscettola, 2014). However, the scarcity of funds and their consequent high costs that resulted in the declining performance of firms and rendered some bankrupt in Nigeria make the current study worthwhile. Also, the conditions of disagreement on the issue of the negative or positive relationship also necessitated further research to confirm these mixed findings with particular consideration for Nigerian firms.

2.5.2 Accounts Receivable Management and Firm Performance

One way to achieve better sales and maintain a good relationship with customers is to grant them credits (Elenora, 2013). Firms grant credit to increase their sales and enhance other operational growth objectives (Garcia-Teruel & Martinez-Solano, 2010). Martinez-Solano et al. (2014) classified accounts receivable management into: 1) financial motives, 2) operational motives, 3) commercial motives, and 4) product quality motives. By selling goods on credit to trustworthy customers, payment is deferred to a later period. In the period between when credit sales are recorded and the time cash payment is received, the amount due is regarded as a current asset and conventionally called accounts receivable.

Accounts receivable is a key component of WCM and refers to the number of days or period taken by firms to collect debts owed by their customers (Akinlo, 2012; Padachi,

2006; Wasiuzzaman, 2015). Accounts receivable or a trade credit comprises a major source of finance and is vital for enhancing a firm's operations, especially in a constrained cash situation (Ferrando & Mulier, 2012; Wasiuzzaman, 2015). Trade credit has the advantage of advancing goods to customers while firms make more sales. Noting the importance of trade credit, Peel, Wilson and Howorth (2000) viewed trade credit as the process of deferring payment for goods and services advanced to customers and giving them a reasonable period of time to pay.

Account receivables typically represent about 25% of the total assets of business firms (Gahala, 1996). Deloof (2003) stated that giving credit to customers stimulates sales and gives the privilege of accessing the product and determining its quality before payments are made. Indirectly, this motivates firms to produce high-quality goods because the goods are being assessed before payment. According to Finney (1994), effective management of accounts receivable has the goal of collecting all the amounts due from customers and minimizing the collection period. Salek (2005) advanced six reasons why good management of accounts receivable helps achieve success. He stated that effective management increases cash flow and sales margins, reduces bad debt, enhances customer service, decreases the administrative burden on the sales force and lowers administrative costs of sales. Peel et al. (2000), Raheman and Nasr (2007) and Banos-Caballero et al. (2013) also stated that proper management of accounts receivable improves firm performance and creates more value for the owners.

Some believe that credit policies are key. Emery (1987) opined that granting credits economically increases the wealth of the seller and buyer. First, for the seller, granting credits minimizes the risk and indirect costs associated with lowering operational costs and tends to lower costs associated with accommodating finished goods amongst others. For the buyer, the granting of credit increases their value as the buyer pays a lower amount for the goods supplied because the value of money changes within time. Second, the customer also benefits as he enjoys the product before paying. Emery (1987) further suggested that firms should adopt a financial policy that smoothens the conditions of both the buyer and the seller. The crux of it all is for firms to enhance operational flexibility and increase profitability. Garcia-Teruel and Martinez-Solano (2007) and Kontus (2013) said that performance could only improve if firms adopt a restrictive credit policy inducing customers to pay promptly. A restrictive policy management must be adopted because the willingness of customers to pay bills cannot be known with absolute precision (Finney, 1994). However, information regarding customer credit soundness and financial health can be obtained using both financial and non-financial data to determine their ability to pay (Kontus, 2013). Most firms expect to collect 99.9% of their billing outstanding, as they have no reason to accept a lesser percentage of collectible bills (Salek, 2005).

Nazir and Afza (2009) said that an aggressive policy would help achieve the objective of shortening the receivable period. A good account receivable management system ultimately increases firm profitability through its influence on the cash inflow. A business should follow its credit policy religiously and monitor a customer's situations before the due dates. This is to prevent a risky situation such as bad debts and to generate adequate

cash for continuing production. Salek (2005) recognized that, while trade credit enhances profitability, a firm should design a policy that resolves the conflicting priorities between a firm and its customers. Salek noted that, although a firm maintains a loose credit policy to boost sales, it should also develop stringent policies that minimize the credit period and bad-debt losses. While the firm thinks of ways to manage receivables to achieve the desired objectives (profitability, sales generation, cash generation, market share, risk tolerance) and provide excellent services to its customers, that firm should also think of minimizing the costs of services it renders.

Several studies have determined the relationship between accounts receivable management and firm profitability. Deloof (2003) found a significant and negative relationship between receivable periods and profitability in Belgian firms. The reason advanced for the negative correlation was that customers require time to understand and approve the quality of a firm's product offered. The more time customers demand to assess products, the more profitability declines. Vishnami and Shah (2007) examined policies that could enhance corporate performance of 23 listed Indian companies from 1995 to 2005. The results of their analysis show a significant and negative relationship between receivable periods and firm performance. They stated that a shorter collection period for receivables is an indication of efficiency and leads to fewer funds being tied up in current assets.

Also, Akoto et al. (2013) examined 13 listed manufacturing firms in Ghana between 2005 and 2009 and found a significant and negative relationship between account receivable days and return on equity. They concluded that manufacturing firms in Ghana would

improve their profitability tremendously if the collection period were reduced. In addition, Garcia-Teruel and Martinez-Solano (2007) evaluated a sample of 8,872 Spanish SMEs from 1996 to 2002. The results of their analyses showed that a negative and significant relationship exists between the accounts receivable period and profitability. They recommended that minimizing the length of time taken to collect receivables would greatly increase value for firms.

Gill et al. (2010) similarly found a significant and negative relationship between accounts receivable and the operating profitability of 88 listed American firms from 2005 to 2007. They concluded that managers could enhance profitability and create more value for a firm's owner through the reduction of the receivables period. Raheman and Nasr (2007) evaluated 94 listed Pakistani firms between 1999 and 2004. The results showed a significant and negative relationship between account receivables and profitability of Pakistani firms. Raheman and Nasr (2014) also studied the behaviour of accounts receivable with net operating profit, return on assets and Tobin's Q as proxies for profitability in Pakistan. They confirmed a negative relationship between the three proxies of profitability and accounts receivable. Taurangana and Afrifa (2013) found a significant and negative association of accounts receivable and the profitability of 137 Small and Medium-sized Enterprises (SMEs) in the United Kingdom. The study was undertaken between 2005 and 2009. They stated that the longer period for receivables suggests the more a firm is financing the operations of its customers. During this period cash is tied up, and tied-up cash can bring about needless crises to firms as they are exposed to unnecessary risk. Taurangana and Afrifa (2013) believed that a proper evaluation of the credit period

extended should be done to avoid risks that are associated with it. The study also found that SMEs especially needed to make this evaluation because SMEs have limited access to financing.

In Malaysia, Wasiuzzaman (2015) found a significant and negative relationship between the profitability of manufacturing firms and accounts receivable. The study used a sample of 160 firms in Malaysia for the period 2005 to 2010. The results of the study were consistent with its general expectation that realizing cash early enough from customers is important because cash can be plugged back into the company through viable inventory opportunities into the firms to earn more profits. In contrast, Sharma and Kumar (2011) found a significant and positive relationship between accounts receivable and profitability of 263 non-financial Indian firms from 2000 to 2008. The reason advanced was that, since 1990 when India's economy was liberalized, the performance of firms increased, which was followed by a great influx of many businesses, bringing an intense competition amongst the firms. In such a competitive environment, firms needed to grant credit over a reasonable period of time to enjoy the loyalty and patronage of customers. Differently, Arunkumar and Ramanan (2013) found a significant and negative relationship using a sensitivity analysis in an investigation of 1,198 listed manufacturing firms in the Indian economy from 2006 to 2010.

Empirical studies undertaken in Kenya by Makori and Jangongo (2013) who evaluated 10 firms between 2003 and 2012 and Mathuva (2010) who studied 30 firms between 1993 and 2008 confirmed a negative relationship between the average collection period and the

profitability of firms. While Makori and Jagongo (2013) found an insignificant relationship, Mathuva (2010) found a significant and negative relationship. The insignificant relationship that Makori and Jangongo (2013) found might be because their sample comprised construction companies and construction companies always receive an advance before work commences. Mathuva (2010) suggested that profitability could be enhanced if a firm reduced the period for which receivables were outstanding or developed a policy encouraging customers to pay bills early.

Ademola (2014) found a significant and negative relationship between accounts receivable management (accounts collection period) and the net operating profit of 12 Nigerian food and beverage manufacturing firms between 2002 and 2011. The study confirmed that firms in Nigeria have difficulty obtaining financing conditions and credit worthiness. As a result, some firms kept customer loyalty by extending the payment period, which ultimately might lead to bad debt if not adequately taken care of. Ademola (2014) recommended that food and beverage firms in Nigeria should speed up collection periods to enhance their profitability. Aileman and Folashade (2014) evaluated the relationship between WCM and the profitability of Nestle and Cadbury Nigeria Plc from 2008 to 2012. They found a negative but insignificant relationship between accounts receivable (trade receivable collection period) and the profitability of Nestle Nigeria Plc while the relationship between trade receivable collection period and profitability of Cadbury showed a positive and insignificant relationship. They attributed these findings to the fact that the funds available were not adequately utilized because both firms did not adopt restrictive policies for their WCM variables. This finding contradicts the traditional theory of finance and supports the

findings of Makori and Jangongo (2013). Aileman and Folashade (2014) recommended that firms should manage their accounts receivable well to enable them plan and operate more efficiently.

In line with the studies of Makori and Jangongo (2013) and Aileman and Folashade (2014), Akinlo (2012) found a negative but insignificant relationship between accounts receivable and profitability. He investigated 66 Nigerian non-financial firms between 1997 and 2007. The study noted that Nigeria's economy was characterized by limited access to finance, low sales volume and constrained market size. The study recommended that policies that would reduce the receivables period and increase profitability of firms should be adopted. Good policies that encourage early payment are associated with performance because early payment or collection makes free cash flow available for more investment opportunities (Wasiuzzaman, 2015).

The above studies have established important associations between accounts receivable and the profitability of firms. These studies were focusing on managing account receivables optimally, arriving at the conclusion that a shorter period was associated with an increase in cash flow and profitability. Reducing the cycle times helps firms in meeting payment schedules and gives an opportunity to re-invest the collected amount into the firm. However, these studies also concluded that the peculiarities of the operating environments of the firms influenced their findings. Consequently, firms should have different dimensional policies that suit their peculiar conditions like Sharma and Kumar's (2011) study in India pointed out. Several factors determine the credit policy to be adopted by

firms. Factors such as economic conditions and other contingencies associated with the business firms need to be analysed to create a proper business environment in which firm can operate. As unfavourable credit policy can affect a firm's viability and develop into bad debt. This will consequently have a significant effect on their profitability. Credit management should entail a variety of techniques aimed at minimizing costs and enhancing profitability.

On this note, this current study is undertaken to determine the influence of accounts receivable on the profitability of firms in Nigeria with special consideration for their environmental economic contingencies.

2.5.3 Accounts Payable Management and Firm Performance

Accounts payable is a key element of a firm's liabilities composition and represents a major component of WCM (Finney, 1994). The management of accounts payable can further be seen as being inverse in both meaning and application to the concept of accounts receivable. It arises from the normal and conventional business practices and transactions. In reality, accounts payable is a debt or short-term liability to be paid by firms. It exists because of the inability of a firm to secure adequate financing for its operations, and firms that are cash strapped frequently create more accounts payable to enable them to finance their operational activities.

According to Falope and Ajilore (2009), the optimization of accounts payable has several benefits. This optimization allows firms to finance its operations using credit and also

provides customers with the opportunity to assess the quality of the product before payment. It is inexpensive and a source of financing that is flexible. Amongst the drivers that effectively contribute towards enhancing the working capital of firms are the ways in which accounts payables are managed. Accounts payable comprise the outstanding amount of bills unpaid by a firm, which are mostly to its suppliers and other creditors. The importance of maintaining the components of WCM, according to Jensen and Meckling (1986) and Akinlo (2012), is because of the imperfect world in which we live in. This is characterized by transaction costs and the costs of scheduling production (Bruinshoofd & Kool, 2004), and the costs of production can vary due to high borrowing and lending rates. Hence, Martinez-Solano et al. (2013) stated that an optimal policy would allow firms to enhance their values in a situation in which market imperfection exists.

Given the intense nature of today's business climate and competition arising from global market and high costs of input, most firms are under pressure to achieve more with less cash. This is because a firm needs to build a competitive advantage strategy. Accounts payable management has been identified as a means of enhancing profitability through cost reduction (Ikechukwu & Nwakaego, 2015). This is evident in Bhattacharya's (2008) trade credit literature, which associates higher payables with higher profitability. Higher payables will generate more cash flow, reduce costs and enhance growth (Ikechuku & Nwakaego, 2015). Mathuva's (2010) study argued that delaying payment to suppliers makes economic sense as a longer period of payment increases the amount of reserves in working capital and its cash flow, which also increases firm performance. However, measures and policies that will not affect the goodwill and business relationship established

between the firm and its suppliers must be established. Agha (2014) classified accounts payable into either high or low while determining a firm's credit worthiness, using the creditor's turnover ratio. A high ratio indicates prompt payment or quick payment to the suppliers, while a low ratio may be interpreted to mean delayed payment.

According to Agha (2014), a high ratio is desirable as it helps maintain a healthy relationship. Babu and Chalam (2014) concluded that benefits are associated with an early payment of a bill to creditors. Creditors may see a late payment or delayed payment as signs of operational weaknesses and poor financial standing. This may affect firm-creditor relationships and further hamper a firm's profitability. Peel, Wilson and Howorth (2000) further stressed the importance of accounts payment when they enumerated the benefits as including competitive tools and building a good relationship. A good relationship enables firms to access more suppliers and gives an opportunity for project expansion by creating more sales and profits. This is based on the reputation of the firm and its financial health. Difficulties are encountered most often when firms think of raising cash flow or financing using trade credit, which is the asymmetrical bargaining positions of the buyer and seller. Pike and Cheng (2001) have argued that a longer period for bill payment may exist when the market is highly competitive. This confirms the opinion of Ganesan (2007) who said that competition affects the payment period.

Pike and Cheng (2001) added that one factor to be considered when managing credit supplies is the size of the firm. An older and larger sized-firm provides more resources and expertise to conduct the terms of credit properly. Thus, the management of credit terms is

crucial, given that it provides funds at a low cost for financially constrained firms (Murthy, 2015; Ng et al., 1999; Wasiuzzaman, 2015). Ng et al. (1999) emphasized the internalization of the activities of firms to generate free cash flow. Ponsian, Chrispina, Tago and Mkiibi (2014) stated that sourcing free cash-flow internally is critical because of the high interest rates and other factors, but that optimization of accounts payable is more important to firms operating in countries with small and constrained capital markets.

Babu and Chalam (2014) studied the determination of WCM efficiency using the Indian leather industry between 1998 and 2011. The result of their analyses showed that accounts payable had a significant and negative relationship with profitability, contradicting the traditional corporate finance theory. This meant that the longer the payment period, the lower the profitability of the firm. Similarly, Ganesan (2007) studied the efficiency of the telecommunication industry using WCM in the United States. The study evaluated 349 firms between 2001 and 2007. The results revealed a significant and negative relationship between days of payment outstanding and profitability. The study stated that having a longer credit period with suppliers might provide a reason for the supply of low-quality materials, which will affect a firm's profitability. Ganesan (2007), like Pike and Cheng (2001), observed that the poor management of days of payment outstanding might be associated with the intense competition in the telecommunication sector. The study recommended that the industry should adopt better strategies for improving their days of payment outstanding, to enhance their performance.

Mansoori and Muhammed (2012) investigated how the profitability of firms in Singapore could be enhanced by using WCM during the period from 2004 to 2011. The study found a significant and inverse relationship between the corporate profitability of 92 firms and the average payment deferred period. They said that in a less profitable firm, payments were extended to a longer period. Firms were encouraged to adopt policies that optimize their payable period to avoid the danger of losing their reputations with suppliers and avoid its consequent effect on profitability.

The findings of Mansoori and Muhammed (2012) confirmed the findings of Babu and Chalan (2014) and Ganesan (2007). Charitou et al. (2010) similarly investigated how the profitability of firms could be improved by adopting WCM in Cyprus. They focused on emerging markets with a sample of 43 firms between 1998 and 2007. Using a multivariate regression analysis, the results revealed an inverse relationship between return on assets and accounts payable. The inverse relationship signifies that profitable and viable firms pay their bills when due, and delaying payment is synonymous with a high debt ratio, which shows that the firm is vulnerable to a high default risk. Babu and Chalam (2014) concluded that less profitable firms in India wait longer to negotiate payments, which is detrimental to the growth of a creditor firm. The study noted that, with the negative effect brought to firms by the global financial crisis, the utilization of the firm's internal resources becomes crucial. Working capital, therefore, represents a substantial and significant cash-flow generation opportunity, if managed optimally. For businesses to reduce volatility, improve their value and reduce the risks associated with economic crisis, proper management of payments and receivables policies is crucial (Chariton et al., 2010).

Banos-Caballero et al. (2012) studied a panel data of 4,076 Spanish SMEs between 2001 and 2005 and found that early payment qualifies firms for discounts. However, this demands a sensitive analysis of the amount of cash that a firm holds to pay cash obligations. As excess cash or keeping excess cash has opportunity costs and constitutes an idle investment. Although early payment may be associated with the profitability of the firm, Pike and Cheng (2001) suggested that late payments are most likely to occur when customers are dissatisfied or when a quality expectations gap exists. That is, the quality the customer expects is quite different from that which was delivered. Moreover, the size or experience of the firm and the relationship between supplier and customer also matters. Ng et al. (1999) argued that, for suppliers to grant credit, their policies must be designed to capture whether a firm meets the credit standards, and a good reputation is also an added advantage. Consequently, the longer period for bill settlement makes firms lose out on a cash discount offered.

Profitability can be improved if firms manage their payment schedules in a way that minimizes late payment charges, which may include higher interest rates, loss of discounts and accumulated interest charges (Taurigana & Afrifa, 2013). Their study found a significant and negative relationship between accounts payable and the profitability of 133 SMEs between 2005 and 2009. While stressing the importance of credit in enhancing cash flow and financing operational activities with ease, they noted that late payment had the effect of hampering the trade relationship existing between a firm and its suppliers. They recommended that all firms, but especially SMEs and other financially strapped firms, should stay faithful to accounts payable management. That is because these funds are a

valuable source of financing for a firm's operational activities and allow them to take advantage of market speculations and other growth opportunities. Similarly, Saghir, Hashmi and Hussain (2011) studied how WCM improved the profitability of 60 Pakistani textile industrial firms from 2001 to 2006. The results revealed that a longer payment period significantly and negatively affected the return on assets of the firms. They concluded that extending payment time leads to lower profitability and is common among firms with low financial standing.

Falope and Ajilore's (2009) study revealed a significant and negative relationship between average payment time and the profitability of a firm. Their study covered the period from 1996 to 2005 and evaluated 50 listed companies on the Nigerian Stock Exchange. The study noted that early payment was associated with high profitability and that only less profitable firms wait longer to pay their bill. Waiting longer to pay bills has several implications ranging from the reputation of the firm to profitability. Contrary to these opinions, Ponsian et al. (2014) found a positive and significant relationship between accounts payable and the profitability of firms. The study considered a sample of 3 manufacturing companies listed on the Dar es Salaam Stock Exchange in Tanzania between 2002 and 2012. Ponsian et al. (2014) concluded that delaying payment is economically sound because, when payment periods are delayed, such delays create more reserves for firms to operate with and consequently enhance profitability. Extending the payment period, however, should not be to the detriment of a firm's credit policy and not to affect the healthy relationship that necessitated the granting of the credit.

Mathuva (2010) examined components of WCM and their effects on profitability. He used 30 Kenyan listed firms between 1993 and 2008. The study found a substantial positive relationship between accounts payable and profitability. The positive correlation signifies that firms strategically extend payment periods to take advantage of cash available for a more viable project or for operations to satisfy working capital needs. Longer periods make certain adequate free cash flow is available, which economically translates to high profitability. Accounts payable management plays a vital role in enhancing operational activities and the growth of firms. Nilsen (2002) noted that the decision to grant credit starts with the determination of credit worthiness. A determination of credit worthiness is relative but exerts a critical influence in the relationship between customers and their suppliers. Nilsen (2002) noted that an extension of credit period or delay might arise when a customer has few sources of funds. Hence, a firm maximizes delay optimally when it is financially constrained. Gul et al. (2013) studied WCM and the profitability of Pakistani SMEs between 2006 and 2012. They found a positive relationship between accounts payable and the profitability of firms. The results indicated that the longer the payment period, the more cash would be made available for firms to use to enhance their profitability. Firms enjoy cash that would have been otherwise tied down for more viable projects.

Nilsen (2002) noted that customers enjoy goods or supplies or input without cash involvement, although such enjoyment can only be used only to purchase goods and cannot be used to finance other operational activities like unrestricted bank loans do. He concluded that firms should be aware of the danger of default while extending a credit period.

Bougheas, Mateut and Mizen (2009) argued that bank loans are difficult to access because they take a longer time to acquire than trade credit, which can be achieved quickly by approaching suppliers. They argued that reliance on an internal source of funding more than on an external source follows the traditional industrial pattern. This traditional industrial pattern takes advantage of the fact that a producer making materials for sale faces the common challenge of the uncertainty of demand.

Therefore, suppliers decrease their stock of un-demanded inventory by offering credit to firms, and firms increase their inventory of goods by accepting such supplies. Their study found a significant and positive relationship among accounts payable, inventory, risk, liquidity and profitability. Accounts payable increase the productivity of the firm. They also provided a model that explains that extending the period of payment is aimed at increasing production, especially in cases in which bank loans become inaccessible and consequently impinge on the economy.

Azam and Haider (2011) confirmed the findings of Ponsian et al. (2014), Mathuva (2010), Nilsen (2002) and Bougheas et al. (2009) when they found a significant and positive relationship between accounts payable and profitability. They used 21 non-financial firms listed on the Karachi Stock Exchange-30 Index for the period 2001 to 2010. The study concluded that performance could be enhanced if the credit period were extended to enable firms to take advantage of the free cash flow. Such an advantage is important for firms that have difficulties accessing external funding through the conventional banking system or other institutions (Ferrando & Miller, 2013). They further stated that a longer period of

trade is associated with an alternative way of financing production. Ferrando and Mulier (2013) argued that the vulnerability of financial market that comes with its imperfections make firms rely on trade credit. For countries in which the supply of bank funding is larger and given at a low rate, the instances of the firms financing operating activities through trade credit would be low.

Fisman and Love (2003) and Ferrando and Miller (2013) opined that in countries in which access to external funds are available at a normal interest rate and whose financial market system is efficient, firms tend to rely on external funds to finance operations. They concluded that, given the peculiar nature of a firm's financial market and the high interest rates associated with external funding, firms resort to trade credit in the form of accounts payable as a substitute for external institutional financing. Raheman, Afza, Qayyam and Bodla (2010) provide more evidence of the link between accounts payable management and profitability. They used a panel data of 204 listed manufacturing firms in Pakistan between 1998 and 2007. The results suggested that increasing the length of payment period would consequently increase the firm's profitability.

However, other studies have found mixed results. Raheman et al. (2010) found a positive but insignificant relationship between accounts payable and profitability, and Afeef (2011) analysed the impact of WCM on the profitability of 40 SME's in Pakistan between 2003 and 2008 and found a negative but insignificant relationship between the payment deferral period and return on assets used to represent profitability. There is an obvious difference in the results of the two studies from Pakistan. This difference could be attributed to the

different sectors investigated. In the first study, Raheman et al. (2010) evaluated manufacturing firms, whereas in the second study, Afeef (2011) analysed SMEs. This meant that the WCM practices of large firms differs from SME's. It suggests that both have different accounts payable policy. Gill et al. (2010) found no significant association between accounts payable and measures of profitability. A significant and positive relationship between accounts payable and the various measures of profitability is interpreted as extending the payment period beyond the due date. This, to the proponents of negative relationship is a sign of unproductiveness and has the effect of raising discontent and uncertainty issues about a firm's reputation.

Accounts payable serves as a bridge between financially constrained firms and their strategy of meeting market demand (Ferrando & Mulier, 2013), and various authors have interpreted this relationship in different ways. A good relationship between both the firm and suppliers necessitates credits. When payments are delayed or extended beyond the due date, the advocates of a significant and negative relationship believe that these delays will affect their relationship and hence lead to low profitability. Other researchers believe that a positive correlation is desired to improve profitability. This group believes that, by extending the credit period, firms make available adequate free cash flow to finance operational activities and enhance their performance.

Given the high-interest rates, inflation rates and limited access to funds experienced by Nigerian firms and the inactive capital market operations (Shodipo, 2010; Akinlo, 2012), firms in Nigeria are vulnerable to adverse effects that are associated with these

characteristics. Hence, firms now rely mostly on the internal sources to generate fund and stay active in their businesses. As a result, this current study determined the effect of accounts payable on the performance of firms in Nigeria, taking into consideration the various economic factors that affect their operations.

2.5.4 Inventory Management and Firm Performance

Every firm in which inventory is required continually manages its inventory system to remain competitive and similarly to survive in the marketplace (Wallin, Rungtusanathan and Rabinovich, 2006). This management serves as a mechanism for firms to enhance customer satisfaction (Lee & Kleiner, 2001). Inventory management, hence, has become critical against the backdrop that firms need to make policies on a continuous basis to provide the needed items of inventory to attend to the demands of customers and also to keep a reasonable quantity for speculative reasons (Buxey, 2006). Such speculative inventory is required to protect against a stocked-out situation and to maintain an adequate level in the event of industrial disharmony between the firm and supplier or a variation in prices.

Working capital management is important for managing a company. Koumanakos (2008) put forward that inventory management is a key component of WCM and significantly influences the profitability of firms. Wallin et al. (2006) reiterated that inventory management is not only concerned with the direct investments arising from purchasing an inventory of goods but with other indirect and processing costs associated with managing such an inventory. This may include, other than minimizing the cash tied up in the process

of inventory usage, mismanagement in the costs of planning, the costs of stockpiling and other associated handling charges (Wallin et al., 2006).

According to Wallin et al. (2006), efficient and effective management of an inventory system in an organization requires four strategies. They include: 1) inventory speculation, 2) inventory postponement, 3) inventory consignment and 4) reverse inventory consignment. Inventory has the goal of ensuring a minimal level of investment and, at the same time, meeting customers' functional requirements. According to Ogbo and Ukpere (2014), inventory may be viewed as an idle stock that commands economic value in any business. This is because inventory is directly linked to a firm's production function and consequently affects the viability and profitability of the firm. The study of inventory management became imperative against the backdrop of the imperfect nature of economic conditions that makes it economically and physically impossible for a stock of inventory to arrive in the factory at the exact time it is needed (Ogbo & Ukpere, 2014). Where a perfect situation exists, less need exists to plan for inventory levels (Mathuva, 2013). Hence, the keeping of inventories to respond to the ever-changing dynamic nature of customer demands is necessary.

Several studies have recognized that efficient and effective inventory management is important in driving a firm's performance (Eroglu & Hofer, 2011; Bin-Syed, Mohamad, Rahman and Suhaimi, 2016; Panigrahi & Sharma, 2013). Koumanakos (2008) emphasized that the traditional inventory problem stems from how assets of inputs of all kinds are managed. Adeyemi and Salami (2010) added that either too large or too small quantities

constitute a great danger to a firm and may cause it to fail in the long run. They reiterated that not managing inventory effectively and efficiently exposes a firm to risk of production bottlenecks, which hinder the required minimum level that drives profits. Having too small of an inventory has the effect of reducing sales through lost marketing patronage.

In a competitive marketing environment, such a loss has the capability of entirely forfeiting customers to other competitors and will eventually lead to either liquidation or insolvency. Tauringana and Afrifa (2013) stated that, by adopting an aggressive strategy aimed at minimizing the holding costs of inventory and keeping further costs such as storage, insurance and others to a minimum, profitability would immensely increase. Qureshin, Iftikhar, Bhatti, Shams and Zaman (2013) suggested that, when effects brought about by an economic crisis are felt, the most appropriate way for cost reductions that also guarantee quality product is by adopting the total quality management (TQM) and just-in-time (JIT) inventory management systems. Their empirical study shows that implementing JIT minimizes the rate of the defects and other costs associated with inventory orders, maintenance and generates a continuous flow of production that enhances a firm's profitability. This is because the philosophy of JIT avoids the costs of inventory holding by ensuring delivery just when something is needed and simplifies the manufacturing or production processes. According to Mistry (2005), JIT enhances improvement in productivity, leads to cost reductions, and increases the financial outcome of firms.

Others have also studied the JIT system. Callen, Morel and Fader (2003) found that the JIT manufacturing technique is more profitable than the application of conventional systems.

Their study revealed that the profits generated using JIT compensates adequately for the difference in expenses. Maiga and Jacobs (2009) compared 131 firms for 5 consecutive years. The pre- and post-JIT adoption findings showed a positive effect of the adoption period on profitability. Others have studied lean supply chain management on the issues of efficiency, cost reduction and performance of firms. Rafuse (1996) argued that, though firms seek efficiency through WCM, but the best strategy for stock management is to focus on the lean supply chain approach. Alipour (2011) encouraged firms to adopt lean working capital strategy, as the lean method eliminates wastage through its philosophy of decreasing costs and maximizing the firm's wealth. Banos-Caballero et al. (2012) suggested that increases in inventory are directly linked to increases in sales. Therefore, better inventory management is aimed at preventing possible interruptions that may occur in the event of changes in customer demand or price variation from the supplier's end.

Mathuva (2013) studied 28 listed non-financial firms in Nairobi, Kenya between 1996 and 2008. He observed that firms need to operate with an optimal inventory level that will maximize the benefits accrued to it. This can be achieved by minimizing the costs associated with keeping a high inventory. He found a negative relationship between inventory and measures of profitability and concluded that larger inventory has the advantage of preventing incidences of being out of stock and probably guarantees business continuity. Keeping a high inventory level means that working capital is tied up, and this can be detrimental to profitability. This study confirmed the earlier opinion of Drury (2013) who stressed that a reduction in the inventory level would generate more cash flow that will become more operational through managing supplier delivery efficiency, equipment

breakdowns, and other services that are aimed at ensuring a high-quality physical product. Deloof (2003) underscored that, through proper planning, cash tied up in the various methods of assessing inventory can be regained through reducing the inventory days to an optimal level to increase corporate profitability.

Panigrahi and Sharma (2013) studied 5 Indian cement firms from 2001 to 2010 with the intent to discover how profitability can be enhanced through the proper management of inventory systems. They found a significant and negative relationship between inventory management and profitability as measured by gross operating profit. Panigrahi and Sharma (2013) stated that funds that are unnecessarily tied up in inventory due to mismanagement could be managed to yield more returns for the firm. The study noted that inventory constitutes a significant proportion of the firms' operations and its management determines their survival or failure. Thus, failure to manage an inventory system could lead firms to bankruptcy. Shin, Ennis and Spurlin (2015) also found that a lower rate of inventory was associated with the profitability of American firms while Nwakaego, Dorathy and Ikechukwu (2014) found a significant and negative relationship between the inventory period and profitability of Nigerian building materials and paint companies from 2000 to 2011. Garcia-Teruel and Martinez-Solano (2007) studied the effects of WCM on profitability of 8,872 SMEs in Spain from 1996 to 2002. They found a significant and negative relationship between inventory and profitability. Their study concluded that, by reducing the number of days in inventory, profitability would be increased. This is because the cost that passes through keeping and safeguarding stock reduces profitability while keeping a shorter period will reduce wastage and scrap conditions.

Various motives drive traditional inventory needs (Wang, 2002). These motives for holding inventory according to Savita (2011) can be classified as transactional, precautionary and speculative motives. The transactional motive guarantees against an uninterrupted production process and the ability to respond to customers' demands promptly. The precautionary motive takes care of stock-out situations arising out of normal business contingencies. The speculative motive economically emphasized the advantage that firms can earn through price variations or price instability.

Several authors have studied the impacts of inventory management on the profitability of firms. For example, Prempeh (2015) studied the impact of inventory on the profitability of 4 listed brewery companies in Ghana from 2004 to 2014. The study revealed a significant and positive relationship between inventory management and the profitability of these firms. Lwiki, Ojera, Mugenda and Wachira (2013) examined how the performance of 8 sugar manufacturing firms could be enhanced through efficient and effective inventory management in Kenya. Results revealed that a significant and positive relationship existed between inventory and firm performance. The findings of Lwiki et al. (2013) and Prempeh (2015) suggested that firms need to hold more inventory to avoid a stock-out situation. A stock-out situation has the characteristic of making firms lose customers and patronage arising out of being unable to meet demand. Gill et al. (2010), who studied American firms, found no significant relationship between inventory and profitability. They noted that large inventory increases sales and consequently reduces the risk of firms running out of stock, which has great impact on profitability. A larger inventory is a sign of steady production

process and continuous sales. Continuous sales translate into an on-going concern and lead to profitability for the firms.

Blazenko and Vandezande (2003) studied corporate holding of inventories and found a significant and positive relationship between gross margin and finished goods inventories. They argued that the competitive environment in which firms operate necessitates the holding of more inventory to avoid the danger of stock-out because increased competition comes with the greater need for stocks. They added that inventories are held in large quantities to support the marketing function of a firm and diligently serve the needs of ever-growing customers. This type of inventory holding is regarded as speculative because it guarantees against future speculation of competition and price increases. Padachi (2006) found an insignificant relationship between inventory holding and profitability.

However, drawing from the transactionary motive, he opined that the benefits of holding more inventory outweighs the costs being tied up and firms should hold more inventory because of its effect in enhancing profitability. Nobanee (2009) also showed how the transactionary motive of holding inventory could enhance a firm's profitability. The study found a significant and positive relationship between inventory management and profitability. A reduction in inventory was associated with a shortage of production and ran the risk of being out of stock. Thus, firms need to maintain either minimum or maximum levels of inventory holding that are optimized for both the carrying costs and opportunity costs of holding inventory. In the determination of the optimal costs that a firm could accept with its inventory level to achieve the desired objectives of the firm, Afrifa

(2013) suggested that the economic order quantity (EOQ) should be adopted to determine the ordering and holding costs that best suit the firm's production in enhancing profitability.

Opinions of researchers and their empirical findings have suggested that under perfect economic conditions, like Miller's (1986) irrelevant theory developed, firms should not worry about keeping large or small inventory. However, due to competition and continuous variation in prices and other contingencies (Afrifa, 2013), firms now maintain a large inventory size (Prempeh, 2015; Lwika et al., 2013; Gill et al., 2010). Large inventories are maintained to respond to customers' demands and to avoid a stock-out situation (Padachi, 2009; Nobanee, 2009). Not letting stock become out of inventory not only affects a firm's profitability and value, but also affects the goodwill and the patronage that a firm will subsequently earn. Keeping a safety stock by holding excess is also interpreted to mean that the stock will be needed between when the inventory is converted to work in progress and from work in progress to the finished goods stage. The stock is required to fill gaps in the processing stage. Koumanatos (2008) argued that extensive inventory covers up for mismanagement that may occur within the firm's cycle and tends to make firms strong enough to absorb an external shock (Afrifa, 2013). Given imperfect economic situations, holding more stock will sometimes translate to higher profitability and a competitive advantage during period of scarcity of goods.

Conversely, some other authors believe that either holding a large or keeping a large amount of inventory comes with varying costs. These costs draw down profitability, and

they believed that keeping a large inventory reduces the profitability of a firm (Mathuva, 2013; Drury, 2000; Panigrahi & Sharma, 2013; Nwakaego et al., 2014). While various authors have argued for larger inventory (significant and positive relationship), others have argued for optimal inventory management (significant and negative correlation). However, some have found no significant relationship between inventory and profitability (Gill et al., 2010; Padachi, 2006). Demeter (2003) argued that inventory is unrelated to sales and has no significant influence on profitability. Given these varying opinions, this study also investigated further the relationship between inventory management and the performance of firms.

2.5.5 Cash Conversion Efficiency and Firm Performance

Cash conversion efficiency (CCE) is one of the additional variables considered in this study. It has not enjoyed a significant association with other variables of WCM. For a comprehensive study, CCE is considered and is a measure used to determine the operational efficiency of firms in transforming sales into cash. According to Filbeck and Krueger (2005), the CCE originated from the REL consultancy in the United Kingdom. They determined the CCE using the cash flow arising from the operations of the firms with sales. This reveals the effectiveness and efficiency with which revenue (sales) are transformed into cash. Filbeck and Krueger (2005) consequently adopted the CCE to examine its potency across industries with data provided by *CFO Magazine* for the period from 1996 to 1999. They noted that CCE is significant in enhancing performance of firms. Since the introduction of CCE by Filbeck and Krueger (2005), several scholars have also attested to its efficiency in enhancing the operational activities of firms.

Ganesan (2007) adopted CCE as one of the measures to analyse the WCM efficiency of 443 telecommunication firms in the equipment industry in the United States for the period from 2001 to 2007. Nasser, Samat, and Othman (2010) used CCE along other variables to determine the effect of WCM on the performance of Air Asia, Malaysia Airlines and Qantas. They considered the period from 1999 to 2007 for both Malaysia Airlines and Qantas, while Air Asia was evaluated for the period from 2004 to 2007. Similarly, Ching, Novazzi, and Gerab (2011) evaluated the relationship between CCE and the profitability of 16 Brazilian listed firms for the period from 2005 to 2009. These studies showed that CCE significantly influenced the performance of firms. Hence, this emerging variable measured as cash flow from operations divided by sales (Filbeck & Krueger, 2005) is adopted in this current study because its application makes available adequate cash flow that will finance a firm's activities.

2.6 Previous Studies on WCM in Nigeria

Several authors have established that WCM has a substantial influence on firm performance and value (Akinlo, 2012; Owolabi & Alu, 2012; Akindele & Odusina, 2015; Mathuva, 2010). This is because WCM allows firms to efficiently redeploy underutilized organizational resources to higher-valued areas requiring funding (Aktas, Croci & Petmezas, 2015). Thus, efficient WCM translates into better performance and for shareholders performance, it is also associated with their market position (Filbeck, Zhao & Knoll, 2017). Shodipo (2010) and Akinlo (2012) opined that Nigerian firms have not been able to enjoy substantially the benefits that accrue from an efficient WCM practice because of the peculiar characteristics of the business environment and the challenges of lending

brought by the financial crisis and capital market decline. Thus, a strategy that aligns WCM with environmental and macroeconomic conditions/factors, as well as ensuring that operational activities of firms are carried out effectively and efficiently is essential to achieve higher performance. In other words, the lack of adequate research that can help policy makers and managers improve their financial performance especially under conditions of macroeconomic uncertainty (Takon & Atsege, 2015; Abosede & Luqman, 2014) necessitated this current research.

A respectable number of studies have focused on establishing the association between WCM and performance of firms in developed and developing economies. However, little research has been undertaken on the concept of working capital and its interrelation with the performance of firms in Nigeria. The few extant ones have no consensus among the findings and are mostly directed at the manufacturing sector. For example, Festus (2012) focused on determining how working capital could be used to resolve profitability and distress issues arising from e-business organizations in Nigeria using a sample of 5 non-financial firms from 2005 to 2007. The study found that WCM significantly influences the success of the business. Barine (2012) studied WCM and the profitability of 22 banks and non-banking firms for 2010 financial year. Findings showed that firms in Nigeria rely heavily on external financing thereby making them vulnerable to any financial crunch that comes along. The study encouraged an adequate working capital policy because such is critical in enhancing free cash flow for a firm. Takon and Atseye (2015) evaluated the effects of WCM on the profitability of 46 firms in Nigeria. The study found a significant relationship between measures of working capital and return on assets of businesses. Takon

and Atseye (2015) concluded that the high cost of acquiring funds and the unstable economic conditions have a great negative influence on firm performance in Nigeria.

Meanwhile, Kurawa and Garba (2014) evaluated WCM and profitability of 4 cement companies in Nigeria between 2001 and 2010. They found that all the dimensions of working capital significantly influenced the profitability of these cement companies using GLS regression. Similarly, Kolapo, Oke and Ajayi's (2015) empirical investigation on how corporate performance could be enhanced, used return on assets and looked at how WCM could drive gross working capital. They evaluated data from 8 non-financial firms from 2001 to 2010. The findings revealed a significant influence of the average payment period and the cash conversion cycle on return on assets while none of the four measures of WCM showed a major impact on gross working capital.

In contrast to the findings of Festus (2012), Kurawa and Garba (2014), and Kolapo et al. (2015), Ogundipe et al. (2012) study determined how working capital affected both profitability and the market valuation of 54 non-financial firms from 1995 to 2009. They found insignificant relationships (positive and negative) between measures of working capital and profitability as represented by return on assets and return on investment while market valuation was determined using Tobin's Q. Similarly, Osundina (2014) found an insignificant relationship between working capital and the profitability of 12 firms. Osundina (2014), however, used a survey to determine the relationship between WCM and profitability (Net Operating Profit) of food and beverage manufacturing firms in Nigeria. Aileman and Folashade (2014) investigated WCM and the profitability of manufacturing

firms using data from Cadbury and Nestle Nigeria Plc between 2006 and 2012. The results revealed an insignificant relationship between the measures of working capital and ROE as measure of profitability.

The issue is that, the findings of Festus (2012), Kurawa and Garba (2014) and Kolapo et al. (2015) with respect to a significant influence of working capital on profitability were inappropriate for generalization because they used sample sizes of 5, 4 and 8 firms respectively. These samples were not an adequate representation of firms in Nigeria. Second, Festus (2012) used chi-square to determine his relationship. Chi-square has limitations because of the multicollinearity that might exist among the variables. The insignificant relationships that Osundina (2014) and Aileman and Folashade (2014) found all shared the common characteristic of having a small sample. However, Ogundipe et al. (2012) utilized 54 non-financial firms. Osundina (2014) evaluated 12 firms, and Aileman and Folashade (2014) investigated 2 firms. The results that Osundina (2014) determined using the questionnaires were inappropriate because financial performance such as profitability should be measured using a more objective approach.

In addition, several studies have found a negative and significant relationship between WCM and profitability of firms. Amongst them was the study of Falope and Ajilore (2009). They evaluated WCM and corporate profitability using 50 non-financial firms in Nigeria from 1996 to 2005. The results of their analysis revealed that accounts payable, accounts receivable, inventory, and the cash conversion cycle all showed a significant and negative relationship with profitability as measured by net operating profit. They also confirmed

that SMEs and large firms have same needs for financing, as both undergo the severe consequences of unfavourable economic conditions and the business environment. In alignment with Falope and Ajilore's (2009) findings, Barine (2012), Akinlo (2012), Owolabi and Alu (2012), Ajibolade and Sankay (2013), and Oladipupo and Okafor (2013) all found a negative relationship between working capital and the profitability of firms in Nigeria.

While Barine (2012) used 22 listed financial and non-financial firms for only one year (2010), Akinlo (2012) used a sample of 66 non-financial listed firms in Nigeria and considered the period from 1997 to 2007. The study noted that the uncertainties associated with transaction costs, production and other new challenges brought by low technological development need to be complemented by optimizing the choice of working management to improve profitability. That is because Nigeria's economy is characterized by a low sales volume and the interminable challenge of limited access to funding. He also commented that the macroeconomic conditions are central and critical for a mono-cultural economy like Nigeria that depends heavily on oil for survival at the expense of other sectors.

Owolabi and Alu (2012) stated that the scarcity of resources (capital and equipment) has affected the extent to which firms in Nigeria can flourish. They evaluated a sample of 5 manufacturing firms from 2006 to 2010 and found a significant and negative relationship between measures of working capital and return on assets used as a proxy for profitability. Ajibolade and Sankay (2013) studied WCM and the financing decisions of firms and determined their synergy on the profitability of 35 manufacturing firms from 2011 to 2012.

Ajibolade and Sankay (2013), like Akinlo (2012), found a significant and negative relationship between WCM components and debt structure and profitability. They stated that the financial crisis of 2007 and 2008 brought many adverse effects to the Nigerian economy, thereby affecting the profitability of firms. They stressed that firms are now trying to regain synergy by focusing on optimizing the components of WCM.

Oladipupo and Okafor (2013) established that WCM could contribute to the profitability and proportion of the dividends due to be paid out. They investigated 12 non-financial firms from 2002 to 2006 and used the Ordinary Least Squares technique. The results revealed that net trade cycle, current ratio, and leverage/debt ratio had significant and negative relationships with profitability while working capital (net trade cycle) significantly influenced the dividend ratio. They observed that the net trade cycle and growth rate earnings had a negative but insignificant relationship. Manyo and Ike (2013) studied the effect of accounts receivable on the return on assets of 46 banks and non-banking firms listed on the Nigerian Stock Exchange. They found that between 2000 and 2009 a significant and negative relationship existed between accounts receivable and return on assets.

Lawal, Abiola and Oyewole (2015) studied the effect of WCM on profitability of 6 selected manufacturing companies in Nigeria from 2006 to 2013 while Akindele and Odusina (2015) studied WCM and firm profitability using a sample of 25 non-financial firms. Lawal et al. (2015) and Akindele and Odusina (2015) found a significant and negative relationship between WCM and profitability. In contrast, Osundina and Osundina's (2014) study found

a positive and significant relationship between all the measures of WCM and market value measured by Tobin's Q. This result was ascertained when they determined the effect of WCM on the market value of 12 manufacturing firms.

Given the mixed findings and the declining performance of firms in Nigeria, Omolade and Mukolu (2013) and Toby (2014) emphasized that the Nigerian business environment was not conducive for business to succeed and grow economically. Omolade and Mukolu (2013) found an insignificant relationship between all the dimensions of WCM and performance measured by return on capital employed (ROCE). They analysed data of 10 listed firms (banking and non-banking sectors) using OLS. The results revealed that 6 firms showed a negative relationship between WCM and ROCE while 4 showed a positive relationship. They linked the insignificant relationship to the Nigerian business environment, which is characterized by insecurity, unstable policies of the government and poor electricity, amongst others.

Like Omolade and Mukolu's (2013) findings, Toby (2014) studied the effect of WCM policy on corporate profitability. The study considered 107 firms spread across 23 sectors in Nigeria for the period 2003 to 2007. Toby (2014) operationalized WCM using the net current asset ratio (NCAR) on return on assets and net profit margin as measures of profitability. The result of the study revealed that most of the companies adopted aggressive working capital, which showed a negative relationship between NCAR and measures of profitability, while others revealed a significant and positive relationship between conservative NCAR and profitability. It is therefore essential that, firms optimize

the choice of either conservative or aggressive working capital policies. A conservative policy enhances company value by focusing on current assets, which reduces a heavy reliance on borrowing.

Several authors have studied SMEs in Nigeria. Sunday (2011) investigated WCM effectiveness of SMEs in Nigeria using 8 SMEs. He found that most SMEs in Nigeria rely heavily on credit facilities for survival. External facilities are not always available for business to thrive, and, when available, they are at a high cost, thereby impacting negatively on their profitability. The findings revealed that debt recovery and credit management were major issues facing SMEs in Nigeria. They recommended good credit policies and control systems for SMEs in Nigeria. According to Falope and Ajilore (2009), despite the difference in the industry and structure of large firms and SMEs in Nigeria, they noted that both SMEs and large firms were exposed to the same financial constraints. Tsagem, Aripin and Ishak (2015) studied the combined effects of WCM, ownership structure and board size on the profitability of 47 SMEs from the North-West zone of Nigeria. The results showed that gross operating profit was negatively and significantly associated with the accounts payable period, accounts receivable, cash conversion efficiency and board size. They further recommended that, due to the unavailability and expensive nature of external financing, firms should optimize their WCM components because they make internal finance available at no cost. They also encouraged government to formulate policies that would make available funding more affordable for SMEs to thrive in Nigeria.

Uremadu, Egbide and Enyi (2012) investigated working capital, liquidity and corporate profitability, using 25 Nigerian manufacturing firms from 2005 to 2006. They found a significant relationship and stated that the global crises had brought about liquidity constraints that had incapacitated the ability of firms to source funds at affordable rates. Abosede and Luqman (2014) evaluated 2 companies (Guinness Breweries and Consolidated Breweries) between 2009 and 2013 in Nigeria. Osundina (2014) studied 12 quoted food and beverage-manufacturing firms. Abosede and Luqman (2014) and Osundina (2014) determined the profitability of manufacturing firms using WCM.

Like Uremade et al.'s (2012) findings, Abosede and Luqman, (2014) noted that factors that affected the efficiency of working capital in Nigeria were divided into external and internal factors. The external factors included economic conditions, government regulations, competition and environmental factors, while the internal factors included skills, the workforce and financial management of the firm. They stated that a firm had absolute control over internal factors, but external factors were not within the control of a firm.

Although several studies have investigated the relationship between WCM and firm performance in Nigeria, many suffer from flaws such as a small sample size or a short span of study, and in most cases the use of statistical analysis was greatly undermined by inappropriate or insufficient analysis. With respect to sample size, Abosede and Luqman (2014) studied 2 companies, Owolabi and Alu (2012) studied 5 manufacturing firms. Ailemen and Folashade (2014) studied 2 manufacturing firms, Kurawa and Garba (2014) studied 4 cement-manufacturing companies and Lawal et al. (2015) studied 6

manufacturing companies. Moreover, the span of time for some studies rendered them inconsequential. For example, Barine's (2012) study was only 2010; Uremadu et al.'s (2012) study covered 2005 to 2006. Samson et al.'s (2012) study covered only 2009, and Ajibolade and Sankay's (2013) study also covered two years from 2011 to 2012. In addition, most of the analytical methods adopted were the OLS and simple regression techniques. Most of the techniques adopted by majority of the studies undertaken in Nigeria have not taken care of the multi-collinearity effects of variables. In sum, the small sample size, the short period of study and the method of analysis make the findings of these studies unsuitable for generalization, especially for a country like Nigeria.

The review of the literature in this current study has shown that most of the studies were undertaken in one major sector, which was the manufacturing sector, and had limited sample sizes. Although several studies used different measures to predict profitability, the issues raised by Abosede and Luqman (2014) and Takon and Atsege (2015) about external factors and economic conditions affecting the relationship between WCM and profitability were not appropriately investigated. Hence, this current study extended the existing research by evaluating the economic conditions as suggested by different scholars from Nigeria and examine other contingency factors that have impeded the performance of firms in Nigeria. The study also considered a large sample size of firms in Nigeria from which the findings may be generalized.

Beyond this, the mixed and often inconsistent results obtained of researchers who have studied the effects of WCM on the profitability of Nigerian firms also necessitated this

study. This study confirmed the appropriateness of the relationship and, thus, advanced the literature on WCM in a new direction. The study focused on non-financial sectors and considered a period of 9 years (from 2007 to 2015) as against the concentration of various studies on manufacturing firms that have had a more limited period. In addition, the study properly placed economic conditions in the analysis to determine their effects on the relationship between WCM and firm performance in Nigeria. A comparison was also made during and after the financial crisis periods to differentiate the conditions of the firms within these periods and the quadratic relationship was also determined. This adds to the corpus of literature and knowledge in the field of WCM.

2.7 Macroeconomic Conditions and Peculiarities of Nigeria

The following sections discuss the effect of inflation rates and interest rates on economic development.

2.7.1 Inflation Rates and Economic Development

Sound economic policy fosters helpful strategies and mitigates against factors that threaten economic development. One of such factors is inflation (Bakare et al., 2015). Inflation is viewed as the constant rise in the overall price level of a broad spectrum of goods and services in a country over a period of time (Umaru & Zubairu, 2012). Several questions have been advanced about whether inflation is detrimental to growth or enhances growth. According to Umaru and Zubairu (2012), inflation rate affects the entire economic cycle, that is, both savings and investments. Inflation rate is a percentage measurement of changes in general prices, the consumer price index, the wholesale price index, and the producer

price index, among others. A stable price promotes economic growth and development while high inflation or high prices could have several adverse effects on an economy (Khan & Senhadji, 2001).

These effects range from high welfare costs posed on the entire society to a distortion in the resource allocation occasioned by price level changes. This adverse condition makes the poor become poorer while the rich become richer because the income of the poor may not be indexed in the price changes. Fischer (1993) stated that inflation also causes budget deficits and reduces growth by its effects on investment and productivity. He concluded that a stable macroeconomic environment is conducive to sustaining a country's economic growth. High inflation reduces a country's competitiveness internationally through the expensive nature of export activities. The interruption that results from high inflation through the expensive nature of imports poses a significant and negative impact on the balance of payments and distorts the economic growth of a nation in the long term. Consequently, a country faces the choice of maintaining an inflation rate below zero or aiming at a higher rate (Bawa & Abdullahi, 2012). However, inflation rates below zero lead to deflation, and the costs of deflation are also challenging to an economy (Billi & Kahn, 2008). In addition, Fischer (1993) added that inflation serves directly as an indicator of uncertainty in a macroeconomic environment.

Achieving a moderate inflation rate helps in stabilizing and developing the economic growth of a nation. Hence, macroeconomic policies should be designed to maximize general economic growth (Bawa & Abdullahi, 2012). It is well known that, in sustaining a

high growth output strategy, decisions by any economic policies to raise the level of outputs also raise prices. Bakare et al. (2015) suggested that inflation threatens all economies, and it is undesirable because of its negative multiplier effect on the economy. This effect begins with the standard of living and on to uncertainty about an organization's future profitability, variation in prices and other negative externalities that it brings to the economy. Sarel (1995) recommended that macroeconomic policy leading to the avoidance of high inflation is key. According to Lins and Duncan (1980) "inflation has differing long run and short run impacts on the financial performance of firms. In the short run, inflation may contribute to reduced firm income, increased capital gains, reduced liquidity, and greater income instability. In the long run, financial outcomes may not be substantially altered, but firms in the industry may adjust toward those who can best deal with income instability and capture growth opportunities" (p. 1050).

Several schools of thought have suggested a threshold level of inflation that gives a satisfactory economic growth level. Khan and Senhadji (2001) evaluated the effects of a threshold on the relationship between inflation and growth in 140 developing and industrial countries from 1960 to 1998 (panel data). The results of the thresholds were categorized into two: a threshold of 1-3% suitable for industrial countries and a threshold of 11-12% for developing countries. Using the econometric technique, a figure below these points is considered to have no effect while a figure above these thresholds is deemed to have a significant and negative relationship. Khan and Senhadji (2001) recommended that policy should be designed to lower the rate of inflation to improve growth performance. They felt

that inflation should always be targeted at a single digit because it raises the cost of capital, which has a direct influence on productivity.

Fabayo and Ajilore (2006) sought to know how much inflation would be too much for Nigerian economic growth between 1970 and 2003. They found a 6% threshold level, compared to a 10% threshold that Muritala (2011) found. Fabayo and Ajilore (2006) used Khan and Sendhaji's (2001) methodology to derive their threshold level. The variance in findings could be attributed to the varied periods of data selection. The two studies, however, reported that a good macroeconomic policy bringing inflation rates to a single digit was necessary, as the benefits of moderate inflation are enormous for an economy like Nigeria. Fabayo and Ajilore (2006) further noted that over time Nigeria has experienced fundamentally high inflation, which has adversely affected the viability of economic activities in the country.

These studies have reiterated the need for government to take such recommendations seriously in view of the negative effects inflation has on the economy, especially in sustaining growth and viability (Omay & Kan, 2010; Umaru & Zubairu, 2012). The consensus in their findings confirms the effect of inflation on growth at different significance levels. These findings influenced the current research in considering the Nigerian inflationary situation, noting that a moderate inflation rate plays a dominant role in the economic development of any country as Khan and Senhadji (2001) and Fischer (1993) concluded. First, they said that inflation raises the cost of capital and other costs of

inputs, which directly affect productivity. Second, inflation also plays a major role in the political stability of government.

Table 2.1 below shows the inflationary trends of 11 countries, and the figures reflect their countries economic conditions and the consequences that abound. For an industrialized nation, according to Khan and Senhadji (2011), inflation should remain from 1% to 3% and 11% to 12% for a developing nation. Among the 11 countries evaluated as shown in Table 2.1, the Nigerian average value stood at about 11.7%. This was the highest average rate for the period under consideration for the countries listed. The rates fell above the specific threshold level advanced by Nigerian studies undertaken by Muritala (2011), Fabayo and Ajilore (2006), and Salami and Kelikume (2010) who suggested 10%, 6%, and 8% respectively. Hence inflation needs to be considered in WCM appraisal and analysis, since it affects investment and cash flows.

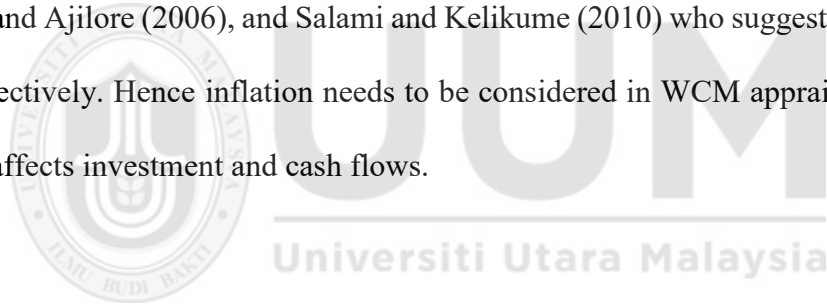


Table 2.1
Global Inflationary Trends (in %)

Year	BRA	CHI	INDO	MAL	NIG	SING	SOUA	THA	TUN	U.S.	U.K.
2000	7.0	-	3.7	1.5	6.9	1.4	5.3	1.6	3.0	3.4	0.8
2001	6.8	-	11.5	1.4	18.9	1.0	5.7	1.6	2.0	2.8	1.2
2002	8.5	-	11.9	1.8	12.9	-0.4	9.2	0.7	2.7	1.6	1.3
2003	14.7	-	6.6	1.0	14.0	0.5	5.9	1.8	2.7	2.3	1.4
2004	6.6	-	6.2	1.5	15.0	1.7	1.4	2.8	3.6	2.7	1.3
2005	6.9	-	10.5	3.0	17.9	0.4	3.4	4.5	2.0	3.4	2.0
2006	4.2	-	13.1	3.6	8.2	1.0	4.6	4.6	4.5	3.2	2.3
2007	3.6	-	6.4	2.0	5.4	2.1	7.1	2.2	3.4	2.9	2.3
2008	5.7	-	9.8	5.4	11.6	6.5	11.5	5.5	4.9	3.8	3.6
2009	4.9	-	4.8	0.6	11.5	0.6	7.1	-0.8	3.5	-0.4	2.2
2010	5.0	-	5.1	1.7	13.7	2.8	4.3	3.3	4.4	1.6	3.3
2011	6.6	5.4	5.4	3.2	10.8	5.3	5.0	3.8	3.5	3.2	4.5
2012	5.4	2.6	4.3	1.7	12.2	4.5	5.7	3.0	5.1	2.1	2.8
2013	6.2	2.6	6.4	2.1	8.5	2.4	5.4	2.2	5.8	1.5	2.6
2014	6.3	1.0	6.4	3.1	8.1	1.0	6.4	1.9	4.9	1.6	1.5
AVERAGE	6.58	2.9	7.47	2.24	11.71	2.05	5.87	2.58	3.73	2.38	2.21

Notes: Source: World Development Indicators (WDI) (2016). Legend: BRA = Brazil, CHI = China, INDO = Indonesia, MAL = Malaysia, NIG = Nigeria, SING = Singapore, SOUA = South Africa, THA = Thailand, TUN = Tunisia, US = United States of America, and UK = United Kingdom.

2.7.2 Interest Rates and Economic Development

Interest rates are typically set by the government or the central bank to achieve a variety of macroeconomic objectives (James, Richard & Victor, 2013). An interest rate is a percentage that measures the remuneration a lender earns for deferring the consumption of resources to a later period. Onwumere, Okore and Ibe (2012) defined interest rate to mean the rental payments for the use of credit by borrowers. Muhammad, Lakhan, Zafar and Noman (2013) noted that interest rate is synonymous with the cost of borrowing money. They further observed that the volume of investment increases or decreases with decreases or increases in interest rates.

Saunders and Schumacher (2000) offered that the margin between the bank's interest rate earnings and expenses as a percentage of interest earnings assets vary widely across banks. The variation is obtainable within and across countries and depicts the spread of the margin. High lending rates, according to Obamuyi (2009), are detrimental to productive investment and economic growth. He further observed that high lending rates create a situation of high moral hazard, as firms will only borrow to escape bankruptcy rather than either investing or financing working capital. A low rate is desirable because in a country like Nigeria where the banks serve as the engine of growth and play an intermediary role of providing finance to both private and real sectors, economic growth is dependent on the facilitation of capital formation and its consequent interest rates (James et al., 2013). Applying the dealership model to respond to in increasing or decreasing situation, McShane and Sharpe (1985), Allen (1988) and Angbazo (1997) believed a bank is synonymous with a dynamic

dealer that sets interest rates on loans and deposits to balance the asymmetric arrival of loan demand and deposit supplies.

Obansa, Okoroafor, Aluko and Eze (2013), Obamuyi (2009), James et al. (2013), and Udoka and Anyingang (2012) observed that, before the Keynesian era, developed nations drew upon the benefits of low interest rates to develop their industries. Industrialization is driven by heavy investment finance through capital accumulation. Udoka and Anyingang (2012) pointed out that minimal lending rates and inflation rates are sine-qua-non for propelling rapid investment and industrialization. Obamuyi (2009) affirmed that high interest rates or lending rates are detrimental to productive investment. Thus, the Keynesian and neoclassical theories noted that low interest rates should promote investment, increase spending and bring economic development (Odhiambo, 2008). This is important, as strategies to attain industrialized status and join other industrialised countries to drive the world economy is the desire of most developing countries. This is evident in their struggle to formulate macroeconomic policies that will bring inflation and interest rates permanently to a single digit to enhance economic development.

Table 2.2
Interest Rates (in %)

YEAR	NIG.	MAL.	SOUA.	SING.	US.	UK.
2000	21.3	7.7	14.5	5.8	9.2	6.0
2001	23.4	7.1	13.8	5.6	6.9	5.1
2002	24.8	6.5	15.8	5.3	4.7	4.0
2003	20.7	6.3	15.0	5.3	4.1	3.7
2004	19.2	6.0	11.3	5.3	4.3	4.4
2005	17.9	6.0	10.6	5.3	6.2	4.6
2006	16.9	6.5	11.2	5.3	8.0	4.6
2007	16.9	6.4	13.2	5.3	8.1	5.5
2008	15.5	6.1	15.1	5.4	5.1	4.7
2009	18.4	5.1	11.7	5.4	3.3	0.6
2010	17.6	5.0	9.8	5.4	3.3	0.5
2011	16.1	4.9	9.0	5.4	3.3	0.5
2012	16.8	4.8	8.8	5.4	3.3	0.5
2013	16.7	4.6	8.5	5.4	3.3	0.5
2014	16.5	4.6	9.1	5.4	3.3	0.5

Notes: Source: WDI (2016). Legend: NIG = Nigeria, MAL = Malaysia, SOUA = South Africa, SING = Singapore, US = United States of America, and UK = United Kingdom.

Table 2.2 above shows the interest rate spread of Malaysia, Singapore, Nigeria, the United Kingdom, the United States and South Africa. These countries have maintained steady and adjusted interest rates and have transformed their economies to an enviable height (Olayemi & Michael, 2013). As evidence of their efficient and effective policy, Malaysia, Singapore, the United States, and South Africa have adopted macroeconomic policies that brought their interest rates lower than those compared to Nigeria. Udoka and Anyingang (2012) explained that, at different intervals or times, Nigeria has witnessed enormous

interest rates swings. Obansa et al. (2013) and Udoka and Anyingang (2012) added that within the period of regulation and deregulation regimes, Nigeria has experienced changes in policies and the disastrous impacts of these changes on economic development have remained controversial.

McKinnon (1973) and Shaw (1973) opined that, by liberalizing the interest rates, economic development and investment would increase. The increase would be occasioned by the fact that savers would switch from unproductive sectors (real sector) to financial sectors, which will ultimately increase the supply of credit to the entire economy through advancement in lending. This position brought a disagreement between the proponents of the Keynesian school of thought who believe in prior investment and the proponents of the McKinnon-Shaw school of thought who believe in prior savings (Obansa et al., 2013). The hypothesis of the McKinnon-Shaw (1973) is premised on the fact that, in developing countries, the demand for loanable funds exceeds supply. The increase is because the financial system is repressed. Rather than high demand, interest rates should be increased to attract deposits. This will spur investment and economic growth will pick up.

Empirical evidence supports the assertion that economic growth is dependent on moderate interest rates. The studies of Obamuyi (2009) and Nicholas (2010) found the relationship between interest rates and economic growth to be significant. Obansa et al. (2013) also found a significant relationship between interest rates and economic growth and concluded that interest rates should be regulated to bring fair rates so that firms can borrow to finance their operations. The CBN introduced the monetary policy rate (MPR) to regulate the

official interest rates. CBN (2011) stated that, in the absence of efficient policy coordination, financial instability could ensue as high interest rates, exchange pressure and high inflation have negative impacts on economic growth. The findings of Muhammad et al. (2013) confirmed Obansa et al.'s (2013) results. They revealed that high interest rates significantly lower investments because of the expensiveness of acquiring loans to finance operations.

Table 2.2 showed that Nigeria's interest rate is high compared to other countries of the world. This high rate has discouraged investments in the real sector and impedes economic growth. To mitigate this effect, the government has advanced several macroeconomic policies. However, Sanni (2006) noted that inconsistency in government policies, persistent large budget deficits occasioned by the oil sector crash and the unfavourable macroeconomic conditions have all hampered the growth of Nigeria's economy. Obansa et al. (2013) stated that the unfavourable business environment has made the demand for loanable funds exceed the supply leading to high liquidity constraints for business firms in Nigeria.

Interest rates and inflation rates are fundamental macroeconomic variables that drive economic growth and stability. This is because the strength of every currency and economy is highly dependent on its purchasing power compared to other countries of the same status. However, inflation and interest rates are considered the most influential macroeconomic factors in the current economic crisis confronting Nigeria. This is because the inflation and interest rates have remained long-standing challenges faced by firms in Nigeria and have

been stuck in the double-digit range over a considerable length of time (CBN, 2016; 2017; Asekunowo, 2016; Emejo, 2016). Therefore, achieving a strong Naira value and low interest rates in Nigeria simultaneously have become “life time” projects and are not likely to be achieved soon. This current study creates a condition of “fit” in which Nigerian firms can operate. This is achieved by making both inflation and interest rates as contingents of the operating environments that they cannot control. This is because the soaring inflation and interest rates create a “misfit” condition for business firms in Nigeria.

2.8 Control Variables

In addition to WCM variables, this current study also considers control variables that have been found empirically to be associated with profitability. These variables were adopted from Deloof’s (2003) study and were used as control variables in this study. They are: firm size, financial debt ratio and sales growth.

2.8.1 Firm Size

Deloof (2003), Lazaridis and Tryfonidis (2006), Padachi (2006), Raheman and Nasr (2007), Gill et al. (2010), Alipour (2011), Charitou et al. (2010), Napompech (2012), and many others have used firm size to examine the relationship between firm size and profitability for different industrial groups. A popular measure of firm size in corporate finance is sales (Dang, Li & Yang, 2018). Considering the purpose of this study, sales is appropriate because it is more related to product market than any other measure (Dang et al., 2018). In addition, sales reflect turnover, input – output and in general productivity. Hence, sales is a more sustainable gauge of firm performance. Firm size, as determined by

the natural logarithm of sales (in sale), has been established as being significantly associated with firm profitability (Deloof, 2003; Pervan & Visic, 2012; Niresh & Thirunavakkarasu, 2014).

Pervan and Visic (2012) noted that large firms have better opportunities to gain better interest rates and discount rates. The discount and interest rates enjoyed by large firms is because they buy large quantities of goods commensurate with their size. Consumption of large quantities of goods due to size leads to large quantity buying and qualifies firms for discount rates. They further added that large firms have stronger bargaining power over smaller firms. Suppliers of goods tend to allow for preferential treatment when matters that concern large firms are discussed. Doğan (2013) observed that large firms have more competitive power/advantage because of their market share compared to small firms. Pervan and Visic (2012) and Doğan (2013) observations of interest and discount rates show that competitive advantage allows large firms to enjoy economies of scale through low operating costs and innovations. These economies of scale reduce the unit cost of production and translate to profitability for large firms. Negotiation power enables firms to demand more favourable credit terms. Favourable credit terms ease financing options, and large businesses can often finance their operation using their suppliers' resources to earn profits. Profits earned through the various benefits of large size mitigate incidences of business failure and bankruptcy.

Several studies have revealed that a positive relationship exists between firm size and profitability. Pervan and Visic (2012) studied the influence of firm size on business success

with 18,492 observations for the period from 2002 to 2010. They revealed a positive and significant relationship between firm size and profitability. Abiodun (2013) and Doğan (2013) found a significant and positive relationship between firm size and profitability. While Abiodun (2013) evaluated 80 non-financial firms listed on the Nigerian Stock Exchange from 2003 to 2009, Doğan (2013) investigated the effect of firm size on profitability using 200 companies listed firms on the Istanbul Stock Exchange in Turkey from 2008 to 2011. In association with WCM, several studies also found a significant and positive relationship between firm size and profitability. Makori and Jangongo (2013), Padachi (2006), and Mathuva (2010) confirmed a significant and positive relationship between firm size and profitability. These findings also reflect the fact that large firms can more easily absorb shocks that may arise due to environmental influences and other macroeconomic conditions than small firms.

2.8.2 Financial Debt Ratio

Debt ratio measures a firm's use of leverage and reveals the percentage of debt a firm uses to finance its operations (Raheman & Nasr, 2006). Deloof (2003), Lazaridis and Tryfonidis (2010), Gill et al. (2010), Chariton et al. (2011), Napompech (2012), and Stephen and Elvis (2011), amongst others, have used debt ratio as a control variable to determine the relationship between WCM and the profitability of firms.

The debt ratio is calculated as: the total liabilities (financial debt) divided by total assets. Assets may include both tangible and intangible resources while liabilities may also include both short- and long-term debts. Pervan and Visic (2012) noted that the debt ratio indicates

the solvency of a firm and its ability to pay obligations when due. A lower ratio indicates that the firm relies less on borrowing in financing its operations as compared to other sources. A higher ratio indicates that the firm uses a greater percentage of debt to finance its operations or to generate profits (Obert & Olawale, 2010; Pervan & Visic, 2012). A high ratio therefore exposes a firm to risk and makes it vulnerable to any unfavourable economic conditions or contingencies that may arise (Pervan & Visic, 2012). While a lower ratio is desired for the growth and survival of firms, large and stable firms can take on more debt in favourable economic conditions without incurring risk or exposing the firm to unnecessary risks. Noting the importance of lower ratio, Pervan and Visic (2012), Raheman and Nasr (2007), Al-Shubiri (2012), Jayarathne (2014), Napompech (2012), and Obert and Olawole (2012) found a significant and negative relationship between profitability and debt ratio when they studied it in association with WCM.

2.8.3 Sales Growth

Sales growth relates to the strategy adopted by a firm to maximize the objective of revenue generation. Akinlo (2012) stated that sales growth indicates a firm's business opportunities and is a principal factor that determines the health and whether a business is on-going. Sales growth enhances firm profitability (Chariton et al., 2010; Makori & Jagongo, 2013). Deloof (2003), Chariton et al. (2010), and Jayarathne (2014) have adopted sales growth as a control variable in determining the profitability of firms. They noted that under estimating sales might lead firms to stagnation, increased costs of inventory and finished goods holdings while a firm may lose its valued customers to competitors arising from non-performance.

Sales growth is determined by calculating the average of sales volume growth from year to year $[(\text{this year's sales} - \text{previous year's sales}) / \text{previous year's sales}]$. Previous studies have established a significant and positive relationship between sales growth and profitability (Deloof, 2003; Makori & Jagongo, 2013; Chariton et al., 2010; Jayarathne, 2014). Their results indicated that the operational efficiencies of firms must be translated to sales. Sales growth is a major source of business revenue and mechanism that increase profitability. Hence, firm size, sales growth and financial debt ratios were used as control variables in this current study.

2.9 Some Explanations of Previous Research on WCM

Working capital management has undergone several successive development stages. Darun, Roudaki and Radford (2015) categorized these stages into four different eras. The first was the era of awareness between 1900 and 1940, which settled for an understanding of the concept and sought common ground upon which working capital practices and theories could be evaluated. The second period was the pre- and post-World War II era from 1920 to 1950s in which liquidity and financing became the focus. The third was the industrial era of 1950 to 1980, and the fourth was the globalization era from 1990s to date.

Singh and Kumar (2014) argued that the initial neglect of WCM might have occurred for two reasons. First, working capital decisions occur frequently and their operations are routine in nature. Second, like investment decisions that are long-term in nature, working capital decisions and operation are routine and reversible through time. However, research in working capital was skeletal in the 1990s period, this research picked up in 2000 when

the financing capital of firms began to decline and supplementing funds through external finance became difficult. Cash, therefore, became a rare and expensive commodity. Wang (2002) examined the association between liquidity management and operating performance and between liquidity and corporate value in Japan and Taiwan. Empirical results revealed that both Japan and Taiwan showed a significant and negative relationship between CCC and ROA and CCC and ROE. The two exhibited sensitivity to industry factors. The findings of Wang (2002) upheld the fact that shortening the cash conversion cycle was associated with high profitability. Similarly, Deloof (2003) used 1,009 Belgian non-financial firms between 1992 and 1996 to determine the relationship between WCM and corporate profitability. Using correlation and regression analysis, he found a negative and significant relationship between gross operating income of Belgian firms and WCM measures. The results also concluded that the manner in which working capital is managed will determine its impacts on firm profitability. Therefore, managers could bring additional value to a firm and its shareholders by appropriately managing the working capital components.

Eljelly (2004) investigated the liquidity and profitability trade-off of companies in Saudi Arabia between 1996 and 2000. Using correlation and regression analysis, the study revealed a significant and negative relationship between profitability and liquidity measured by current ratio. The study gives credence to the notion that cash conversion and cash gap are more appropriate measures of liquidity than is current ratio. Firm size was found to be a significant factor, and analysis revealed that firms with a higher current ratio and a longer cash conversion cycle exhibited a higher negative relationship with

profitability. Size is important to the firm and brings with it several benefits. In line with the findings of Eljelly (2004), Filbeck and Krueger (2005) revealed that the 960 firms from *CFO Magazine*'s annual survey from 1996 to 1999 could reduce financing cost of operations or increase funds available for expansion through reducing the amount of resources tied up in current assets.

Lazaridis and Tryfonidis (2006) examined the relationship between WCM and profitability of 131 firms listed on the Athens Stock Exchange between 2001 and 2004. The study established that a significant relationship existed between the cash conversion cycle and profitability as measured by gross operating profit. Lazaridis and Tryfonidis (2006) concluded that managers could create more profit and value for their firms by optimizing the cash conversion cycle and its components. Padachi (2006) found the same results using a sample of 58 small manufacturing firms from 1998 to 2003 in Mauritius to determine trends in WCM and its influence on firm performance. Padachi (2006) found a significant relationship between WCM (cash conversion cycle, inventory, receivables and payable) and profitability measured by return on assets. Shah and Sana (2006) found a negative relationship between gross operating income in the Pakistani oil and gas sector and the inventory period, sales growth, accounts receivable and the cash conversion period. Accounts payable had a positive relationship; however, the negative relationship found between sales and profitability might be associated with the sensitivity or peculiarities of the sector studied.

In 2007, this line of research continued unabated. Raheman and Nasr (2007) evaluated 49 Pakistani firms between 1999 and 2004; Vishnani and Shah (2007) evaluated 23 Indian consumer electric industries between 1994 and 1995 in India, and Garcia-Teruel and Martinez-Solano (2007) evaluated SMEs in Spain between 1996 and 2002. Raheman and Nasr (2007) found a significant and negative relationship between all the measures of WCM and profitability while a positive and significant relationship was found between the size of a firm and profitability. Garcia-Teruel and Martinez-Solano (2007) found a significant and negative relationship between the various WCM variables and the adopted measures of profitability. However, the results could not account for the relationship between profitability and accounts payable because the relationship lost significance when endogeneity and other factors were controlled for. Generally, the findings of Raheman and Nasr (2007), Vishnani and Shah (2007), and Garcia-Teruel and Martinez-Solano (2007) agreed with the earlier studies of Padachi (2006) and Lazaridis and Tryfonidis (2006).

Afza and Nazir (2007a) examined the choice of either aggressive or conservative WCM for 208 companies listed on Karachi Stock Exchange (KSE) between 1995 and 2005. They found a negative relationship between working capital policies and the profitability of firms. Afza and Nazir (2007b) used 263 public companies listed on the KSE to determine the relationship between aggressive and conservative working capital policies for 17 industrial groups. Their study found significant differences for the various policies and across different industries when ANOVA and LSD tests were conducted. Ordinary least square affirmed a negative relationship between profitability measures and the degree of aggressiveness of WCM investment and financing policies. Ganesan (2007) determined

the efficiency of telecommunication equipment industries using a sample of 349 companies between 2007 and 2009. He found a negative association between profitability and liquidity. Ganesan further established that each component of WCM had an independent impact. The study recommended that telecommunication industries need to improve upon their working capital to bring forth benefits for them and reduce reliance on external funding.

Salawu (2007) investigated the industrial practices and the aggressive/conservative WCM policies of 15 diverse industrial groups for 42 firms listed on the Nigerian Stock Exchange between 1994 and 2003. The analysis of firms showed that the various industries exhibited distinctive and significantly different policies. For the nature of asset policies, the industries showed remarkable stability beyond the period of study, and the findings were like those of Afza and Nazir (2007b). Salawu (2007) found a negative and significant correlation between industry assets and liability policy and recommended that, because WCM policies are industry-specific, firms should consider the peculiarities of their industry before adopting any policy.

Narender, Menon, and Shwetha (2008) and Singh and Pandey (2008) investigated the determinants and components of WCM. Narender et al. (2008) found a significant impact of debt ratio and firm size on the WCM of Indian Cement Companies. Singh and Pandey (2008) established a significant impact of WCM on Hindalco Industry Limited in India. As a result, they encouraged firms to improve their fixed and current assets, as they play key roles in determining profitability and success. Samiloglu and Demirgunes (2008) and

Appuhami (2008) evaluated the effects of WCM on firm profitability. Samiloglu and Demirgunes (2008) used 5,843 firm/quarters data for companies listed on the Istanbul Stock Exchange between 1989 and 2007. The study found a negative relationship between accounts receivable, inventory, leverage and profitability, while sales (growth) was positively related to profitability. Appuhami (2008) found a significant relationship of WCM requirements for the 416 industrial firms he studied in Thailand.

Mathuva (2009) studied the influence of components of WCM on the profitability of 30 firms listed on Nairobi Stock Exchange for the period 1993 to 2008. He found a significant and negative relationship between the account collection period, cash conversion and firm profitability. The results also revealed a significant and positive relationship of the inventory period and the payment period on profitability. Mathuva (2010) argued that high inventory reduces the incidences of stock-out and its consequent effects on the firm. Falope and Ajilore (2009), Nobanee and Al-Hajjar (2009), and Zariyawati, Annur, Taufiq, and Rahim (2009) found a significant and negative relationship between WCM components and profitability. Falope and Ajilore (2009) used 50 non-financial firms listed on the NSE between 1996 and 2005 and concluded that differences existed in the financial and working capital needs of small and large firms in Nigeria. Nobanee and Al-Hajjar (2009) used return on investment for measuring the profitability of 2,123 non-financial firms listed on Tokyo Stock Exchange from 1990 to 2004 and Zariyawati et al. (2009) drew insights from 1,628 panel data from Malaysia from 1996 to 2006. The findings of Falope and Ajilore (2009), Nobanee and Al-Hajjar (2009), and Zariyawati et al. (2009) supported the findings of Deloof (2003).

Nazir and Afza (2009) examined 132 manufacturing firms from 14 diverse industry groups listed on the KSE to establish the WCM requirements and the determining factors of Pakistan firms from 2004 to 2007. Results showed that either too low or too high working capital renders the firm ineffective and reduces the benefits of WCM. They also found that external and internal factors were responsible for the variability in WCM. They adopted these internal and external factors to establish the determinants of working capital requirements of firms' performance. Noreen, Khan and Abbas (2009) similarly determined the practices of WCM in Pakistan with the combined objectives of examining international cash management sales and foreign exchange activities. They found that decisions relating to WCM were centralized and recommended a decentralized process to enable firms to management working capital more effectively.

Sen and Oruc (2009) studied the efficiency level of WCM and return on assets of 49 firms listed on Istanbul Stock Exchange from 1993 to 2007. The study revealed a significant and negative relationship between the cash conversion cycle (with its other components) and return on assets. Sen and Oruc (2009) further observed that the decrease in sales and slowdown of cash flow during the global crisis necessitated a more intense application of WCM. This is because the obscurity about what the future holds hinders firms from steady investments in capital adequacy, and the only sensitive intervention remains a faithful application of WCM policy to intervene in the declining economic situations of firms to increase their profitability. Ramachandran and Janakiraman (2009) found mixed results while determining the relationship of WCM efficiency and EBIT. The study found that

CCC and payment day were inversely related to EBIT while accounts receivable had a positive relationship with EBIT.

Charitou et al. (2010), Dong and Su (2010), Muhamad and Saad (2010), and Danuletiu (2010) found a significant and inverse relationship between the measures of WCM and profitability in various contexts. Charitou et al. (2010) evaluated 43 non-financial firms listed on the Cyprus Stock Exchange between 1998 and 2007. They noted that the global financial crisis had created a burden on firms, and the best option left to enhance profitability and increase shareholder value was the efficient application of WCM policies. This also supports the earlier position of Sen and Oruc (2009) who emphasized the need for firms to stay focused on WCM policy in times of liquidity crises. Dong and Su's (2010) study was based on listed firms in Vietnam from 2006 to 2008. They analysed only CCC. Mohamad and Saad (2010) randomly selected 172 listed firms in Malaysia between 2003 and 2007. They determined market valuation using Tobin's Q, return on investment and return on assets, which all showed negative results. Danuletiu (2010), who investigated 20 companies between 2004 and 2008 using ALBA country companies, found no significant relationship between WCM and profitability rates. The insignificant results might arise from the inclusion of different industry sectors in Danultiu's analysis.

Working capital management during a liquidity crisis is critical. Mohamad and Saad (2010) emphasized that, when cash becomes expensive and threatens the survival of firms like the Malaysian experience during the global economic crisis, WCM optimization is key to regaining solvency and guarantees efficient operational activities. Gill et al. (2010)

examined 88 American firms listed on the New York Stock Exchange from 2005 to 2007. They found a significant and positive and significant and negative correlation of the cash conversion period and accounts receivable with profitability as measured by gross operating profit respectively. Inventory period, payable period, and firm size were insignificantly correlated with profitability. Raheman, Afza, Qayyum, and Bodla (2010) studied a sample of 204 manufacturing firms listed on the Karachi Stock Exchange in Pakistan from 1998 to 2007 and found a significant and negative impact of the cash conversion cycle, net trade cycle, inventory and receivables on net operating profit. Accounts payable was found to be positively correlated with net operating profit. However, the relationship of both receivables and payables with net operating profit was not validated. Banos-Caballero et al. (2012) studied Spanish SMEs between 2001 and 2005. They found that firms operate with a certain level of cash conversion cycle length that guarantees a desired target, noting that older firms and companies with a greater cash flow experience a longer cash cycle.

The findings of Karaduman, Akbas, Caliskan and Durer (2010) are consistent with those of Deloof (2003), Eljelly (2004), Shah and Sana (2006), Lazaridis and Tryfonidis (2006), Garcia-Teruel and Martinez-Solano (2007) and Zariyawati et al. (2009) who also found a significant and negative relationship between WCM and various measures of profitability. Karaduman et al. (2010) found a negative and significant relationship using 140 companies randomly selected from the Istanbul Stock Exchange from 2005 to 2008.

In addition to business stability, increased shareholder value and profitability, Ngwenya (2010) noted that WCM was a source of healthy competition. He used a sample of 69 firms listed on the Johannesburg Stock Exchange from 1998 to 2008. His findings revealed that the cash conversion cycle and accounts receivable were significant and negatively correlated with gross operating profit while inventory and accounts payable had a positive and significant association with gross operating profits.

Nobanee et al. (2011) evaluated 2,123 Japanese non-financial firms between 1990 and 2014. They found a significant and negative relationship between the cash conversion cycle and return on investment. Using a sample of 3,786 firms, between 1990 and 2006, Kieschnick et al. (2011) concluded that additional investments made in WCM yielded more than proportional profit, but required the influence of sales, the firms' debt structure, financial constraints and other risks. Generally, decreases in the cash conversion cycle increase profitability and shareholders' value. Kieschnick et al. (2011) drew insights from American corporations and reiterated the need for managers to devise more tactical ways of making investments in working capital to yield the desired results while noting that appropriate measures should be taken to deal with the macroeconomic conditions that negatively influence investment prospects in working capital. Ching et al. (2011) concluded that the debt ratio and cash conversion period were negatively correlated with firm profitability.

In contrast, Alam, Ali, Rehman and Akram (2011), Arunkumar and Ramanan (2013), and Haq, Sohail, Zaman and Alam (2011) all revealed a positive association between WCM

requirements and measures of profitability evaluated. Afeef (2011) found that the cash conversion cycle and accounts payable were insignificantly associated with operating profit to sales while accounts receivable and inventory showed a negative and significant relationship with operating profit to sales. Afeef's (2011) findings contradicted those of Sharma and Kumar (2011) and Ali (2011). Sharma and Kumar (2011) obtained their results from the data of 263 non-financial firms in India from 2000 to 2008. They found that the cash conversion cycle and accounts receivable were positively correlated with profitability while accounts payable and inventory had negative correlations with profitability. Ali (2011) evaluated 160 textile firms in Pakistan for the period from 2000 to 2005. Both the cash conversion cycle and inventory were positively correlated but accounts receivables and payable were negatively correlated with profitability. The peculiarity of these results may be because of the differences in industry and sample sizes.

Karaduman, Akbas, Caliskan, and Durer (2011) used 1,198 manufacturing firms in Turkey between 2005 and 2009 and found a negative and significant association between the measures of WCM evaluated and profitability. Azam and Haider (2011) and Coskun and Kok (2011) found significant inverse associations of the cash conversion cycle, accounts payable and inventory with measures of profitability but accounts payable had a significant and positive association with the cash conversion cycle.

Thus, WCM components significantly affect the profitability of firms and need to be managed optimally (Stephen & Elvis, 2011). Alam et al. (2011) confirmed this relationship, evaluating 65 randomly selected listed firms in Pakistan from 2005 to 2009.

They found that the sustainability of firms, that had been neglected, was brought to the forefront by the liquidity squeeze of global economic crisis. The concept of liquidity has regained importance in the literature of finance and efficient WCM because liquidity is key in providing the free cash flow that will enhance the operations of firms. Sen and Oruc (2000), Chariton et al. (2010) and Mohamad and Saad (2010) have all validated the importance of WCM in easing liquidity challenges faced by firms. In addition, Alam et al.'s (2011) findings revealed that a significant association existed between WCM components and market value and the profitability of firms. Mohamad and Saad (2011) confirmed the significant correlation of WCM with market valuation using the Malaysian economy.

However, Wang (2002), Deloof (2003), Eljelly, (2004), Lazaridis and Tryfonidis (2006), Garcia-Teruel and Martinez-Solano (2007), Zariyawati et al. (2009), Karaduma et al. (2010), Al-Debi'e (2011), and Karaduman et al. (2011) found a negative relationship between the measures of WCM and profitability. Alipour (2011), and Bieniasz and Golas (2011) confirmed these findings. Similarly, Owolabi and Alu (2012), Akinlo (2012), and Ogundipe et al. (2012) found a negative and significant association between WCM and profitability. Owolabi and Alu (2012) findings were insignificant and contradicted the results of Abuzayed (2012) who had found positive results with all the dimensions of WCM. Also, the findings of Owolabi and Alu (2012) deviated from the findings of authors who had established a negative association between WCM and profitability because it revealed an insignificant association. Such differences may be associated with the state of

economy as Akinlo (2012) emphasized and include factors such as limited access, low sales volume and constraints of market.

Others have studied factors related to profitability as well. Stephen and Elvis (2011) noted that WCM significantly influenced the profitability of SMEs in Kenya. Samson, Mary, Yemisi and Erekpitan (2012) studied 30 SMEs in Nigeria for 2009. They said that managers could create more value for SMEs by reducing the days committed in receivable management and inventory management. This practice would increase profitability and reduce the risk a firm faces (Dhar & Paul, 2011). Aygun (2012), Barine (2012), Mansoori and Muhammed (2012), and Vahid et al. (2012) found a significant and inverse association between WCM and profitability measures within the 2012 stream of working-capital research. Barine (2012), who studied 22 quoted firms on the Nigerian Stock Exchange for 2010, emphasized that the optimization of WCM comes with several benefits, but Nigerian firms were yet to enjoy these benefits. That was because unstable macroeconomic policies, low capacity utilization of firms due to infrastructural breakdowns, an unstable market, high costs of financing, and high interest rates characterize the Nigerian economy.

Vahid et al.'s (2012) study revealed that conservative investment policies combined with aggressive financing policies increased the profitability and value of firms. The result supported the findings of Dhar and Paul (2011), who encouraged firms to adopt an aggressive WCM policy with a minimal investment in current assets. They noted that an excessive level of current assets might create negative effects on profitability. Charitou et al. (2012) investigated emerging Asian countries from 1998 to 2010 using a sample of 728

firm observations while Nyamao, Patrick, Martin, Odondo, and Simeyo (2012) evaluated 113 small scale enterprises in Kenya for the period 2007 to 2010. They divided the sample into 72 trading and 41 manufacturing firms to determine the effects in different sectors; they all revealed significant and positive relationships between WCM and firm profitability.

Some believe that the objective of WCM is directed at both the liquidity and profitability of firms (Nyamao et al., 2012), but Bhunia and Das (2012) believed otherwise. They used a sample of 50 SMEs in India for the period from 2003 to 2010 and noted that WCM had a minimal relationship with profitability and found liquidity not to be associated with profitability. However, their study focused on private companies, and, in a private business that is not well regulated, owners may supply funds at irregular intervals to mitigate the incidences of liquidity crises. This situation may make liquidity insignificant in an analysis.

Muhammed, Jan, and Ullah (2012) studied WCM influence on the profitability in the textile industry in Pakistan. Using a sample of 25 companies, the study revealed that an increased inventory period and cash conversion cycle improved profitability and that accounts payable should be reduced. Usama (2012) found that the inventory period and the accounts receivable period should be reduced to increase profitability while the cash conversion cycle and accounts payable should be extended. The studies of Usama (2012) and Muhammed et al. (2012) have differences, although the two studies were undertaken in the Pakistani economy. The differences may be attributed to the industries studied; as Usama's (2012) study was based on 18 firms in the food sector listed on Karachi Stock

Exchange for the period from 2006 to 2010 while Muhammed et al. (2012) evaluated 25 textile firms listed on the Karachi Stock Exchange for the period from 2001 to 2006.

Tauringana and Afrifa (2013), Almazari (2013), Arshad and Gondal (2013), Tufail et al. (2013), and Korankye and Adarquah (2013) all found a significant and negative relationship between WCM and profitability. Tauringana and Afrifa (2013) determined the importance of WCM using 133 SMEs from Alternative Investment Market (AIM) in the United Kingdom for the period from 2005 to 2009. They found an inverse relationship between the measures of WCM and return on assets. Almazari (2013) evaluated the influence of WCM on the profitability of 8 Saudi cement companies for the period from 2008 to 2012. The study found a significant and inverse relationship with gross operating profit while sales was positively correlated with profitability. Arshad and Gondal (2013) used 21 cement firms listed on the Karachi Stock Exchange from 2004 to 2014 while Korankye and Adarquah (2013) investigated 6 manufacturing firms in Ghana from 2004 to 2011.

Akoto et al. (2013) evaluated 13 manufacturing firms listed on the Ghana Stock Exchange for the period from 2005 to 2009. They found a positive impact of CCC and accounts payable on return on equity, though accounts payable was found to be insignificant. Accounts receivable had a negative relationship with return on equity. However, this finding contradicts that of Korankye and Adarquah (2013) in Ghana. The differences in their studies raises concern and necessitates more research in Ghana because they evaluated

the same industry and had similar sample sizes. The differences that arose may be from differences in methodological analyses.

Oladipupo and Okafor (2013) evaluated the contributions of WCM to corporate profitability and the dividend pay-out ratio of 12 listed manufacturing firms in Nigeria for the period 2002 to 2006. Oladipupo and Okafor (2013) found an inverse relationship between the measures of WCM and profitability. Measures of dividend pay-out and profitability showed a positive and significant association while the combination of WCM and corporate profitability on dividend pay-out shows an insignificant association. More evidence of inconsistency in results occurred. Makori and Jagongo (2013) investigated how WCM could improve the profitability of manufacturing and construction firms in Kenya. They evaluated 10 firms for the period 2003 to 2012. They found a positive association of accounts payable and the inventory period with profitability while the cash conversion cycle and accounts receivable revealed a significant and negative relationship with profitability. They argued that management could increase firm value (profitability) and shareholder value by reducing the accounts receivable days and extending payment periods to creditors in a way that retains their relationship and guarantees adequate funding for internal operations. They also reported that firm size, sales growth and current ratio significantly influence profitability.

Gul et al. (2013) studied SMEs from Pakistan for the period 2006 to 2012 and confirmed the earlier study of Azam and Haider (2011) who found similar results. Gul et al. (2013) found an inverse relationship of the cash conversion cycle, accounts receivables and

inventory with profitability measured by return on assets while accounts payable and sales growth showed a positive relationship with profitability. Supporting Vahid et al. (2012) and Dhar and Paul (2011), Tufail et al. (2013) found a negative relationship between the aggressiveness of WCM policies and firm performance. Liquidity and firm size had a positive association while the equity ratio had a negative association with profitability. They determined this using a sample of 117 textile firms listed on the Karachi Stock Exchange for the period from 2005 to 2010. Panigrahi and Sharma (2013) found a negative relationship among accounts payable, accounts receivable, inventory and profitability. The cash conversion cycle had a positive relationship with profitability. This finding aligned with Ali (2011), Sharma and Kumar (2011), Abuzayed (2012), Charitou et al. (2012), Usama (2012) and Nyamao et al. (2012) who found a positive relationship between the cash conversion cycle and profitability.

Enqvist et al. (2014), Agha (2014), Iqal et al. (2014), and Ademola (2014) found a significant and negative relationship with various measures of profitability. Enqvist et al. (2014) determined the influences of WCM on the profitability of different business cycles of all firms listed on the Nasdaq and the OMX Helsinki, Finland Stock Exchange for the period 1990 to 2008. The negative relationship between measures of WCM and return on assets and gross operating income implied that the significance of WCM on profitability was greater in poor economic conditions. They concluded that economic conditions exhibited measurable influences on the components of WCM and their relationships with profitability. Agha (2014) confirmed a similar relationship with profitability using the

Glaxo Smith Kline Pharmaceutical Company listed on Karachi Stock Exchange in Pakistan for the period from 1996 to 2011.

In contrast, Ademola (2014) found a positive but insignificant relationship of the cash conversion period and aggressive investment policy with net operating profits. The study evaluated a sample of 12 manufacturing firms in Nigeria from 2002 to 2011. The accounts collection period had a significant and negative relationship with net operating profits while the inventory conversion period had a negative and insignificant result. The insignificant and positive relationship found between aggressive investment policies by Ademola (2014) contradicts the earlier negative association that Vahid et al. (2012), Dhar and Paul (2011) and Tufail et al. (2013) found. The inconsistency may be due to the effects of the global economic meltdown in 2007 and 2008 that significantly affected Nigerian firms. This is because, during an economic crisis, cash becomes an expensive commodity and threatens the liquidity position of firms (Chariton et al., 2010; Sen & Oruc, 2009; Mohamad & Saad, 2010).

Banos-Caballero et al. (2014) examined WCM, corporate performance and financial constraints using selected samples of non-financial companies in the United Kingdom. They observed that, with lower levels of WCM, managers may prefer to increase working capital investments to increase sales and enjoy discounts from suppliers for early payment. They noted that levels of working capital exist that render an “investment” negative. This may arise because high investment at that level decreases a firm’s value and increases interest expenses. This also exposes firms to a high probability of bankruptcy and credit

risks. However, bankruptcy and risk are the issues working capital efficiency tends to resolve (Dhar & Paul, 2011). Banos-Caballero et al. (2014) recommended that firm managers should keep an optimal level of working capital that guarantees investment in working capital viability and avoids deviations from the optimum level and core objectives. Jayarathne (2014) examined 20 manufacturing firms listed on the Colombo Stock Exchange from 2008 to 2012. He found a negative association of the cash conversion cycle, the accounts receivable period and account inventory period with net operating profit while accounts payable had a positive association with net operating profit. The result supports the earlier studies of Coskun and Kok (2011) and Gul et al. (2013) who found the same results from different context.

Ukaegbu (2014) determined the profitability of developing economies in Africa using WCM. He obtained data from Egypt, Kenya, Nigeria, and South Africa for the period 2005 to 2009. The findings revealed that the cash conversion cycle and accounts receivable had a significant and negative association with profitability measured by gross operating profit, while accounts payable and inventory had a significant and negative association with operating profit. The study noted that the relationship of accounts payable with profitability was only in Egypt and was the reverse in other countries. Similarly, Afeef (2014) found a negative and insignificant relationship of CCC, accounts payable, accounts receivable and inventory on return on assets. When further regressed on operating profit to sales as a measure of profitability, all turned negative and were highly significant. This confirms the assertion that Deloof (2003), Padachi (2006), Barine (2012), Bhunia and Das (2012),

Raheman et al. (2010), and Charitou et al. (2010) made that effective and efficient WCM increases the profitability of firms.

Ayub (2015) found an insignificant relationship between the cash conversion cycle, accounts payable, accounts receivable, inventory and profitability of 138 Pakistani textile firms listed on the Karachi Stock Exchange from 1999 to 2007. The study confirmed the findings of Afeef (2014), Owolabi and Alu (2012), and Al-Debi'e (2011) who also found insignificant relationships between WCM measures and profitability. In contrast, Iqbal and Zhuquan (2015) and Nobanee et al. (2014) found a negative relationship. Nobanee et al. (2014) evaluated 2,123 non-financial firms in Japan between 1990 and 2004. They concluded that Japanese firms could increase their performance by shortening the inventory conversion period and receivables period while payment to suppliers should be slowed to improve their operations internally and improve performances of firms.

Iqbal and Zhuquan (2015) evaluated 85 Pakistani firms from 2008 to 2013. They found a negative relationship between all the measures of WCM and profitability and suggested that managers could increase profitability and firm value by substantially reducing measures of WCM while maintaining an optimal cash conversion cycle to increase profitability. WCM has enjoyed widespread acceptance of influencing the profitability and value of firms (Banos-Caballero, 2014).

Banos-Caballero et al. (2014) studied the relationship between WCM, corporate performance and financial constraints and found that the relationship was U-shaped, contrary to the general direction and the theory of WCM. This means that an optimal

investment level exists in WCM balancing benefits and costs to maximize firm performance. They confirmed that managers prefer to increase investments in WCM that increase sales and guaranteed discounts for early payment. They found that a level of WCM exists at which higher investments will lead to a negative value and increase interest expenses. Such a level increases the probability of bankruptcy and creates additional expenses or credit risks. Managers are therefore encouraged to keep an optimal level that avoids deviations from enhancing firm value. Aktas et al. (2015) also supported these notions. They found that WCM was valuable for firms that are financially constrained to fund a growth strategy. They further showed that an optimal level of WCM investment that increases stock, operating performance and helps in redeploying underutilized resources exists. Aktas et al. (2015) obtained these results using 30 firms in the United States from 1982 to 2011 and concluded that WCM helps in expanding investments.

Murthy (2015) examined the interrelationship between WCM, financing constraints and firm financial performance in the six Gulf Cooperation Council (GCC) countries with a sample of 153 large manufacturing firms. Murthy's study found that the average receivables period levels significantly influenced the performance of GCC manufacturing firms measured by pre-tax return on sales. This suggests that the average receivable period had a significant and negative impact on the performance of GCC manufacturing firms. The study also found that inventory levels did not impact the performance of firms. This means that lower investment in accounts receivable results directly in better profits with minimal assets. This will lead to better pre-tax return on assets. Wasiuzzaman's (2015) study on firm value in an emerging market in Malaysia and the influence of WCM using

192 firms from 1999 to 2008 confirmed Murthy's (2015) findings. Wasiuzzaman (2015) found that improvement in WCM efficiency increased firm value. The result was significant for financially constrained firms, while it was insignificant for unconstrained firms.

In a varied opinion, Maswadeh (2015) determined the association between WCM strategies and the profitability of 8 pharmaceutical corporations in Jordan for the period from 2009 to 2013. The study classified the strategy into aggressive, moderate and conservative strategies to determine their effects on profitability. Maswadeh (2015) found that WCM strategy was more significantly associated with profitability than the moderate strategy, while the aggressive strategy followed. This study was similar with Vahid et al. (2012), Dhar and Paul (2011) and Tufail et al. (2013) who found a negative relationship between aggressive WCM policy and the profitability of firms. Maswadeh (2015) found that an aggressive strategy was the last option while the Jordanian Pharmaceutical Corporation did not adopt a conservative WCM strategy.

Nha and Loan (2015) evaluated WCM and firm value of 450 listed companies on the Ho Chi Minh City and Hanoi Stock Exchanges between 2006 and 2014. The study concluded that the relationship of WCM with profitability in manufacturing firms in Vietnam was non-linear and supported the trade-off theory between firm value and the effectiveness of WCM. Their study revealed that an optimal level of WCM exists that maximizes the profitability and value of firms. Similarly, Afrifa and Padachi (2016) studied the influence of WCM level on SME profitability of 160 Alternative Investment Market (AIM) firms

between 2005 and 2010. The results produced a concave (quadratic) relationship between WCM level and profitability, noting that an optimal level of WCM exists that maximizes profitability. Additional analysis by “Benchmarking” and creating a “Deviation Point” revealed that a deviation either below or above the optimum level decreased profitability. While deviation either way affected profitability, Afrifa and Padachi (2016) noted that the deviations were also significant at certain levels. The study shares some similarity with those of Nha and Loan (2015) and Banos-Caballero et al. (2014), which revealed that the relationship between working capital and performance was U-shaped in nature. They stated that an optimal level of investment exists in WCM that balances the benefits and costs that will consequently increase firm performance. This shows that WCM strategy is a continuous process enhancing operational activities and increasing firm performance if managed properly.

Deepa, Sivakumar, Deshmukh, and Malarkodi (2016) studied the influence of the cash conversion cycle on the performance of 40 coconut oil mills from Western Tamil Nadu between 2009 and 2013. They found that the cash conversion cycle, the liquidity level and the capital structure significantly influenced the performance of the coconut oil mills. The result was obtained by classifying the oil mills into an efficient group (70%) and an inefficient (30%) group. In addition to the factors that Deepa et al. (2016) offered, the earlier work of Nha and Loan (2015) outlined five key areas that could change the optimal level of WCM. They included: 1) the capability to increase assets, 2) financial leverage, 3) return on total assets, 4) classification of firm size according to total assets or net assets and 5) finally, operating cash flow of a firm.

Goel and Sharma (2015) summarized more factors that affected WCM. They studied trends and determinants of WCM efficiency and used a sample of 1,200 Indian manufacturing firms from 2004 to 2013. Their samples were divided into 11 industries to determine the influence of exogenous variables, specific and macroeconomic factors that affect WCM efficiency. The study found that factors like debt, size, age of the firm, the proportion of fixed net assets to total assets and profitability significantly affected firms while macroeconomic (GDP and interest rates) factors were found to be insignificant. They also found that WCM increased and decreased prior to and during the economic crisis. Goel and Sharma (2015) concluded that their study would give greater insight into WCM practices and how managers could combine the mixture of the factors that enhance their profitability in India. They further recommended that future researchers should incorporate specific and macroeconomic factors to determine their influence on firm performance.

Madhou, Moosa, and Ramiah's (2015) earlier studies on the factors influencing WCM supported those of Deepa et al. (2016) and Goel and Sharma (2015). Madhou et al. (2015) studied the determinants of corporate profitability using a sample of 1,751 Australian firms from 2003 to 2008. They found that size and debt ratio significantly affected profitability in the three models used. Madhou et al. (2015) noted that both surplus and negative working capital had a positive relationship with the coefficient of "cash" – while the "debt ratio" negatively influenced corporate governance ratings. Similarly, a negative relationship existed between accounts payable and profitability while accounts receivable was positively correlated with profitability. Although the study recommended an optimal

adoption of working capital, they said that risk management should be added to the traditional variables of inventory, cash, accounts payable and account receivables.

El-Mande and Shuaibu (2016) examined WCM with respect to profitability for 10 food and beverages listed firms in Nigeria. Using a sample of 10 firms examined from 2004 to 2014, they found a significant and positive association between inventory and accounts receivable with profitability while the cash conversion cycle and accounts payables showed a significant and negative association with profitability. Their study concluded that managers should optimize their WCM policies by decreasing the cash conversion cycle and making free cash flow available to fund their operations and add value to their firms. Kasiran, Mohamad, and Chin (2016) evaluated the efficiency of WCM on SMEs in Malaysia. They randomly selected 24 SMEs from the database between 2010 and 2013. Their results showed that the selected firms (SMEs) were less efficient in managing their working capital during the period under review. Sharma and Kaur (2016) also found a significant relationship between liquidity and profitability of Bharti, Airtel Telecom companies between 2007 and 2014. Hence, the limitations from these studies examined above motivated the present study.

2.10 Research Gap

The present research found significant research gaps in the literature reviewed relating to WCM and the profitability of firms. This begins with the consideration of comprehensive WCM measures. Unlike prior studies that only evaluated four variables, this present study

considered comprehensively five WCM measures in determining the relationship between WCM and firm performance.

First, although existing studies have contributed to WCM and firm performance literature, but they have not addressed the recommendations and issues raised by Filbeck and Krueger (2005), Sen and Oruc (2009), Ali and Khan (2011), Kieschnick et al. (2013), Mathuva (2011), Enqvist et al. (2014) and Goel and Sharma (2015) on the effects of macroeconomic conditions on WCM efficiency. Mirza and Javed (2013) noted that macroeconomic conditions of a country significantly affect WCM efficiency in multiple ways, while Kieschnick et al. (2013) stated that macroeconomic conditions negatively influence investment prospects in WCM. Ali and Khan (2011) further added that macroeconomic factors such as interest rates, inflation rates and GDP exert significant pressure on working capital efficiency. Enqvist et al. (2014) stated that economic conditions exhibit measurable influences on the relationship between WCM and profitability.

The importance of attaining a stable macroeconomic environment in which firms can operate cannot be overemphasized because it underscores the efficiency of WCM. Mathuva (2013) observed that high and unstable interest rates and inflation rates decrease investments in WCM. Hence, Zariyawati et al. (2010), Akinlo (2012), and Wasiuzzaman (2013) opined that investment in WCM increases with better economic conditions. This study filled the gap by studying macroeconomic conditions as they affect WCM. Drawing insights from Boron and Kenny (1986), this present study adopted these macroeconomic conditions as “moderator variables” in determining the relationship between WCM and

firm performance in Nigeria, using contingency theory (Donaldson, 2001; Zeithaml et al. 1988; Kotler, 1994). According to Donaldson (2001), contingency theory argues that the enhancement of firm performances results from an alignment between the contingency factors (macroeconomic conditions) and a firm's strategy (WCM). Establishing this relationship adds to the corpus of literature on WCM and finance management generally and help create a new forum for further research on WCM area.

Second, Wasiuzzaman (2015) and Murthy (2015) noted that WCM gained academic interest more than ever before during the worldwide financial crisis of 2007-2008. They argued that WCM is considered more effective for financially constrained firms than for unconstrained firms. Owolabi and Alu (2012) contend that WCM is important for all firms because it creates value and increases firm profitability. Pavon and Visic's (2012) study added that seeking performance through WCM is a continuous process because firms exist and operate in an ever-changing environment. Such changes will continue to draw the attention of both practitioners and researchers. Similarly, Sen and Oruc (2009), Charitou et al. (2010), and Mohamad and Saad (2010) stated that WCM intervenes at all times but may be found to be more important when firms face liquidity challenges, especially during economic crises. This is because WCM optimization is a key to regaining the solvency of firms. The CBN (2010) report stated that the financial crisis of 2007-2008 affected firms in Nigeria, as some firms went into bankruptcy others were liquidated.

Given these opinions, the present study divided analysis periods into two distinct phases to study the issues. These include: 1) the period during the financial crisis (2007-2009) and

2) the period after the financial crisis (2013-2015). This was done to determine the variation in the liquidity states of Nigerian firms within these various periods and to evaluate the intervention of WCM in bringing solvency through the optimization of WCM variables. This issue has also been rarely studied in Nigeria. Thus, this study filled the gap by determining the significant differences between these periods using the Cramer Z statistic (Cramer, 1986).

The extant literature also exhibits varying opinions resulting from WCM analysis. For example, Deloof (2003) revealed that high WCM levels enabled firms to increase sales, enjoy discounts for early payments, and increased profitability and firm value. Conversely, Kieschnick et al. (2013) suggested that a higher level of investment in WCM would require additional financing expenses, which increases the probability of firms going bankrupt. These mixed findings are indications of non-linear or concave relationships between WCM and the profitability of firms (Banos-Caballero, 2013; Nha & Loan, 2015; Afrifa & Padachi, 2016). In other words, non-linear or concave or quadratic relationship describes the type of investment in WCM that is non-sequential and harbours the propensity to deviate. This concave level determines the optimal working capital level at which firm profitability is maximized and a deviation from this level affects the profitability of firms (Banos-Caballero 2013; Nha & Loan, 2015; Afrifa & Padachi, 2016).

The current study determined the optimal level at which investments in WCM maximizes firm profitability in Nigeria and investigated the effect of deviations from that optimal level on the profitability of firms in Nigeria. The study is similar in concept but different in

application from prior studies. For example, Banos-Caballero et al. (2013) determined a U-shape for firms in the United Kingdom, and Nha and Loan (2015) evaluated only manufacturing firms in Vietnam and used one variable while Afrifa and Padachi (2016) evaluated influences on SMEs using only one dimension of WCM. Hence, the present study is the first to determine the quadratic relationship of WCM and firm performance using comprehensive measures of WCM (CCC) with non-financial listed firms in Nigeria. Also, the effect of deviations from an optimal level on WCM was determined.

2.11 Summary of the Chapter

This chapter examined the interrelationship between WCM, macroeconomic conditions and firm performance. The chapter revealed that contingency theory would align macroeconomic conditions with WCM strategy to create a fit condition. Fit conditions, the study argues, can enhance firm performance. This is contrary to one-dimensional approach used by previous studies in determining the relationship between WCM and firm performance.

The chapter started with a discussion on the concept of firm performance, introduced the theories supporting the study, such as the pecking order theory and contingency theory, and established how WCM components affect the performance of firms. This was followed by determining the peculiarities of WCM research in Nigeria, the Nigerian economic conditions, and a brief discussion on the control variables. The later part summarized the discussion on WCM and ended with a determination of limitations of the existing literature and the need for further study.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents a detailed description of the methodology adopted in this research. Specifically, the chapter begins with an explanation of the research framework. Thereafter, the hypothesis development, research design, population, sampling and sampling process, the operational definitions of terms and variable measurements, the quantitative method, and qualitative methods are presented accordingly.

3.2 Theoretical Framework

Figure 3.1 presents the theoretical framework of this study. Drawing insights from previous studies (Deloof, 2003; Eljelly, 2004; Nobanee & Ellili, 2015) and the theoretical perspectives of pecking order theory and the contingency theory, this framework depicts the interactions between WCM variables (such as ARM, APM, INVM, CCC and CCE), economic conditions (inflation and interest rates) and the financial performance of firms. This study adopts three performance measures, namely, ROA, ROE and TQ to examine their variability and approaches that reflect the financial performance of firms.

The framework proposed in this study shows that WCM approaches in terms of ARM, APM, INVM, CCC and CCE, which are regarded as internal sources of funds can be used to improve firm performance (Deloof, 2003; Charitou et al., 2010; Eljelly, 2004; Madhou et al., 2015; Padachi, 2006; Smith, 1980). Thus, the choice of these WCM approaches is

supported by the pecking order theory, which proffers that internal sources of fund are cost effective and easily accessible compared to external sources (Myer & Majluf, 1984). In addition, the framework incorporates control variables such as firm size, sales growth and financial debt ratio to determine their impact on the association between WCM and firm performance.

Furthermore, the theoretical framework of this study is also guided by the contingency theory (Donaldson, 2001). The contingency theory's framework is built on three elements which are; 1) that an association exists between the contingency and the organizational structure, 2) that contingencies impact organizational structure, and 3) that a fit level of the organizational structure variable exists for each level of contingency, which leads to high performance. Conversely, a misfit leads to lower performance (Donaldson, 2001). The theory's assumption holds that the relationship between WCM and firm performance is dependent on contingency factors such as economic conditions (Rauch et al., 2009; Donaldson, 2001). Impliedly, the framework depicts the moderating effect of economic conditions (inflation and interest rates) on the relationship between WCM and firm performance.

Therefore, the framework of this study, first explains the direct relationship between WCM and firm performance. Second, it shows the interactions of control variable with WCM and firm performance. Third, it explains the moderating effect of inflation and interest rates on WCM and firm performance as denoted by the dotted line connecting economic conditions to the direct relationship between WCM and firm performance.

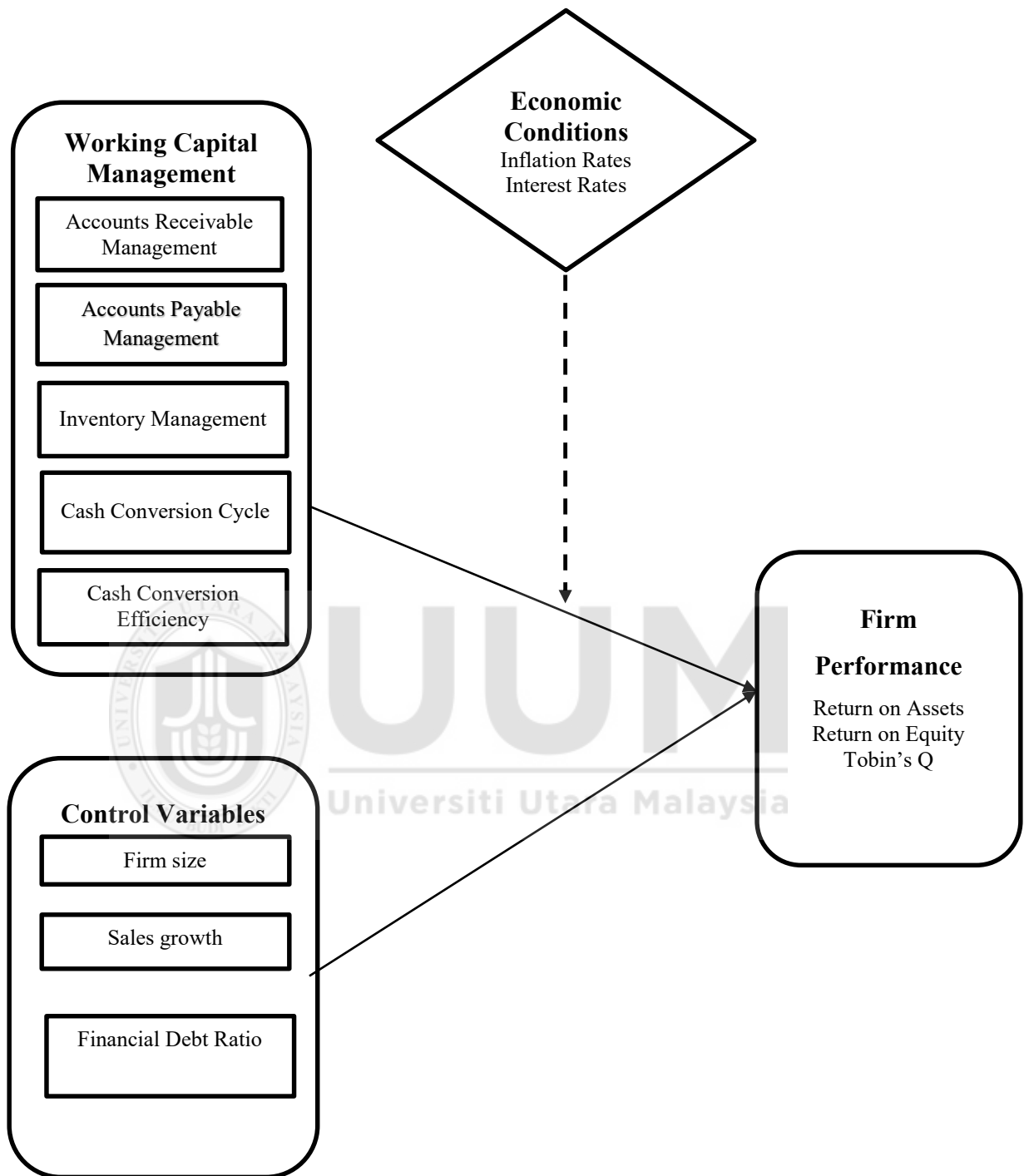


Figure 3.1
Research Framework

3.3 Hypotheses Development

The following subsections present arguments supporting the development of hypotheses in this study.

3.3.1 WCM and Firm Performance

The hypotheses formulated between variables of WCM (ARM, APM, INVM, CCC and CCE) and firm performance (ROA, ROE and TQ) are presented in the following subsections.

3.3.1.1 Accounts Receivable Management

Theories and evidences suggest that accounts receivable management (ARM) generally increases firms' cash flow and enhances firm performance. Specifically, the pecking order theory that emphasizes financing operations using internal fund, implicitly supports this. Prior research has associated ARM with firm performance (Deloof, 2003; Eljelly, 2004; Wasiuzzaman, 2015). A higher ARM period indicates that firms take a longer time to collect the amount owed to them by customers, while a shorter ARM period indicates that firms collect the amount owed by their customers early. These periods of collection have implications for maximizing firm performance.

A number of studies that examined the relationship between ARM and firm performance have found mixed results. For instance, some studies have found significant and negative relationships between ARM and firm profitability (Mathuva, 2013; Deloof, 2003; Vishnami & Shah, 2007; Akoto et al., 2013; Garcia-Tenuel & Martinez-Solano, 2007; Gill

et al., 2010; Raheman & Nasr, 2007; Wasiuzzaman, 2015; Ademola, 2014; Tauringana & Afrifa, 2013); while other studies have reported significant and positive relationships (Abuzayed, 2012; Sharma & Kumar, 2011). Since the findings of previous studies have been mixed, it therefore warrants further investigation. Similarly, previous studies have not considered the dimensions of firm performance in terms of ROA, ROE and TQ, holistically. Furthermore, given that previous findings have been based on developed economies, with very few on developing and underdeveloped countries, such as Nigeria, there is room for more research to discern the association between ARM and firm performance in Nigeria. Therefore, the following hypotheses are formulated:

H1a: There is a significant relationship between ARM and ROA.

H2a: There is a significant relationship between ARM and ROE.

H3a: There is a significant relationship between ARM and TQ.

3.3.1.2 Accounts Payable Management

Accounts payable management (APM) is a key component of WCM (Finney, 1994) and constitutes a significant source of short-term financing options (Deloof, 2003; Garcia-Teruel & Martinez-Solano, 2010). Prior studies which have examined the association between APM and firm performance have found mixed results. For instance, several studies have found negative relationships (Babu & Chalam, 2014; Ganesan 2007; Mansoori & Muhammad, 2012; Charitou et al., 2010; Banos-Caballero et al., 2012; Pike & Cheng, 2001; Saghir et al., 2011; Falope & Ajilore, 2009), whereby a shorter payment period to

suppliers is beneficial because it qualifies a firm for discounts and results in high profitability. Furthermore, they concluded that only less profitable firms wait longer to pay their bills. Waiting longer to pay bills has several implications, ranging from damaging the reputation of the firm to lower profitability. Contrary to the negative APM-firm performance relationship advocates, several other studies have demonstrated a positive relationship (Azam & Haider, 2011; Ponsian et al., 2014; Mathuva, 2010; Nilsen, 2002; Bougheas et al., 2009), arguing that profitability can be enhanced by having a longer payment period or by postponing payments to customers to alleviate the cash crunch or shortages through the renegotiation of payment terms. Such periods reduce a firm's need for cash and avoid stock-out situations.

Furthermore, it could be argued that the context and conditions under which these findings have emerged differ from Nigeria. Majority of these findings have emerged from developed countries, where the supply of bank funding is larger and accessible, while few have come from emerging and underdeveloped countries, where the capital market is inefficient. Most developing countries, as evidence suggests, cannot guarantee access to adequate finance for their firms, hence necessitating the use of trade credit (suppliers). In summary, the findings of prior studies have led to the conclusion that there is a significant relationship between APM and firm performance. This suggests that the management of payment behavior or schedules of a firm is a source of finance that is less costly and accessible compared to acquiring external financing. However, the direction of the relationship between APM and firm performance is not clear. Therefore, consistent with the thesis advanced by the pecking order theory, this study hypothesizes that the

management of payment schedules of firms to their suppliers is expected to enhance firm performance in terms of ROA, ROE and TQ. In line with the foregoing, the following hypotheses are proposed:

H1b: There is a significant relationship between APM and ROA.

H2b: There is a significant relationship between APM and ROE.

H3b: There is a significant relationship between APM and TQ.

3.3.1.3 Inventory Management

Inventory management (INVM) is a component of WCM, which refers to the management and acquisition of raw materials firms use for production. Both large and small firms require effective management of inventory to function. The level of inventory a firm holds allows it to optimize business operations and profitability. A higher inventory level suggests that firms hold a large stock and for a longer period, while a lower inventory level indicates a minimum inventory level with a high turnover rate. Typically, the level of inventory increases as demand increases but decreases when sales decline. Therefore, favorable business environmental conditions determine the inventory level a firm holds. Implicitly, inventory must be sold more frequently.

Either a high or low inventory level has implications for firm performance. As such, the management of inventory has been studied extensively by Deloof (2003), Muthuva (2013), Drury (2000), Panigrahi and Sharma (2013), Garcia-Teruel and Martinez-Solano (2007)

and Nwakaego et al. (2014), who found a negative relationship between INVM and firm performance; while Prempeh (2015), Blazenko and Vandezande (2003), Padachi (2006) and Nobanee (2009) found a positive relationship for the same. The mixed and inconsistent findings reported from the previous studies and the differences in business environmental conditions under which these studies emerged from, necessitate further understanding of the relationship between INVM and firm performance. As such, this study proposes that INVM influences the performance of firms in Nigeria, specifically in the rate of their ROA, ROE and TQ. Based on these arguments, the hypotheses below are formulated:

H1c: There is a significant relationship between INVM and ROA.

H2c: There is a significant relationship between INVM and ROE.

H3c: There is a significant relationship between INVM and TQ.

3.3.1.4 Cash Conversion Cycle

Cash conversion cycle (CCC) is a dynamic measure of WCM and measures the length of time cash is committed from purchases of raw materials through work-in-progress to finished goods until cash is realized from sales of the finished goods (Deloof, 2003; Nobanee et al., 2011). Several studies have adopted CCC to determine the efficiency of WCM (Deloof, 2003; Falope & Ajilore, 2009; Garcia-Teruel & Martinez-Solano, 2007). They explained that the idea of the CCC is to measure the liquidity positions of firms resulting from shortening the time lag between an expenditure commitment for purchases of raw materials and the realization of sales of finished goods. This argument is consistent

with the assumptions of the pecking order theory. Previous studies that have evaluated the relationship between CCC and firm performance have found mixed findings. Some studies have found a negative relationship (Shin & Seonen, 1998; Murugesu, 2013; Manyo, 2013; Nobanee et al., 2011; Lazaridis & Tryfonidis, 2006; Garcia-Teruel & Martinez-Solano, 2007; Deloof, 2003; Attari & Raza, 2012), while others have found a positive relationship (Raheman et al., 2010; Padachi, 2006; Lyrودي & Lazaridis, 2000; Gill et al., 2010; Abuzayed, 2012; Muscettola, 2014).

According to the proponents of the negative relationship, a shorter CCC maximizes firm performance for the reason that it leads to the generation of internal funds quickly and reduces the burden of external funds. Similarly, it easily enables firms to finance operational activities, thus indicating efficiency of sales, trade policies and disbursement (Nobanee, 2009). On the other hand, the proponents of a positive relationship believe that a longer CCC enhances profitability because it avails a good period of time for customers to access the product before payment commences. This has the effect of ultimately retaining customer relationships that lead to higher sales and higher profitability. It provides the customers with the impression that firms allowing longer periods also demonstrate the quality of their products.

This present study argues that most of these findings have been derived from developed economies, which have better markets and other technological support that may yield these results. However, a number of significant methodological weaknesses severely constrains the validity of the conclusion as well as the general inferences made by the few studies

from developing and underdeveloped economies. Arising from the mixed findings and the methodological flaws of prior studies, this study argues that further investigation of the relationship between CCC and firm performance in terms of ROA, ROE and TQ, is warranted. These lead to the following hypotheses:

H1d: There is a significant relationship between the CCC and ROA.

H2d: There is a significant relationship between the CCC and ROE.

H3d: There is a significant relationship between the CCC and TQ.

3.3.1.5 Cash Conversion Efficiency

Cash conversion efficiency (CCE) is a measure used to determine the operational efficiency of firms to generate cash from operations (Filbeck & Krueger, 2005). They theorized that CCE is associated with firm performance because it is focused on improving operational cashflow from sales and other activities. This allows firms to make more investment and acquisitions and reduce risks, thereby allowing them to maintain competitive advantage and high profitability. Despite this, CCE has received less attention compared to other components of WCM. However, Ganesan (2007), Ching, Novazzi, and Gerab (2011) and Nasser, Samat, and Othman (2010) adopted CCE to determine the relationship between WCM and performance of firms; they concluded that CCE improves the performance of firms. They further noted that CCE emphasizes on the ability of firms to realize cash flow from sales.

Given that many firms have continued to struggle to convert more operating profit into cash, research on the relationship between CCE and firm performance, which can directly improve the ability of firms to generate cashflow, is central to a better understanding of firm performance. Moreover, prior studies have not explicitly associated CCE with firm performance in terms of ROA, ROE and TQ. Therefore, the hypotheses below are formulated:

H1e: There is a significant relationship between CCE and ROA.

H2e: There is a significant relationship between CCE and ROE.

H3e: There is a significant relationship between CCE and TQ.

3.3.2 Economic Conditions

The evidence is mixed on the relationship between WCM and firm performance (Salman, Folajin, & Oriowo, 2014; Sharma & Kumar, 2011; Makori & Jagongo, 2013). Filbeck and Krueger (2005), Mathuva (2014), Wasiuzzaman, and Arumugam (2013), Mirza and Javed (2013), Zulfiguar and Din (2015) and Smith et al. (2003) suggested that the mixed findings can be explained in part by the changing macroeconomic factors. Therefore, this study argues that macroeconomic conditions that lead to more volatile operating conditions by making production cost and output prices of firms that depend on import and export of materials and goods less predictable, can significantly affect the relationship between WCM and firm performance. Macroeconomic conditions contribute to the complexity of

operational and financial challenges of firms. This is because WCM requirements increase during periods of unstable macroeconomic conditions. Therefore, this study argues that the two components of macroeconomic conditions, namely inflation and interest rates are particularly relevant in honing the relationship between WCM and firm performance (Filbeck & Krueger, 2005; Garcia-Teruel & Martinez-Solano, 2007; Molina & Preve, 2009; Enqvist, Graham & Nikkinen, 2014; Mathuva, 2014).

Inflation and interest rates are important aspects of a firm's economic environment because of their influence on the purchasing power, exchange rates, the cost of living standards, sales, cost of capital and a country's political and economic systems. During times of rising inflation and interest rates WCM levels fluctuate and as a result, firms find it difficult to make plans for the future and be profitable. In other words, it is subject to fluctuations and prevents firms from ploughing back their profits for the purpose of WCM. Therefore, in such an environment, firms can end up understating or overstating pricing products, which may result in a shortage of cashflow and profitability. Inflation and interest rates are closely interrelated. Given that volatility in inflation increases with its level and that interest rates are associated with expected inflation, countries that undergo inflation are also likely to experience high interest rates. Inflation and interest rates have also been advocated by Smith et al. (2003), Garcia-Teruel and Martinez-Solano (2007), Molina and Preve (2009), Enqvist, Graham and Nikkinen (2014), Mathuva (2014) and Madhou, Moosa and Ramiah (2015), as factors that affect firm performance.

Therefore, this study focuses on five major WCM components (ARM, APM, INVM, CCC and CCE) to illustrate their relationship with firm performance. ARM depends on the credit a firm extends to its customers. During periods of unstable economic conditions (higher inflation and interest rates), the incentive to extend trade credit to customers decreases since the present value of receivables is lower (Molina & Preve, 2009). Also, the negative sales shock firms experience during rising inflation and interest rates affects ARM, which generally increases when sales increase but decreases when sales decline. This is because managers are more likely to relax credit policies when sales decline in order to attract customers. Consequently, APM is affected as well, in that APM increases as sales increase, but when sales decline, firms postpone payment. Hence, during rising inflation and interest rates, the payment schedules of firms change and the rate of default is increased, which may affect the relationship between firms and their suppliers.

Similarly, the level of inventory a firm holds is typically affected during this period because firms may find the acquisition of inventory difficult due to high prices. This changes the normal amount required for the purchase of inventory, thereby causing depression of capital. In addition, inventory levels are affected during this period because sales decline. Under normal business environmental conditions, firms are motivated to build inventory and minimize inventory stock-out because sales are expected to increase; whereas, during periods of high inflation and interest rates, firms experience negative sales shock (a decline in sales is experienced). Hence, the level of inventory is also affected by the prevailing business conditions. This is because inventory levels grow when sales are expected to increase but decrease when a decline in sales is experienced.

Higher inflation and interest rates impact on the ability of firms to fund their day-to-day operations, thereby making firms experience a longer CCC. This is largely “due to inventory being tied up and receivables not materializing” (Mathuva, 2014, p.182). Further, the negative sales shock experienced also affects the ability of managers to make production plans according to sales projections. Similarly, the overall ability of firms to generate cash from operations (the CCE), will stagnate during rising inflation and interest rates.

Although studies have examined the relationship between WCM and firm performance and offered different explanations for the mixed findings or variations in this relationship, very few prior studies have examined whether or not the extent of uncertainty in the macroeconomic environment of firms affects this relationship. Therefore, this study provides support for the notion that economic conditions, in terms of inflation and interest rates, affect all the components of WCM and matter in explaining the mixed and inconsistent WCM-firm performance relationship. This is also supported by the contingency theory (Donaldson, 2001), which proffers that inflation and interest rates are macroeconomic factors which are contingent to the performance of a firm. Following this argument, this study formulates the hypotheses below:

H4a – H4e: Inflation rates significantly moderate the relationship between WCM and ROA.

H5a – H5e: Inflation rates significantly moderate the relationship between WCM and ROE.

H6a – H6e: Inflation rates significantly moderate the relationship between WCM and TQ.

H7a – H7e: Interest rates significantly moderate the relationship between WCM and ROA.

H8a – H8e: Interest rates significantly moderate the relationship between WCM and ROE.

H9a – H9e: Interest rates significantly moderate the relationship between WCM and TQ.

3.3.3 Working Capital Management Level

Prior research has posited that WCM has a linear relationship with firm performance (Abuzayed, 2012; Deloof, 2003; Eljelly, 2004; Garcia-Teruel & Martinez-Salano, 2007; Shin & Soenen, 1998; Sharma & Kumar, 2011). The premise for this conclusion is that the environment where a firm operates is supposedly stable and predictable. However, business environmental conditions are in reality unstable because they are often characterized by fluctuating inflation, interest and exchange rates and competition. Therefore, previous findings on the relationship between WCM and firm performance have ignored the dictates of fluctuating environmental conditions. For instance, during conditions of high inflation and interest rates, there could be inadequate investment levels in WCM and subsequently, low financial performance. Similarly, stable inflation and interest rates could result in excess WCM, which often result in idle funds and lower performance of firms. Consequently, assuming a linear relationship underestimates the intricacies of inadequate and excess investment levels in WCM and the relationship with firm performance.

Hence, Nha and Loan (2015), Bonos-Cabellero et al. (2012), Bonos-Cabellero, Garcia-Teruel, and Martinez-Solano (2014) and Afrifa & Padachi, 2016) argued that the relationship between WCM and firm performance is nonlinear or quadratic. Furthermore,

Deloof (2003), Tauringana and Afrifa (2013) argued that both low and high levels of investments in WCM have varying implications for firm performance. This suggests that an optimal level exists at which investment in WCM would balance costs and benefits and maximize profitability. Furthermore, deviations from this point will negatively affect profitability (Bonos-Cabellero et al., 2012; Bonos-Cabellero, Garcia-Teruel, & Martinez-Solano, 2014; Nha & Loan, 2015, Afrifa & Padachi, 2016). Therefore, the hypotheses below are formulated:

H10a: There is a quadratic relationship between WCM and ROA.

H10b: There is a quadratic relationship between WCM and ROE.

H10c: There is a quadratic relationship between WCM and TQ.

3.3.4 WCM during and after the Financial Crisis

The global financial crisis of 2007 to 2008 delivered negative macroeconomic consequences to the economies of the world, which affected the lending and financing conditions of firms. Rising capital and liquidity needs have always been the greatest challenges for funding operational activities and sustaining the performance of firms. The fact that firms continue to experience liquidity problems makes research on WCM imperative. This is because efficient WCM addresses the liquidity constraints and enhances the performance of firms. During the crisis period, firms have realized that the optimization of WCM is crucial and failure to manage it properly can have a negative impact on their

ability to fund their day-to-day operations. This need essentially led to an increased number of studies conducted on WCM addressing the liquidity constraints of firms (Murthy, 2015; Nobanee & Ellili, 2015).

In addition, several studies have argued that the relationship between WCM and firm performance is affected more during financial crisis when firms face WCM deterioration. This is because the ability of firms to generate cash from operations during a crisis stagnates. This effect could be indicative of the significant attention WCM research received during the financial crisis (Murthy, 2015; Nobanee & Ellili 2015; Wasiuzzaman, 2015), because during a financial crisis, WCM needs would increase (Ramiah et al., 2014; Scholleova, 2012). This explains that the study of WCM is considered more effective for financially constrained firms.

On the other hand, Owolabi and Alu (2012) and Pervan and Visic (2012) argued that the WCM-firm performance relationship has exhibited no significant differences during crisis periods and normal times. These studies have documented that WCM is important for all firms and during all periods because it addresses the liquidity constraints and increases the financial performance of firms. Every firm needs cash to operate and fund its day-to-day operations. By so doing, firms reduce external funding requirements by becoming more WCM-efficient. Hence, the need for cash which WCM generates goes beyond operational activities to easing the pressure of firms to pay dividends and continuously invest. Similarly, Sen and Oruc (2009), Charitou et al. (2010) and Mohamad and Saad (2010) stated that WCM intervenes at all times but may be found to be more important when firms

face liquidity challenges, especially during economic crises. This is because WCM optimization is a key to regain the solvency of firms. Arising from these arguments, determining the differences in the relationship between WCM and firm performance during and after the financial crisis is important to prepare firms from being overwhelmed in the advent of a future crisis. Arising from the above, the hypotheses below are proposed to compare how firms fared during and after the crisis.

H11a: There is a significant difference in the relationship between WCM and ROA of firms in Nigeria during and after the financial crisis of 2007-2008.

H11b: There is a significant difference in the relationship between WCM and ROE of firms in Nigeria during and after the financial crisis of 2007-2008.

H11c: There is a significant difference in the relationship between WCM and TQ of firms in Nigeria during and after the financial crisis of 2007-2008.

3.4 Research Design

Research design helps determine the success of any research. According to Burns and Grove (2003), a research design is a blueprint specifying how research is conducted with maximum control over factors that may interfere with the validity of the findings. Zikmund, Babin, Carr and Griffin (2009) also defined a research design as a master plan that specifies the methods and procedures for conducting and analysing the information under study. According to Sekaran and Bougie (2010), a research design includes the rational decisions

made regarding the ways to achieve the purposes of the study, which is guided by the framework, objectives, questions and hypotheses (Burns & Grove, 2003).

In selecting this study's design, consideration was given to the observation of Castro, Kellison, Boyd, and Kopak (2010) about the limitations of using either a quantitative approach or qualitative approach to solve a problem. The limitations of these two approaches limit the extent of the findings of researchers who elect to adopt either of the methods and make them less generalizable in modern social and behavioural research. Thus, this study mixed the quantitative and qualitative approaches to evaluate the moderating effect of economic conditions on the relationship between WCM and firm performance in Nigeria. The adoption of a mixed approach provides a better understanding of a research problem (Creswell, 2003) and results in findings of high quality and inferences (Tashakkori & Teddlie, 2003; Ivankova, Creswell, & Stick, 2006).

Creswell (2009) further advanced four basic aspects that influence the design of a mixed method approach, which included: timing, weighting, mixing and theorizing. Timing refers to the period of data collection for both quantitative and qualitative research methods, which could either be in a sequential form (in phases) or concurrently (at the same time). Weighting refers to the preference of either method in a study while mixing refers to how the quantitative data and qualitative data are mixed or merged.

The mixing aspect of data is said to be connected when the data analysis and results can be used to identify participants for the qualitative data collection. Where both quantitative and qualitative data are collected concurrently and merged or integrated, transforming the

qualitative themes into counts and comparing them with the descriptive quantitative data means that a mixing is said to be connected. Lastly, embedded mixing refers to a situation in which the primary aim is to collect data using a particular design, like the quantitative, with the intention of obtaining another form of data design, say qualitative, to provide supportive information. In other words, neither connecting nor integrating a mixing method is being utilized under the embedded approach. Rather, a process described as a “dominant and less-dominant” design is used (Creswell, 1994, p. 179).

The last factor that influences design for a mixed method is theorizing. Theorizing refers to the explicit or implicit theoretical perspective guiding the entire research design. Theory implicitly drives the current study. As explained in the preceding chapter, the framework of this study is implicitly driven by both the contingency theory and the pecking order theory. This framework is implicitly driven by these theories because the variables that constituted the framework were not directly adopted as constructs of the aforementioned theories. However, the theoretical framework explained how a firm can align its internal strategies and structure to the contingents of its environment to increase performance.

Thus, this study adopted the dominant less-dominant design of a mixed method in a sequential explanatory approach (Creswell, 1994, 2009). This design has two distinct phases: first the quantitative and then the qualitative (Creswell, 2003), in which notation is given as “QUAN → qual (Creswell, 2003; Johnson & Onwuegbuzie, 2004; Cameron, 2009). Where “QUAN” stands for quantitative, “→” stands for sequential, “qual” stands for qualitative while the capital letter and lower-case letter denotes a higher priority or

weight and a lower priority or weight respectively. This design implies that the researcher collects and analyses the quantitative data first followed by the qualitative data in which the data are collected and analyzed in a sequenced order to explain or elaborate upon the results obtained from the quantitative analysis conducted in the first phase (Ivankova, et al., 2006). Thus, the qualitative phase builds on the quantitative phase and, by process, the two phases are said to be connected (Ivankova, et al., 2006).

The data for the quantitative phase, which was the first stage, were collected from the annual financial reports of listed firms in Nigeria with the potential to identify the predictive powers of the selected variables (WCM variables) on the performance of firms in Nigeria. While in the second stage, which was the qualitative phase, the data were collected using in-depth interviews conducted with 6 participants purposefully selected from different firms examined in the first stage (quantitative phase). This was done to provide a robust description of the issue. In summary, priority was given to the first stage (the quantitative phase) because the quantitative data collection came first while the second stage (qualitative phase) follows in a smaller part. This process is illustrated in Figure 3.1.

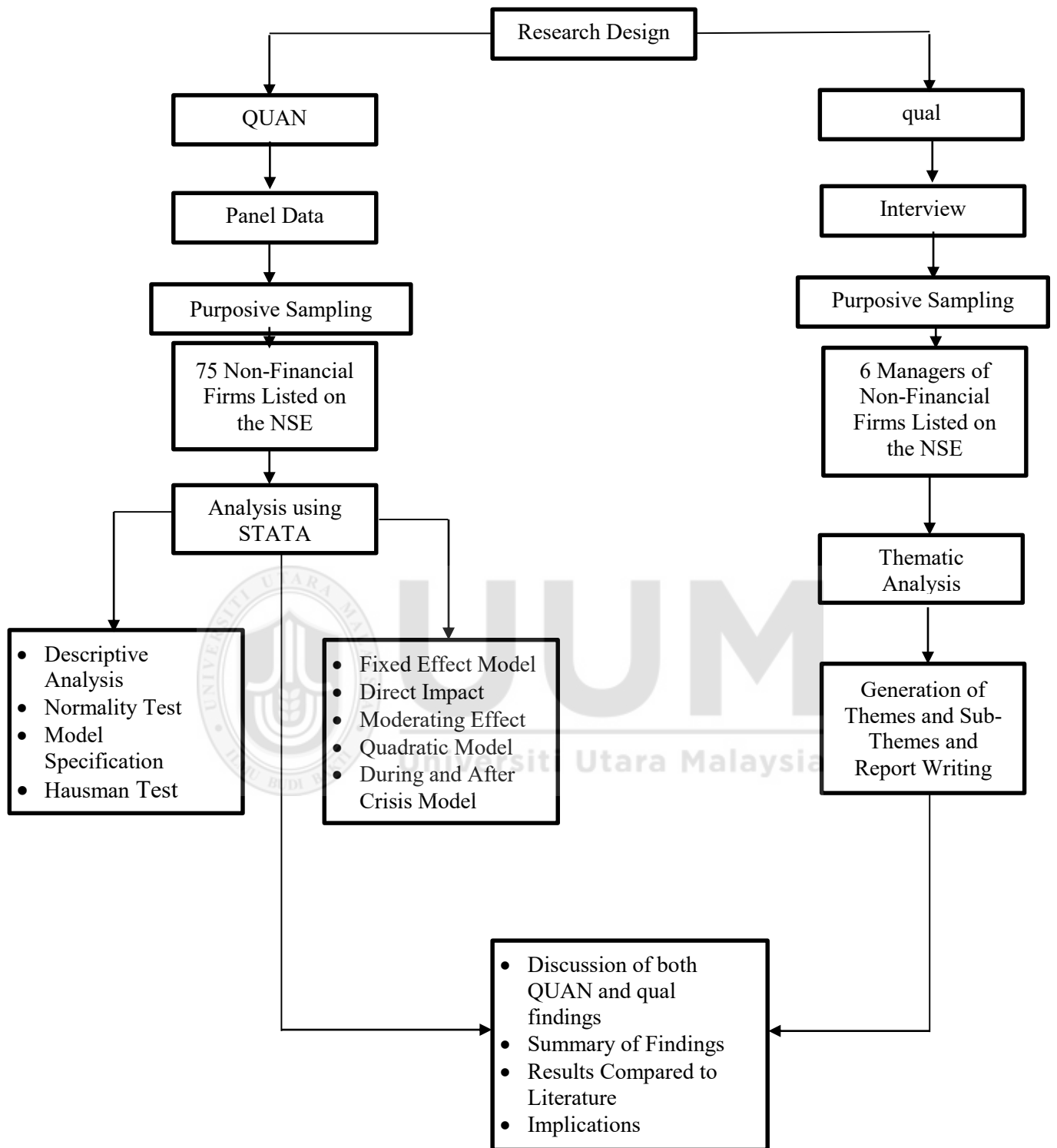


Figure 3.2
Research Sketch of Sequential Explanatory Design

3.5 Population of the study

Population refers to the entire objects, groups of people, events and other things of interest that a study hopes to examine (Cavana, Delahaye, & Sekaran, 2010). Similarly, Burn and Grove (2003) defined population to mean the entire element of interest that meets the criteria for inclusion in a study. This suggests that a population must have common identifiable characteristics for identification and inclusion in a study. The population of this study comprised the 130 non-financial firms listed on the Nigerian Stock Exchange (NSE) as of 2015. The choice of non-financial firms is consistent with Falope and Ajilore (2009), Mathuva (2010), Azam and Haider (2011), and Abuzayed (2012).

The NSE, the source of data for this study services the largest economy in Africa and champions the development of Africa's financial markets (NSE, 2014). This choice was for several reasons. First, the choice of listed firms in Nigeria is consistent with the studies of Lazaridis and Tryfonidis (2006) and Mathuva (2010). They argued that listed firms have incentives to report accurate profits or actual data because the market value of their shares is dependent on their financial statements. Also, financial data accruing through NSE undergo a mandatory audit as required by law, which guarantees the accuracy and reliability of the data generated.

Second, the exclusion of financial firms is consistent with the studies of Deloof (2003), Lazaridis and Trifonidis (2006), Falope and Ajilore (2009), and Mathuva (2010). They argued that the reporting requirements of WCM for financial institutions differ from those of other institutions. Moreover, the definition and applications of WCM of banks differ

from the definition this study adopts, and the non-inclusion of financial firms is to also allow for easy comparability with most prior studies undertaken that focus on non-financial firms for developed and developing economies and specifically for Nigeria. That is because prior studies have focused mainly on non-financial-firms (i.e., Deloof, 2003; Falope & Ajilore, 2009; Lazaridis & Tryfonidis, 2006; Azam & Haider, 2011). Hence, banks, insurance and other financial services firms were omitted from this study. The performance of firms in Nigeria remains at the centre stage of this discourse, and inferences was drawn from this choice of data for robust research and, as central to this study, led the researcher to discover and resolve the various contingencies affecting WCM efficiency and the inconsistency in findings. The population distribution is shown in Table 3.1 according to their industries.

Table 3.1
Population of Companies by Industries

Industry Classification	Number of Companies Listed
Agriculture	5
Conglomerates	6
Construction/Real Estate	9
Consumer Goods	27
Health Care	11
ICT	9
Industrial Goods	21
Natural Resources	5
Oil and Gas	14
Services	23
Total	130

3.6 Quantitative Method

This study employed the quantitative research approach to address/answer research questions one to four. According to Creswell (2003), a quantitative approach to research is one in which the researcher primarily uses postpositive claims for developing knowledge. Creswell (2009) noted that the quantitative research approach is appropriate for complex studies with many variables and treatments. Thus, in determining the moderating effect of economic conditions on the relationship between WCM and firm performance, this study adopted the descriptive and causal research design.

Descriptive statistics have the characteristics of yielding data that leads to important research findings and recommendations and such statistics occupy a valuable place within research in the social sciences (Knupfer & McLellan, 1996). Central to this discourse is that this study utilized the panel data. A sample of 75 firms was drawn from a population of 130 non-financial firms listed on the NSE for the period from 2007 to 2015. The data gathered were divided into two periods. The first period was used to test the direct relationship between WCM and firm performance from 2007 to 2015 and the moderating effect of economic conditions on the WCM relationship with firm performance and the quadratic relationship. The second set was used to test the effects of WCM on firm performance during and the period after an economic crisis (i.e., 2007 to 2009 and 2013 to 2015 respectively). This was to determine whether the financial crisis affected the WCM of firms in Nigeria as previous researchers have claimed.

3.6.1 Data Collection

The sources of data for this study were secondary and primary sources. The secondary data were collected from the annual financial statements of the quoted/listed firms on the Nigerian Stock Exchange for the period from 2007 to 2015. Listed firms were chosen primarily because of availability of data and reliability of the financial statements, as they are subjected to mandatory audits (Mathuva, 2010). The choice, type and selection criteria are discussed in the following subsections. In-depth interviews was the primary source of data collection for this study. Based on this, open-ended interview questions were designed. This permits the participants to give detailed material information about the WCM practices of their firms and challenges encountered overtime. It similarly permits the researcher to probe further by asking follow-up questions where necessary.

3.6.1.1 Data Collection Procedure

The data for this study were sourced using secondary sources of data collection. The relevant data were collected from the Nigerian Stock Exchange. This is due to the reliability and availability of the data (Abuzayed, 2012). Listed firms have the incentive to provide adequate information and may not hide profits because they do not want to pay taxes (Lazaridis & Tryfonidis, 2006). The data were also sorted according to the periods of analysis (i.e., 2007 to 2015, 2007 to 2009 and 2013 to 2015). The division of the periods in this study is corroborated by the studies of Njiforti (2015) and Ramiah, et al. (2014). This study, therefore, considers only the data of non-financial firms and for those actively engaged in business during the entire periods of this study. Hence, to be enlisted in this study companies must not be liquidated, bankrupt, delisted or merged with another for the

period from 2007 to 2015. Firms exhibiting signs of inconsistencies or unable to provide annual reports for any reason were not considered. To achieve this, the annual financial statements or annual reports of the firms were perused, and the information necessary for this study was extracted from the annual reports for the specific period.

The individual company's annual report was mainly sourced from the Nigerian Stock Exchange office, Abuja Nigeria and their website (<http://www.nse.com.ng/Listings-site/listed-securities/listed-companies>) and the Securities and Exchange Commission office Abuja, Nigeria. Other missing years were downloaded from the individual companies' websites. Data relating to the economic conditions of Nigeria (inflation rates and interest rates for the period of the study) were accessed from the Datastream of Thompson Reuters at the Perpustakaan Saltanah Bahiyah Library, Universiti Utara Malaysia.

3.6.2 Sample

The sampling procedure is an important part of research given the challenges in studying the entire population. This is imperative since most company practices demonstrate characteristics of inconsistency, which distort variable measurement in research. This could be either through change of accounting date or periods, cessation, merger or acquisition. A sampling process therefore aids in the removal of companies that demonstrate behaviour contrary to the guideline (specifications) for inclusion in this study as enumerated in Sections 3.6.1.1 and 3.6.2.2. Therefore, the sample for this study was

derived from a total population of 130 non-financial firms listed on the Nigerian Stock Exchange between 2007 and 2015.

3.6.2.1 Sample Period

This study applied the panel data regression, and data were sourced for a period of 9 years – from 2007 to 2015. The choice of the period was informed by the quest to determine the effect that the financial crisis of 2007 brought upon companies in Nigeria. The effect lasted till 2009 (Njiforti, 2015) and necessitated the inclusion of the years 2007 through 2009 to enable the researcher to determine the impact of the crisis on the effectiveness of WCM during and after crisis. Hence, static panel data were adopted, where data were collected for the same companies for the period of 9 years in a row.

3.6.2.2 Sample Selection

This study initially adopted the entire population as a sample, which comprised 130 non-financial firms in Nigeria. However, certain specification criteria were established to determine the final sample size to arrive at valid data that would support the various objectives of the study and the analyses to be conducted.

There were four specifications criteria set for inclusion in this study, and companies that did not meet them were excluded. First, only companies whose balance sheets and income statements fell within the period under consideration (2007 to 2015) were included. Second, companies with negative values (i.e., distressed companies or those that were missing substantial parts or yearly figures for the period of this study from 2007 to 2015) were not included. Third, newly listed companies were omitted because the study periods

were divided into two: 1) during the economic crisis (2007-2008) and 2) after the financial crisis (2010-2015). Fourth, companies that were delisted were excluded.

The initial population of this study was 130 companies listed on the Nigerian Stock Exchange; however, through a meticulous process it was discovered that 15 companies were delisted between the periods of this study, i.e., between 2005 and 2015. This brought the main population/sample of this study to 115. Amongst which, the following numbers of companies were derived for each classification of industry: agriculture 5, conglomerates 6, construction/real estate 7, consumer goods 22, healthcare 11, ICT 7, industrial goods 17, natural resources 4, oil and gas 12 and services 24.

In the second step, further screening revealed that 19 companies were not listed between 2007 and 2010, a period that one of the objectives of this study relies on. This made them unsuitable for inclusion in the sample since the period is required to evaluate the effect of the financial crisis on WCM effectiveness. This narrowed the sample of the study to 96 companies.

In the third step, companies with complete annual financial reports were ascertained. Thirty-five companies had incomplete financial reports, which resulted in missing year figures. Of these 35 companies, certain records (i.e., opening stock, closing stock and others) could not be found for 3 companies due to the nature of their operations. This informed the decision to exclude these companies because the omitted records were necessary for the computation of certain variables in this study. This brought the number to 32 companies. From the list of 32, several firms had missing figures of differing degrees

and significance. Companies with significant years missing figures (two, three and four blank years) were excluded as the averaging method of estimation was unreliable for their replacement. See Table 3.2.

Table 3.2
Sample Selection Distribution

Sample	No. of Companies
Total No. of non-financial firms listed	130
Less: firms delisted between 2005 and 2015	15
Initial Population of the study	115
Less: companies not listed between 2007 and 2010	19
Complete non-financial firms listed for the period	96
Less: firms with uncompleted data:	
Missing /Incomplete data	35
Replaced data using averaging method	-14
Useful data (total sample)	75

In a few cases where the gap of the blank or absence of data was insignificant, the study applied a simple imputation process known as the averaging method of estimation using the “series mean” in SPSS for replacement (Kang, 2012; Spineli, Fleming & Pandis, 2015). This was done for 14 companies. This brought the total number of companies included in this study to 75 following the sample selection criteria.

3.6.2.3 Final Sample

The sample of firms in this study covered a period from 2007 to 2015. The consideration of the period from 2007 was to enable the study to capture the effect of the financial crisis

on the effectiveness of WCM while the cut-off year of 2015 was the latest period annual financial report were available for extraction as at the time of data collection for this study. Following the sample selection criteria as discussed previously, 75 firms were finally selected and forms the sample size of this study. Hence, data of the 75 firms were extracted from the various annual financial reports for nine (9) years between 2007 and 2015. The final data for this study is a balanced panel dataset containing 675 firm-year observations. This sample is considered adequate and comprehensive when compared to previous studies undertaken in related area in Nigeria. For example, Abosede and Luqman, (2014) studied 2 companies, Owolabi and Alu (2012) studied 5 manufacturing firms. Ailemen and Folashade (2014) studied 2 manufacturing firms, Kurawa and Garba (2014) studied 4 cement-manufacturing companies and Lawal et al. (2015) studied 6 manufacturing companies.

Similarly, the current study sample selection cut across different sectors (see Table 4.1). Such a representation allows for generalization of findings because the sample is representation of the entire population. This view is supported by Sekaran (2003) who stated that in a case of large population, taking all members into consideration may lead to potential errors arising out of human mistakes. In addition, the sample of 75 companies represents more than half of the entire population of this study (see Table 3.1); hence, the conclusion can be reached that the sample selected is a representative of the population of this study. This is considered more appropriate compared to the concentration of previous studies on few sectors.

3.6.3 Operationalization of Variables and Measurement

The measurement of the different variables used in this study are defined accordingly. They are categorized into three groups: 1) firm performance variables (dependent variables), 2) WCM variables (independent variables) and 3) the moderator variables (inflation and interest rates). Below is a brief description and definitions of these variables as applied in this study.

3.6.3.1 Dependent Variables

This study adopted three proxies of firm performance measurement. Two of these are accounting-based (return on assets and return on equity) (Ross, Westerfield, & Jordan, 1999) while the third is market-based (TQ) (Abuzayed, 2012). The decision to adopt accounting-based measures as proxies for firm performance is informed by the WCM literature. Hitherto, a significant amount of research in WCM, like Deloof (2003), Javid (2014), Pouragbanjan and Emamgbolipouarchi (2012), and Azam and Haider (2011) have used return on assets and return on equity while a few researchers adopted TQ.

3.6.3.1.1 Return on Assets

Return on Assets (ROA) is an accounting-based measure and evaluates the efficiency with which firms or company managers utilize assets to generate profits (Ross et al., 1999). In the context of this study, ROA is operationalized as the overall measure of performance, which reflects both the profit margin and efficiency of the entire assets usage of a company. ROA has its pros and cons like other variables in research. ROA enjoys significant acceptability and usage in WCM literature. ROA increases directly the size of a firm and

investments in it (Akinlo, 2012). ROA maximizes shareholder value and creates a competitive advantage over other firms. ROA is also a means of comparing firms across an industry (Lev & Sunder, 1979). In this study, ROA was measured as Azam and Haider (2011), Javid (2014) and Enqvist et al. (2014) explicated, as = [Net Income after Tax (excluding donations)/Book Value of Total Assets].

3.6.3.1.2 Return on Equity

Return on Equity (ROE) is an accounting-based measure and has been used widely in WCM literature (see Arunkumar & Ramaman, 2013; Makori & Jagongo, 2013). The choice of ROE is also motivated by the fact that it offers a useful signal to all stakeholders about financial success or failure and knowledge about whether the growing profits or declining profits of a firm are the result of pouring new equity capital into the business or otherwise (Follet, 2012). ROE does not reveal the amount due to shareholders as dividends; dividends are strictly a management decision (Berzkalne & Zegalve, 2014). However, ROE is an indication that a company can generate returns and is worth the risk that an investment may require (Berman, Knight, & Case, 2013). Hence, ROE was operationalized in the context of this study as the amount of profit that shows the percentage of owners' investment or equity. It is measured and defined in line with the views of Azam and Haider (2011) and Afrifa and Padachi (2016), as net income divided by the shareholders equity [ROE = Net Income /Total Shareholder's Equity]. By this method, the study determined whether the owner's investment in the company is yielding profits or is efficiently and effectively generating profit.

3.6.3.1.3 Tobin's Q

Tobin's Q is a market-based measure (Abuzayed, 2012) and has been associated with WCM as stock market performance (Afza & Nasr, 2007). Tobin's Q (TQ) is operationalized in this study as a ratio to compare the market value of the stock of various companies with their equity book value. The present study measured TQ in line with the view of Abuzayed (2012), as the equity market value plus liability book value divided by equity book value plus liability book value. $[TQ = \text{Equity Market Value} + \text{Liability Book Value} / \text{Equity Book Value} + \text{Liability Book Value}]$.

3.6.3.2 Independent Variables

The key variable in this study is WCM, which serves as the independent variable. The concept of WCM evolved from the time of Karl Marx, who viewed working capital as a "variable capital" (Bhattacharya, 2007). It has been popularly defined as current assets minus current liabilities. WCM is determined in this study using the following variables: Accounts Receivable Management (ARM), Accounts Payable Management (APM), Inventory Management (INVM), Cash Conversion Cycle (CCC) and Cash Conversion Efficiency (CCE).

3.6.3.2.1 Accounts Receivable Management

Accounts Receivable Management is also known as the average collection period. This is the collection period reflecting, on average, the number of days it takes firms to collect the amount owed by its customers (Deloof, 2003). Muthuva (2010) reiterated that its management is crucial in determining the solvency of firms. In the context of this study,

ARM was operationalized as the various customers or debtors who are in the possession of goods, services or materials of the firm but are yet to make payment for them. The efficiency with which credit is granted and how collections are facilitated within the specified days is at the centre stage of this concept. ARM was measured and used in this study in line with the views of Deloof (2003) and Abuzayed (2012) as: $[ARM = (Accounts\ Receivable \times 365\ days) / Sales]$.

3.6.3.2.2 Accounts Payable Management

Accounts Payable Management is also known as accounts payable periods and represents a firm's obligations to pay short-term debts and other financial commitments. If managed properly, APM can be a source of financing at a free cost for firms and reduces over dependency on external funds (Deloof, 2003). This is because external funds are not always available and, when available, they are often available only at high cost (Shodipo, 2010). APM is seen in this study as those customers and suppliers who have advanced goods to the company but have not been paid for such goods; hence, it is operationalized as the average length of time or interval of purchases of both materials (inputs) and labour on credit and the time taken for the settlement of cash for them. Following Deloof (2003) and Abuzayed (2012), this study measured APM as: $[APM = (Accounts\ payable \times 365\ days) / Purchases]$.

3.6.3.2.3 Inventory Management

Inventory Management is another measure of WCM. The turnover of inventory is a valuable indicator used to determine the operational efficiency of firms. In the context of

this study, inventory is operationalized as the supply and usage of goods and products a firm/company prepares for sale. This includes: raw materials, work in progress, and finished goods (Follet, 2012). This means the stock of raw materials, work in progress and finished goods waiting to be transformed or sold. Inventory is applied to this study by reference to the applications of Deloof (2003) and Abuzayed (2012): $[INVM = (Inventories \times 365 \text{ days}) / \text{Cost of Sales}]$.

3.6.3.2.4 Cash Conversion Cycle

Gitman (1974) first introduced the cash conversion cycle, and, later, Gitman and Sachdeva (1984) further refined the concept. Richard and Laughline (1980) operationalized the CCC as the time gap between expenditures in cash on purchases and the later recovery of cash from the sales of the product. It has been used as a comprehensive measure for WCM and is regarded as an important measure of WCM (Al-Shubiri & Aburumman, 2013). Hence, in the context of this study, CCC is seen as the movement of cash from the suppliers' end to inventory, receivables, to the bank until cash is recovered again. The CCC is therefore operationalized as the length of time cash is committed from purchases of raw materials through work in progress to finished goods and until when cash is realized from sales of finished goods. The effectiveness of firms depends on how raw materials (inventory), accounts receivable, and accounts payable are managed for cash to recycle again (Deloof, 2003). Doing so well, guarantees the operational efficiency of firms (Abuzayed, 2012). CCC is measured in this study following Deloof's (2003) and Abuzayed's (2012) guidelines as follows: $[CCC = \text{Accounts Receivable Management} + \text{Inventory Management} - \text{Accounts Payable Management}]$.

3.6.3.2.5 Cash Conversion Efficiency

The Cash Conversion Efficiency has been introduced to jointly determine firm performance. It has been rarely studied in association with WCM in the literature. The CCE argument is premised on the fact that the traditional WCM measures fail to consider the speed or the management of all the WCM components but rather emphasizes measurement (Filbeck & Krueger, 2005). CCE further reveals that for performance to ensue, best practices need to be maintained. For example, the sales operations department should concentrate on how to make more sales than on reporting them (Follett, 2012). Hence, different strategies aimed at improving sales should be encouraged. Generally, CCE emphasizes the dynamic change in the operations of the firms that will create operational efficiency (Filbeck & Krueger, 2005; Ganesan, 2007). In this current study, it is measured as: $[CCE = \text{Cash Flow from Operations} / \text{Sales}]$.

3.6.3.3 Moderation Variables (Economic Conditions)

The following sections present a discussion on moderation variables, which include inflation rates and interest rates.

3.6.3.3.1 Inflation Rates

Inflation is used in this study as the moderator, and it is denoted by the abbreviation “INFLAR”. Inflation is generally referred to as the general reduction in the value of money that presents a challenge to a firm and distorts its financial reports (Follett, 2012). Firms need to align their internal strategies with this macroeconomic variable because the firm derives its right to exist from the fact that it creates a surplus value to society (Blakley &

Sti, 1991). In other words, Blakley and Sti (1991) stated that firms with positive net working capital balances will be harmed, *ceteris paribus*, by inflation while those holding negative working balances will gain. Given the effect of inflation on both WCM and firm performance, the present study operationalized inflation as the fall in the value of money or goods. Hence, inflation is measured in line with Smith et al. (2003) measurement as: [Inflation = Rate of Inflation], or [the Consumer Price Index].

3.6.3.3.2 Interest Rates

Interest rates is also used as the moderator variable in this study, and it is denoted by the abbreviation “INTER”. The interest rate is expressed as a percentage of a loan to be paid for the use of the rate at which savings equal investment. Non-monetary factors determine interest rates. It is normally referred to the price paid for the desire to hold money (Obura & Anyango, 2016). The interest rate is measured as the lending rate and is defined here as the bank rate that usually meets the Short International Fund: $INTER = \text{Lending Interest Rate (\%)}$.

3.6.3.4 Control Variables

This study considered some control variables that have figured prominently in WCM research and established to influence the relationship between WCM and firm performance. Thus, to prevent the possibility of omitted bias, as Bartov, Radhakrishnan, and Krinsky (2000) noted, the following variables were included. They are: firm size, sales growth and financial debt ratio.

3.6.3.4.1 Firm Size

Firm size has been described and recognized as an essential variable in explaining firm performance (John & Adebayo, 2013). In this study, firm size is measured as the natural logarithm of sales.

3.6.3.4.2 Sales Growth

Sales growth plays a major role both for the firms and for the perceptions of top managers (Brush, Bromiley, & Hendrickx, 2000). Understanding how firms grow in terms of sales remain a critical component of any firm analysis. To analyse this, this study measured sales growth as: $\text{this year's sales} - \text{previous year's sales} / \text{previous year's sales}$.

3.6.3.4.3 Financial Debt Ratio

The financial debt ratio measures the extent or combination of a firms leverage. This varies widely from firm to firm; it is measured or expressed as a ratio of total debt to total assets (total debt/total assets) in this study.

Table 3.3
Summary of Variables' Measurement

S/No	Variable	Acronym	Definition/Measurement	Sources
1	Return on Assets	ROA	Net Income After Tax / Book value of Assets.	Azam and Haider (2011).
2	Return on Equity	ROE	Net Income / Total Shareholders' Equity	Azam and Haider (2011).
3	Tobin's Q	TQ	Equity Market Value +Liability Book Value / Equity Book Value + Liability book value	Abuzayed (2012).
4	Cash Conversion Cycle	CCC	ARM + INM - APM	Deloof (2003).
5	Accounts Receivable Management	ARM	(Accounts Receivable x 365days) / Cost of Sales	Deloof (2003).

Table 3.3 (continued)

S/No	Variable	Acronym	Definition/Measurement	Sources
6	Accounts payable Management	APM	(Accounts Payable x 365days) / Purchases	Deloof (2003), Abuzayed (2012).
7	Inventory Management	INVM	(Inventories x 365days) / Cost of Sales	Deloof (2003), Abuzayed (2012).
8	Cash Conversion Efficiency	CCE	Cash Flow from Operations / Sales	Filbeck and Krueger (2005).
9	Inflation Rates	INFLAR	Inflation Rate (Consumer Price Index).	Smith et al. (2003).
10	Interest Rates	INTER	Interest Rates (Lending Rates)	Obura and Anyango (2016).
11	Firm Size	Ln(sales)	Natural Logarithm of Sales	Deloof (2003).
12	Sales Growth	SG	This Year's Sales – Previous Year's Sales / Previous Year's Sales.	Deloof (2003).
13	Financial Debt Ratio	FDR	Financial Debt / Total Assets	Deloof (2003).

3.6.4 Unit of Analysis

Unit of analysis refers to the level at which a study's data are used to represent one data point in an analysis (Silverman & Solman, 1998). Hence, the unit of analysis is considered to be the entity that a study hopes to analyse. That is, the “who” or “what” the study considers. The unit of analysis of this study is the company. It is the data point that represents the data for the study. The choice of unit of analysis has several benefits or consequences on the research design. However, an inappropriate unit of analysis may lead to results that are erroneous (Silverman & Solmon, 1998).

3.6.5 Technique of Data Analysis

Techniques of analysis are important in transforming the raw data extracted into an analytical method and information form suitable for decision making (Davis, 1996). In addressing the main objectives of this study, which is centred on determining the direct and moderating effect of economic conditions on the relationship between WCM and firm performance in Nigeria, the study adopts panel data regression. Panel data regression is the most suitable analytical tool for this study because the panel data framework deals appropriately with unobservable differences that may arise due to a combination of different firms at different time periods (Hausman & Taylor, 1981; Islam, 1995).

These firms certainly may have differences in their operations and production functions (Islam, 1995). This is one of the reasons why this study utilizes panel data regression. This means that individual firms or persons are observed at several different points in time that may be in days, years and either before treatment or after treatment (Schmidheiny & Basel, 2011). Panel data refers to a data set comprising multiple observations on each sampling unit (Baltagi, 2005). This is the pooling of observations relating to a cross-section of countries, households, companies and many others over several time periods (Baltagi, 2005). By pooling time-series and cross-sectional data, the panel data regression guarantees the ability to control absolutely individual-specific effects and other possible unobservable effects that might be correlated with other items included as variables in the specification of the relationship (Hausman & Taylor, 1981).

In addition to the panel data regression that was used to estimate objectives one and two, other techniques were adopted for objectives three and four. Thus, for each objective, a suitable technique of data analysis was developed to address the research questions arising and test the various hypotheses formulated. In summary, the study also conducted a descriptive analysis to explore the characteristics of the variables (dataset). Similarly, a correlation analysis was performed to determine the bivariate association (strength of linear association) amongst the study variables while the multivariate linear regression was adopted to test the various hypotheses developed. Thus, multiple regression analysis was used to determine the effect of the independent variables on the dependent variables.

3.6.5.1 Descriptive Statistics

Descriptive statistics are always used to describe the starting point of any statistical analysis. This is because they help to detect abnormalities in the data collected. Descriptive statistics are also used to define the characteristics of the data in analysing the preliminary results (Quartey, 2003).

3.6.5.1.1 Normality Test

The assumption of normality is imperative in research using regression analysis (Field, 2012). It is crucial because, when such an assumption is disregarded, it may lead to drawing inaccurate and unreliable conclusions in a study. In statistics, the assumption is that the sampling distribution of the mean is normally distributed. This assumption remains sacrosanct for the use of parametric tests (Field, 2012). Several tests or ways of inspecting the normality distribution of data exist, some are: the histogram of the residual, normality

probability plot, quartile of a normal distribution plot (Q-Q normal probability plot), the Jarque-Bera test and others.

This study inspected the normality distribution of the data in two different ways: first, the skewness and kurtosis values were computed for the study's variables. The decision criteria were guided by the threshold provided by Field (2012) for a value of ± 1.96 for skewness and ± 3.29 for kurtosis to be within the limits of normal data. In addition, a graphical device known as the normality probability plot was used to determine the shape of the probability density of the study's variables. However, there are several suggestions that normality is not the rule for real data (Blanca, Arnau, Lopez-Montiel, Bono & Bendayan, 2013; Kadri, Aziz & Ibrahim, 2010). In addition, the central limit theorem states that, if a sample size $n > 30$, normality should not be a problem and such parametric test can be relied on (Field, 2010). Despite this leeway, this study ensured that normality problem was addressed.

3.6.5.1.2 Missing Data

Missing data in research are a common problem. In this study missing data were identified after data collection. These data were declared missing after several sources like the concerned company website, data stream and other means of accessing such data were exhausted. To resolve this problem, two options were considered: First, for data that were randomly missing and can be adequately predicted by existing data, a suitable method was used to replace such data (Kang, 2013; Spineli et al., 2015). The study addressed the missing data using the simple imputation process known as the series mean option in the

SPSS software to replace (estimate) all the missing data that were random. Second, for data missing not at random, such an imputation technique could not be adopted as it may be misleading or lead to misrepresentation of the population. Thus, the source of such data (company) was not considered in this study.

3.6.5.1.3 Outliers

Outliers are observations points that are distinct from other observations in statistics (Grubbs, 1969). In other words, they are data values or observations that differ greatly from other data set. To deal with outliers in this study, winsorization was adopted (Dehnel, 2014).

3.6.5.2 Justification for Panel Data Option

Panel data analysis has become necessary for adoption in view of the following issues that Baltagi (2005) established. First, the method controls for individual heterogeneity. In regression analysis, heterogeneity has posed many challenges and has resulted in unanswered questions about the findings generated without the proper control of such an effect. Baltagi (2005) argued that, unlike the traditional time-series and cross-sectional methods of analysis or techniques, the panel data analysis acknowledges that individual firms are heterogeneous and advances several ways of dealing with such biased findings. Given that biased findings are misleading, panel data is acknowledged as an appropriate tool for this analysis.

Second, panel data provides more informative data and less collinearity amongst other variables. Panel data provides degrees of freedom and, most importantly, guarantees

efficiency. Panel data is most useful when a study suspects that the outcome of variables depend on other explanatory variables not considered or observed but correlated with other observed explanatory variables (Schmidheiny & Basel, 2011). Third, panel data detect and measure with ease the effects of observation better than purely cross-sectional data (Hsiao, 2003). Baltagi (2005) added that panel data analysis is more effectively studied in the dynamics of adjustment than does the cross-sectional method. Fourth, panel data are considered appropriate in identifying and measuring effects that are not detectable using cross-sectional or time series data. Fifth, panel data help in the construction and testing of several complicated behavioural models as compared to cross-sectional or time series data.

However, panel data also have some drawbacks. These include the problem of design and data collection, distortion of measuring errors resulting from incomplete data or other issues associated with gathering data, a short time series dimension and many others (Yaffee, 2003). Despite these drawbacks and many others that are not discussed in this research, panel data offer several benefits compared to other methods. In summary, panel data differ in application and method from the traditional time series or cross-sectional regression because they allow for the control of unobservable heterogeneity that may be present, several assumptions of panel data are aimed at resolving the unobserved heterogeneity effects.

The static panel data has three main regression models, which are: 1) the pooled OLS model, 2) the fixed effect model and 3) the random effect model (Gujarati, 2006). However, Schmidheiny and Basel (2011) summarized them into two main assumptions, which are

the fixed and random effect models. The main differences between the models stated above, lie in the method of treating the individual effect (Gujarati, 2006). The panel data regression model may be formulated as:

$$y_{it} = \beta_0 + \beta_1 X_{it} + \beta_2 X_{it} + \dots + \beta_n X_{it} + \varepsilon_{it} \dots$$

Where: y represents the dependent variable of the observation and X the independent variables. β_0 represents the constant term or intercept across sectional observations. Subscript i represents the company or the cross-sectional dimension. Subscript t denote time or shows the time series dimension. ε_{it} represents the error term, where $\varepsilon_{it} = \mu_i + v_{it}$. (μ_i represents the unobservable individual specific effect and v_{it} is the remainder of the disturbance or idiosyncratic error term). The appropriate statistical analysis tool suitable for this model is the STATA. Thus, STATA version 13 was used to determine the relationship between the dependent variable and the independent variables.

3.6.5.2.1 Pooled OLS Regression

The Pooled OLS provides a consistent and efficient estimate of the homogenous intercept and slope. The Pooled OLS model is easy both in estimate and interpretation because data can be pooled at once and run with the model concurrently. The Pooled OLS is the first decision of panel data regression where a choice is made between the pooled OLS vs fixed effect vs random effect to determine the suitability of a particular model using the Breusch-Pagan Lagrange Multiplier Test (Breusch & Pagan, 1980). The choice or selection is guided by a decision criterion relating to the calculation of the critical value. Hence, when the calculated value is greater than the critical value, the null hypothesis is rejected (H_0

states that the variance of the unobserved fixed effect is zero) and fixed effect or random effect are preferred.

In addition, the idea that the unit-specific effects do not differ in Pooled OLS makes it very restrictive and usually unrealistic. According to Baum (2006), Pooled OLS regression can have a complicated error process such as heteroskedasticity across panel units and serial correlation within panel units among others. Arising from the above discourse and the various drawbacks of Pooled OLS in realizing misleading results, Fixed Effects and Random Effects were adopted. Their adoption has become necessary in view of their flexibility in predicting research outcome.

3.6.5.2.2 Fixed Effects Model

The fixed effects model assumes that differences across units can be observed or captured in differences along the constant term (Greene, 2003). Fixed effects model is designed to account for the causes of changes within an entity (Torres-Reyna, 2007). Yaffee (2003) stated that it might have a constant shape but differ according to the cross-sectional unit (i.e., country, company). Baltagi (2005) added that the fixed effect model becomes an appropriate specification because it focuses on the behaviour of numbers of firms and numbers of times. The assumption is that a fixed effects model proposes that the slope coefficients may be constant for all firms, but the intercept will vary across the firms. In practice, fixed effects determine the relationship between the predictor variable and the outcome variables that is within an entity (i.e., company, persons). Each entity possesses peculiar characteristics that either may or may not influence the predictor variables. Hence,

in adopting fixed effects, individuals or characteristics might have impacts or bring bias to the predictor or outcomes that need to be controlled. This accounts for the correlation between the entity's error term and predictor variables. Fixed effects play the role of removing those time-invariant characteristics to access the net effect of the predictors on the outcome variable (Torres-Reyna, 2007).

Second, the fixed effects model assumes that these time-variant variables discussed above may have characteristics that are unique to the individual and should not be correlated with each other's individual characteristics. However, situations in which they (errors) are correlated, fixed effects will no longer be suitable, and inferences drawn based on that may be misleading (inferences may not be correct). To correct this, a new model must be created for such relationship by the probability of random effects and accounts for the main reason to consider the Hausman test (Torres-Reyna, 2007).

3.6.5.2.3 Random Effects Model

The random effects model emerged for different reasons. Unlike the fixed effects model, the random effects model assumes that the variations from different entities are random and uncorrelated with the predictor or independent variables as the case may be and are included in the model (Torres-Reyna, 2007). Furthermore, Baltagi (2005) noted that too many parameters exist in the fixed effects model, which leads to a loss of degrees of freedom. This is something that the random effects model avoids. Hence, the crucial point in distinguishing between the fixed effect and random effects models as Green (2008) noted is whether the unobserved individual effects embodied elements that are correlated with

these effects are stochastic or not. Unlike fixed effects, random effects allow for inferences drawn to be generalized beyond the sample considered in the model. In fixed effects, a researcher may be required to specify those individual firms or study characteristics that may or may not influence the predictor variables. The main issue here is that some variables may not be available, and their unavailability might lead to omitted variables that, in turn, leads to bias (Torres-Reyna, 2007).

According to Yaffee (2003), both methods have their pros and cons. He noted that the fixed effects model frequently experiences too many cross-sectional units of observations, which will require many dummy variables for specification. Many dummy variables have the potential to sap the model of a sufficient number of degrees of freedom. This accounts for a drawback in statistical tests. In addition, such may lead to multicollinearity and increase the standard error of the study and reduce the model's statistical power to test parameters. On another note, fixed effects have the advantage of correcting the error terms of the individual effect.

3.6.5.2.4 The Hausman Test (Fixed or Random Effects)

In deciding on the option of fixed or random effects, the Hausman test emerged (Hausman, 1978). The option is guided by determining whether a significant correlation exists between unobserved firm-specific random effects and the regressor (Schmidheiny & Basel, 2011). Where no correlation exists, the random effects model is considered to be more powerful and parsimonious. But, if there is a correlation, the random effects model is inconsistently

estimated while the fixed effects model is considered as the model of choice (Torres-Reyna, 2007).

3.6.6 Panel Data Analysis Diagnostic Test

The final stage of determining a method of analysis suitable for regression analysis is to check the assumptions underlining such models. Like other estimation techniques, panel data has some basic assumptions, which should not be violated to avoid spurious results. They are: heteroscedasticity and autocorrelation.

3.6.6.1 Heteroscedasticity

Heteroscedasticity is the opposite of homoscedasticity (Field, 2012). Homoscedasticity therefore refers to a situation in which the variance of the residual terms at each level of the predictor variables should be constant. Hence, heteroscedasticity occurs when the residual of the predictor variables has unequal variance (Field, 2012). In other words, it refers to a condition in which the explanatory variables are assumed to be non-stochastic (Gujarati, 2006). It is a feature of a sample selected and not of a population. The presence of heteroscedasticity still makes the OLS estimators unbiased and consistent but affects the distribution of the estimated coefficients, increases the variance of the distribution and therefore makes the OLS estimators inefficient. It also underestimates the variance of the estimator thereby leading to higher values for “t” and for “f-statistics” (Asteriou & Hall, 2015).

Several methods exist to check heteroscedasticity, some of which include: The Park Test, Glejser Test, Spearman's Rank Correlation Test, Goldfeld-Quandt Test, Breusch-Pagan-Godfrey (BPG) Test, White's General Heteroscedasticity Test and other tests of heteroscedasticity (Gujarati, 2006). The choice of a method to adopt (test of heteroscedasticity) is based on certain assumptions considered appropriate for a technique used. Thus, the appropriate test for panel data and statistical software adopted (STATA) in this study is the Modified Wald Test for Groupwise heteroscedasticity as proposed by Greene (2003). Thus, the study fails to accept the null hypothesis of homoscedasticity if the value of $p < 0.05$ or it is statistically significant. However, where the presence of heteroscedasticity is proved in this study, the VCE-cluster and robust standard error corrective measure is employed (Baum, 2006).

3.6.6.2 Autocorrelation

The second assumption of panel data is the issue of autocorrelation. The assumption states that the error terms of a regression model are independently distributed or serially independent but where this assumption fails, the disturbances are said not to be independent but autocorrelated or serially correlated (Asteriou & Hall, 2015). Put succinctly, the assumption of the model suggests that the disturbance term of or relating to any observation is not influenced by the disturbance term relating to another observation (Gujarati & Porter, 2009). This means that an error that occurred at the period "t1" may not be correlated with another at period "t2". Thus, when an equation or regression is proven to exhibit autocorrelation, the OLS estimators will be unbiased and consistent but the estimator (OLS) will be insufficient while the estimated variances of the regression coefficients will

be biased and inconsistent and consequently invalidate the hypothesis testing. Moreover, it overstates both the value of R^2 and the t-statistics (Asteriou & Hall, 2015).

To detect the presence or otherwise of autocorrelation or serial correlation in this study, the Wooldridge Test for Autocorrelation is adopted. Hence, a decision is made when the f-value is significant to indicate the presence of autocorrelation or vice versa. However, several methods exist to correct the problem of autocorrelation, but this study adopts the VCE-cluster and robust standard error as a corrective measure to overcome the effect of autocorrelation (Baum, 2006).

3.6.6.3 Multicollinearity

Multicollinearity is another basic assumption in a linear or multiple regression. Multicollinearity in a regression occurs when two highly correlated predictors are assessed simultaneously (Vatcheva, Lee, McCormick, & Rahbar, 2016). In other words, “multicollinearity exists when there is a strong correlation between two or more predictors in a regression model” (Field, 2012, p. 223). The presence of multicollinearity has an adverse impact on the regression analysis because it produces unstable and biased standard errors that lead to unstable p-values (Field, 2012; Vatcheva et al., 2016). Generally, it leads to unrealistic and invalid interpretations, which can lead to misleading conclusions (Vatcheva et al., 2016).

To diagnose for multicollinearity, this study adopted the pairwise correlation coefficient or the correlation matrix between the predictors and the variance inflation factor (VIF). Several cutoff values exist for the determination multicollinearity for both correlation

coefficients and VIF. Typically, the most commonly used cutoff for correlations between two predictors is more than 0.8, and such are considered as highly correlated (Field, 2012), but Hair et al. (2010) and Coakos and Ong (2011) suggested a value exceeding 0.7. For the VIF, a value greater than 10 is suggestive of multicollinearity.

3.6.7 Research Model

Consistent with prior research (e.g. Abuzayed 2012; Afrifa & Padachi, 2016; Deloof, 2003; Banos-Caballero et al., 2012), this study estimates the following multivariate panel data regression models to examine the relationship between WCM and firm performance as well as the moderating effect of inflation and interest rates on the relationship between WCM and firm performance.

3.6.7.1 Models for Objective One

The following models (1, 2 and 3) are developed to test the relationship between WCM and firm performance:

$$ROA_{it} = \beta_0 + \beta_1 ARM_{it} + \beta_2 APM_{it} + \beta_3 INVM_{it} + \beta_4 CCC_{it} + \beta_5 CCE_{it} + \beta_6 FIRMSIZE_{it} + \beta_7 SALESGROWTH_{it} + \beta_8 FDR_{it} + \varepsilon_{it} \dots\dots\dots \text{Model 1.}$$

$$ROE_{it} = \beta_0 + \beta_1 ARM_{it} + \beta_2 APM_{it} + \beta_3 INVM_{it} + \beta_4 CCC_{it} + \beta_5 CCE_{it} + \beta_6 FIRMSIZE_{it} + \beta_7 SALESGROWTH_{it} + \beta_8 FDR_{it} + \varepsilon_{it} \dots\dots\dots \text{Model 2.}$$

$$TQ_{it} = \beta_0 + \beta_1 ARM_{it} + \beta_2 APM_{it} + \beta_3 INVM_{it} + \beta_4 CCC_{it} + \beta_5 CCE_{it} + \beta_6 FIRMSIZE_{it} + \beta_7 SALESGROWTH_{it} + \beta_8 FDR_{it} + \varepsilon_{it} \dots\dots\dots \text{Model 3.}$$

Where:

ROA is the return on assets, a measure of firm performance. β_0 = intercept of equation. β_1 to β_5 are coefficients of the independent variables. β_6 to β_8 are coefficients of the control variables. Subscript “it” represent the panel data notation; “i” = the cross-sectional unit while “t” = the time or period (i.e. 2007-2015), ε = error term. ARM is accounts receivable management, APM is accounts payable management, INVM is inventory management, CCC is cash conversion cycle and CCE is cash conversion efficiency. FIRMSIZE is firm size, SALES GROWTH is sales growth while FDR is financial debt ratio. The other two measures of firm performance are ROE which is the return on equity and TQ, which is the Tobin’s Q. In addition, these models were estimated using the fixed effect model.

3.6.7.2 Models for Objective Two

Models 4, 5 and 6 presented below were developed to test the moderating effect of inflation rates on the relationship between WCM variables, namely, ARM, APM, INVM, CCC, CCE and the dimensions of firm performance (ROA, ROE, and TQ). Additionally, Models 7, 8 and 9 were developed to estimate the moderating effect of interest rates on the relationship between WCM variables, namely, ARM, APM, INVM, CCC and CCE and the dimensions of firm performance (ROA, ROE, and TQ).

$$\begin{aligned} \text{ROA}_{it} = & \beta_0 + \beta_1 \text{ARM}_{it} + \beta_2 \text{APM}_{it} + \beta_3 \text{INVM}_{it} + \beta_4 \text{CCC}_{it} + \beta_5 \text{CCE}_{it} + \beta_6 \text{INFLAR}_{it} + \\ & \beta_7 \text{ARM}_{it} * \text{INFLAR}_{it} + \beta_8 \text{APM}_{it} * \text{INFLAR}_{it} + \beta_9 \text{INVM}_{it} * \text{INFLAR}_{it} + \\ & \beta_{10} \text{CCC}_{it} * \text{INFLAR}_{it} + \beta_{11} \text{CCE}_{it} * \text{INFLAR}_{it} + \beta_{12} \text{FIRMSIZE}_{it} + \\ & \beta_{13} \text{SALES GROWTH}_{it} + \beta_{14} \text{FDR}_{it} + \varepsilon_{it} \dots \dots \dots \text{Model 4.} \end{aligned}$$

$$\begin{aligned}
ROE_{it} = & \beta_0 + \beta_1 ARM_{it} + \beta_2 APM_{it} + \beta_3 INVM_{it} + \beta_4 CCC_{it} + \beta_5 CCE_{it} + \beta_6 INFLAR_{it} + \\
& \beta_7 ARM_{it} * INFLAR_{it} + \beta_8 APM_{it} * INFLAR_{it} + \beta_9 INVM_{it} * INFLAR_{it} + \\
& \beta_{10} CCC_{it} * INFLAR_{it} + \beta_{11} CCE_{it} * INFLAR_{it} + \beta_{12} FIRMSIZE_{it} + \\
& \beta_{13} SALESGROWTH_{it} + \beta_{14} FDR_{it} + \varepsilon_{it} \dots \dots \dots \text{Model 5.}
\end{aligned}$$

$$\begin{aligned}
TQ_{it} = & \beta_0 + \beta_1 ARM_{it} + \beta_2 APM_{it} + \beta_3 INVM_{it} + \beta_4 CCC_{it} + \beta_5 CCE_{it} + \beta_6 INFLAR_{it} + \\
& \beta_7 ARM_{it} * INFLAR_{it} + \beta_8 APM_{it} * INFLAR_{it} + \beta_9 INVM_{it} * INFLAR_{it} + \\
& \beta_{10} CCC_{it} * INFLAR_{it} + \beta_{11} CCE_{it} * INFLAR_{it} + \beta_{12} FIRMSIZE_{it} + \\
& \beta_{13} SALESGROWTH_{it} + \beta_{14} FDR_{it} + \varepsilon_{it} \dots \dots \dots \text{Model 6.}
\end{aligned}$$

$$\begin{aligned}
ROA_{it} = & \beta_0 + \beta_1 ARM_{it} + \beta_2 APM_{it} + \beta_3 INVM_{it} + \beta_4 CCC_{it} + \beta_5 CCE_{it} + \beta_6 INTER_{it} + \\
& \beta_7 ARM_{it} * INTER_{it} + \beta_8 APM_{it} * INTER_{it} + \beta_9 INVM_{it} * INTER_{it} + \\
& \beta_{10} CCC_{it} * INTER_{it} + \beta_{11} CCE_{it} * INTER_{it} + \beta_{12} FIRMSIZE_{it} + \\
& \beta_{13} SALESGROWTH_{it} + \beta_{14} FDR_{it} + \varepsilon_{it} \dots \dots \dots \text{Model 7.}
\end{aligned}$$

$$\begin{aligned}
ROE_{it} = & \beta_0 + \beta_1 ARM_{it} + \beta_2 APM_{it} + \beta_3 INVM_{it} + \beta_4 CCC_{it} + \beta_5 CCE_{it} + \beta_6 INTER_{it} + \\
& \beta_7 ARM_{it} * INTER_{it} + \beta_8 APM_{it} * INTER_{it} + \beta_9 INVM_{it} * INTER_{it} + \\
& \beta_{10} CCC_{it} * INTER_{it} + \beta_{11} CCE_{it} * INTER_{it} + \beta_{12} FIRMSIZE_{it} + \\
& \beta_{13} SALESGROWTH_{it} + \beta_{14} FDR_{it} + \varepsilon_{it} \dots \dots \dots \text{Model 8.}
\end{aligned}$$

$$\begin{aligned}
TQ_{it} = & \beta_0 + \beta_1 ARM_{it} + \beta_2 APM_{it} + \beta_3 INVM_{it} + \beta_4 CCC_{it} + \beta_5 CCE_{it} + \beta_6 INTER_{it} + \\
& \beta_7 ARM_{it} * INTER_{it} + \beta_8 APM_{it} * INTER_{it} + \beta_9 INVM_{it} * INTER_{it} + \\
& \beta_{10} CCC_{it} * INTER_{it} + \beta_{11} CCE_{it} * INTER_{it} + \beta_{12} FIRMSIZE_{it} + \\
& \beta_{13} SALESGROWTH_{it} + \beta_{14} FDR_{it} + \varepsilon_{it} \dots \dots \dots \text{Model 9.}
\end{aligned}$$

Where:

ROA is the return on assets, a measure of firm performance. β_0 represents the intercept of equation. β_1 to β_6 are coefficients of the independent variables while β_7 to β_{11} are coefficients of the interacting variables. β_{12} to β_{14} are coefficients of the control variables. Subscript “it” represents the panel data notation; where “i” is the cross-sectional unit while “t” represents the time or period (i.e. 2007-2015) and ε is the error term. ARM is accounts receivable management, APM is accounts payable management, INVM is inventory management, CCC is the cash conversion cycle and CCE is the cash conversion efficiency. INFLAR is the inflation rates while “*” represents the interaction sign. ARM*INFLAR is the interacting term between accounts receivable management and inflation rates. APM*INFLAR is the interacting term between accounts payable management and inflation rates. INVM*INFLAR is the interacting term between inventory management and inflation rates while CCC*INFLAR represents the interacting term between cash conversion cycle and inflation rates. CCE*INFLAR represents the interacting term between cash conversion efficiency and inflation rates. FIRMSIZE is firm size, SALESGROWTH represents sales growth while FDR is the financial debt ratio. The other two measures of firm performance are ROE that is the return on equity and TQ that is Tobin’s Q.

In addition, INTER refers to interest rates while ARM*INTER is the interacting term between accounts receivable management and interest rates. APM*INTER is the interacting term between accounts payable management and interest rates. INVM*INTER

is the interacting term between inventory management and interest rates while CCC*INTER represents the interacting term between cash conversion cycle and inflation rates. CCE*INTER represents the interacting term between cash conversion efficiency and interest rates. These models were estimated using the fixed effect model.

3.6.7.3 Models for Objective Three

The models below were used to determine the quadratic relationship between WCM and firm performance in Nigeria. In addition, the effects of deviation of WCM from optimal level is estimated using this model. In equation 10, the quadratic relationship is established using the CCC as a comprehensive measure of WCM. Following Tong (2008) and Martinez-Sola et al. (2014) two effects of WCM investment levels were created, where the CCC represented a low-level investment in WCM and CCC² represented a high-level investment in WCM. To confirm the result, it is expected that the coefficients of β_1 and β_2 will be positive and negative or negative and positive respectively.

$$ROA_{it} = \beta_0 + \beta_1(CCC)_{it} + \beta_2(CCC)^2_{it} + \beta_3FIRMSIZE_{it} + \beta_4SALESGROWTH_{it} + \beta_5FDR_{it} + \varepsilon_{it} \dots \dots \dots \text{Model 10a.}$$

$$ROE_{it} = \beta_0 + \beta_1(CCC)_{it} + \beta_2(CCC)^2_{it} + \beta_3FIRMSIZE_{it} + \beta_4SALESGROWTH_{it} + \beta_5FDR_{it} + \varepsilon_{it} \dots \dots \dots \text{Model 10b.}$$

$$TQ_{it} = \beta_0 + \beta_1(CCC)_{it} + \beta_2(CCC)^2_{it} + \beta_3FIRMSIZE_{it} + \beta_4SALESGROWTH_{it} + \beta_5FDR_{it} + \varepsilon_{it} \dots \dots \dots \text{Model 10c.}$$

DEVIATION is derived from equation 11 and included in equation 12. Following Afrifa and Padachi (2016), this study eliminated the variables “CCC” and “CCC²” to determine the optimal level. Furthermore, to determine the DEVIATION point, this study made CCC the dependent variable and made all the control variables (FIRMSIZE, SALESGROWTH and FDR) independent variables. DEVIATION is, hence, the absolute value of residuals, which were computed from equation (11).

$$CCC_{it} = \beta_0 + \beta_1 \text{FIRMSIZE}_{it} + \beta_2 \text{SALESGROWTH}_{it} + \beta_3 \text{FDR}_{it} + \varepsilon_{it} \dots \text{Model 11.}$$

DEVIATION is the absolute value of residuals derived from equation (11) above. It is thereafter included in model (12) after eliminating the variables “CCC” and “CCC²” from equation 10. DEVIATION becomes the main independent in equation 12. This is aimed at determining the effect of Deviation from the optimal level of investment in WCM. The point of Deviation would mean the existence of a point (optimal) at which further investment in WCM would reduce profitability.

$$ROA_{it} = \beta_0 + \beta_1 (\text{DEVIATION})_{it} + \beta_2 \text{FIRMSIZE}_{it} + \beta_3 \text{SALESGROWTH}_{it} + \beta_4 \text{FDR}_{it} + \varepsilon_{it} \dots \text{Model 12a.}$$

$$ROE_{it} = \beta_0 + \beta_1 (\text{DEVIATION})_{it} + \beta_2 \text{FIRMSIZE}_{it} + \beta_3 \text{SALESGROWTH}_{it} + \beta_4 \text{FDR}_{it} + \varepsilon_{it} \dots \text{Model 12b.}$$

$$TQ_{it} = \beta_0 + \beta_1 (\text{DEVIATION})_{it} + \beta_2 \text{FIRMSIZE}_{it} + \beta_3 \text{SALESGROWTH}_{it} + \beta_4 \text{FDR}_{it} + \varepsilon_{it} \dots \text{Model 12c.}$$

In equation 13, the study determined whether deviations in either way (higher or lower) affected firm profitability. The equation advances over equation 12 by including an interaction term. The aim is to determine the effect of deviation below or above the optimal level of investment in WCM on firm performance. Following Tong (2008), Martinez-Sola et al. (2014) and Afrifa and Padachi (2016), the study introduced “INTERACT” and defined it as “above-optimal” * DEVIATION. Above-optimal is defined as a dummy variable that takes a value of 1 for a positive residual and 0 if otherwise (Afrifa & Padachi, 2016). Hence, DEVIATION and INTERACT are introduced, and the study expects a negative impact of both above-optimal and below-optimal and DEVIATION on firm performance. Note that “above-optimal” and “below-optimal” are assumptions made in the literature and in equation 11. They refer to a level of working capital investment above or below the optimal level (required level) determined in the preceding equations.

$$ROA_{it} = \beta_0 + \beta_1(DEVIATION) + \beta_2(INTERACT) + \beta_3FIRMSIZE_{it} + \beta_4SALESGROWTH_{it} + \beta_5FDR_{it} + \varepsilon_{it} \dots\dots\dots \text{Model 13a.}$$

$$ROE_{it} = \beta_0 + \beta_1(DEVIATION) + \beta_2(INTERACT) + \beta_3FIRMSIZE_{it} + \beta_4SALESGROWTH_{it} + \beta_5FDR_{it} + \varepsilon_{it} \dots\dots\dots \text{Model 13b.}$$

$$TQ_{it} = \beta_0 + \beta_1 (DEVIATION) + \beta_2(INTERACT) + \beta_3FIRMSIZE_{it} + \beta_4SALESGROWTH_{it} + \beta_5FDR_{it} + \varepsilon_{it} \dots\dots\dots \text{Model 13c.}$$

Where:

Subscript “it” represent the panel data notation; “i” = the cross-sectional unit while “t” = represents the time or period (2007-2015). β_0 = intercept of equation, ε = error term. The definitions of WCM variables and performance variables remained the same as previously explained in section 3.6.3 while other additional variables were defined accordingly. These models were estimated using the fixed effect model.

3.6.7.4 Models for Objective Four

Models 14a, 14b, and 14c presented below were developed to estimate the hypothesis, which states that significant difference would exist in the relationship between WCM and firm performance during and after financial crisis.

$$ROA_{it} = \beta_0 + \beta_1 ARM_{it} + \beta_2 APM_{it} + \beta_3 INVM_{it} + \beta_4 CCC_{it} + \beta_5 CCE_{it} + \beta_6 FIRMSIZE_{it} + \beta_7 SALESGROWTH_{it} + \beta_8 FDR_{it} + \beta_9 D_1 + \varepsilon_{it} \dots \dots \dots \text{Model 14a.}$$

$$ROE_{it} = \beta_0 + \beta_1 ARM_{it} + \beta_2 APM_{it} + \beta_3 INVM_{it} + \beta_4 CCC_{it} + \beta_5 CCE_{it} + \beta_6 FIRMSIZE_{it} + \beta_7 SALESGROWTH_{it} + \beta_8 FDR_{it} + \beta_9 D_1 + \varepsilon_{it} \dots \dots \dots \text{Model 14b.}$$

$$TQ_{it} = \beta_0 + \beta_1 ARM_{it} + \beta_2 APM_{it} + \beta_3 INVM_{it} + \beta_4 CCC_{it} + \beta_5 CCE_{it} + \beta_6 FIRMSIZE_{it} + \beta_7 SALESGROWTH_{it} + \beta_8 FDR_{it} + \beta_9 D_1 + \varepsilon_{it} \dots \dots \dots \text{Model 14c.}$$

Where:

Subscript “it” represent the panel data notation; “i” = the cross-sectional unit while “t” = represents the time or period. β_0 = Intercept of equation, ε = Error term, D_1 = Dummy variable which takes the value of 1 for periods before crisis and 0 if otherwise. In order to

address this objective, first, each regression result was run separately for the periods during the crisis and after the crisis. Then, the Cramer (1987) Z-statistic was employed to compare the R^2 of the two regressions with regards to the two periods. The results of the Cramer Z are a function of the sample size, the number of independent variables in the model and the real value of the R^2 . The Cramer Z-statistic enables researchers to compare two regression results that have different dependable variables (Kothari, 2001). This approach is indeed helpful in making comparison (Brown, Lio, & Lys, 1999; Sami & Zhuo, 2004). The Cramer Z-statistic is computed as:

$$z = \frac{\hat{R}^2_1 - \hat{R}^2_2}{\sqrt{Var(\hat{R}^2)_1 - Var(\hat{R}^2)_2}}$$

$$\text{Variance} = Var(\hat{R}^2) \sim \frac{4}{N} \hat{R}^2 (1 - \hat{R}^2)^2 \left[1 - \frac{2(q+1)+3}{N} \right]$$

Where: $\hat{R}^2_1$ = the R-squared of regression one. $\hat{R}^2_2$ = the R-squared of regression two.
 $Var(\hat{R}^2)_1$ and $Var(\hat{R}^2)_2$ = variance of first and second regressions respectively. N = is the sample size and q = the number of predictors in each regression.

3.7 Qualitative Method Design

This section presents the methods employed in collecting and analysing the qualitative data.

3.7.1 Justifications for the Method

The main justification for the inclusion of the qualitative paradigm in this study is to probe in detail the practices of WCM and determine in a more comprehensive manner the effect of an unstable macroeconomic environment (inflation rates and interest rates) on the performance of firms in Nigeria. This area has received little attention over time. Inflation rates and interest rates exerts pressure on WCM performance (Ali & Khan, 2011; Mathuva, 2014). They are attributed to the inconsistent findings in the WCM literature (Filbeck & Krueger, 2005). Therefore, a need exists to strengthen the findings from different perspectives, i.e., both the quantitative approach and qualitative approach (interview), to see how the results converge and grow confidence in WCM research. Such findings, therefore, are not attributed to a method artifact (Bouchard, 1976; Jick, 1979) as the result emerged from different methods.

Creswell (2003) argues that such mixed method provides a stronger understanding of the concept (for example, WCM) than either quantitative or qualitative approach can do alone. In addition, the difficulties encountered by financial statement preparers with regards to measuring or quantifying human capital in economic unit has posed many problems. Stanko, Zeller, and Melena (2014) stated that the value an employee adds to bring success to a firm has been difficult to measure and appropriately included in the financial data reported. This difficulty in measuring human contributory aspects to financial reporting justifies the option of the qualitative method of evaluation in this study. Moreover, given that WCM variables require the skills, experience and knowledge of people working within a firm to determine when to grant customers credits (evaluation of customers' credit

worthiness), how to strengthen the relationship between the firm and its customers and the evaluation of competitive advantage strategies to adopt, also informed the need for the qualitative method.

The non-inclusion of these strategies, which are often regarded as intangible assets in the financial data, also makes the qualitative study worthwhile. Qualitative information allows managers to give perspectives about their challenges and efforts not reported in the financial annual reports through their participation in an interview. To obtain the views and perceptions of insiders on this matter, interviews were conducted with managers of firms in Nigeria. These officers were interviewed because of their knowledge regarding WCM practices in their various companies. Consequently, this study specifically determined their WCM practices and evaluated the effect of inflation and interest rates on the effectiveness of WCM. It also sought their views on the practices of WCM during and after the financial crisis of 2007-2008. In most qualitative studies, suppliers of such information are described differently like informant, respondents and others. However, Creswell (2009) said that they are better described as participants. Thus, the providers of these information (interviewees) are addressed in this study as “participants”.

3.7.2 Sampling Design

This study adopts the purposeful sampling technique to select six (6) companies from where the participants emerged. The following sections discuss the company selection process and the participants.

3.7.2.1 Company Selection and Participants

The selection of companies (firms) for this study was based on purposive sampling technique. The purposive sampling technique was employed to select twelve (12) companies for in-depth interviews. According to Merriam (1998), purposive sampling is necessary especially if the study wants to discover, understand and gain insight about a group, such study should select a sample from which the most can be learned. In addition, the number of companies selected is in line with Guest, Bunce, and Johnson (2006). They stated that for studies “which aim is to understand common perceptions and experiences among a group of relative homogeneous individual, twelve interviews should suffice” (Guest et al., 2006, p. 79). After the selection of companies, several follow up calls and emails were made to obtain their consent for participation.

Initially, three firms did not agree to participate in the study due to their company policy, which prevents staff from been interviewed for fear that their strategies/secrets may be exposed to their competitors. The researcher attempted to persuade them by presenting an official letter from the Universiti Utara Malaysia and noted that their responses would be treated anonymously. However, all efforts to convince them proved unsuccessful.

Appointments were scheduled different times during a three-week period, but of these, only six companies honoured their engagement time (scheduled time) while the other three companies constantly shifted the interview periods because of time constraints and the unavailability of the required staff to attend the interview. At the end, these three companies were not considered in this study. Hence, interviews were conducted for only

six companies. The participants from these companies comprised finance directors and managers. The choice of the participants was informed by their knowledge of key issues in WCM practices. These participants are more involved in WCM-related decisions daily and have worked for more than ten (10) years in their respective companies. This suggests that the participants were abreast of the economic situations of their companies before, during and after the financial crisis and the entire coverage of this study.

3.7.3 Data Collection

The data for this study were collected in September 2016 through a semi-structured face-to-face interview (Saunders, Lewis, & Thornhill, 2003) during which open-ended questions were asked. A semi-structured interview requires that an interview guide be provided to acquaint the participants on the subject matter while the open-ended questions give participants the freedom to express their views and thought beyond what was asked. An interview generally is a systematic way of obtaining information or data through conversations by talking and listening to people. Such a method of gathering information enables the researcher to obtain productive, deep and rich information about the participants' perceptions, attitude, opinion and motivations that drives the action they take (Creswell, 2009; Patton, 2002; Wimmer & Dominick, 2006). It also enables the participants to provide their views and opinions about the discourse and allows for more control over the line of questioning (Creswell, 2009). Arising from this, a research protocol was developed to ensure uniformity throughout the interview process. It specifically provided the purpose of the interview, title, instructions to the participants and introductory questions, which sought their perceptions about the key issues in relationship to the

management of working capital and various changes encountered over time (see: Appendices A and B for details). Particularly, the interview questions for this study were developed based on the research questions, which were informed by the literature review. Three themes formed the interview questions: WCM practices of firms, financial crisis and economic conditions.

Before the interviews began, an official letter of introduction from the Universiti Utara Malaysia was shown to the participants and a sample of the questions was sent to the various participants. Additionally, the researcher assured the participants that they could withdraw from the interview at any time. This was done to give them confidence that the essence of the interview was for academic purposes and not for any other motive. In addition, the two documents were given in advance to prepare their minds relatively on the discourse. The duration of the interviews ranged in length from between 45 minutes and 1 hour.

The interviews were audio taped in addition to notes that the researcher took in the field. Regarding the venue of the interview sessions, two participants preferred their offices while the remaining participants preferred quiet rooms within their office complex. During the interviews, the participants and researcher agreed that the responses should be anonymous, and the participants would not be “recognized” at any point. This agreement was made to give assurance to the participants that the secrets of their business strategies would not be divulged to their competitors and the general public at large. In the end, substantial

knowledge of WCM practices and techniques was gained from the sessions. The interviews were conducted in English.

3.7.4 Interview Method of Analysis

The researcher conducted word-to-word transcriptions of the audio record of the interviews in addition to the notes taken. In line with the suggestions that Attride-Stirling (2001) and Krippendorff (2004) offered, the study adopted a thematic analysis approach. The thematic analysis was conducted to enable the identification of the themes and perspectives with regards to research questions (Braun & Clarke, 2006; Creswell, 2009). In transcribing the spoken text (verbal expressions) and the non-verbal expressions on the subject matter to produce the desired layout of transcription, the researcher used a word processor and ensured that the views of the participants were not influenced by the researcher's knowledge of WCM concepts (Daymon & Holloway, 2011; Hollima & Rowley, 2014). The researcher identified the different themes and other key notes by using different highlighters to colour code. Hence, an amalgamation of similar colour coded portions was created with reference to the research questions to create a new document for analysis.

The researcher was guided by the 15-point checklist criteria (see: Appendix D) for thematic analysis that Braun and Clarke (2006) created. However, prior to the main analysis, the researcher ensured the validity and reliability of data to determine if they were in line with the participants' responses through checking and reconciling the participants tape recorded statements and the notes taken. Typically, the researcher is expected to transcribe statements made and return them to the participants for confirmation of their statements,

but the researcher adopted instant check for this study. Instant check here refers to confirming the statements made by the participants on the spot. This was because of the difficulties in obtaining a repeat appointment with the busy officers. Finally, care was taken throughout the process to avoid selecting data that matched the researcher's pre-conceptions (Holliman & Rowley, 2014; Kvale & Brinkmann, 2009).

3.8 Summary of the Chapter

The chapter provides a detailed discussion of the methods of research employed in data collection and analysis in this study. This study employed the mixed method design of QUAN–qual dominant less-dominant paradigm. The approach was sequential with an embedded interpretation. This is done to obtain in-depth understanding of the practices of WCM to compliment the quantitative findings. The chapter also discussed the theoretical framework, and hypotheses were developed based on the research questions and objectives. Furthermore, the various variables for the study were operationalized, and the study's population, sample determination and the methods of data collection and analytical techniques adopted were discussed. This chapter offers a direction to the remaining chapters of this study. The next chapter specifically discusses the study's quantitative findings.

CHAPTER FOUR

QUANTITATIVE RESULTS AND DISCUSSIONS

4.1 Introduction

This chapter presents and discusses the study's empirical results, which address research objectives one, two, three and four. These objectives were set to: 1) determine the relationship between working capital management and firm performance; 2) determine the moderating effect of economic conditions on the relationship between working capital management and firm performance; 3) determine the quadratic relationship between working capital management and firm performance; and 4) determine the difference in the relationship between working capital management and firm performance during and after the financial crisis of 2007-2008. The chapter is further sub-divided into six sections. Section 4.2 discusses the classification of sample representation. Section 4.3 presents the descriptive statistics of the variables. The correlation matrix and diagnostic test results are discussed in Sections 4.4 and 4.5, respectively. Section 4.6 addresses objective one while Section 4.7 addresses objective two. Sections 4.8 and 4.9 address research objectives three and four, respectively. Lastly, Section 4.10 summarizes the findings from the chapter.

4.2 Industry Classification of the Sample Size

As stated in the preceding chapter, this study evaluated non-financial listed firms in Nigeria, which totalled 115 firms as seen in Table 4.1. The Table indicates the available listed firms for the period of data collection of this study, which was between September 2016 and January 2017. Due to the absence of complete data for a significant number of

years and variables, only 75 firms had usable financial statement (data) for the period of 2007 to 2015. Therefore, the final sample of the study comprised 75 firms. These firms had the required data necessary for analysis over the period of nine years (2007 to 2015), resulting in 675 firm-year observations.

As shown in Table 4.1, the percentages of firms used are: agriculture (5.33%), conglomerate (8.00%), construction/real estate (4.00%), consumer goods (22.67%), healthcare (6.67%), ICT (2.67%), industrial goods (20.00%) and natural resources (4.00%). Others are oil and gas (12.00%) and services (14.67%). These results show that all the sectors are represented and the expectation is that the findings from this sample reflect the general characteristics of firms operating in Nigeria.

Table 4.1
Industry Classification of Sample

Distribution of Sample firms by Industry	Number of Firms Listed	Available Firms (Usable)	Percentage of Firms Used
Agriculture	5	4	5.33
Conglomerates	6	6	8.00
Construction/Real Estate	7	3	4.00
Consumer Goods	22	17	22.67
Healthcare	11	5	6.67
ICT	7	2	2.67
Industrial Goods	17	15	20.00
Natural Resources	4	3	4.00
Oil and Gas	12	9	12.00
Services	24	11	14.67
Total	115	75	100.00

Source: Insights from the Nigerian Stock Exchange.

4.3 Descriptive Statistics

Table 4.2 below presents the descriptive statistics of all the variables used in this study. It provides information about the mean, median, standard deviation, minimum, maximum and the skewness and kurtosis for the dependent, independent and control variables. The study adopted return on assets (ROA), return on equity (ROE) and market valuation (TOBIN'S Q) as the dependent variables while the independent variables are: accounts receivables management (ARM), accounts payable management (APM), inventory management (INVM), cash conversion cycle (CCC) and cash conversion efficiency (CCE). The moderating variables are inflation rates (INFLAR) and interest rates (INTER). The control variables are firm size (FIRMSIZE), sales growth (SALESGROWTH) and financial debt ratio (FDR).

The descriptive statistics in Table 4.2 reveal that ROA is on average 5.39% with a minimum of -20.03% and a maximum of 28.57% yields, respectively. The average of ROE is 22.32% with a minimum and a maximum of 0.006% and 97.58% yields, respectively. TQ is on average 193.59% with minimum and maximum yields of 52.62% and 685.27%, respectively. The variations between ROA, ROE and TQ as shown in their mean, minimum and maximum values reveal that some companies made huge profits between the reviewed periods, while others made significant losses. This important difference accounts for the reason why all these measures are included in this study.

Table 4.2
Descriptive Statistics of Continuous Variables (n=675)

Variable	Mean	Median	Standard Deviation	Min	Max	Skewness	Kurtosis
ROA	0.0539211	0.0511312	0.0974374	-0.2003407	0.2857245	-0.2054961	4.097238
ROE	0.2332133	0.1571171	0.2255173	0.000063	0.9758307	1.662434	5.48206
TQ	1.935865	1.343815	1.511531	0.5261765	6.852686	1.727627	5.366354
ARM	65.81284	33.98553	85.91416	1.614762	404.844	2.511986	9.408382
APM	71.40689	42.26579	79.66378	1.691966	335.38	1.846047	5.923211
INVM	100.0844	82.88017	83.46253	1.989002	358.2027	1.339954	4.699067
CCC	98.03848	69.8113	120.9543	-121.1655	469.8565	1.217954	4.880861
CCE	0.1064187	0.1023664	0.2442265	-0.6259259	0.7416459	-0.3135631	5.377915
INFLAR	112.4799	110.8408	28.9964	70.65815	158.9435	0.101972	1.717299
INTER	7.630997	7.700803	2.252735	3.509	11.06417	-0.2547931	2.276369
FIRMSIZE	9.878679	9.860165	0.8014258	8.269192	11.26919	-0.0638473	2.308822
SALESGR	0.1325887	0.0856619	0.340373	0.5409587	1.264393	1.192165	5.809239
FDR	0.5731376	0.5613916	0.2724106	0.0767562	1.399866	0.7752867	4.23238

Note: Variables are defined as follows: Return on assets (ROA), return on equity (ROE), market valuation (TQ), accounts receivable management (ARM), accounts payable management (APM), inventory management (INVM), cash conversion cycle (CCC), cash conversion efficiency (CCE), inflation rates (INFLAR), interest rates (INTER), firm size (FIRMSIZE), sales growth (SALESGROWTH) and financial debt ratio (FDR).

The average of ARM is 65.81 days with a minimum of 1.61 days and a maximum of 404.84 days. The mean value of ARM of 66 days suggests that it takes an average of two months and six days for companies under examination to collect the money owed by their customers after credit sales. The mean value is consistent with previous studies, like Mathuva (2010) which reported a mean of 65 days and Tauringana and Afrifa (2013) which reported a mean value of 81. Likewise, APM period has a mean of 71.41 days with minimum and maximum days of 1.69 and 335.38, respectively. This reveals that it takes the companies under study two months and 11 days to pay their suppliers. However, the standard deviation of 79.66 shows that a large variation exists in the pattern of payment of these companies. Similar days of 90.5 and 95 were reported by Igbal et al. (2014) and Mathuva (2000), respectively.

The Table also reveals a mean of 100.08 days for INVM with a minimum and a maximum of 1.99 and 358.20 days, respectively. These results show that listed companies in Nigeria take on average, three months and 10 days to turnover their inventory. The standard deviation of 83.46 indicates that a wide variation of inventory turnover days exists amongst the listed firms. Besides this point, the minimum value of 1.99 suggests that listed companies in Nigeria hold a minimum stock of inventory for various motives to drive their traditional inventory needs as Wang (2002) suggested. These include holding inventory for transaction-oriented, precautionary and speculative motives (Savita, 2011). Comparably, Charitou et al. (2010) recorded a similar mean average of 103 days while Mathuva (2010) reported a mean of 97 days. These suggest that the inventory values of this study are appropriate to predict the relationship between WCM and firm performance.

For the CCC, the mean is 98 with a minimum of 121 and a maximum of 469 days. The CCC measures the effectiveness of firms in realizing cash from operations. The result shows the time (98 days) it takes for firms to turnover inventory, sell and recover cash back to the business. The result indicates a longer cycle, which has the consequence of creating a cash gap for a firm that requires external funding. This conversion period takes three months with an overdue period of 121 days. The long period of conversion may be the result of the inclusion of construction companies and real estate companies; these companies require more time to deliver their contracts.

The longer conversion period is also evident in the standard deviation value of 120 days and signifies the variations of the CCC amongst these firms. Previous studies have also reported similar means. Karaduman et al. (2010) reported a mean of 99 days in their study of Turkey while Enqvist et al. (2014) reported a mean of 108 days in their investigation in Finland. The CCE reveals a mean value of 10.62% with a minimum and a maximum of 62.59% and 74.16%, respectively. The CCE measures the efficiency with which a firm's operations cycle is managed. The mean value demonstrates that firms use efficient internal measures in realizing sales early, but the minimum and maximum values contradict the efficiency of the various measures adopted. As revealed by the standard deviation (24%), the maximum values denoting inefficiency may be due to differences in the sample characteristics, demonstrating that some firms may not be efficient.

The study also includes INFLAR, which has a mean value of 112.48 with minimum and maximum values of 70.66 and 158.94, respectively. Also included in the study is the

INTER, which have a mean value of 7.63 with minimum and maximum values of 3.51 and 11.06, respectively. These macroeconomic variables reported have higher rates compared to other countries as illustrated in Table 2.1. This has implications with respect to economic instability for a country. Other variables considered to control the differences that might exist amongst the sampled firms include FIRMSIZE, SALESGROWTH and FDR. FIRMSIZE was measured using the natural log of sales and has a mean value of 9.88. Its minimum and maximum values are 8.27 and 11.27, respectively. The standard deviation is 0.80. Firm size is normally used in WCM studies to control for the advantages of bigger size over smaller size. According to Pervan and Visic (2012), large firms have better opportunities to enjoy discounts and negotiate favourable payment terms and conditions because of their rate of consumption. Dagan (2013) added that large firms have more competitive power or advantages compared to small firms. As shown by the mean (9.88), different sizes exist, but the standard deviation of 0.80 reveals that although differences exist, the dispersion is small. Hence, a conclusion can be drawn that firms considered in this study are of similar sizes.

SALESGROWTH is the second control variable and has a mean of 0.13 (13%) with minimum and maximum values of 0.54 (54%) and 1.26 (126%), respectively. The standard deviation is 34%. The mean of 13% suggests a low domestic demand and patronage for the various products and services provided. The low sales recorded and poor patronage may be the result of high inflation and interest rates because where these exist, the prices of goods will be astronomically high. However, the standard deviation of 34% shows a wide variation of patronage amongst these companies. The minimum and maximum values

confirm that while some companies recorded a moderate sales growth (patronage) rate, others recorded a high sales growth rate.

FDR is the third control variable, which measures the percentage of a firm's assets financed by debt. It has a mean value of 57% with a minimum of 7.7% and maximum of 139.9%. The standard deviation is 27%. The mean value of 57% suggests that these companies mainly finance their operations with debt while about 43% of their finance comes from both equity and other sources. This is high and constitutes excess risk to firms listed on the Nigerian Stock Exchange. This may be responsible for the closure of some companies as reported by the *Premium Times* (2012) and the significant low performance reported by Alex (2015). Hence, this and many other factors may explain why companies operating in Nigeria have recorded low performance compared to those in other countries. The study also considered skewness and kurtosis to test for the normality of the original data in Table 4.2. The finding of the skewness is within the range of -0.06 to 2.5. This means that most (more than 95%) of the dataset is within the range of normal data. The kurtosis is within the range of 1.72 to 9.41. This also means that most of the dataset is within the expected range of normality as revealed by the kurtosis. The appropriateness of the skewness and kurtosis was determined by benchmarking with Kline's (2011) thresholds.

In addition, the transformed data shows relatively a more acceptable skewness within the range of 0.06 to 1.7, and a kurtosis within the range of 1.7 and 5.8 (see Section 4.5.2.1 for more discussion). However, several studies have stated that financial data are always not normal (Kadri et al., 2010). In addition, Field (2012) reported that for a sample size greater

than 30 ($n > 30$), normality should not be a problem. Based on this evidence, the data for this study are considered appropriate for predicting the viability of WCM on firm performance.

4.4 Correlation Analysis for the Relationship between WCM and Firm Performance

Table 4.3 presents the Pearson correlation matrix of all variables considered in this study. This is important to describe the direction, strength of association and significance between and among the various variables considered in a study (Sekaran, 2006; Pallant, 2011). Moreover, Saunders et al. (2003) and Anderson, Sweeney, Williams, Freeman, and Shoesmith (2007) pointed out that a high correlation between variables suggests the presence of multicollinearity. Field (2005) stated that multicollinearity becomes a problem if the correlation coefficient exceeds 0.80. Therefore, the correlation of the variables in this study was determined to detect the presence of multicollinearity and the possibility of spurious regression coefficient. Also, a zero correlation is undesirable as it suggests the existence of no relationship. This is unacceptable in research (Reimann, Filzmoser, Garret, & Dutter, 2008). Thus, either a positive or negative (+1/-1) value is expected to indicate the presence of a relationship.

The results as shown in Table 4.3 indicate a significant and negative correlation between ROA and ARM, APM, INVM, CCC and FDR, validating the assumption that firm profitability increases with decreases in WCM investments (Deloof, 2003). Meanwhile, CCE, FIRMSIZE and SALESGROWTH are significant but positive, indicating a positive correlation. With regards to ROE, this study found a significant and negative correlation

between ROE and ARM, CCC and CCE while INVM and SALESGROWTH are insignificant, suggesting an inverse correlation. However, ROE is significant and positively correlated with APM, FIRMSIZE and FDR. The results of the Pearson Correlation also show that TQ is significantly and negatively correlated with ARM and CCC but insignificantly correlated with CCE. Conversely, APM, SALESGROWTH and FDR are significantly and positively correlated with TQ while INVM and FIRMSIZE are statistically insignificant. Like the Descriptive Statistics in Table 4.2, the Pearson Correlation presented in Table 4.3 is consistent with previous studies conducted on WCM.



Table 4.3
Correlation Coefficient Analysis

VARIABLES	ROA	ROE	TQ	ARM	APM	INVM	CCC	CCE	FIRMSIZE	SALES GROWTH	FDR
ROA	1.0000										
ROE	0.1152***	1.0000									
TQ	0.2514***	0.4311***	1.0000								
ARM	-0.2532***	-0.1005***	-0.1161***	1.0000							
APM	-0.0744*	0.1029***	0.0880**	0.2633***	1.0000						
INVM	-0.1442***	-0.0185	0.0321	0.1696***	0.3077***	1.0000					
CCC	-0.1643***	-0.1190***	-0.1009***	0.4364***	-0.1012***	0.6465***	1.0000				
CCE	0.1739***	-0.0701*	-0.0154	-0.1793***	0.0145	-0.0624	-0.1222***	1.0000			
FIRMSIZE	0.3264***	0.1162***	0.0624	-0.3273***	-0.1485***	-0.3743***	-0.3418***	0.0189	1.0000		
SALESGROWTH	0.2276***	-0.0073	0.1040*	-0.0695*	-0.1008***	-0.1058***	-0.0960**	-0.0371	0.0647*	1.0000	
FDR	-0.2183***	0.3542***	0.1458***	0.0868**	0.0879**	-0.0302	-0.029	-0.0754*	0.0751*	-0.0259	1.0000

Notes: Variables significance levels are labelled at 1% (***), 5% (**) and 10% (*) for tests of the correlation coefficient. Variables are defined as follows: Return on assets (ROA), return on equity (ROE), market valuation (TQ), accounts receivable management (ARM), accounts payable management (APM), inventory management (INVM), cash conversion cycle (CCC), cash conversion efficiency (CCE), firm size (FIRMSIZE), sales growth (SALESGROWTH) and financial debt ratio (FDR).

The correlation between the rest of the independent variables and control variables suggests that a relationship exists between the variables (no correlation variables are equal to zero) and that multicollinearity is not a problem in this study. This is because the coefficients are below the multicollinearity threshold. Multicollinearity becomes a problem when the correlation coefficient exceeds 0.80 (Field, 2005) while Hair et al. (2010) and Coakos and Ong (2011) suggested that multicollinearity becomes a problem when the correlation amongst variables exceeds 0.70. Overall, the coefficients of correlation between the dependent, independent and control variables presented in Table 4.3 show that none of the variables exceeds either the 0.70 or 0.80 threshold values. This means that the variables in this study fall within the acceptable range, suggesting that multicollinearity is not an issue in this study.

In addition to the correlation matrix, the variance inflation factor (VIF) was also used to examine the various models and test for the presence of multicollinearity as Myers (1990) suggested. Myers (1990) opined that a certain degree of multicollinearity may still exist even though the correlation coefficients are below the required threshold. Hence, the VIF test conducted (see Section 4.5.1 on multicollinearity detection for more discussion) revealed that the models are totally free from multicollinearity and that all the models are below the threshold value of 10 as suggested by Field (2005), which signifies no presence of multicollinearity. Hence, the correlation statistics presented in Table 4.3 reveal that the data for this study are appropriate and support the various regressions analyses of this study.

4.5 Multivariate Analysis Diagnostic Tests

To ensure that the data set (variables) in this study are appropriate for the chosen instrument of analysis, several diagnostic tests were conducted to fulfil the criteria for such instrument (panel data). This is necessary to avoid yielding spurious and misleading results. The diagnostic tests considered necessary like other statistical estimation methods in this study were: multicollinearity test, normal distribution of data, the test of heteroskedasticity, auto/serial correlation and the model specification test.

4.5.1 Multicollinearity Detection

According to Hair et al. (2009), the simplest way to identify multicollinearity amongst variables is by examining the correlation matrix for all the independent variables. High collinearity amongst independent variables, according to Sekaran and Bougie (2011), is undesirable for a regression model because it inflates the standard error and decreases the reliability of estimations. It also yields misleading results and impairs the usefulness of the regression models. Moreover, Field (2012) stated that multicollinearity between variables makes it difficult to assess the individual importance of the predictor. Field (2005:2012) further stated that multicollinearity between variables becomes a problem when their correlation exceeds 0.80. The correlation matrix in Table 4.3 shows that all coefficient values are less than 0.8. Specifically, this study's highest correlation is 0.6464, which is between INVM and CCC, thus suggesting no threat. Furthermore, this study conducted the VIF for confirmation and the results are presented in Table 4.4.

Table 4.4
Results of VIF

VARIABLE	MODEL 1 (ROA)		MODEL 2 (ROE)		MODEL 3 (TQ)	
	VIF	TOLERANCE	VIF	TOLERANCE	VIF	TOLERANCE
CCC	3.22	0.310506	3.22	0.310506	3.22	0.310506
INVM	2.87	0.348913	2.87	0.348913	2.87	0.348913
ARM	1.84	0.544812	1.84	0.544812	1.84	0.544812
APM	1.79	0.558532	1.79	0.558532	1.79	0.558532
FIRMSIZE	1.29	0.777565	1.29	0.777565	1.29	0.777565
CCE	1.05	0.951203	1.05	0.951203	1.05	0.951203
FDR	1.03	0.969179	1.03	0.969179	1.03	0.969179
SALESGROWTH	1.03	0.975303	1.03	0.975303	1.03	0.975303
MEAN VALUE	1.76		1.76		1.76	

Note: Variables are defined as follows: Return on assets (ROA), return on equity (ROE), market valuation (TQ), accounts receivable management (ARM), accounts payable management (APM), inventory management (INVM), cash conversion cycle (CCC), cash conversion efficiency (CCE), firm size (FIRMSIZE), sales growth (SALESGROWTH) and financial debt ratio (FDR).

The results of VIF for the models are within the range of 1.03 to 3.22 with a mean value of 1.76. The values indicate that multicollinearity is not an issue in this study since the values obtained are less than the threshold value of 10 suggested by Field (2005). Thus, this fulfills the conditions for conducting regression analysis as no extreme collinearity is present and all the separate variables actually measure different things.

4.5.2 Test for Normality

Normality of data is the degree to which the distribution of the sampled data corresponds to normal distribution (Hair et al., 2009). To deal with normality and outliers, this study adopted the technique of winsorization. Winsorization is a method of reducing both the smallest and largest extreme values by replacing them with a predetermined empirical quantile (Green & Martin, 2015). To achieve normality, the data for this study were winsorized at the 3% level to avoid distortions due to outliers. The decision to winsorize and not completely apply trimming or eliminating outlier observations was made because the study employed the balanced panel data. Moreover, the decision to winsorize is consistent with the procedures followed by prior studies in WCM as undertaken by Kieschnick et al. (2006), Hill, Kelly, and Highfield (2010) and Afrifa and Padachi (2016). The outcome was confirmed using the skewness and kurtosis and the standardized normal probability plot (P-P normal probability plot).

4.5.2.1 Skewness and Kurtosis

The original data results shown in Table 4.2 are skewed between -0.06 to 2.5 while the kurtosis ranges from 1.72 to 9.41. Given the distribution of the variables (see Table 4.2),

ARM and APM were logged to achieve transformation following Fiador (2016). Hence, the transformed data is skewed from -0.06 to 1.73 while kurtosis ranges from 1.72 to 5.8. The transformed skewness and kurtosis presented in Table 4.5 are within the threshold of ± 3 and ± 10 , respectively, as Kline (2011) suggested. Hence, the ranges of the skewness and kurtosis show that the data are within normal limits.

Table 4.5
Normality (Skewness and Kurtosis)

VARIABLE	SKEWNESS	KURTOSIS
ROA	-0.2054961	4.097238
ROE	1.662434	5.48206
TQ	1.727627	5.366354
ARM	-0.3100852	2.910008
APM	-0.5326772	3.003485
INVM	1.339954	4.699067
CCC	1.217954	4.880861
CCE	-0.3135631	5.377915
INFLAR	0.101972	1.717299
INTER	-0.2547931	2.276369
FIRMSIZE	-0.0638473	2.308822
SALESGROWTH	1.192165	5.809239
FDR	0.7752867	4.23238

Note: The definition of variables remains the same

Moreover, the normal probability plot graph confirms the assumption of linearity in all the models. The P-Plot graphs in Figures 4.1, 4.2 and 4.3 reveal that the data are normally distributed since the observed values fall along a straight line expected of normally distributed data.

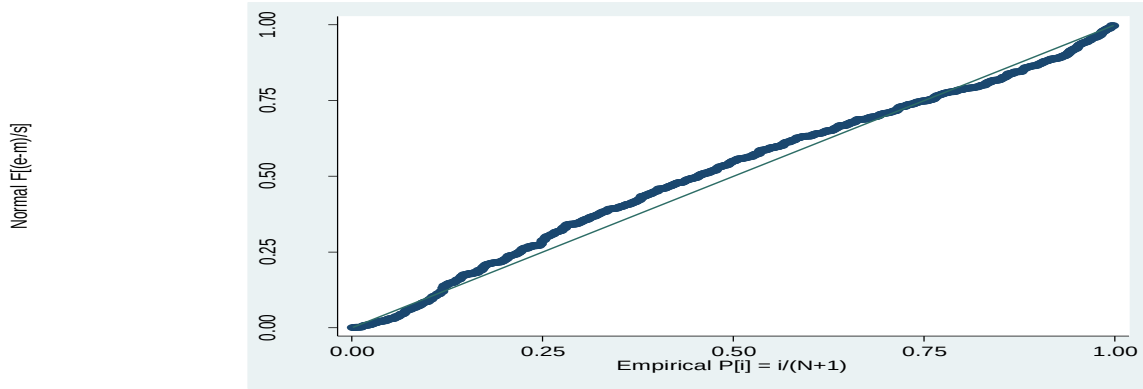


Figure 4.1
P-Plot Normality Graph for ROA Model

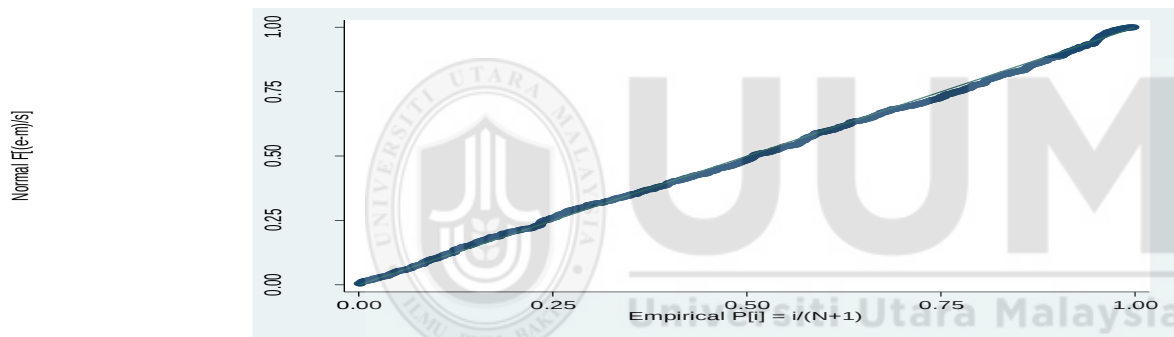


Figure 4.2
P-Plot Normality Graph for ROE Model

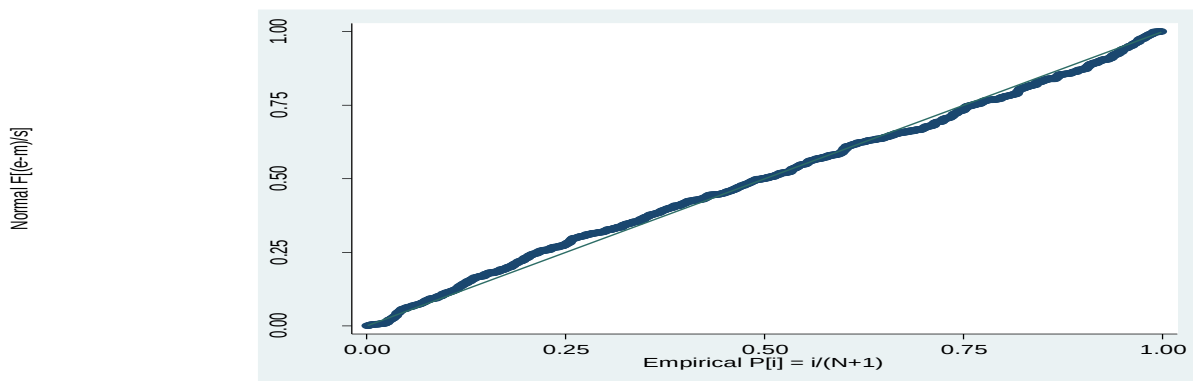


Figure 4.3
P-Plot Normality Graph for the TQ Model

As there is no deviation from the line, this suggests that all assumptions of normality are not violated. Kadri et al. (2010) explained that financial data need not be tested for normality while Blanca et al. (2013) and Lumley, Diehr, Emerson, and Chen (2002) suggested that the normality assumption is not the rule with real data. Lumley et al. (2002) further stated that a large data set often relies on the central limit theorem, which states that the average of many independent random variables is approximately normally distributed around its true population mean. In addition, Field (2012) concluded that for a sample size greater than 30 ($n > 30$), the parameter of such a study can be used and that the assumption of normality should not hold. Despite this flexibility, this study, in its quest for a comprehensive solution for a performance breakthrough, also checked for the normal distribution of the dataset.

4.5.3 Test of Heteroskedasticity

The opposite of heteroskedasticity is homoscedasticity. The homoscedasticity assumption states that at each level of regression of the predictor variables, the variance of the residual terms (error terms) should be constant (Field, 2012; Hair et al., 2009). The assumption of equal variance of the population error is critical for the real application of multivariate technique (Hair et al., 2009). When the variance of the residual terms (error terms) is very unequal, heteroskedasticity is said to be present (Field, 2012). Thus, the heteroskedasticity test was conducted to determine whether or not the error terms amongst the variables are constant.

The results of the Wald Test for groupwise heteroskedasticity conducted for the direct and interaction models (without moderation and with moderation) as shown in Table 4.6 suggests the presence of heteroskedasticity. The probabilities (Prob) of all the models are statistically significant at p-values less than 1%, suggesting that the residuals of these models are heteroskedastic. This evidence therefore leads to the rejection of the null hypothesis (meaning the disturbance terms of the variables are not constant across the panel). According to Hair et al. (2010), proceeding with analysis without correcting for the presence of heteroskedasticity could lead to biased estimates and misleading inferences being drawn consequently. Thus, to address the problem of heteroskedasticity and to guarantee against misleading inferences being drawn from the analysis, the study adopted the technique discussed in Section 4.5.6 for its analysis.

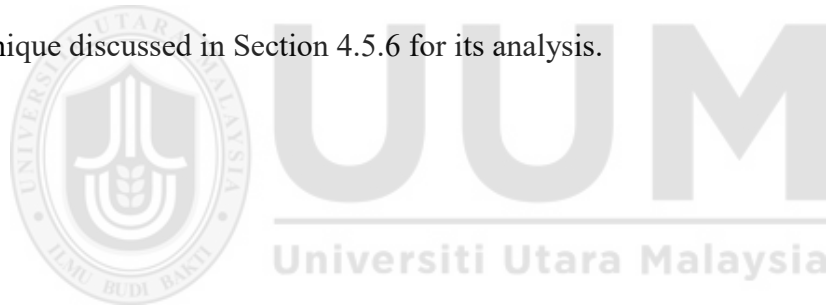


Table 4.6
Modified Wald Test for Groupwise Heteroskedasticity

Relationship between WCM and Firm Performance			
	Model 1 (ROA)	Model 2 (ROE)	Model 3 (TQ)
Chi2	21468.97	16757.38	89233.27
Prob	0.0000	0.0000	0.0000

Moderating Effect of Inflation Rates on WCM and Firm Performance			
	Model 4 (ROA)	Model 5 (ROE)	Model 6 (TQ)
Chi2	26496.35	13473.95	30434.78
Prob	0.0000	0.0000	0.0000

Moderating Effect of Interest Rates on WCM and Firm Performance			
	Model 7 (ROA)	Model 8 (ROE)	Model 9 (TQ)
Chi2	41057.83	20049.0	33312.3
Prob	0.0000	0.0000	0.0000

Note: The definition of variables remains the same as previously defined in the methodology

4.5.4 Wooldridge Test for Serial Correlation

In addition to the test of heteroskedasticity, the study also tested for the presence of autocorrelation and serial correlation using the Lagrange Multiplier Test for serial correlation in STATA and the *xtserial* command for autocorrelation in panel data. According to Gong, Li, and Wang (2011), both autocorrelation and serial correlation are interwoven as the presence of one suggests the presence of the other and vice versa. Serial correlation occurs when error terms from different time periods are correlated. It occurs in a research with time-series characteristics, when errors associated with a particular time carry over into future time periods (Williams, 2015).

The presence of autocorrelation or serial correlation means noise and is undesirable in regression analysis. This is because it violates the assumption of regression (Anderson et al., 2007) and produces regression results that are less efficient (Drukker, 2003). Serial correlation also results in misspecification. Moreover, Wooldridge (2009) stated that the OLS standard errors usually understate the actual sampling variation in the OLS estimates and should not be relied upon when significant serial correlation is present. Thus, the test for autocorrelation or serial correlation is important because it is a precondition to reporting and relying on both panel data and OLS regression results. Hence, this precondition necessitated this test to guarantee that the models in this study are free from such problem.

Based on the argument above, this study relied on the null hypothesis that “there is no first order serial correlation” for the models to be included in the regression. The hypothesis will consequently be rejected if the probability value becomes significant at a value of less than 10 % ($p < 0.10$), thus suggesting the presence of auto/serial correlation and vice versa. As revealed in Table 4.7, the probabilities [F (p-value)] of models 1, 2, 4, 5, 7 and 8 that the estimated the relationship between WCM and firm performance as measured by ROA and ROE and the moderating effects of inflation and interest rates on the relationship between WCM and firm performance as measured by ROA and ROE, respectively, are statistically insignificant. The p-values of these models are greater than the 10% level. This led to a decision to accept the null hypothesis of no correlation between error terms, indicating that no auto/serial correlation exists in the ROA and ROE regression models.

Table 4.7
The Probabilities [F (p-value)]

Relationship between WCM and Firm Performance			
Variable	Model 1 (ROA)	Model 2 (ROE)	Model 3 (TQ)
Value	1.447	0.006	69.347
F(p-value)	0.2328	0.9394	0.0000
Moderating Effect of Inflation Rates on WCM and Firm Performance			
	Model 4 (ROA)	Model 5 (ROE)	Model 6 (TQ)
Value	1.164	0.061	62.472
F(p-value)	0.2842	0.8057	0.0000
Moderating Effect of Interest Rates on WCM and Firm Performance			
	Model 7 (ROA)	Model 8 (ROE)	Model 9 (TQ)
Value	1.343	0.087	67.645
F(p-value)	0.2503	0.7690	0.0000

Notes: Ho: no first-order autocorrelation. Variable definitions: Return on assets (ROA), return on equity (ROE) and market valuation (TQ).

For models 3, 6 and 9, the probabilities [F (p-value)] of the autocorrelation result reveal that the relationship between WCM and TQ and moderating effects of inflation and interest rates on the relationships between WCM and TQ, respectively, are statistically significant at the 1% level. Based on these results, this study rejects the null hypothesis of no correlation between error terms. The results suggest the presence of first order autocorrelation in the models that estimated the relationship between WCM and TQ and moderating effects of inflation and interest rates on the relationships between WCM and TQ, respectively. However, Wooldridge (2009) stated that with a large sample, a possibility exists of finding serial correlation and its confirmation should not be surprising.

Despite this flexibility, this study employed other measures of correcting for serial correlation to avoid spurious results (see explanation in Section 4.5.6).

4.5.5 Model Specification

In this study, 14 main regression models were formulated. The first three models examined the direct relationship between WCM and firm performance while models four to six and seven to nine examined the moderating effects of INFLAR and INTER on the relationship between WCM and firm performance, respectively. Other models (10 to 14) were used to determine the differences between WCM and firm performance during and after the financial crisis in Nigeria and to also determine the quadratic relationship between WCM and firm performance. The independent variables for the models remained constant, but the dependent variables (ROA, ROE and TQ) were switched for all the models. These models were checked to avoid misspecification.

According to Rao (1971), model misspecifications occur when a variable that is considered relevant is omitted or an irrelevant variable is included in a model. In stata, the *linktest* is used to detect a specification error using the command *linktest*. The *linktest* uses the predicted value ($\hat{y}$) and predicted value squared ($\hat{y}^2$) as the predictors to rebuild the models. Therefore, the variable $\hat{y}$ is expected to be a statistically significant predictor of the model because it is the predicted value derived from the model. This is expected to be the case, except if the model is completely misspecified. On the other hand, if a model is well or correctly specified, it is expected that the variable $\hat{y}^2$ should not be statistically significant. However, if the $\hat{y}^2$ is statistically significant, then the *linktest* is significant,

which means that either a relevant variable(s) has (have) been omitted or the link function is not well or correctly specified (Torres-Reyna, 2007). As Table 4.8 reveals, the *linktest* shows that the variable $_hatsq$ is statistically insignificant for all the models (with p-values for direct relationship models, inflation rate models and interest rate models all greater than the 10% significance level). This confirms, on the one hand, that the variables considered or chosen for this study are meaningful predictors. On the other hand, it indicates that the models are well or correctly specified, indicating that no important variable(s) was (were) omitted or no irrelevant variable(s) was (were) included in the models.

Table 4.8
Model Specification

Relationship between WCM and Firm Performance				
P> t	ROA	ROE	TQ	
$_hat$	0.000	0.000	0.000	
$_hatsq$	0.113	0.163	0.210	
Moderating Effect of Inflation Rates on WCM and Firm Performance				
P> t	ROA	ROE	TQ	
$_hat$	0.000	0.000	0.000	
$_hatsq$	0.577	0.739	0.852	
Moderating Effect of Interest Rates on WCM and Firm Performance				
P> t	ROA	ROE	TQ	
$_hat$	0.000	0.000	0.000	
$_hatsq$	0.180	0.238	0.491	

Note: Variable definitions: Return on assets (ROA), return on equity (ROE), market valuation (TQ).

4.5.6 Robust Standard Error Estimate

To correct for the presence of heteroskedasticity and serial correlation and prevent disturbances with the error term, this study adopted the cluster-robust-VCE estimator. The option of VCE (robust) follows the recommendations of Baum (2006), Lei (2006), Hoechle (2007) and Afrifa and Padachi (2016). According to Baum (2006), Lei (2006) and Hoechle (2007), the adoption of VCE-robust and cluster estimate can overcome such problems. Thus, the VCE (robust) option is meaningful as it controls for both heteroskedasticity and serial correlation, which consequently corrects for error disturbances that may affect the study's prediction.

4.5.7 Model Selection Criteria

The choice of specification for this study's model rested between two statistical considerations. The statistical considerations compare the fixed effects (FE) model and the random effects (RE) model using the Hausman specification test proposed by Hausman and specified by Greene (2008). The statistical test tests whether the unique errors are correlated with the regressor while its null hypothesis is that they are not. In this way, a rejection using Hausman test is taken to mean that RE assumption is false and FE is used if the p-value is significant. Baltagi (2005) stated that in the traditional panel data analysis, the appropriateness of the choice between pooled OLS model (OLS) and RE using the Breusch and Pagan LM test must be determined. This is done to determine whether or not the data for the study are heterogeneous (h) using the Breusch and Pagan LM test. The Breusch and Pagan LM test results in Table 4.9A (see: Appendix E) reveal a significant p-value for all the models. The results suggest that the RE model is preferred over the OLS.

The next step was the choice between FE and RE models. The results of the Hausman test for the models as shown in Table 4.9 indicate a significant p-value for all the models.

Table 4.9
Hausman Test for Fixed Effects Model

Direct Relationship between WCM and Firm Performance			
Variable	Model 1 (ROA)	Model 2 (ROE)	Model 3 (TQ)
chibar2 (01)	24.83	14.78	53.97
F (p-value)	0.0017	0.0636	0.0000

Note: Ho: Difference in coefficients is not systematic.

In line with the Hausman null hypothesis, the Table demonstrates that no correlation exists between the error term and the constant. Therefore, the results (Hausman Test) suggest that the FE model is more appropriate for this analysis since the results produced a significant p-value. The statistical choice of FE model made by Hausman test is consistent with prior WCM studies reported by Deloof (2003), Padachi (2006), Abuzayed (2012), Goel and Sharma (2015), Nha and Loan (2015) and many others.

4.5.8 Fixed Effects Regression Models

The Hausman test and other tests conducted evinced that the fixed effects model is appropriate for this study. Moreover, to avoid disturbances and guarantee more accuracy and reliability of results, the study further implemented an estimator of the VCE that is robust (VCE-robust and cluster estimator) to all the study's models to correct for the presence of heteroskedasticity and autocorrelation.

4.6 Empirical Results: Relationship between WCM and firm performance

This section presents the multivariate analysis results that determined the direct relationship between WCM variables and ROA, ROE and TQ, respectively. It specifically addresses research objective one and tests hypotheses 1a to 3a.

4.6.1 Regression Results for the relationship between WCM and ROA

Table 4.10 presents the results of model 1, which determines the relationship between WCM variables and ROA. The explanatory power (R^2) of the model (0.1228) shows that model 1 explains about 12.28% of the variation in ROA. The R^2 is comparable to those obtained by Sharma and Kumar (2011), Ogundipe et al. (2012), Tauringana and Afrifa (2013) and Afrifa and Padachi (2016). The F-value (6.35) is statistically significant at the 1% level and suggests that overall, the variables in this model are satisfactory, and that no important variable is omitted (Wooldridge, 2009). The hypothesized variables are discussed accordingly:

Table 4.10

Model 1 (Regression Results for the relationship between WCM and ROA)

Fixed Effect Model (Std. Err. adjusted for 75 clusters in ID)				
Variable	Coefficient	Robust Std. Err.	t-value	p-value
ARM	-0.00141	0.00557	-0.250	0.801
APM	0.00808	0.00472	1.710	0.091*
INVM	-0.00020	0.00011	-1.850	0.069*
CCC	0.00008	0.00006	1.420	0.160
CCE	0.02818	0.01538	1.830	0.071*
FIRMSIZE	0.00875	0.01704	0.510	0.609
SALESGROWTH	0.05691	0.01454	3.910	0.000***
FDR	-0.05043	0.02130	-2.370	0.02**
CONSTANT	-0.02643	0.16961	-0.160	0.877
R-squared				0.1228
Prob > F			(6.35)	0.0000
Rho				0.50423
Observations				675
Hausman Test			24.83	(0.0017)
VIF				1.76
Heteroskedasticity			21468.97	(0.0000)
Serial Correlation			1.447	(0.2328)

Notes: Variables' significance levels are labelled at 1% (***), 5% (**) and 10% (*). Variables are defined as follows: Return on assets (ROA), accounts receivable management (ARM), accounts payable management (APM), inventory management (INVM), cash conversion cycle (CCC), cash conversion efficiency (CCE), firm size (FIRMSIZE), sales growth (SALESGROWTH) and financial debt ratio (FDR).

4.6.1.1 Results of Hypothesis 1a

Hypothesis 1a predicted a significant relationship between ARM and ROA. The results from Table 4.10 show that ARM is negatively associated with ROA. This is because the coefficient is -0.00141. The result obtained is statistically insignificant ($p\text{-value} > 10\%$) and therefore, does not support hypothesis 1a, which predicted that a significant relationship exists between ARM and ROA. This result implies that a percentage decrease in ARM increases ROA by 0.00141. The result, though not statistically significant, supports the traditional WCM assumption that the shorter the ARM, the more cash a firm holds to take advantage of market variations, enjoy discounts for cash payment and generate more returns for the firm. The pecking order theory also supports this.

The negative relationship between ARM and ROA confirms the result obtained from the correlation matrix. It is also consistent with the findings of Akinlo (2012), Taurigana and Afrifa (2013), Makori and Jangongo (2003), Aileman and Folashade (2014) and Yegon, Kiprono and Willey (2014), who obtained negative and insignificant results for the relationship between ARM and profitability. However, it contradicts the findings of Ademola (2014) who obtained a negative and significant relationship between accounts collection period and net operating profit. Meanwhile, the insignificant relationship is not surprising and can be explained from two perspectives. First, in line with the argument of Makori and Jagongo (2003), the present study's sample includes construction companies and real estate companies. In construction companies, the retention money agreed upon takes a long time to receive, either after the construction or when contracts have been completed. This long period does not promote good record-keeping and such amounts may

insignificantly contribute to the profit of firms. Second, the insignificant regression results could also be explained by the fact that the period of the study (2007 to 2015) includes the transitory period of a financial crisis. During this period, debts recovered were not commensurate to their real market value due to depreciation and capital erosion. In addition, the Nigerian economy is characterized by high inflation and interest rates. In such circumstances, payment of debt becomes difficult and can result in an insignificant relationship.

4.6.1.2 Results of Hypothesis 1b

Hypothesis 1b predicted a significant relationship between APM and ROA. The results from Table 4.10 show that APM is positively associated with ROA. The coefficient (0.00808) is statistically significant at the 10% level. This result implies that a higher APM is associated with higher profitability in terms of ROA. Thus, a percentage increase in APM increases ROA by 0.00808. The result is statistically significant and supports the traditional WCM assumption, that extending payment periods enables firms to take absolute advantage of the free cash flow that will be used to improve a firm's profitability (ROA). Also, the decision to extend payment periods to generate free cashflow is aligned with the assumption of the pecking order theory (Myers & Majluf, 1984).

More importantly, the results support hypothesis 1b, which predicted a significant relationship between APM and ROA. The results also confirm the prior findings obtained by Mathuva (2010), Azam and Haider (2011), Makori and Jagongo (2013) and Nurein et al. (2015). This result is important, given the financing challenges of firms in Nigeria

(Punch, 2016). Therefore, the extension of payment periods that guarantee free cash flow becomes the best option that helps firms to finance operational activities, decrease operational costs and increase their performance.

4.6.1.3 Results of Hypothesis 1c

Hypothesis 1c posited a significant relationship between INVM and ROA. The results in Table 4.10 show that the coefficient of INVM is -0.00020 and indicates a negative relationship between INVM and ROA. This result suggests that ROA increases with decreases in INVM. Hence, a one day decrease in INVM increases ROA by 0.00020. The relationship so established between INVM and ROA is statistically significant at the 10% level and supports hypothesis 1c, which predicted a significant relationship between INVM and ROA. This result also supports the aggressive working capital strategy and previous studies.

Tauringana and Afrifa (2013) suggested that by adopting an aggressive strategy, firms minimize inventory holding and its related costs and reduce warehouse storage costs and insurance costs to increase profitability. Moreover, keeping optimal inventory management levels is also consistent with the TQM and JIT inventory management systems that Qureshi et al. (2013) suggested. The result of this study is also in line with Deloof (2003), Samiloghu and Demirgunes (2008), Karaduman et al. (2010), Stephen and Elvis (2011), Nwakaego et al. (2014) and Yegon et al. (2014), who found a significant relationship between inventory management and various measures of profitability.

4.6.1.4 Results of Hypothesis 1d

Hypothesis 1d predicted a significant relationship between CCC and ROA. The results from Table 4.10 show that CCC is positively associated with ROA. The coefficient of the relationship is 0.00008. This positive relationship implies that ROA increases with increases in CCC. Hence, a one day increase in CCC is associated with a 0.00008 increase in ROA. The relationship established is statistically insignificant ($p\text{-value} > 10\%$) and therefore, does not support hypothesis 1d, which predicted a significant relationship between CCC and ROA. The result also indicates that firms in Nigeria are less efficient in managing their working capital cycle.

The result is not surprising because in a situation in which ARM, which indicates the efficiency of debt collection is insignificant, then CCC is bound to be longer and insignificant as well. Moreover, several reports of bad debts and debtors' unwillingness to pay debts in Nigeria as extensively discussed in the literature, could also be responsible for such an insignificant relationship (Omotola, 2013). The coefficient of this result is similar to the findings of Padachi (2006), Abuzayed (2012), Zakari and Saidu (2016) and Nijam (2016), who obtained a positive and significant relationship between CCC and profitability. They argued that a longer CCC increases a firm's profitability because it avails substantial time for customers to access their products before paying and demonstrates proof of quality products. By this, customers' increased patronage and loyalty are gained while sales increase. However, the result contradicts the traditional assumption of WCM which states that a shorter CCC indicates efficiency of a firm's operations and implies that money is not

tied up in either the inventory process or receivables. By extension, the result also contradicts the assumption of the pecking order theory.

4.6.1.5 Results of Hypothesis 1e

Table 4.10 also shows the results of hypothesis 1e and reveals that CCE is positively (0.02818) related to ROA. The coefficient is significant at the 10% (p-value = 0.071) level and supports hypothesis 1e, which postulated that there is a significant relationship between CCE and ROA. The result implies that a higher CCE leads to an increase in ROA. Hence, a percentage increase in CCE leads to a 0.02818 increase in ROA.

4.6.1.6 Control Variables for the Regression Results for the Relationship between WCM and ROA

Table 4.10 also includes three control variables: FIRMSIZE, SALESGROWTH and FDR. FIRMSIZE is positively associated with ROA, indicating that the size of a firm brings advantages that increases ROA. This assertion cannot be substantiated since the result is statistically insignificant. Similarly, SALESGROWTH is found to be positively associated with ROA. The coefficient is statistically significant at the 1% level. The result implies that when sales increase, the profit of firms in terms of ROA increases. Table 4.10 also shows that FDR is negatively associated with ROA. The result obtained is statistically significant at the 5% level. The negative relationship indicates that lower debt is associated with higher ROA. This result is consistent with the views of the pecking order theory.

4.6.2 Regression Results for the Relationship between WCM and ROE

Table 4.11 shows the results of model 2, which estimates the relationship between WCM variables and ROE. The regression R^2 shows that the estimated model is fit and a conclusion can be made that the independent variables explain about 11.28% of the variations in ROE. Like the regression results between the WCM and ROA relationship, the R^2 obtained is comparable to previous studies, such as Sharma and Kumar (2011), Ogundipe et al. (2012), Tauringana and Afrifa (2013) and Afrifa and Padachi (2016). The F-value (4.17) is statistically significant at the 1% level, suggesting that overall, the variables in this model are satisfactory (Wooldridge, 2009). The various hypotheses formulated are discussed accordingly:



Table 4.11

Model 2 (Regression Results for the Relationship between WCM and ROE)

Fixed Effect Model (Std. Err. adjusted for 75 clusters in ID)				
Variables	Coefficients	Robust Std. Err.	t-value	p-value
ARM	-0.01010	0.01241	-0.810	0.418
APM	-0.00525	0.01287	-0.410	0.684
INVM	0.00057	0.00029	1.940	0.057*
CCC	-0.00022	0.00023	-0.970	0.335
CCE	-0.03968	0.03351	-1.180	0.240
FIRMSIZE	-0.04765	0.03586	-1.330	0.188
SALESGROWTH	0.00635	0.02569	0.250	0.805
FDR	0.23268	0.06063	3.840	0.000***
CONSTANT	0.59311	0.35782	1.660	0.102
R-squared				0.1128
Prob > F				(4.17)0.0004
Rho				0.44150
Observations				675
Hausman Test				14.78(0.0636)
VIF				1.76
Heteroskedasticity				16757.38(0.0000)
Serial Correlation				0.006 (0.9394)

Notes: Variables' significance levels are labelled at 1% (***), 5% (**) and 10% (*). Variables are defined as follows: Return on equity (ROE), accounts receivable management (ARM), accounts payable management (APM), inventory management (INVM), cash conversion cycle (CCC), cash conversion efficiency (CCE), firm size (FIRMSIZE), sales growth (SALESGROWTH) and financial debt ratio (FDR).

4.6.2.1 Results of Hypothesis 2a

The results of hypothesis 2a reveal that ARM is negatively (-0.01010) related to ROE. The result suggests that a percentage decrease in the number of days that receivables are collected increases ROE by 0.01010%, ceteris paribus. The result obtained is statistically insignificant (p-value > 10%) and therefore, does not support hypothesis 2a, which predicted a significant relationship between ARM and ROE. The insignificant p-value can

best be explained with the failing economic conditions of Nigeria and other factors discussed in model 1. However, the result supports WCM's notion of shorter collection periods for receivables. (Vishnami & Shah, 2007), and similarly, lends support to the theoretical perspective of the pecking order theory, which encourages ways of optimizing internal resources.

In addition, the coefficient of this result is consistent with prior studies undertaken by Deloof (2003), Lazaridis and Tryfonidis (2006), Raheman and Nasr (2014), Wasiuzzaman (2015), El-Maude and Shuaib (2016) and Samiloglu and Akgun (2016). Their argument is based on the fact that realizing cash early from debtors increases the amount of free cash flow available to be plugged back into the business for continued operations. This prevents cash being tied-up in the hands of debtors, which may bring about an endless crisis for firms and expose them to unnecessary risks (Tauringana & Afrifa, 2013).

4.6.2.2 Results of Hypothesis 2b

The result of hypothesis 2b shows that the relationship between APM and ROE is negative (-0.00525) and statistically insignificant ($p\text{-value} > 0.10$). The coefficient suggests that a shorter APM is associated with a higher ROE. This implies that a percentage decrease in APM increases ROE by 0.00525%. The result provides no sufficient evidence to support this notion; therefore, hypothesis 2b which predicted that a significant relationship exists between APM and ROE is not supported. This result supports the findings of Ademola (2014) who found a negative and insignificant relationship between APM and net operating profit but contradicts the traditional assumptions of WCM and the pecking order theory,

which assert that longer payment periods increase access to free cashflow in the form of liquidity that firms can use to finance operational activities. There are also a number of studies that have found a similar negative coefficient, such as Deloof (2003), Lazaridis and Tryfonidis (2006), Enqvist et al. (2014), Yazdanfar and Ohman (2015), Samiloghu and Akgun (2016) and Yazdanfar and Ohman (2017). Their findings reveal that a shorter payment period is associated with higher profitability.

The insignificant p-value is not surprising because the CBN, in its periodic reviews, is uneasy with the growing rate of NPL recorded in the financial sector at around 70% for 2015 (from ₦3,633 billion in 2014 to ₦628,54 in 2015) (Emefiele, 2015). Because of this high rate of NPL, banks decided to reduce loans to the real sector (Punch, 2016). This situation has implications that can produce insignificant results.

4.6.2.3 Results of Hypothesis 2c

The result discussed here is for Hypothesis 2c, which predicted the relationship between INVM and ROE. The regression results in Table 4.11 reveal a positive (0.00057) and significant ($p\text{-value} < 0.10$) relationship between INVM and ROE. This implies that higher INVM leads to higher ROE. Thus, an increase in INVM period by one day increases the ROE of firms by 0.00057%. This means that firms under consideration are more inclined to avoid a stock-out situation with considerable inventory if the possibility of increasing profit is greater (Blazenko & Vandezande, 2002). The regression result has the expected sign and supports hypothesis 2c, which predicted a significant relationship between INVM and ROE.

The positive and significant result is consistent with the finding of Mathuva (2000) who opined that increased inventory levels reduce the consequences of interruptions in the production process and the loss of customers and businesses arising from scarcity of inventory. This result also supports the argument made in Chapter Two (Section 2.5.4) about the significance of holding an optimal inventory level. Hence, a conclusion can be made that holding a large amount of inventory settles variation and uncertainty that may occur in both demand and supply, and most specifically, guarantees smooth operations. This result contradicts the earlier findings of the NVM and ROA relationship (Table 4.10) and the findings of Deloof (2003), Nwakaego et al. (2014) and Shin et al. (2015).

4.6.2.4 Results of Hypothesis 2d

The result of hypothesis 2d reveals a negative relationship between CCC and ROE. The coefficient is -0.00022 and statistically insignificant. This inverse relationship suggests that a lower CCC is associated with a higher ROE. This means that ROE increases by 0.00022% if CCC is reduced by one day. This assertion cannot be substantiated significantly and therefore, contradicts hypothesis 2d, which predicted a significant relationship between CCC and ROE. However, the coefficient of the result supports the prior findings of Deloof (2003), Nobanee et al. (2011), Iqbal and Zhuguan (2015) and El-Maude and Shuaib (2016), who found a negative and significant relationship between CCC and measures of profitability.

Similarly, the result supports the view of the pecking order theory that prefers such internal strategies as demonstrated in the CCC result. A lower or shorter CCC strategy can improve

the internal cash flow of firms, a method that pecking order theory emphasizes. The insignificant p-value value is not surprising as the Nigerian economy is characterized by capital market decline, economic stagnation, capital outflow and currency depreciation (Shodipo, 2010). Such a situation makes firms in Nigeria depend on banks for funding at high interest rates and have implications for CCC.

4.6.2.5 Results of Hypothesis 2e

The result of hypothesis 2e reveals a negative (-0.03968) and insignificant relationship between CCE and ROE. This result suggests that a lower CCE is associated with a higher ROE and vice versa. Thus, a decrease of 1% in CCE eventually increases ROE by 0.03968%. The result is statistically insignificant and does not support hypothesis 2e. The result reflects the inherent challenges facing the Nigerian economy which is characterized by a complex operating environment, poor economic policy and market challenges. These factors play a very important role in firms' efficiency and growth potential. The result confirms the findings of Ganesan (2007) and Nasser et al. (2010) who found negative relationships between CCE and profitability. Nevertheless, this finding does not support the arguments of this present study which emphasizes other ways of raising funds internally by converting sales or revenue to cash flow early enough. It is also not consistent with the result obtained from model one.

4.6.2.6 Control Variables for the Regression Results for the Relationship between WCM and ROE

The regression results in the relationship between WCM and ROE also include control variables: FIRMSIZE, SALESGROWTH and FDR. FIRMSIZE is negatively related to ROE but statistically insignificant. This implies that with increases in size of the firm, the ROE declines. SALESGROWTH is found to be positively related to ROE but is statistically insignificant. The result suggests that the efficiency with which sales are made influences the performance of the firm. However, the result is statistically insignificant. FDR is positively associated with ROE. The coefficient is statistically significant at the 1% level. This indicates that high debt increases ROA.

4.6.3 Regression Results for the Relationship between WCM and TQ

Table 4.12 presents the results of model 3, which estimates the relationship between WCM variables and TQ. The R^2 (10.58) of the regression result implies that the model is fit and the independent variables explain about 11% of the variations in TQ. This model's R^2 is comparable to previous studies (see: Afrifa & Padachi, 2016; Sharma & Kumar, 2011; Ogundipe et al., 2012; Tauringana & Afrifa, 2013). The F-value (2.42) is statistically significant at the 5% level and shows that the dependent variables are jointly fit in predicting firm performance (Wooldridge, 2001). The various hypotheses formulated are discussed accordingly:

Table 4.12

Model 3 (Regression Results for the Relationship between WCM and TQ)

Fixed Effect Model (Std. Err. adjusted for 75 clusters in ID)				
Variable	Coefficients	Robust Std. Err.	t -value	p-value
ARM	0.15150	0.07874	1.920	0.058*
APM	-0.06024	0.05929	-1.020	0.313
INVM	0.00298	0.00188	1.590	0.117
CCC	-0.00147	0.00087	-1.690	0.095*
CCE	-0.06494	0.26506	-0.240	0.807
FIRMSIZE	-1.01219	0.27226	-3.720	0.000***
SALESGROWTH	0.32489	0.14501	2.240	0.028**
FDR	0.29245	0.30086	0.970	0.334
CONSTANT	11.26755	2.68202	4.200	0.000***
R-squared				0.1058
Prob > F			(2.42)	0.0222
Rho				0.69331
Observations				675
Hausman Test				53.97(0.0000)
VIF				1.76
Heteroskedasticity				89233.27(0.0000)
Serial Correlation				69.347(0.0000)

Notes: Variables' significance levels are labelled at 1% (***), 5% (**) and 10% (*). Variables are defined as follows: Market valuation (TQ), accounts receivable management (ARM), accounts payable management (APM), inventory management (INVM), cash conversion cycle (CCC), cash conversion efficiency (CCE), firm size (FIRMSIZE), sales growth (SALESGROWTH) and financial debt ratio (FDR).

4.6.3.1 Results of Hypothesis 3a

The result of hypothesis 3a shows that ARM is positively and significantly related to TQ.

The result suggests that a higher ARM increases TQ. This implies that a 1% increase in the ARM period on average leads to a 0.15150 increase in TQ. The relationship is statistically significant at the 10% level and thus supports hypothesis 3a, which predicted a significant relationship between ARM and TQ. This result contradicts the earlier relationships found

between ARM with ROA and ROE in models one and two, respectively, and the findings of Deloof (2003). The result also contradicts the assumptions of WCM and the pecking order theory. Both WCM and the presumptions of the pecking order theory are based on the principle that a shorter accounts receivable period increases firm performance. A shorter period makes adequate cash available for firms to use, but the result presented is not aligned with this idea.

The reasons for this contradiction are several. One is because high inflation and interest rates characterize the Nigerian business environment. These factors lead to economic instability and have consequences that bring about a low standard of living and a low motivation to purchase goods by customers. Thus, when customers are unwilling to purchase goods, the only strategy that could motivate them is by granting longer credit (longer payment period) as this result demonstrates. This is similar to the case of India as Sharma and Kumar (2011) reported. Conversely, the result supports previous studies undertaken by Abuzayed (2012) and Sharma and Kumar (2011). These studies have found a significant and positive relationship between ARM and profitability. This result demonstrates that managers can extend accounts receivable days to generate more returns and increase the performance of firms in Nigeria.

4.6.3.2 Results of Hypothesis 3b

The result of hypothesis 3b reveals that APM is negatively and insignificantly associated with TQ. The coefficient of the relationship is -0.06024 and implies that a lower APM is associated with higher TQ, meaning that a percentage decrease in APM is expected to

increase TQ by 0.06024. This result cannot be proven significantly and therefore does not support hypothesis 3b, which predicted a significant relationship between APM and TQ. The result contradicts the findings in model one that reveal a positive and significant relationship between APM and ROA, the WCM and pecking order theory assumption. But it is consistent with the findings in model two that determined the relationship between APM and ROE and Deloof's (2003) findings which established that less profitable firms wait longer to settle their bills.

4.6.3.3 Results of Hypothesis 3c

Hypothesis 3c predicted a significant relationship between INVM and TQ. The results in Table 4.12 reveal that the relationship between INVM and TQ is positive (0.00298) and statistically insignificant. This confirms that an increase in INVM enhances TQ. Thus, an increase in the INVM period by one day leads to a 0.00298 increase in TQ. Since the result is not significant, hypothesis 3c, which predicted that a significant relationship exists between INVM and TQ is therefore, not supported. This result is not consistent with the findings in model one, which determined the relationship between INVM and ROA, but supports the findings of the relationship between INVM and ROE. In addition, the findings show that good INVM and profitability (TQ) are intertwined. Hence, a poor decision leading to an inadequate INVM level in firms will have implications that may reduce profitability and lower market valuation of firms in Nigeria and vice versa.

4.6.3.4 Results of Hypothesis 3d

The result of hypothesis 3d is reported in Table 4.12. This study finds that CCC is negatively and significantly related to TQ. The coefficient of CCC is -0.00147 and statistically significant at the 10% level. The result implies that the shorter the CCC, the higher the TQ. Hence, a decrease in CCC by one day brings about a 0.00147 increase in TQ. This assertion is statistically significant and therefore supports hypothesis 3d, which predicted a significant relationship between CCC and TQ.

This result contradicts the findings obtained for the relationship between CCC and ROA but supports the findings obtained for the relationship between CCC and ROE. The result is also consistent with the WCM assumption which states that firms can create additional value for their shareholders by keeping CCC to a minimum (Yegon et al., 2014). The result supports the views of the pecking order theory and demonstrates that generating funds internally through the optimization of CCC is key to enhancing firm performance. This result is supported by previous studies undertaken by Deloof (2003), Akinlo (2012), Yegon et al. (2014) and Wasiuzzaman (2015). Therefore, a conclusion can be made that a shorter CCC increases firm performance and creates more value for firms since it minimizes the cost of holding an unproductive investment in WCM (Yazdanfar & Ohman, 2014).

4.6.3.5 Results of Hypothesis 3e

Hypothesis 3e predicted a significant relationship between CCE and TQ. The results in Table 4.12 show that CCE is negatively and insignificantly related to TQ. The coefficient of the relationship is -0.06494 but is statistically insignificant ($p\text{-value} > 10\%$) and

therefore, does not support hypothesis 3e. This result suggests that a decrease in CCE leads to an increase in TQ. This means that a percentage decrease in CCE brings about a 0.06494 increase in TQ. The CCE reveals the efficiency with which firms convert sales into cash (Kerner, 2001). This study argues that free cashflow generated through operational efficiency creates greater flexibility in decisions regarding operational financing and investment and consequently increases the firm's market value. The present result provides no support for this claim and contradicts the earlier relationship found between CCE and ROA.

4.6.3.6 Control Variables for the Regression Results for the Relationship between WCM and TQ

Three control variables are considered in this regression. They are: FIRMSIZE, SALESGROWTH and FDR. Table 4.12 reveals that the relationship between FIRMSIZE and TQ is negatively and statistically significant at the 1% level. This finding suggests that FIRMSIZE influences profitability and the market valuation of firms. Based on the regression results, SALESGROWTH is positively and significantly related to TQ. The coefficient is statistically significant at the 5% level. SALESGROWTH is important in business because it demonstrates business expansion and increases in the market base of firms. For firms to remain in business and be successful, both growth in size and profitability are imperative. As evident in Table 4.12, a positive relationship exists between FDR and TQ. The relationship is statistically insignificant. The coefficient of the result suggests that debt financing options increase both profitability and the market valuation of

firms in Nigeria. This is consistent with the thesis advanced by pecking order theory, which prefers debt to equity.

4.7 Moderating Effect of Economic Conditions

The following subsections present the regression results that estimated the moderating effect of economic conditions in the relationship between WCM and firm performance and specifically address research objective two. Subsection 4.7.1 presents the regression results of the moderating effect of INFLAR on the relationship between WCM and firm performance, while subsection 4.7.2 presents the regression result that determined the moderating effect of INTER on the relationship between WCM and firm performance.

4.7.1 Moderating Effect of Inflation Rates on WCM and Firm Performance

The following sections present the regression results that estimated the moderating effect of INFLAR on the relationship between WCM and firm performance in Nigeria.

4.7.1.1 Moderating Effect of Inflation Rates on WCM and ROA

Table 4.13 presents the regression results of model 4, which estimated the moderating effect of INFLAR on the relationship between WCM and ROA. The model fit as indicated in the R^2 and F-value is satisfactory overall. The results show that the interaction between WCM and INFLAR as indicated in the R^2 (20%) significantly explains more of the variations in ROA than the direct relationship with R^2 value of 12%. The hypothesized relationships are discussed below:

Table 4.13

Model 4 (Moderating Effect of Inflation Rates on WCM and ROA)

Fixed Effect Model (Std. Err. adjusted for 75 clusters in ID)				
Variables	Coefficients	Robust Std. Err.	t-value	p-value
ARM	0.00107	0.00048	2.230	0.029**
APM	-0.00065	0.00057	-1.160	0.251
INVM	0.00108	0.00047	2.280	0.025**
CCC	-0.00086	0.00042	-2.020	0.047**
CCE	0.07165	0.04651	1.540	0.128
INFLAR	-0.0000097	0.0002059	-0.050	0.963
ARM*INFLAR	-0.0000100	0.0000044	-2.260	0.027**
APM*INFLAR	0.0000069	0.0000051	1.360	0.178
INVM*INFLAR	-0.0000114	0.0000045	-2.530	0.013**
CCC*INFLAR	0.0000084	0.0000039	2.140	0.035**
CCE*INFLAR	-0.0004087	0.0004389	-0.930	0.355
FIRMSIZE	0.0348258	0.0206404	1.690	0.096*
SALESGROWTH	0.0383123	0.0136574	2.810	0.006***
FDR	-0.0412902	0.0191606	-2.150	0.034**
CONSTANT	-0.2661609	0.1995262	-1.330	0.186
R-squared				0.1993
F - Value				6.03
Prob > F				0.0000
Rho				0.50129
Observations				675
Heteroskedasticity				26496.35 (0.0000)
Serial Correlation				1.164 (0.2842)

Notes: Variables' significance levels are labelled at 1% (***), 5% (**) and 10% (*). Variables are defined as follows: Return on assets (ROA), accounts receivable management (ARM), accounts payable management (APM), inventory management (INVM), cash conversion cycle (CCC), cash conversion efficiency (CCE), firm size (FIRMSIZE), sales growth (SALESGROWTH) and financial debt ratio (FDR). INFLAR denotes inflation rates while "*" represents the interaction sign. ARM*INFLAR, APM*INFLAR, INVM*INFLAR, CCC*INFLAR and CCE*INFLAR indicate the interaction of inflation rates with ARM, APM, INVM, CCC and CCE.

4.7.1.1.1 Results of Hypothesis 4a

Hypothesis 4a proposed the moderating effect of INFLAR on the relationship between ARM and ROA. The result shows that ARM*INFLAR has a negative (-0.0000100) and significant (p-value = 0.026) relationship with ROA. This result indicates that INFLAR has a negative effect on the relationship between ARM and ROA. The coefficient of the relationship is significant at the 5% level and therefore, supports hypothesis 4a, which predicted that INFLAR significantly moderate the relationship between ARM and ROA. The coefficient of the result is consistent with the findings of Deloof (2003) and Tauringana and Afrifa (2013) who found a significant and negative relationship between ARM and profitability. Moreover, the result confirms the viewpoint of the contingency theory, which states that the fit of a firm resulting from the combination of contingency and structure, produces higher performance.

4.7.1.1.2 Results of Hypothesis 4b

Hypothesis 4b proposed the moderating effect of INFLAR on the relationship between APM and ROA. The coefficient of the interaction between INFLAR and APM (APM*INFLAR) on ROA is 0.0000069 and signifies a positive relationship. The positive relationship found between APM*INFLAR and ROA is statistically insignificant (p-value > 10%) and therefore, provides no sufficient evidence to support hypothesis 4b, which predicted that INFLAR significantly moderates the relationship between APM and ROA. In addition, the result contradicts the views of the contingency theory that firms move into fit when they align their strategy to the contingencies of their environment and the findings of Azam and Haider (2011) and Nurein et al. (2015). It is also consistent with the study of

Akoto et al. (2013) which reported a positive and insignificant relationship between APM and ROA. They noted that extending payment period to suppliers is beneficial and associated with higher performance.

4.7.1.1.3 Results of Hypothesis 4c

Hypothesis 4c predicted that INFLAR significantly moderates the relationship between INVM and ROA. The results of this study show that the interaction term $INVM*INFLAR$ is negatively (-0.0000114) and significantly ($p\text{-value} = 0.013$) related to ROA. This suggests that INFLAR affects INVM of firms and has implications for their performance. The result is statistically significant at the 5% level and therefore, supports hypothesis 4c. Therefore, this study concludes that INFLAR significantly moderate the relationship between INVM and ROA. The coefficient of the result is supported by prior studies undertaken by Deloof (2003) and Yegon et al. (2014) who also found a significant and negative relationship between inventory and profitability. Similarly, the result confirms the assumption of the contingency theory.

4.7.1.1.4 Results of Hypothesis 4d

Hypothesis 4d predicted that INFLAR significantly moderate the relationship between CCC and ROA. In line with this hypothesis, the results presented in Table 4.13 reveal a coefficient of 0.0000084, which indicates a positive relationship between $CCC*INFLAR$ and ROA. The relationship is statistically significant at the 5% level ($p\text{-value} = 0.035$) and therefore, supports hypothesis 4d, which predicted that INFLAR significantly moderates the relationship between CCC and ROA. This result confirms the thesis advanced by

contingency theory (Donaldson, 2001). This finding also reveals that INFLAR have a material effect on firms' operational cycles and can have consequences on their performance.

4.7.1.1.5 Results of Hypothesis 4e

Hypothesis 4e predicted that INFLAR significantly moderate the relationship between CCE and ROA. The results of this study show that the coefficient between CCE*INFLAR and ROA is -0.0004087 and specifies a negative relationship. The negative relationship is statistically insignificant (p-value > 10%) and implies that INFLAR does not affect a firm's efficiency in transforming sales into cash and its performance. This result provides no significant support for hypothesis 4e and implies that INFLAR does not moderate the relationship between CCE and ROA. This finding contradicts the thesis advanced by contingency theory.

4.7.1.1.6 Control Variables for the Moderating Effect of Inflation Rates on WCM and ROA

This model also contains three control variables. Specifically, FIRMSIZE and SALES GROWTH are positively associated with ROA while FDR is negatively associated with ROA.

4.7.1.2 Moderating Effect of Inflation Rates on WCM and ROE

Table 4.14 presents the regression results of model 5, which estimated the moderating effect of INFLAR on the relationship between WCM and ROE. The model fit as indicated in the R^2 and F-values is satisfactory overall. The results show that the interaction between

WCM and INFLAR as indicated in the R^2 (17%) significantly explains more of the variations in ROE than the direct relationship with a R^2 value of 11%. The hypothesized relationships are discussed below:

Table 4.14

Model 5 (Moderating Effect of Inflation Rates on WCM and ROE)

Fixed Effect Model (Std. Err. adjusted for 75 clusters in ID)				
Variables	Coefficients	Robust Std. Err.	t-value	p-value
ARM	0.00109	0.00085	1.280	0.205
APM	-0.00167	0.00080	-2.100	0.040**
INVM	0.00257	0.00075	3.440	0.001***
CCC	-0.00256	0.00074	-3.480	0.001***
CCE	0.29523	0.15364	1.920	0.059*
INFLAR	-0.0009627	0.000645	-1.490	0.140
ARM*INFLAR	-0.0000078	0.0000084	-0.930	0.357
APM*INFLAR	0.0000141	0.0000074	1.900	0.061*
INVM*INFLAR	-0.0000171	0.0000076	-2.270	0.026**
CCC*INFLAR	0.0000194	0.0000077	2.530	0.013**
CCE*INFLAR	-0.0030529	0.0013955	-2.190	0.032**
FIRMSIZE	-0.0137077	0.0467488	-0.290	0.770
SALESGROWTH	-0.0189698	0.0225305	-0.840	0.403
FDR	0.2130905	0.0573034	3.720	0.000***
CONSTANT	0.3299263	0.4298983	0.770	0.445
R-squared				0.1715
F - Value				4.66
Prob > F				0.0000
Observations				675
Heteroskedasticity				13473.95 (0.0000)
Serial Correlation				0.061 (0.8057)

Notes: Variables' significance levels are labelled at 1% (***), 5% (**) and 10% (*). Variables are defined as follows: Return on equity (ROE), accounts receivable management (ARM), accounts payable management (APM), inventory management (INVM), cash conversion cycle (CCC), cash conversion efficiency (CCE), firm size (FIRMSIZE), sales growth (SALESGROWTH) and financial debt ratio (FDR). INFLAR denotes inflation rates while * represents the interaction sign. ARM*INFLAR, APM*INFLAR, INVM*INFLAR, CCC*INFLAR and CCE*INFLAR indicate the interaction of Inflation rates with ARM, APM, INVM, CCC and CCE.

4.7.1.2.1 Results of Hypothesis 5a

Table 4.14 presents the result of hypothesis 5a, which predicted that INFLAR significantly moderate the relationship between ARM and ROE. The regression result reveals that the coefficient of ARM*INFLAR is -0.0000078, indicating a negative relationship between ARM*INFLAR and ROE. The negative relationship is statistically insignificant (p-value > 10%) and suggests that INFLAR have no severe implications for receivable period of firms in this study and returns on shareholders' equity. Based on this evidence, hypothesis 5a, which predicted that INFLAR significantly moderate the relationship between ARM and ROE, is therefore not supported. The result, however, confirms the earlier findings of Akinlo (2012) and Yegon et al. (2014) who found a negative and insignificant relationship between ARM and profitability in the direct relationship but contradicts the findings of Deloof (2003) who found a significant and negative relationship between ARM and profitability and the assumption of the contingency theory as Donaldson (2001) stipulated.

4.7.1.2.2 Results of Hypothesis 5b

The result of hypothesis 5b shows that APM*INFLAR is positively related to ROE with a coefficient of 0.0000141. The positive relationship is statistically significant at the 10% level. Therefore, hypothesis 5b, which predicted that INFLAR significantly moderate the relationship between APM and ROE, is supported. This result therefore provides sufficient evidence to show that price level changes affect APM and has significant implications for ROE. The results support the argument of the contingency theory and its approaches to attaining a fit condition that can enhance firm performance. Nevertheless, the coefficient

of this relationship contradicts the direct relationship reported in hypothesis 2b (see Table 4.11) and the findings of Deloof (2003).

4.7.1.2.3 Results of Hypothesis 5c

Hypothesis 5c predicted that INFLAR significantly moderates the relationship between INVM and ROE. The result of this study reveals that $INVM*INFLAR$ is negatively and significantly related to ROE. The coefficient of the relationship is -0.0000171 and is significant at the 5% level ($p = 0.026$). The coefficient is also consistent with the findings of Deloof (2003) and Iqbal and Zhuqam (2015) who found significant and negative relationships between inventory management and profitability in their direct relationship. Similarly, it supports the views of the contingency theory, which implies that the effectiveness of inventory management on firm performance is contingent upon inflation rates. Thus, hypothesis 5c, which predicted that INFLAR significantly moderate the relationship between INVM and ROE, is supported.

4.7.1.2.4 Results of Hypothesis 5d

Table 4.14 provides evidence supporting hypothesis 5d, which stated that INFLAR significantly moderate the relationship between CCC and ROE. This is because $CCC*INFLAR$ is positively and significantly related to ROE. The coefficient of the relationship between $CCC*INFLAR$ and ROE is 0.0000194 and is statistically significant at the 5% level. This result provides strong evidence that high INFLAR affect firms' operation cycle and consequently affect their performance. This is true considering that during inflationary periods, the purchase of raw materials becomes difficult while its effect

on the standard of living affects the willingness of customers to buy and pay as and when due. These effects have consequences on firms' operational cycles and thus affect their performance. This result supports the contingency theory's assumptions.

4.7.1.2.5 Results of Hypothesis 5e

The results of hypothesis 5e show that $CCE \times INFLAR$ is negatively and significantly related to ROE. The coefficient of the relationship is -0.0030529 and is statistically significant at the 5% level. The coefficient of this result is consistent with the findings of Ganesan (2007) and Nasser et al. (2010) and provides sufficient evidence to support the views of the contingency theory. Furthermore, hypothesis 5e, which predicted that INFLAR significantly moderate the relationship between CCE and ROE, is hereby supported.

4.7.1.2.6 Control Variables for the Moderating Effect of Inflation Rates on WCM and ROE

The model also includes control variables in the study. These are FIRMSIZE, SALES GROWTH and FDR. Consistent with prior findings shown in Table 4.13, FIRMSIZE and SALESGROWTH are negatively related to ROE while FDR is positively related to ROE.

4.7.1.3 Moderating Effect of Inflation Rates on WCM and TQ

Table 4.15 presents the regression results of model 6, which estimated the moderating effect of INFLAR on the relationship between WCM and TQ. The model fit as indicated in the R^2 and F-values is satisfactory overall. The results show that the interaction between WCM and INFLAR as indicated by the R^2 (14%) significantly explains more of the

variations in TQ than the direct relationship with R^2 value of 11%. The hypothesized relationships are discussed below:

Table 4.15

Model 6 (Moderating Effect of Inflation Rates on WCM and TQ)

Fixed Effect Model (Std. Err. adjusted for 75 clusters in ID)				
Variable	Coefficient	Robust Std. Err.	t-value	p-value
ARM	0.01649	0.00656	2.510	0.014**
APM	-0.01461	0.00496	-2.940	0.004***
INVM	0.01788	0.00733	2.440	0.017**
CCC	-0.01480	0.00566	-2.620	0.011**
CCE	-0.61307	0.89137	-0.690	0.494
INFLAR	-0.0050418	0.0035928	-1.400	0.165
ARM*INFLAR	-0.0001185	0.0000491	-2.410	0.018**
APM*INFLAR	0.0001162	0.0000415	2.800	0.007***
INVM*INFLAR	-0.0001222	0.0000529	-2.310	0.024**
CCC*INFLAR	0.0001078	0.0000437	2.460	0.016**
CCE*INFLAR	0.0042756	0.0069839	0.610	0.542
FIRMSIZE	-0.7188948	0.2185347	-3.290	0.002***
SALESGROWTH	0.1704237	0.1476436	1.150	0.252
FDR	0.2959994	0.3253396	0.910	0.366
CONSTANT	9.1683610	2.3488380	3.900	0.000***
R-squared				0.1385
F - Value				2.65
Prob > F				0.0035
Observations				675
Heteroskedasticity				30434.78 (0.0000)
Serial Correlation				62.472 (0.0000)

Notes: Variables' significance levels are labelled at 1% (***), 5% (**) and 10% (*). Variables are defined as follows: Market valuation (TQ), accounts receivable management (ARM), accounts payable management (APM), inventory management (INVM), cash conversion cycle (CCC), cash conversion efficiency (CCE), firm size (FIRMSIZE), sales growth (SALESGROWTH) and financial debt ratio (FDR). INFLAR denotes inflation rates while "*" represents the interaction sign. ARM*INFLAR, APM*INFLAR, INVM*INFLAR, CCC*INFLAR and CCE*INFLAR indicate the interaction of INFLAR with ARM, APM, INVM, CCC and CCE.

4.7.1.3.1 Results of Hypothesis 6a

The results of hypothesis 6a, which predicted that INFLAR significantly moderate the relationship between ARM and TQ, are presented in Table 4.15. These results show that the coefficient of ARM*INFLAR is -0.0001185 and indicates a negative relationship between ARM*INFLAR and TQ. The negative relationship is statistically significant at the 5% level (p -value = 0.018). Therefore, hypothesis 6a, which predicted that INFLAR significantly moderate the relationship between ARM and TQ, is supported. The result contradicts the direct relationship reported in hypothesis 3a but supports the prior findings of Deloof (2003) and the views of the contingency theory.

4.7.1.3.2 Results of Hypothesis 6b

The results of hypothesis 6b, which predicted that INFLAR significantly moderate the relationship between APM and TQ, reveals a coefficient of 0.0001162. The coefficient indicates a positive relationship between APM*INFLAR and TQ. This positive relationship is significant at the 1% level and therefore, supports hypothesis 6b. This means that INFLAR moderate the relationship between APM and TQ. The result is similar to the findings of the direct relationship obtained by Mathuva (2010) and Makori and Jagongo (2013) and supports the viewpoints of the contingency theory. However, it contradicts the findings of Deloof (2003), Raheman and Nasr (2007) and Sharma and Kumar (2011).

4.7.1.3.3 Results of Hypothesis 6c

The findings of this study show that the relationship between INVM*INFLAR and TQ is negatively and statistically significant. This is because the coefficient is -0.0001222 and

significant at the 5% ($p = 0.024$) level. Therefore, hypothesis 6c, which predicted that INFLAR significantly moderate the relationship between INVM and TQ, is supported. The result largely supports the views of the contingency theory and the findings of Deloof (2003) but contradicts the earlier direct relationship found between INVM and TQ as reported in hypothesis 3c.

4.7.1.3.4 Results of Hypothesis 6d

The proposed moderating effect of INFLAR on the relationship between CCC and TQ is shown in Table 4.15. The result reveals that a positive and significant relationship exists between CCC*INFLAR and TQ. The coefficient of the result is 0.0001078 and is statistically significant at the 5% ($p = 0.016$) level. This result supports hypothesis 6d, which predicted that INFLAR significantly moderate the relationship between CCC and TQ. The result also supports the views of contingency theory and is consistent with Gill et al. (2010), Abuzayed (2012), Muhammed et al. (2012) and Nijam (2016). These studies have found a positive and significant relationship between CCC and firm performance. However, the coefficient of the relationship between CCC*INFLAR and TQ (0.0001078) is considered weak when compared to the coefficient of the direct relationship between CCC and TQ, which is 0.00147 as reported in hypothesis 3d. The weak coefficient is a reflection of the negative effect of INFLAR on WCM and firm performance. Inflation can create a financial crisis, leading to longer CCC and the low performance of firms.

4.7.1.3.5 Results of Hypothesis 6e

The results of hypothesis 6e, which predicted that INFLAR significantly moderate the relationship between CCE and TQ, show a positive relationship as indicated by the coefficient of 0.0042756. The positive relationship between CCE*INFLAR and TQ is statistically insignificant because the p-value of 0.542 is greater than 10%. Therefore, there is no sufficient statistical evidence to support hypothesis 6e that predicted that INFLAR moderate the relationship between CCE and TQ. Accordingly, hypothesis 6e is not supported. This means that during inflationary pressure, the relationship between CCE and TQ would not be affected significantly. The result also contradicts the direct relationship reported in hypothesis 3e, while the coefficient of the direct relationship between CCE and TQ of 0.06494 is higher than the coefficient of the moderating relationship of 0.0042756. The difference between the two regressions coefficients can be interpreted simply as a decline in efficiency and might also have tended to reduce the performance of firms. To a large extent, the result contradicts the assumptions of pecking order and contingency theories. The result also contradicts the studies of Genesan (2007) and Nasser et al. (2010), who found a negative relationship between CCE and profitability.

4.7.1.3.6 Control Variables for the Moderating Effect of Inflation Rates on WCM and TQ

Model 6 also controls for the effect of FIRMSIZE, SALESGROWTH and FDR as presented in Table 4.14. FIRMSIZE is negatively and significantly related to TQ while SALESGROWTH and FDR are negatively but insignificantly related to TQ.

4.7.2 Moderating Effect of Interest Rates on WCM and Firm Performance

The following sections present the regression results that estimated the moderating effect of INTER on the relationship between WCM and firm performance in Nigeria.

4.7.2.1 Moderating Effect of Interest Rates on WCM and ROA

Table 4.16 presents the regression results of model 7, which estimated the moderating effect of INTER on the relationship between WCM and ROA. The model fit as indicated in the R^2 and F-values is satisfactory overall. The results show that the interaction between WCM and INTER as indicated in the R^2 (13%) explains more of the variations in ROA than the direct relationship with R^2 value of 12%. The hypothesized relations are discussed accordingly:



Table 4.16

Model 7 (Moderating Effect of Interest Rates on WCM and ROA)

Fixed Effect Model (Std. Err. adjusted for 75 clusters in ID)				
Variables	Coefficients	Robust Std. Err.	t - value	p - value
ARM	0.000462	0.000284	1.630	0.108
APM	-0.000056	0.000318	-0.180	0.860
INVM	0.000176	0.000251	0.700	0.485
CCC	-0.000303	0.000237	-1.280	0.205
CCE	0.030198	0.046385	0.650	0.517
INTER	0.002255	0.002038	1.110	0.272
ARM*INTER	-0.000064	0.000025	-2.540	0.013**
APM*INTER	0.000018	0.000027	0.680	0.501
INVM*INTER	-0.000049	0.000022	-2.270	0.026**
CCC*INTER	0.000049	0.000021	2.400	0.019**
CCE*INTER	-0.000479	0.005658	-0.080	0.933
FIRMSIZE	0.009814	0.017481	0.560	0.576
SALESGROWTH	0.054269	0.014602	3.720	0.000***
FDR	-0.048069	0.020862	-2.300	0.024**
CONSTANT	-0.034010	0.173307	-0.200	0.845
R-squared				0.1318
F - Value				3.64
Prob > F				0.0001
Rho				0.50222
Observations				675
Heteroskedasticity				41057.83 (0.0000)
Serial Correlation				1.343 (0.2503)

Notes: Variables' significance levels are labelled at 1% (***), 5% (**) and 10% (*). Variables are defined as follows: Return on assets (ROA), accounts receivable management (ARM), accounts payable management (APM), inventory management (INVM), cash conversion cycle (CCC), cash conversion efficiency (CCE), firm size (FIRMSIZE), sales growth (SALESGROWTH) and financial debt ratio (FDR). INTER denotes interest rates while * represents the interaction sign. ARM*INTER, APM*INTER, INVM*INTER, CCC*INTER and CCE*INTER indicate the interaction of Interest rates with ARM, APM, INVM, CCC and CCE.

4.7.2.1.1 Results of Hypothesis 7a

Hypothesis 7a predicted that INTER significantly moderate the relationship between ARM and ROA. Consistent with this study's prediction, the results of this study show that ARM*INTER is negatively and significantly related to ROA. The coefficient of the relationship is -0.000064 and is statistically significant at the 5% level ($p = 0.013$). This suggests that INTER significantly moderate the relationship between ARM and ROA. This result is consistent with the direct relationship reported in hypothesis 1a and the moderating relationship reported in hypothesis 4a. This result also supports the prior findings of Deloof (2003) and the views of the contingency theory.

4.7.2.1.2 Results of Hypothesis 7b

Hypothesis 7b predicted that INTER significantly moderate the relationship between APM and ROA. The results presented in Table 4.16 show that a positive and insignificant relationship exists between APM*INTER and ROA. The coefficient of the relationship is 0.000018 and is statistically insignificant ($p\text{-value} > 10\%$). The result implies that INTER do not have significant consequences on the APM of firms in Nigeria. Therefore, hypothesis 7b, that INTER moderate the relationship between APM and ROA, is not supported. The result is in line with the direct relationship reported in hypothesis 1b and the moderating relationship earlier reported in hypothesis 4b; however, it contradicts the findings of Deloof (2003) and the views of the contingency theory.

4.7.2.1.3 Results of Hypothesis 7c

Hypothesis 7c predicted that INTER significantly moderate the relationship between INVM and ROA. The results presented in Table 4.16 show that $INVM*INTER$ is negatively and significantly related to ROA. The coefficient of the relationship is -0.000049 and is statistically significant at the 5% level. The result confirms the earlier finding reported in hypotheses 1c and 4c and the views of the contingency theory. Importantly, the negative effect reveals that INTER make investments unattractive. High interest rates increase the cost of inventory and the cost of carrying or holding inventory. Firms are encouraged to purchase raw materials in the quantities needed for consumption and not to stockpile because of the high costs of financing. This is consistent with the JIT and TQM approaches that Qureshi et al. (2013) suggested. Based on this evidence, hypothesis 7c, which predicted that INTER significantly moderate the relationship between INVM and ROA, is supported.

4.7.2.1.4 Results of Hypothesis 7d

Hypothesis 7d predicted that INTER significantly moderate the relationship between CCC and ROA. The results presented in Table 4.16 reveal that the relationship between $CCC*INTER$ and ROA is positively and statistically significant. The coefficient is 0.000049 and is statistically significant at the 5% level. The result supports the previous findings in both the direct and moderating relationships. This finding suggests that INTER moderate the relationship between CCC and ROA. The positive influence implies that INTER have implications that lead to a longer CCC. Based on the significant evidence provided, hypothesis 7d, which predicted that INTER significantly moderate the

relationship between CCC and ROA, is supported. This result is also in line with the studies of Gill et al. (2010), Abuzayed (2012), Muhammed et al. (2012) and Nijam (2016). These studies have found a positive and significant relationship between CCC and firm performance.

4.7.2.1.5 Results of Hypothesis 7e

The results of hypothesis 7e are presented in Table 4.16. These results show that CCE*INTER is negatively related to ROA. The coefficient is -0.000479 and is statistically insignificant (p-value > 10%). Statistically, the study provides no evidence to support hypothesis 7e, which predicted that INTER significantly moderate the relationship between CCE and ROA; hence, this hypothesis is not supported. The result contradicts the direct relationship reported in hypothesis 1e, and by implication, the assumptions of the contingency theory. However, the result is consistent with the findings of Ganesan (2007) and Nasser et al. (2010). They found negative relationships between CCE and profitability.

4.7.2.1.6 Control Variables for the Moderating Effect of Interest Rates on WCM and ROA

Importantly, model 7 also included control variables. FIRMSIZE is positively related to ROA but statistically insignificant. SALESGROWTH is similarly positively and statistically significant at the 1% level with ROA while FDR reveals a negative and significant association with ROA.

4.7.2.2 Moderating Effect of Interest Rates on WCM and ROE

Table 4.17 presents the regression results of model 8, which estimated the moderating effect of INTER on the relationship between WCM and ROE. The model fit as indicated in the R^2 and F-values is satisfactory overall. The results show that the interaction between WCM and INTER as indicated in the R^2 (12%) significantly explains more of the variations in ROE than the direct relationship with R^2 value of 11%. The hypothesized relationships are discussed accordingly:



Table 4.17

Model 8 (Moderating Effect of Interest Rates on WCM and ROE)

Fixed Effect Model (Std. Err. adjusted for 75 clusters in ID)				
Variable	Coefficient	Robust Std. Err.	t-value	p-value
ARM	0.001900	0.000645	2.950	0.004***
APM	-0.001514	0.000648	-2.340	0.022**
INVM	0.002476	0.000454	5.450	0.000***
CCC	-0.002008	0.000451	-4.450	0.000***
CCE	0.032977	0.098998	0.330	0.740
INTER	0.003087	0.006414	0.480	0.632
ARM*INTER	-0.000210	0.000071	-2.980	0.004***
APM*INTER	0.000161	0.000070	2.310	0.024**
INVM*INTER	-0.000225	0.000055	-4.070	0.000***
CCC*INTER	0.000199	0.000052	3.850	0.000***
CCE*INTER	-0.009967	0.012260	-0.810	0.419
FIRMSIZE	-0.039698	0.038566	-1.030	0.307
SALESGROWTH	-0.003436	0.024789	-0.140	0.890
FDR	0.220929	0.058609	3.770	0.000***
CONSTANT	0.453373	0.376519	1.200	0.232
R-squared				0.1233
F - Value				11.58
Prob > F				0.0000
Observations				675
Heteroskedasticity				20049.04 (0.0000)
Serial Correlation				0.087 (0.7690)

Notes: Variables' significance levels are labelled at 1% (***), 5% (**) and 10% (*). Variables are defined as follows: Return on equity (ROE), accounts receivable management (ARM), accounts payable management (APM), inventory management (INVM), cash conversion cycle (CCC), cash conversion efficiency (CCE), firm size (FIRMSIZE), sales growth (SALESGROWTH) and financial debt ratio (FDR). INTER denotes interest rates while * represents the interaction sign. ARM*INTER, APM*INTER, INVM*INTER, CCC*INTER and CCE*INTER indicate the interaction of INTER with ARM, APM, INVM, CCC and CCE.

4.7.2.2.1 Results of Hypothesis 8a

The results of hypothesis 8a show that the relationship between the ARM*INTER and ROE is negatively and statistically significant at the 1% level. The coefficient of the relationship is -0.000210 with a p-value of 0.004. This result implies that high INTER have a negative effect on accounts receivable of firms and their performance. The result provides significant support for hypothesis 8a, which predicted that INTER significantly moderate the relationship between APM and ROE. This result confirms the assumptions of the contingency theory. Similarly, the result is consistent with several previous studies that have investigated the relationship between ARM and firm performance, for example, Deloof (2003), Lazaridis and Tryfonidis (2006), Mathuva (2010) and Tauringana and Afrifa (2013).

4.7.2.2.2 Results of Hypothesis 8b

The results of hypothesis 8b reveal a coefficient of 0.000161 and indicates a positive relationship between APM*INTER and ROE. The relationship is statistically significant at the 5% level. This result supports the views of the contingency theory, which postulates that the ability of a firm to enhance its performance is contingent upon various external factors of which high interest rates are not the exception. This finding, therefore, supports hypothesis 8b, validating that INTER moderate the relationship between APM and ROE. This result supports prior studies on the relationship between APM and firm performance as discussed in Chapters Two and Three, which include Falope and Ajilore (2009), Mathuva (2010), Abuzed (2012), Osundina and Osundina (2014) and Nurein et al. (2015).

4.7.2.2.3 Results of Hypothesis 8c

The results that estimated the moderating effect of INTER on the relationship between INVM and ROE reveal a coefficient of -0.000225. The coefficient implies a negative relationship between INVM*INTER and ROE. The negative relationship is statistically significant at the 5% level. This evidence supports hypothesis 8c, validating that INTER moderate the relationship between INVM and ROE. This result confirms the assumptions of the contingency theory, which states that the ability of a firm to enhance its performance is contingent upon various environmental attributes (i.e., interest rates) that move firms out of fit. This result is in line with the findings of Deloof (2003), Lazaridis and Tryfonidis (2006), Akinlo (2012) and Yegon et al. (2014). These studies have reported a negative and significant relationship between INVM and profitability. The plausible explanation for their result is that less profitable firms wait longer to pay their bills, whereas, profitable firms pay their bills early as the result denotes.

4.7.2.2.4 Results of Hypothesis 8d

As this study anticipated, the result of the moderating effect of INTER on the relationship between CCC and ROE is positive and statistically significant at the 1% level. The coefficient value is 0.000199 with a p-value of 0.000. This result suggests that INTER significantly lengthen the average conversion time of a firm which affects the ability to generate cash and make sustainable improvements. This finding supports hypothesis 8d, that INTER significantly moderate the relationship between CCC and ROE; hence, hypothesis 8d is supported. This finding supports the views of the contingency theory and

previous studies that have examined the effect of CCC on the profitability of firms, such as Gill et al. (2010), Abuzayed (2012) and Osundina and Osundina (2014).

4.7.2.2.5 Results of Hypothesis 8e

CCE measures the operational efficiency of firms in converting profits into cash, but the results presented in Table 4.17 provide no significant evidence to support this. The coefficient of the relationship between CCE*INTER and ROE is -0.0009967 and indicates a negative relationship. The result is statistically insignificant ($p\text{-value} > 10\%$) and therefore, does not support hypothesis 8e, which predicted that INTER significantly moderate the relationship between CCE and ROE. The negative relationship suggests that the ability of firms to generate cash from sales is lower during high interest rates. The result is consistent with the findings of Ganesan (2007) and Nasser et al. (2010) who found negative relationships between CCE and profitability.

4.7.2.2.6 Control Variables for the Moderating Effect of Interest Rates on WCM and ROE

For the control variables, FIRMSIZE and SALESGROWTH are negatively associated with ROE, but they are statistically insignificant, while FDR is positively and statistically significant in the relationship with ROE.

4.7.2.3 Moderating Effect of Interest Rates on WCM and TQ

Table 4.18 presents the regression results of model 9, which estimated the moderating effect of INTER on the relationship between WCM and TQ. The model fit as indicated in the R^2 and F-values is satisfactory overall. The results show that the interaction between

WCM and INTER as indicated in the R^2 (12%) significantly explains more of the variations in TQ than the direct relationship with R^2 value of 10%. The hypothesized associations are discussed accordingly:

Table 4.18

Model 9 (Moderating Effect of Interest Rates on WCM and TQ)

Fixed Effect Model (Std. Err. adjusted for 75 clusters in ID)				
Variable	Coefficient	Robust Std. Err.	t-value	p-value
ARM	0.014188	0.004590	3.090	0.003***
APM	-0.010884	0.004136	-2.630	0.010**
INVM	0.014769	0.004198	3.520	0.001**
CCC	-0.012434	0.004029	-3.090	0.003***
CCE	-0.266024	0.882441	-0.300	0.764
INTER	-0.013096	0.042100	-0.310	0.757
ARM*INTER	-0.001438	0.000523	-2.750	0.007***
APM*INTER	0.001158	0.000511	2.270	0.026**
INVM*INTER	-0.001405	0.000490	-2.870	0.005***
CCC*INTER	0.001240	0.000502	2.470	0.016**
CCE*INTER	0.019983	0.097826	0.200	0.839
FIRMSIZE	-0.943292	0.261689	-3.600	0.001***
SALESGROWTH	0.251734	0.144604	1.740	0.086**
FDR	0.248733	0.316452	0.790	0.434
CONSTANT	11.005450	2.662258	4.130	0.000***
R-squared				0.1232
F - Value				3.18
Prob > F				0.0006
Observations				675
Heteroskedasticity				33312.26 (0.0000)
Serial Correlation				67.645 (0.0000)

Notes: Variables' significance levels are labelled at 1% (***), 5% (**) and 10% (*). Variables are defined as follows: Market valuation (TQ), accounts receivable management (ARM), accounts payable management (APM), inventory management (INVM), cash conversion cycle (CCC), cash conversion efficiency (CCE), firm size (FIRMSIZE), sales growth (SALESGROWTH) and financial debt ratio (FDR). INTER denotes interest rates while “*” represents the interaction sign. ARM*INTER, APM*INTER, INVM*INTER, CCC*INTER and CCE*INTER indicate the interaction of INTER with ARM, APM, INVM, CCC and CCE.

4.7.2.3.1 Results of Hypothesis 9a

The result of hypothesis 9a shows that $ARM*INTER$ is negatively and significantly related to TQ. The coefficient is -0.001438 and is statistically significant at the 1% level ($p < 0.000$). Based on this evidence, hypothesis 9a, which predicted that INTER significantly moderate the relationship between ARM and TQ, is supported. This result is consistent with previous studies undertaken by Deloof (2003), Lazaridis and Tryfonidis (2006), Mathuva (2010) and Tauringana and Afrifa (2013). They found a significant and negative relationship between ARM and profitability measures. The result also supports the views of the contingency theory. This result shows that the relationship between ARM and firm performance is significantly affected by interest rates. High interest rates affect the willingness of customers to pay debt, which makes collection difficult for firms. Interest rates, in this regard, affect cash flow and investment, and therefore, play a central role in determining the performance of firms.

4.7.2.3.2 Results of Hypothesis 9b

The results of hypothesis 9b show that the coefficient between $APM*INTER$ and TQ is 0.001158 with a p-value of 0.026. This indicates a positive and significant relationship between $APM*INTER$ and TQ. The result shows that the relationship between APM and TQ is affected by INTER. This means that INTER determine how firms typically spend, as well as how they consume. This complexity delays or significantly affects suppliers' payment. Delay in payments occasioned by the negative effect of interest rates as the result depicts, affects firms' goodwill and their reputation with their suppliers. In addition, it reduces investors' confidence in them. Deloof (2003) and Lazaridis and Tryfonidis (2006)

referred to firms that delay payment as a sign that they are unprofitable. Such are the consequences on firms' performance. Based on this evidence, hypothesis 9b, which predicted that INTER significantly moderate the relationship between APM and TQ, is supported. This result supports the assumptions of the pecking order theory and contingency theory. The result also supports the studies conducted by Falope and Ajilore (2009), Mathuva (2010), Abuzayed (2012) and Nurein et al. (2015) that have found a positive and significant relationship between ARM and different measures of profitability.

4.7.2.3.3 Results of Hypothesis 9c

With regards to inventory management, the coefficient of INVM*INTER is negatively (-0.001405) and significantly (p-value < 0.01) related to TQ. This result suggests that INTER impact inventory performance. The result supports hypothesis 9c, which predicted that INTER significantly moderate the relationship between INVM and TQ, and hence, leads to the hypothesis being supported. The result confirms the viewpoints of the pecking order theory and contingency theory; while the coefficient is consistent with the prior findings of Deloof (2003), Falope and Ajilore (2009), Raheman et al. (2010), Kaddumi and Ramadan (2012) and Yegon et al. (2014).

4.7.2.3.4 Results of Hypothesis 9d

With regards to the moderating effect of INTER on the relationship between CCC and TQ, the results of the analysis presented in Table 4.18 indicate that the CCC*INTER is positive and significantly related to TQ at the 5% level. The coefficient of the relationship between CCC*INTER and TQ is 0.001240 with a p-value of 0.016. This result indicates that high

INTER increase CCC and reduce firm performance. Based on this evidence, hypothesis 9d, which predicted that INTER significantly moderate the relationship between CCC and TQ, is supported. This result is consistent with the studies of Gill et al. (2010), Abuzayed (2012) and Osundina and Osundina (2014), which have found a positive and significant relationship between CCC and different measures of profitability. This result also corroborates the views of the contingency theory, but contradicts the findings of DeLoof (2003), who obtained a negative relationship between CCC and profitability.

4.7.2.3.5 Results of Hypothesis 9e

Hypothesis 9e predicted that INTER moderate the relationship between CCE and TQ. The results in Table 4.18 show that CCE*INTER is positively but insignificantly ($p\text{-value} > 0.10$) associated with TQ. The coefficient of the association is 0.019983. This result provides no statistical evidence to support the relationship between CCE*INTER and TQ, and therefore, hypothesis 9e is not supported. The result also contradicts the pecking order theory and the contingency theory. Further, the result is inconsistent with the findings of Ganesan (2007) and Nasser et al. (2010), who found negative relationships between CCE and profitability.

4.7.2.3.6 Control Variables for the Moderating Effect of Interest Rates on WCM and TQ

Other variables included in model 9 are FIRMSIZE, SALESGROWTH and FDR. From the results in Table 4.18, FIRMSIZE is negatively and significantly related to TQ. SALES

GROWTH is positively and significantly associated with TQ. The coefficient of FDR is also positively but insignificantly related to TQ.

4.8 The Quadratic Relationship between WCM and Firm Performance

This section presents and discusses the results of the quadratic relationship between WCM and firm performance and specifically addresses research objective three. The section uses CCC as a comprehensive measure to represent WCM (Afrifa & Padachi, 2016). Subsection 4.8.1 determines the quadratic relationship between CCC and ROA, ROE and TQ, while subsection 4.8.2 determines the effect of deviation from optimal working capital investment level. These results were also derived from the sample of 675 firm-year observations.

4.8.1 Results of Hypotheses 10a to 10c

Table 4.19 presents the results of the quadratic relationship between WCM and firm performance. As proposed in model 10, two effects of WCM investment levels were created. The CCC represented low investment levels in WCM while CCC² represented high investment levels in WCM. This was done to determine the quadratic relationship and consequently the optimal level of investment in WCM. To confirm this relationship, the coefficients β_1 and β_2 were expected to be either positive and negative or negative and positive, respectively, to validate the effect. The results in Table 4.19 show that the R² for ROA is 10.25% while the R² for ROE is 9.08% and 8.76% for TQ. These R² values show that the models explain about 10%, 9% and 9% of the variations in ROA, ROE and TQ, respectively.

The $f >$ probability is statistically significant for ROA, ROE and TQ. These show that jointly, the models are fit in predicting firm performance. The results of CCC and CCC² are consistent with expectations. The coefficients of CCC are negatively and insignificantly associated with ROA, ROE and TQ, which are -0.0000919, -0.0001577 and -0.0000559 for ROA, ROE and TQ, respectively. In addition, the coefficients of CCC² are associated positively with ROA, ROE and TQ. The coefficient value of ROA is 0.000000223 and is statistically insignificant. ROE also has an insignificant coefficient value of 0.000000312, while TQ has an insignificant coefficient value of 0.000000593. The results of ROA, ROE and TQ are statistically insignificant because their $p >$ values are greater than 10%. This is not surprising as it reflects the consequences of both high inflation and interest rates that firms in Nigeria experience.



Table 4.19

Model 10 - Determination of Quadratic Relationship

Variable	ROA	ROE	TQ
CCC	-0.0000919 (-1.16)	-0.0001577 (-0.91)	-0.0000559 (-0.05)
CCC ²	0.000000223 (1.08)	0.000000312 (0.64)	0.000000593 (0.22)
FIRMSIZE	0.016047 (0.96)	-0.0633484 (-1.74)*	-1.098687 (-3.67)***
SALESGROWTH	0.0555814 (3.73)***	0.0075271 (0.26)	0.3208437 (2.06)**
FDR	-0.0469117 (-2.22)**	0.2244374 (3.56)***	0.3307196 (1.03)
Constant	-0.081464 (-0.49)	0.737274 (2.08)**	12.54847 (4.22)***
R ²	0.1025	0.0908	0.0876
F-value	13.59	11.89	3.20
F > Prob	0.0000	0.0000	0.0114
rho	0.48977	0.44312	0.68385
Observations	675	675	675
Heteroskedasticity	57967.81 (0.0000)	35957.94 (0.0000)	58131.20 (0.0000)
Serial Correlation	1.636 (0.2049)	22.931 (0.0000)	66.102 (0.0000)

Notes: Variables' results begin with their coefficients, t-statistics are in parentheses while *, **, and *** denote significance levels at 10%, 5%, and 1%, respectively. Results were obtained using the FE model. Variables are defined as follows: ROA represents return on assets, ROE represents return on equity and TQ represents market valuation of firms. CCC represents cash conversion cycle while CCC² represents the square of cash conversion cycle. Similarly, FIRMSIZE denotes firm size, SALESGROWTH denotes sales growth and FDR denotes financial debt ratio. R² denotes the R-squared and it is used to determine the proportion of the sample variation in the ROA, ROE and TQ that is explained by the CCC and CCC² variables. "F" indicates the F-Statistics, and it is used to justify the inclusion of all the variables. F > Prob shows the statistical significance of the "F". rho is the "intraclass" correlation, and it is used to determine the variance due to differences across the panel.

The results above are in tandem with expectations. The results indicate that CCC is negatively related to ROA, ROE and TQ. The result validates that realizing cash early improves firm performance. This is in line with the findings of Deloof (2003) and Lazaridis and Tryfonidis (2006). They stated that the inverse relationship between CCC and profitability suggests management efficiency in realizing cash early and avoiding the danger of a cash trap.

The results of this current study demonstrate a level of efficiency that leads to sustainable performance of firms. Consistently, the negative relationship between CCC and ROA, ROE and TQ also shows that investment in WCM increases firm performance to a “point” at which further (high) investment in WCM (denoted by CCC^2) will begin to decrease firm performance. This is evident in the positive relationship between CCC^2 and ROA, ROE and TQ. The positive relationship signifies longer periods of CCC. The longer gap indicates the length of time firms source external funding to maintain operational activity levels. Integral to this current discussion is that at a lower level, investment in WCM increases firm performance to a point at which higher level investment in WCM will decrease performance. This result is consistent with the findings of Banos-Cabellero et al. (2014), Nha and Loan (2015), Pais and Gama (2015), Afrifa and Padachi (2016) and Lyngstadaas and Berg (2016), which have provided evidence that the relationship between WCM and firm performance is quadratic and not linear. Therefore, hypotheses 10a - 10c are supported.

4.8.1.1 Control Variables for the Quadratic Relationship between WCM and Firm Performance

Other variables included in the analysis to control for the differences amongst firms are FIRMSIZE, SALESGROWTH and FDR. FIRMSIZE is positively related to ROA but not statistically significant. Related to ROE and TQ, the relationship between FIRMSIZE and ROE and TQ is positive and significant. SALESGROWTH, on the other hand, is positively associated with ROA, ROE and TQ. However, the coefficients of ROA and TQ are statistically significant at the 1% and 5% levels, respectively, while the coefficient of ROE

is statistically insignificant. FDR is negatively associated with ROA. The coefficient is significant at the 5% level while the coefficient of the relationship between FDR and ROE is positively and statistically significant at the 1% level. In addition, the relationship between TQ and FDR is positive but insignificant.

4.8.1.2 Effect of Deviation from Optimal WCM Investment Level

In order to establish and strengthen the WCM-profitability nexus, it was necessary to find the level of investment in WCM required to successfully finance firms' operational activities. It is evident from Table 4.19 that the relationship between WCM and firm performance is quadratic. The quadratic relationship suggests a lower investment boundary and higher investment boundary for WCM that inevitably leads to the conclusion that an optimal level of WCM investment exists that maximizes firm performance.

This section therefore determines the effect of DEVIATION from this "optimal level" of investment in WCM by considering Model 12. In Model 10, the quadratic relationship was established, and this relationship reflects on the potential impact of working capital on improving firm performance to an optimal point, at which further investments reduce performance. Following Martinez-Sola et al. (2014), Nha and Loan (2015) and Afrifa and Padachi (2016), CCC and CCC² were eliminated in Model 10 and replaced with the residual estimated from Model 11 by making CCC the dependent variable (see Table 4.20).

Table 4.20

Model 12 Deviation from Optimal Level of WCM Investment Level

Variable	ROA	ROE	TQ
DEVIATION	-0.028702(-1.70)*	-0.0133325(-0.30)	-0.0123579(-0.05)
FIRMSIZE	-1.440642(-1.68)*	-0.740557(-0.33)	-1.734177(-0.13)
SALESGROWTH	-0.7019604(-1.57)	-0.3438182(-0.30)	-.0138369(-0.00)
FDR	-0.1174142(-2.64)***	0.192707(1.67)*	0.3087526(0.45)
Constant	17.26001(1.69)*	8.791255(0.33)	20.10375(0.13)
R ²	0.1028	0.0893	0.0873
F-value	17.07	14.6	14.25
F > Prob	0.0000	0.0000	0.0000
rho	0.48639	0.44840	0.68374
Observations	675	675	675

Notes: Variables' results begin with their coefficients, t-statistics are in parentheses while *, **, and *** denote significance levels at 10%, 5% and 1%, respectively. Results were obtained using FE model. Variables are defined as follows: ROA represents return on assets, ROE represents return on equity and TQ represents market valuation of firms. DEVIATION represents the absolute values of the residual derived from model 8. Similarly, FIRMSIZE denotes firm size, SALESGROWTH denotes sales growth and FDR denotes financial debt ratio. R² denotes the R-squared, and it is used to determine the proportion of the sample variation in the ROA, ROE and TQ that is explained by the CCC and CCC² variables. "F" indicates the F-Statistics and it is used to justify the inclusion of all the variables. F>Prob shows the statistical significance of "F". rho is the "intraclass" correlation, and it is used to determine the variance due to differences across the panel.

Several steps were followed to determine the effect of deviation. First, the residuals estimated from Model 11 were obtained and substituted with CCC and CCC² in Model 12. Second, the residual's absolute values were determined from equation 11. The absolute value of the residual is called DEVIATION. Third, DEVIATION was included in Model 12 as the main independent variable to determine if DEVIATION from the optimal investment level of WCM affects the performance of firms. Consistent with Nha and Loan (2015) and Afrifa and Padachi (2016), the study assumed that in Model 12, the coefficient of the DEVIATION will be negative and less than zero ($\beta < 0$). This would indicate a negative relationship between DEVIATION from optimal investment level of WCM and

firm performance. As expected, Table 4.20 reveals that the coefficients of DEVIATION are negatively associated with measures of firm performance - ROA, ROE and TQ.

The coefficient of ROA is statistically significant at the 10% level while the coefficients of ROE and TQ are not statistically significant. The negative relationship between DEVIATION and ROA, ROE and TQ confirms the quadratic relationship of WCM and implies that DEVIATION from an optimal investment level in WCM affects firm profitability negatively. These results, however, do not indicate the direction of DEVIATION - either low or high (below or above the optimal level) that affects firm profitability.

In order to determine whether deviations in either way (low or high) affect profitability, Model 13 was introduced. Model 13 advanced Model 12 by including an Interaction Term. The aim was to determine the effect of DEVIATION below (negative) and above (positive) the optimal investment level in WCM on firm performance. Following Afrifa and Padachi (2016), the term INTERACT was introduced and defined as Above Optimal*DEVIATION. Above optimal is a dummy variable given the value of 1 for a positive residual estimated in Model 11 and 0, if otherwise. Table 4.21 presents results of Model 13. In line with the studies of Nha and Loan (2015) and Afrifa and Padachi (2016), this study expected that the coefficient of DEVIATION ($\beta_1 < 0$) would be less than 0 and the coefficient of DEVIATION + INTERACT ($\beta_1 + \beta_2 < 0$) would also be less than 0.

Table 4.21

Model 13: Deviation, Interact and WCM Investment Level

Variable	ROA	ROE	TQ
DEVIATION	-0.0570636(-1.69)*	-0.0328143(-0.37)	-0.1976634(-0.38)
INTERACT	0.0567238(1.68) *	0.0210581(0.24)	-0.1811916(-0.35)
FIRMSIZE		-4.104798(-0.72)	-126.4722(-3.75)***
SALESGROWTH	0.0475753(4.53)***	-0.2990479(-0.63)	-09.603464(-3.42)***
FDR	-0.0456682(-3.60)***	0.1950883 (3.35)***	-0.6678404(-1.94)*
Constant	0.1072857(4.92)***	14.2046(0.72)	437.914(3.74)***
R ²	0.1028	0.0901	0.1083
F-value	17.07	11.78	14.46
F > Prob	0.0000	0.0000	0.0000
rho	0.48639	0.43476	0.64808
Observations	675	675	675

Notes: Variables' result begin with their coefficients, t-statistics are in parentheses while *, **, and *** denote significance levels at 10%, 5% and 1%, respectively. Results were obtained using FE model. Variables are defined as follows: ROA represents return on assets, ROE represents return on equity and TQ represents market valuation of firms. DEVIATION represents the absolute values of the residual derived from model 8 while INTERACT is defined as "above optimal*Deviation. Similarly, FIRMSIZE denotes firm size, SALESGROWTH denotes sales growth and FDR denotes financial debt ratio. R2 denotes the R-squared and it is used to determine the proportion of the sample variation in the ROA, ROE and TQ that is explained by the CCC and CCC2 variables. "F" indicates the F-Statistics and it is used to justify the inclusion of all the variables. F>Prob shows the statistical significance of "F". rho is the "intraclass" correlation and it is used to determine the variance due to differences across the panel.

The results in Table 4.21 show that DEVIATION is negatively associated with ROA, ROE and TQ. The coefficient of ROA is statistically significant at the 10% level while the coefficients of ROE and TQ are statistically insignificant. INTERACT is positively associated with both ROA and ROE but negatively associated with TQ. The coefficient of ROA is significant at the 10% level while ROE and TQ are statistically insignificant with respect to INTERACT. Mathematically, the study expected that the coefficient of $\beta_1 < 0$ and $\beta_1 + \beta_2 < 0$ would confirm the effect of DEVIATION.

In column 1 (ROA model), the coefficient of $\beta_1 < 0$ [-0.0570636] while $\beta_1 + \beta_2 < 0$ [-0.0570636 + 0.0567238 = -0.0003398]. In column 2 (ROE model), the coefficient of $\beta_1 < 0$ [-0.0328143] while $\beta_1 + \beta_2 < 0$ [-0.0328143 + 0.0210581 = -0.0117562]. In column 3, $\beta_1 < 0$ [-0.1976634] while $\beta_1 + \beta_2 < 0$ [(-0.1976634) + (-0.1811916) = -0.378855]. These results support the study's argument, that a deviation from an optimal level of investment in working capital would negatively affect firm performance. This is indicated in the sum of the coefficient values of DEVIATION and INTERACT, which yielded negative values, suggesting that a deviation has negative effect on a firm. The omission of FIRMSIZE when INTERACT was introduced suggests the presence of multicollinearity. This contradicts the multicollinearity results reported earlier.

The relationship between WCM and firm performance has been widely presumed to be linear, but this thesis provides evidence that the relationship is quadratic. This means that either a low level or a high level of investment in working capital has implications with respect to the decrease in firm performance and threatens a firm's financial sustainability. The potential impact of either a low or a high level of investment in working capital is that an optimal level exists for maximizing firm performance. Therefore, deviations, in either direction from an optimal level of investment, adversely affect firm performance. This study, therefore, argues that understanding the variability of investment in WCM greatly influences firm performance.

4.9 The Difference between WCM during and after Financial Crisis

This section provides empirical results on the differences in the relationship between WCM and firm performance during and after the financial crisis of 2007-2008. The section addresses research objective four and adopts Pooled OLS, following Deloof (2003), Raheman et al. (2010) and Abuzayed (2012). The intent here was to determine if differences in WCM performance exist during and after the crisis period. In order to achieve this, different regression analyses were considered and the differences in their R^2 were determined using Cramer's Z statistic. The first section (4.9.1) determines these differences with respect to ROA while Sections 4.9.2 and 4.9.3 determine differences in WCM with respect to ROE and TQ, respectively.

4.9.1 Results of Hypothesis 11a

This section examines the differences in the relationship between WCM and ROA during and after the financial crisis (Njiforti, 2015). The regression results are presented in Table 4.22 below. First, Table 4.22 shows the total sample of the study (675 observations) pooled in a separate regression. Second, is the regression results of the period during the financial crisis utilizing 225 observations while the third is the regression results indicating the post-crisis period which also employed 225 observations.

The results of the analysis confirm that a significant difference exists in the relationship between WCM and ROA of firms during and after the economic crisis of 2007-2008. The result shows that the post-crisis period had a more effective influence of WCM on ROA as indicated by the R^2 . The R^2 of the period during the crisis was 0.2071 and less than the R^2

of the post-crisis period at 0.3191. The R^2 measures the goodness of fit of a regression. It indicates the percentage of the variance in ROA (the dependent variable) that WCM (independent variables) explains collectively. The difference in the R^2 of the two periods - during and after the financial crisis, was confirmed by applying Cramer's Z-statistic (Cramer, 1987). From the result of Cramer's Z-statistic, the z-score of the explanatory power is -2.23 and statistically significant at the 5% level.



Table 4.22

Model 14 (WCM and ROA during and after Financial Crisis)

Period	ARM	APM	INVM	CCC	CCE	FIRMSIZE	SALESGR	FDR	CONSTANT	F	N	R ²
Pooled 2007-2015	-0.0002238 (-1.62)	0.0001102 (0.80)	-0.0001141 (-0.86)	0.0001262 (0.96)	0.0582955 (3.70)***	0.0371096 (7.73)***	0.0591148 (4.98)***	-0.0775056 (-4.81)***	-0.2763913 (-5.54)***	19.93***	675	0.2404
During Crisis 2007-2009	0.0001044 (0.42)	-0.0000184 (-0.07)	0.0001805 (0.76)	-0.00014 (-0.60)	0.0766873 (3.64)***	0.0415102 (4.63)***	0.0561871 (3.29)***	-0.0254014 (-1.13)	-0.3521429 (-3.95)***	5.97***	225	0.2071
Post Crisis 2013-2015	-0.0001917 (-1.14)	0.0000103 (0.05)	-0.0001602 (-0.77)	0.0000782 (0.47)	0.0479752 (1.70)*	0.0298579 (4.03)***	0.0481023 (1.86)**	-0.0971519 (-3.37)***	-0.1903006 (-2.42)**	10.45***	225	0.3191
Z - statistics (Z-score)											-2.23**	

Notes: The coefficients are in front of parenthesis and t-statistics in parenthesis while Variables' significance levels are labelled at 1% (***), 5% (**) and 10% (*).

Variables are defined as follows: ROA represents return on assets, ARM represents accounts receivable management and APM represents accounts payable management. INVM represents inventory management while CCC represents cash conversion cycle and CCE represents cash conversion efficiency. For the remaining variables, FIRMSIZE denotes firm size, SALESGROWTH denotes sales growth and FDR denotes financial debt ratio. "F" indicates the F-Statistics and it is used to justify the inclusion of all the variables. "N" signifies the number of observations considered in each regression while R² denotes the R-squared and it is used to determine the proportion of the sample variation in the ROA that is explained by the WCM variables. Z - Score is the significance value from the statistical table derived from Cramer's Z-statistic.

The result confirms the intuitive explanations of differences in WCM often described by previous studies (Ramiah et al, 2013; Wasiuzzaman, 2015; Murthy, 2015). It also suggests that WCM is more effective in predicting ROA during a period of macroeconomic stability. This finding supports the argument made by Wasiuzzam (2015) and Murthy (2015) that WCM gained more interest during the financial crisis of 2007-2008. During this period, WCM continued to increase due to uncertainties, ranging from macroeconomic instability to decreases in bank lending. This affected the WCM components, such as accounts payable and receivables and inventory, thereby requiring more attention.

On the receivables side, it affected collection time and increased the amount of bad loans (aging debts). On the inventory side, the purchase of stock became difficult while level of activities decreased. These affected the efficiency of WCM and led to deterioration in the performance of firms. These effects can be confirmed by looking at the combined R^2 of the pooled regression. The R^2 for the pooled regression was 0.2404, while during and after the financial crisis, R^2 values were 0.2071 and 0.3191, respectively. A critical evaluation shows that the pooled period (2007 to 2015) almost lost its significance as it was less than the short period after the crisis (2013 to 2015). This is a clear indication that during a crisis, WCM is greatly affected and requires more attention. Therefore, hypothesis 11a, which predicted that there is a significant difference in the relationship between WCM and ROA, is supported.

4.9.2 Results of Hypothesis 11b

Table 4.23 provides the results of the relationship between WCM and ROE during and after the financial crisis of 2007-2008. The R^2 of the entire sample from 2007 to 2015 is 0.1569 and appears to be less than the R^2 values for the periods during and after the crisis at 0.2297 and 0.2459, respectively. This means that the explanatory power of WCM is higher after the financial crisis than during the financial crisis. More specifically, Cramer's Z-statistic indicates that the differences in the relationship between WCM and ROE during and after the financial crisis are statistically insignificant, suggesting that no significant differences exist between the two periods. This is evident in the Z score of -0.33, which is statistically insignificant.

The Z score provides no statistical evidence to support hypothesis 11b which posited that a significant difference exists in the relationship between WCM and ROE during and after the financial crisis of 2007-2008. This result is in line with the arguments of Owolabi and Alu (2012) and Pervan and Visic (2012). They argued that WCM is relevant at all times and can be beneficial to both constrained and unconstrained firms.

Table 4.23

Model 15 (WCM and ROE during and after Financial Crisis)

Period	ARM	APM	INVM	CCC	CCE	FIRMSIZE	SALESG	FDR	CONSTANT	F	N	R ²
Pooled 2007-2015	-0.0003617 (-0.85)	0.0003919 (1.00)	-0.0000000455 (-0.01)	0.0000126 (0.03)	-0.0571779 (-1.54)	0.0248779 (2.03)**	-0.002534 (-0.10)	0.2822924 (7.64)***	-0.1728812 (-1.41)	13.23***	675	0.1569
During Crisis 2007-2009	0.0006613 (2.11)**	-0.0006806 (-1.66)*	0.0012618 (4.23)***	-0.0010162 (-3.67)***	0.0366559 (0.61)	0.0790802 (3.07)***	0.0391451 (1.10)	0.2377709 (4.55)***	-0.6884194 (-2.70)**	12.6***	225	0.2297
Post Crisis 2013-2015	0.0000754 (0.12)	0.000414 (0.70)	-0.0002173 (-0.36)	0.00000928 (0.02)	-0.1669604 (-2.70)***	-0.0008898 (-0.05)	-0.0776335 (-1.85)	0.3116273 (4.99)***	0.0461517 (0.28)	6.39***	225	0.2459
Z - statistics (Z-score)												-0.33

Notes: The coefficients are in front of parenthesis and t-statistics in parenthesis while variables significance levels are labelled at 1% (***), 5% (**) and 10% (*).

Variables are defined as follows: ROE represents return on equity, ARM represents accounts receivable management and APM represents accounts payable management. INVM represents inventory management while CCC represents cash conversion cycle and CCE similarly represents cash conversion efficiency. On the remaining variables, FIRMSIZE denotes firm size, SALESGROWTH denotes sales growth and FDR denotes financial debt ratio. "F" indicates the F-Statistics, and it is used to justify the inclusion of all the variables. "N" signifies the number of observations considered in each regression while R² denotes the R-squared, and it is used to determine the proportion of the sample variation in the ROA that is explained by the WCM variables. Z - Score is the significance value from the statistical table derived from Cramer's Z-statistic.

Beyond this, it can be noticed that there is an increase in the explanatory power of WCM after the crisis. As illustrated in Table 4.23 above, the explanatory power (R^2) for the post-crisis regression is more than the explanatory power during the crisis with an increase of 0.0162%. This means that WCM performance was higher after crisis than during crisis. The result reflects the dynamism of WCM and similarly shows that unstable macroeconomic environment can alter the structure of WCM investments. This is because the negative effect of the crisis heightened the focus on liquidity management and funding operational activities of companies. Hence, the optimization of WCM investment is key both during a crisis and in normal times. Based on the evidence provided in Table 4.23 above, hypothesis 11b, which predicted a significant difference in the relationship between WCM and ROA, is not supported.

4.9.3 Results of Hypothesis 11c

In Table 4.24 below, the study reports the result of differences in the relationship between WCM and TQ during and after the financial crisis. For the entire sample (2007 to 2015), the result reveals a R^2 value of 0.0679 while the R^2 values for during and post-crisis periods are 0.0741 and 0.133, respectively. The increase in R^2 from 0.0741 to 0.133 with a difference of 0.0589 suggests a difference between the two periods. The difference in the two periods as revealed by the explanatory powers of the regression, was confirmed using Cramer's Z-statistic. Cramer's test results display a Z-score of -1.46 that is statistically significant at the 10% level. This result provides significant support for hypothesis 11c, which predicted a significant difference in the relationship between WCM and TQ.

Beyond these arguments, other explanations can be offered to uphold this result. In the Nigerian experience, the consequences the financial crisis brought upon firms are multiple. First, the financial crisis impacted the financial sector and made banks and other lending institutions tighten their credit standards, thereby making the acquisition of credit by firms to support their operations difficult at a critical time (Soludo, 2009; Njiforti, 2015). Second, the financial crisis caused capital erosion as companies holding monetary assets experienced a decline in value or losses while those holding monetary liabilities gained. Third, the fall in consumer demand arising from economic challenges decreased sales of companies and their profits as well.

These consequences brought by the financial crisis were particularly critical for WCM performance. Apparently, the increased viability of WCM after the crisis period in terms of the explanatory power is justified. Arising from these evidences, the study concludes that a significant difference existed in the relationship between WCM and TQ during and after the financial crisis of 2007-2008.

Table 4.24

Model 16 (WCM and TQ during and after Financial Crisis)

Period	ARM	APM	INVM	CCC	CCE	FIRMSIZE	SALESGR	FDR	CONSTANT	F	N	R ²
Pooled 2007-2015	-0.0035966 (-2.56)**	0.003097 (2.12)**	0.0003907 (0.22)	0.0005945 (0.41)	-0.1211822 (-0.47)	0.0926519 (0.97)	0.490391 (2.75)***	0.8119189 (3.62)***	0.4212806 (0.41)	5.89***	675	0.0679
During Crisis 2007-2009	0.0043908 (1.10)	-0.0046987 (-0.99)	0.0082238 (1.93)*	-0.0052078 (-1.26)	-0.0618063 (-0.13)	-0.0106736 (-0.06)	0.4745759 (1.55)	0.8031858 (2.05)**	1.533454 (0.79)	1.96**	225	0.0741
Post Crisis 2013-2015	-0.0044276 (-2.73)***	0.0055089 (2.64)***	-0.0019262 (-1.09)	0.0006884 (0.50)	-0.1988008 (-0.50)	0.2862215 (1.99)**	0.479333 (1.90)*	0.9706638 (2.86)***	-1.636561 (-1.12)	5.49***	225	0.133
Z - statistics (Z-score)												-1.46*

Notes: The coefficients are in front of parenthesis and t-statistics in parenthesis while variables' significance levels are labelled at 1% (***), 5% (**) and 10% (*).

Variables are defined as follows: TQ represents market valuation of firms, ARM represents accounts receivable management and APM represents accounts payable management. INVM represents inventory management while CCC represents cash conversion cycle and CCE similarly represents cash conversion efficiency. On the remaining variables, FIRMSIZE denotes firm size, SALES GROWTH denotes sales growth and FDR denotes financial debt ratio. "F" indicates the F-Statistics, and it is used to justify the inclusion of all the variables. "N" signifies the number of observations considered in each regression while R² denotes the R-squared, and it is used to determine the proportion of the sample variation in the ROA that is explained by the WCM variables. Z-Score is the significance value from the statistical table derived from Cramer's Z-statistic.

4.10 Summary of the Chapter

This chapter presents and discusses the results of the moderating effect of economic conditions on the relationship between WCM and firm performance in Nigeria. The chapter begins with the descriptive statistics and Pearson correlation matrix of variables using the STATA software. The chapter also provides the diagnostic tests and other model assessment tests to guarantee model fit and prevent specification error. Furthermore, the chapter presents and discusses the empirical results following the objectives of this study. First, the results of the direct relationship between WCM and firm performance reveal inconsistent findings. Second, the study interacted inflation and interest rates with WCM variables to determine their moderating effect on firm performance. Results reveal that inflation and interest rates significantly moderate the relationship between WCM and firm performance.

Third, this study employed the same dataset to determine the quadratic relationship between WCM and firm performance, and findings reveal that the relationship between WCM and firm performance is quadratic and not linear. It specifically concludes that either excess or inadequate WCM has implications that are undesirable, which suggests that an optimal level exists at which investment in WCM can maximize returns. This characteristic of WCM reveals that investments in WCM harbors the propensity to deviate. Further estimates reveal that an optimal level exists at which investment in WCM would yield a maximum return and that deviation from the optimal level, either below or above, affects the viability of WCM and firm performance. Fourth, this study employed Cramer's Z-statistic to test the differences in the relationship between WCM and firm performance

during and after the financial crisis of 2007-2008. To ensure comparability between the periods and support the foregoing discussion, the study employed the same dataset. The result from the study's empirical test shows that the relationship between WCM and measures of firm performance is different for the two periods, albeit in varying degrees. In summary, the results show a strong explanatory power of the post-crisis period compared to the crisis period. A summary of the entire results is shown in Table 4.25.



Table 4.25
Summary of Hypotheses Results and Decisions

HYP	STATEMENT	RESULT	DECISION
H _{1a}	There is a significant relationship between ARM and ROA.	There is a negative and insignificant relationship between ARM and ROA.	Not supported
H _{2a}	There is a significant relationship between ARM and ROE.	There is a negative and insignificant relationship between ARM and ROE.	Not supported
H _{3a}	There is a significant relationship between ARM and TQ.	There is a positive and significant relationship between ARM and TQ.	Supported
H _{1b}	There is a significant relationship between APM and ROA.	There is a positive and significant relationship between APM and ROA.	Supported
H _{2b}	There is a significant relationship between APM and ROE.	There is a negative and insignificant relationship between APM and ROE.	Not supported
H _{3b}	There is a significant relationship between APM and TQ.	There is a negative and insignificant relationship between APM, and TQ.	Not supported
H _{1c}	There is a significant relationship between INVM and ROA.	There is a negative and significant relationship between INVM and ROA.	Supported
H _{2c}	There is a significant relationship between INVM and ROE.	There is a positive and significant relationship between INVM and ROE.	Supported
H _{3c}	There is a significant relationship between INVM and TQ.	There is a positive and insignificant relationship between INVM and TQ.	Not supported

Table 4.25 (continued)

HYP	STATEMENT	RESULT	DECISION
H _{1d}	There is a significant relationship between CCC and ROA.	There is a positive and insignificant relationship between CCC and ROA.	Not supported
H _{2d}	There is a significant relationship between CCC and ROE.	There is a negative and insignificant relationship between CCC and ROE.	Not supported
H _{3d}	There is a significant relationship between CCC and TQ.	There is a negative and significant relationship between CCC and TQ.	Supported
H _{1e}	There is a significant relationship between CCE and ROA.	There is a positive and significant relationship between CCE and ROA.	Supported
H _{2e}	There is a significant relationship between CCE and ROE.	CCE is negatively and insignificantly related to ROE.	Not supported
H _{3e}	There is a significant relationship between CCE and TQ.	CCE is negatively and insignificantly related to TQ.	Not supported
H _{4a}	Inflation Rates significantly moderate the relationship between ARM and ROA.	Inflation Rates significantly moderate the relationship between ARM and ROA.	Supported
H _{5a}	Inflation Rates significantly moderate the relationship between ARM and ROE.	Inflation Rates do not significantly moderate the relationship between ARM and ROE.	Not supported
H _{6a}	Inflation Rates significantly moderate the relationship between ARM and TQ	Inflation Rates significantly moderate the relationship between ARM and TQ.	Supported

Table 4.25 (continued)

HYP	STATEMENT	RESULT	DECISION
H4b	Inflation Rates significantly moderate the relationship between APM and ROA.	Inflation Rates do not significantly moderate the relationship between APM and ROA.	Not Supported
H5b	Inflation Rates significantly moderate the relationship between APM and ROE.	Inflation Rates significantly moderate the relationship between APM and ROE.	Supported
H6b	Inflation Rates significantly moderate the relationship between APM and TQ.	Inflation Rates significantly moderate the relationship between APM and TQ.	Supported
H4c	Inflation Rates significantly moderate the relationship between INVM and ROA.	Inflation Rates significantly moderate the relationship between INVM and ROA.	Supported
H5c	Inflation Rates significantly moderate the relationship between INVM and ROE.	Inflation Rates significantly moderate the relationship between INVM and ROE.	Supported
H6c	Inflation Rates significantly moderate the relationship between INVM and TQ.	Inflation Rates significantly moderate the relationship between INVM and TQ.	Supported
H4d	Inflation Rates significantly moderate the relationship between CCC and ROA.	Inflation Rates significantly moderate the relationship between CCC and ROA.	Supported
H5d	Inflation Rates significantly moderate the relationship between CCC and ROE.	Inflation Rates significantly moderate the relationship between CCC and ROE.	Supported
H6d	Inflation Rates significantly moderate the relationship between CCC and TQ.	Inflation Rates significantly moderate the relationship between CCC and TQ.	Supported

Table 4.25 (continued)

HYP	STATEMENT	RESULT	DECISION
H _{4e}	Inflation Rates significantly moderate the relationship between CCE and ROA.	Inflation Rates do not significantly moderate the relationship between CCE and ROA.	Not Supported
H _{5e}	Inflation Rates significantly moderate the relationship between CCE and ROE.	Inflation Rates significantly moderate the relationship between CCE and ROE.	Supported
H _{6e}	Inflation Rates significantly moderate the relationship between CCE and TQ.	Inflation Rates do not significantly moderate the relationship between CCE and TQ.	Not supported
H _{7a}	Interest Rates significantly moderate the relationship between ARM and ROA.	Interest Rates significantly moderate the relationship between ARM and ROA.	Supported
H _{8a}	Interest Rates significantly moderate the relationship between ARM and ROE.	Interest Rates significantly moderate the relationship between ARM and ROE.	Supported
H _{9a}	Interest Rates significantly moderate the relationship between ARM and TQ.	Interest Rates significantly moderate the relationship between ARM and TQ.	Supported
H _{7b}	Interest Rates significantly moderate the relationship between APM and ROA.	Interest Rates do not significantly moderate the relationship between APM and ROA.	Not Supported
H _{8b}	Interest Rates significantly moderate the relationship between APM and ROE	Interest Rates significantly moderate the relationship between APM and ROE.	Supported
H _{9b}	Interest Rates significantly moderate the relationship between APM and TQ.	Interest Rates significantly moderate the relationship between APM and TQ.	Supported
H _{7c}	Interest Rates significantly moderate the relationship between INVM and ROA.	Interest Rates significantly moderate the relationship between INVM and ROA.	Supported

Table 4.25 (continued)

HYP	STATEMENT	RESULT	DECISION
H _{8c}	Interest Rates significantly moderate the relationship between INVM and ROE.	Interest Rates significantly moderate the relationship between INVM and ROE.	Supported
H _{9c}	Interest Rates significantly moderate the relationship between INVM and TQ.	Interest Rates significantly moderate the relationship between INVM and TQ.	Supported
H _{7d}	Interest Rates significantly moderate the relationship between CCC and ROA.	Interest Rates significantly moderate the relationship between CCC and ROA.	Supported
H _{8d}	The relationship between CCC and ROE is moderated by Interest Rates.	Interest Rates significantly moderate the relationship between CCC and ROE.	Supported
H _{9d}	Interest Rates significantly moderate the relationship between CCC and TQ.	Interest Rates significantly moderate the relationship between CCC and TQ.	Supported
H _{7e}	Interest Rates significantly moderate the relationship between CCE and ROA.	Interest Rates do not significantly moderate the relationship between CCE and ROA.	Not supported
H _{8e}	Interest Rates do not significantly moderate the relationship between CCE and ROE.	Interest Rates do not significantly moderate the relationship between CCE and ROE.	Not supported
H _{9e}	Interest Rates significantly moderate the relationship between CCE and TQ.	Interest Rates do not significantly moderate the relationship between CCE and TQ.	Not supported
H _{10a}	There is a significant difference in the relationship between WCM and ROA during and after the financial crisis of 2007-2008.	The difference in the relationship between WCM and ROA during and after the financial crisis is significant. This means that WCM is significantly affected during periods of crisis.	Supported

Table 4.25 (continued)

HYP	STATEMENT	RESULT	DECISION
H _{10b}	There is a significant difference in the relationship between WCM and ROE during and after the financial crisis of 2007-2008.	The difference in the relationship between WCM and ROE during and after the financial crisis is not significant.	Not supported
H _{10c}	There is a significant difference in the relationship between WCM and TQ during and after the financial crisis of 2007-2008.	The difference in the relationship between WCM and TQ during and after the financial crisis is significant. This means that WCM is significantly affected during periods of crisis.	Supported
H _{11a}	There is a quadratic relationship between WCM and ROA of firms in Nigeria.	The relationship between WCM and ROA is quadratic and not linear.	Supported
H _{11b}	There is a Quadratic relationship between WCM and ROE of firms in Nigeria.	The relationship between WCM and ROE is quadratic and not linear.	Supported
H _{11c}	There is a quadratic relationship between WCM and TQ of firms in Nigeria.	The relationship between WCM and TQ is quadratic and not linear.	Supported

CHAPTER FIVE

QUALITATIVE FINDINGS AND DISCUSSION

5.1 Introduction

This chapter presents and analyses the data collected from in-depth interviews conducted with six managers of firms operating in Nigeria. This analysis provides answers to research question five, which sought participants' views on: *how do managers perceive the effectiveness of WCM practices on firm performance in Nigeria?* These interviews focused on firms' WCM practices, environmental economic conditions affecting WCM and practices of WCM during financial crisis with the purpose of obtaining the meaning practitioners (managers) attach to WCM variables and how they interpret their activities. It also aims to explore the strategies firms adopt in managing WCM at normal and crisis times. Thus, the interviews were conducted to deepen knowledge and understanding about WCM in enhancing firm performance. Responses of each participant are presented in quotations and labelled accordingly. This chapter is therefore organised as follows: Section 5.2 provides the demographic data of participants, while Section 5.3 presents the analysis of interview and discussion on the findings. Section 5.4 summarizes the chapter.

5.2 Demographic Data of Participants

In this study, the opinions of six managers were sought on how they make effective WCM decisions to enhance their firm's performance. Throughout the interviews with the participants, pseudonyms were used. In this way, the real names and identities of the participants were obscured. Hence, for the purposes of this study these managers were

referred to as “participants”. This is important in view of the agreement made by both parties with regards to confidentiality and anonymity. This approach builds confidence in the participants and gives them no reason to doubt that the exercise is not for academic purpose. Moreover, this procedure reassured participants that they were not revealing their business strategies or weaknesses to their competitors. A comprehensive description of the participants is presented in Table 5.1. Specifically, the table shows the pseudonym of participants, sex, and years of experience, nature of business, designations and locations.

Table 5.1
Summary of Demographic Description of Participants

Pseudonym	Gender	Years of Experience	Nature of Business	Designation	Location
Participant 1	Male	10	Consumer Goods	Finance Director	Abuja
Participant 2	Male	15	Consumer Goods	Finance Director	Abuja
Participant 3	Male	11	Industrial Goods	Manager	Abuja
Participant 4	Male	12	Construction	Manager	Abuja
Participant 5	Male	10	Industrial Goods	Manager	Abuja
Participant 6	Male	10	Industrial Goods	Manager	Abuja

Source: Field Data, 2016.

The above Table (5.1) shows that the six participants to this study were all males. In terms of experience, three (3) participants (1, 5 and 6) had ten years of job (work) experience while another three (3) participants (2, 3 and 4) had between fifteen to eleven years of experience respectively. Meanwhile, in terms of their nature of business (as reflected in the categorization on the Nigerian Stock Exchange), two participants (1 and 2) belonged to the category of consumer goods, additionally three other participants (3, 5, and 6) were involved in industrial goods, while participant 4 was in the construction line of business. In terms of participants’ designations, four participants (3, 4, 5, and 6) worked as managers

in their respective companies, while participants 1 and 2 served as finance directors of their companies. All the companies contacted were headquartered within Abuja, the federal capital territory of Nigeria, but with branches across the country.

It is important to note that the listed firms reflected in Table 5.1 are all non-financial entities, and the results the interviews yielded captured their distinct and actual business practices. This provided the researcher the opportunity to converge both the quantitative and qualitative data and the findings therefrom.

5.3 Analysis of the Interviews

This study investigates the moderating effect of economic conditions on the relationship between WCM and firm performance. The perception of the participants on the subject matter produced various basic themes. These themes were later grouped into three organizing themes, namely, WCM practices, economic conditions and effects of the financial crisis. These three organizing themes were also merged into a global theme of optimal WCM strategy. Findings from the interviews are presented under each appropriate organizing theme.

5.3.1 Theme 1: Perceptions of WCM Practices

Regarding WCM practices, the opinions of participants to determine if efficient WCM practices improve firm performance was sought. Six (6) participants responded to the question and their responses indicated that efficient WCM serves as a financing option that improves firm performance. Their responses also revealed that WCM practices have major

drawbacks in terms of uniform practices. Hence, the concept does not follow a consensus or a defined standard. This means that the contribution of WCM to firm performance does not necessarily follow any universal assumption, rather it requires practices that reflect the peculiar circumstances of the firms and their specific environment. In line with the question asked, participant 2 (finance director) opened by saying:

Working capital management as I understand it, is all about how to finance our business. And our management of working capital depends on the situation we face. But as you know, working capital management has variables such as cash, receivables, payables and inventory and many other components that are dynamic. As I said before, it depends on the situation. For example, we did not pay one of our suppliers as early as usual last year to enable us to use the funds for other purposes, but we later realized that the supplier offered about 20% discount for prompt payment. But afterwards, we realized that the benefits of extending payment period did not actually compensate or cover up for the 20% discount offer that we missed. (Participant 2)

Further, participant 2 indicated that some essential pre-conditions must be met before taking a WCM decision. He stated that decisions regarding WCM are not taken in isolation, they require proper evaluation to determine the benefits and costs of taking any action. This, he stated, revealed that companies in Nigeria must rely on a variety of techniques and methods to appropriately deal with the various dimensions of WCM. In a related opinion, participant 1, suggested that in their working capital model “a financing decision is far more crucial than most financial officers think.” He explained:

For firms who face liquidity problems and those who do not, proper management of each of the components of WCM is important to all of us. The strategies we adopted to manage these components change from time to time depending on our customers’ demands,

market conditions, economic situation and the firms' internal mechanisms. (Participant 1)

The responses of participants 1 and 2 described the complex and dynamic nature of investment in WCM. This implies that WCM requirements directly influence decisions and strategies of firms and vice versa. Conversely managers often make a WCM decision before the need arises. Because WCM needs differ from year to year, the strategies adopted must reflect these changes. For instance, a decision to extend payments to creditors should be dependent on the amount of the discount offered. Where a discount is offered for cash payment, firms need to know if the discount will compensate the benefit of holding on to payment. Also, when a firm experiences an increase in price or patronage for a particular season occurring because of the inability of their competitors to meet expectation or they are liquidated, or customers have lost confidence in their products, these conditions requires additional investment in WCM. Participant 1 suggests that: "such a situation will require changing decisions regarding inventory level" (a component of WCM). Inventory decisions would change because of the urgent needs to increase output and take absolute advantage of such patronage to increase profitability.

Worthy of emphasis is that the efficiency and effectiveness of this decision depends on whether the firm is financially constrained or not. For a financially constrained firm, the decision to increase inventory within a short period to meet a quick and unexpected sales demand may slow. While participants 1 and 2 spoke alike, participant 2 further suggested a new approach in dealing with the dynamics of WCM:

... We have to introduce training programmes that will cater for our managers to improve their capacity to handle purchasing, payment to suppliers, sales personnel, and other working capital activities more effectively. This will ensure a balance in WCM requirements and needs, and improve firm performance at all levels. Those who should be trained should include the finance and non-finance managers entrusted with working capital-related activities. Presently, we train our staff regularly through workshops for them to be abreast of current trends in the market and respond accordingly. (Participant 2)

Evidence from the excerpt above indicates that to minimize or avoid a mismatch of WCM investment decisions and consequences arising from its dynamism, staff training is imperative. This is because the knowledge gained can be applied to real practices to enhance profitability. Examples cited include that such knowledge can allow the procurement officer to understand operations better and to make better inventory forecasts and, most importantly, to determine the type of techniques to adopt for managing the inventory cycle. This knowledge can also inform their decisions on how to review suppliers and customers payment terms (trade policy), to know how to categorize debts that are aging and to know how to determine customers credit worthiness and many others.

Furthermore, two other participants (4 and 5) made statements supporting the views of participant 2. Their responses suggested that with increased firm competition, staff training becomes key to understanding the metrics of WCM. Specifically, participant 5 claimed that:

Frequent training and seminars organized by my company avails us of the opportunity to improve our WCM requirements. Our company has a stringent financing policy that will motivate a branch to look for ways to enhance sales and collect receivables early. This is because no branch can source funds externally to

finance operations. Such needs must be communicated to the head office. However, the practice is that branches can spend from what they can generate. This puts all managers on their toes to optimize every opportunity. All monies expended are generated internally, but when a certain level of expenditure is required, managers are not allowed to source for fund through loans and advances. Such a responsibility rest on the management. (Participant 5)

The response from participant 5 indicates that, in general, companies in Nigeria are required to develop specific approaches that will ensure managers have the needed information to guide operational and WCM decisions. Moreover, the participant felt that through organizing workshops and seminars both shareholders and employees will develop a common objective that will help their firms deliver the desirable outcomes. That approach will reduce agency problems as postulated by Jensen and Meckling (1976).

In summary, participant responses interlinked themes around staff training, financing policy, trade policy and WCM dynamics. The ideas expressed indicates that training and retraining can supply the needed expertise that will yield a multiplier effect on financing and trade policy, including WCM dynamics generally. All these are presumed to exist in a rapidly changing environment. From the various views of the participants, four themes emerged, namely, WCM dynamism, staff training, financing policy and trade credit policy (which refers to how firms manage their accounts receivables or average collection periods). These basic themes were analysed under the organizing theme of WCM practices. The dynamics that links these various themes, as suggested in the contribution of participants, is consistent with the thesis advanced by contingency theory.

5.3.2 Theme 2: Perceptions of Economic Conditions

Another issue raised was about the effect of economic conditions of firms on the effectiveness of WCM. Participants were asked about the key economic constraints affecting their companies? Participant 6 replied, “In fact, our financing ability is deeply affected by economic conditions, especially, high inflation rates and interest rates”. Then he adds, “We could barely operate as planned because of differences in the price of materials, and this had numerous negative effects on our operations and business.”

Participant 6 further described the effect of inflation and interest rates as alarming: “Of course, like I said before, there are negative effects which we experienced on our businesses because of inflation and interest rates and not as a result of poor management.” The participant looked up at the ceiling lights and then said, “Achieving our company’s objective of higher profit was not easy at that period because, first, our production level reduced due to high prices and lack of funds to finance operations. Second is the behaviour of customers that also affected sales level. Although, we were up to the challenge but only that our profit margin dropped.”

The response implies that a lack of funds brought by the effect of inflation and interest rates needed to run the day-to-day operational activities of the firm affected the activity level otherwise known as the production level. This is further explained by participant 6.

... Apart from the limited cash needed to pay for raw materials, marketing, operating expenses, suppliers and so on caused by the effect of inflation and interest rates, it also made businesses lose its customers to competitors. As you well know, customers whose needs or wants changes because of mismatch between supply and

demand are difficult to regain. Meaning a customer's patronage is lost, okay! That is how a customers' preferences for consumption will change, sales will be affected, and profit will also drop. (Participant 6)

The response of participant 6 shows that, when companies fail to meet customers' demands, this may lead to loss of valuable customers to competitors, which makes regaining their loyalty much more challenging.

Offering a different opinion on the effect of high interest rates and inflation rates, Participant 2, in a sombre mood, expressed dissatisfaction over the government's insensitiveness to these factors. He angrily retorted:

It is not a story that the government is not showing concern about the trouble of our environment, but a reality and to be honest, it is affecting our business negatively. In short, WCM, we know, is key but you don't expect a manager to perform "magic" when the prices of raw materials are doubled and worst of all ... banks are not willing to help, as they no longer give loans with ease. Please, can you answer me or interview the federal government to know why we cannot access dollar again and the suspension of forex for some essential raw materials? Some of these raw materials are not locally produced in Nigeria; neither do they have substitutes. Hum, can you now see that about 40% of what makes our performance less than expected is not caused by our inability to manage WCM and internal management per se but because some of these issues are beyond us. (Participant 2)

As stated by participant 2, the general outlook of government responsiveness to economic policies is poor. The lack of a concrete policy to forestall economic crisis did not only make inflation and interest rates spiral, but left companies operating within Nigeria vulnerable to suffer the negative effects. Furthermore, participant 2 aptly summed his views by saying, "Most companies in Nigeria are keenly affected by government insensitive attitude to the

Nigerian business environment”. He added that, “Although we have internal challenges, if government can support us through proactive and favourable policies, we can operate freely and make huge profits from which government will benefit through taxation.”

In a similar development, participant 4 also lamented over the effect of unfavourable economic conditions. According to him, both companies and the society were affected negatively. He expressed his grief saying:

We in the construction company are more affected by inflation rates and interest rates. In short, let me give you example, as a construction company when we get mobilized for commencing a project, no money is expected from the client or owner until the contract gets to a defined level accepted by both parties or is completed as the case may be. So, imagine a situation in which the fixed amount charged can no longer finance the project due to high prices or due to inflationary effects on materials. What can a company do? Note that, agreements already specify the terms and conditions, so no reimbursement will be made until the due date. The circumstances get complicated because access to short-term loans is also difficult due to high interest rates and inflation rates. This is one of the reasons why some of our contracts are abandoned. (Participant 4)

The statement of participant 4 above shows that the reason why most contracts are abandoned is related to the high costs of materials brought about by inflation and interest rates. The same participant further added that:

In one way or the other, both the business and employees suffered the consequences. Of course, while the company was finding ways to deal with the high cost of financing projects and redundancy brought by low contract rate, the management made a decision to drastically reduce workforce. Let’s say, to an extent by 10%. This is because it makes no economic sense paying workers while

existing contracts cannot be smoothly undertaken due to high costs, and new contracts are not won too. (Participant 4)

This suggests that the company tried to eliminate redundancy in their system. The responses from participants 2 and 4 highlight that the unexpected inflation and interest rates affected the domestic prices of raw materials that are essential to their operations, liquidity and access to capital. The contractions experienced by these firms are not unrelated to the variability of WCM, and suggest that, for performance to ensue, the environment in which firms operate must economically be stable.

Participant 1 raised another key implication:

...frankly speaking, the high interest rates and inflation rates have not only made this company lose experienced and dedicated staff due to low capacity utilization but have also affected our relationship with both suppliers and major customers. In fact, we have to adopt different tactics to deal with our customers. This was because some customers who purchased goods genuinely refused to pay, while others began to pay slowly. The attitudes of customers that manifest in this way and at such periods are not normal. (Participant 1)

The abnormality in customer attitude related by Participant 1 is tied to the situation of the economy at the material time, which led to abnormal behaviour in transactions between firms and its customers. Further explanations suggest that not paying debt when due may affect a company's reputation and the relationship with their customers, "but the present circumstances left them (both firm and customers) with no better choice," Participant 1 said. Participant 4 stated that "the effect is evidenced in the numbers of companies that

have shut down operation and many others that have also relocated to nearby countries (Ghana).” In addition, Participant 5 stated that “the effect is quite challenging.”

Further, Participant 5 made a general observation that was not specifically about his company by suggesting that:

Doing a business under unstable condition is not easy, most especially when it has to do with cash. In fact, it is one of the main causes of business failure because decision are hard to take when cash is involved. Therefore, a certain level of economic stability is required for companies to operate and even contribute meaningfully to the economic development in the form of tax. For example, high exchange rates affected some of us importing raw material for production. And doing business will be a big problem because of inadequate raw material or inventories as you call it while profit will reduce. Every business will prefer to do with plenty of inventory than to have problem with it. (Participant 5)

As explained by participant 5, unstable macroeconomic factors have widespread implications for companies in Nigeria. These range from rising costs of operational activities to unexpected fluctuations in the prices of raw materials considered as essential by companies. Such rising costs of operations and unexpected fluctuations in prices of essential raw materials frequently used for production by firms led to a “material” increase in the costs of production and consequently decreased firm profitability. Hence, the management of such “cost volatility” has been a concern of most businesses (especially manufacturing companies) in Nigeria to enable them to compete favourable and sustain growth.

In sum, this section discusses the views of participants on the environmental factors mitigating the performance of firms. The participants have all described the Nigerian

environment as “volatile economically”, which affected the viability of firms. Overall, their responses suggest that the Nigerian environment is characterized by severe macroeconomic instability, for which participants mostly blamed poor government policy, which drives interest rates, inflation rates, exchange rates. These themes collectively can be brought under the organising theme of the economic conditions. While the effects of these macroeconomic conditions differ from company to company according to the participants’ responses, a clear consensus is present that interest rates, inflation rates, exchange rates and government policies affected all companies operating in Nigeria in varying degrees.

5.3.3 Theme 3: Perceptions of the Financial Crisis and WCM

Participants were asked about the differences in their WCM practices during and after the financial crisis of 2007-2008. In general, their responses suggested that the fiscal crisis caused deterioration in the level of investment in WCM, which led to a decline in their profitability. Participant 3 stated that, “Access to finance was our major problem, especially how to make payments under such difficult conditions.... There were many problems during the crisis but we were more worried about how to finance operations and manage all necessary payments”. Participant 2 confirmed the issue of payments challenge, saying that “... certainly we were affected like other manufacturing companies.” Further elaborating that “The crisis really slowdown our activities due to financing problems.” Mincing no words, participant 3 stated that the challenges were particularly acute and led to difficulties in financing operational activities. He said:

The crisis was a major threat to our financing and investment capacity. In some cases, getting bank loan was like “hell”. Banks were mostly concerned about charging high interest rates. Though the problem would not have been severe, if only customers were not sluggish to repaying their debts. What I mean is that, even collecting the money owed by customers was also challenging. (Participant 3)

Accordingly, the participant responses suggest that their financing challenge was more related to the high interest rates charged by banks, default in payment of debt by customers and the resultant reduction in production level. Yet, the participants spoke at a time when their respective financial situations were showing signs of improvement. This was confirmed by the statement of participant 4.

The business and profit opportunities we lost during the crisis cannot be regained soon. The problem we faced during the crisis majorly was the issue of cash-on-hand. As you know, no aspect of the business can operate and function well without cash, cash is important and needed to purchase inventory, take advantage of investment opportunities and many more. ...The situation indeed affected our company. Despite the limited cash and pressure we faced, we still managed to improve our performance. (Participant 4)

One of the explanations the participant gave for the low production capacity and performance of companies in Nigeria was attributable to the crisis. Precisely, the crisis destabilized the internal cash generating mechanism of companies and made financial institutions tightened their credit standards by giving stringent lending conditions. The effects of these made cash become scarce and tighter than before.

Similarly, participant 3 buttressed the low sales argument earlier mentioned by participant 4. He stated that “...low sales was recorded due to the challenges in meeting customers’

demands.” The financial difficulties experienced by businesses during the crisis that manifested in the form of cashflow constriction, high interest rates, and sluggishness in payments by customers, led to low productivity and sales contraction. This was evident, as participants suggested, because higher productivity-output and sales can be achieved by a quantitative increase in inputs such as increasing the raw materials or inventory employed, enhancing technology utilization and upgrading workers skills. These are all driven by financial resources which are not easily come by during crisis periods. Under such conditions supplies hardly meet the demands of customers.

Participant 3 further said: “Despite the high cost of production, we still maintained high quality at competitive prices in order to keep our customers”, implying that despite their financial challenges, the quality of products could not be compromised together with the price charged. This was considered necessary to gain the patronage of customers who are always looking for where deep discounts are offered to buy from. Further comments from the participant revealed why WCM was a serious problem. Example, due to debtors’ (accounts receivable) whose payments are meant to increase the cashflow of the businesses, but yet are slow to respond. Participant 3 clarified this point, thus:

... I would like to say that another challenge we faced was more related to recovery of debt from customers. The problem then was how to recover cash although, one strategy that was an eye-opener to us was frequent contact, I mean ... like “reminder” and frequent visit. The problem initially appeared insurmountable, because we discovered that some customers had closed down their businesses for fear of running into bigger debts as condition worsen, but using different approaches which I do not think we have to discuss in detail here it was surmounted. (Participant 3)

As part of the strategy adopted to recover cash from customers to finance operations, participant 3 explained that they facilitated informal dialogue with the customers to guarantee early payments. This implied that the inability of customers to pay debts as and when due increased the balance of accounts receivable.

Moreover, firms adopted specific strategies to reduce the degree of impact felt. Most of the participant responses suggested that some of them survived because they optimized their assets and widen the scope of their internal financing strategies through efficient and effective cash management. Participant 1 specifically explained that, “Proper management and forecasting of cash receipts and payments determined our resilience during the crisis”. While Participant 4 said that, “Although we actually adopted different internal measures to overcome the negative impact of the crisis I don’t have the permission to discuss them here”. The participant was not specific about the internal measures undertaken, but the conclusion could be made that the optimization of investments in WCM and aligning their strategies with the present condition was one such major strategies.

Part of the interviews included the aftermath of the crisis. In this connection, participants acknowledged a distinction in their operational activities between what obtained during the crisis period and after it. Participant 1 explained it this way, “Of course, access to finance improved after the crisis.” Participant 4 said simply: “There is improvement only in the area of finance but generally, things are still difficult.” In the opinion of Participant 2: “The struggle continues but the pressure is reduced.” The above evidence revealed much more about the challenges businesses faced and the attitude of managers to those

challenges, which was mixed and sometimes ambivalent. This mixture of ambivalence and hope reflected the conditions in which firms found themselves, which includes sales decline, tight financing conditions, low productivity and dwindling staff welfare. All these factors produced a kind of chaos and instability in the system, which made the conceptualization of WCM theory difficult and partly explain why performance was generally seen by participants as low.

In conclusion, the basic themes emerging from the participant responses were liquidity crisis, tight financing conditions, sales decline and changes in WCM practices as shown in Figure 5.1.



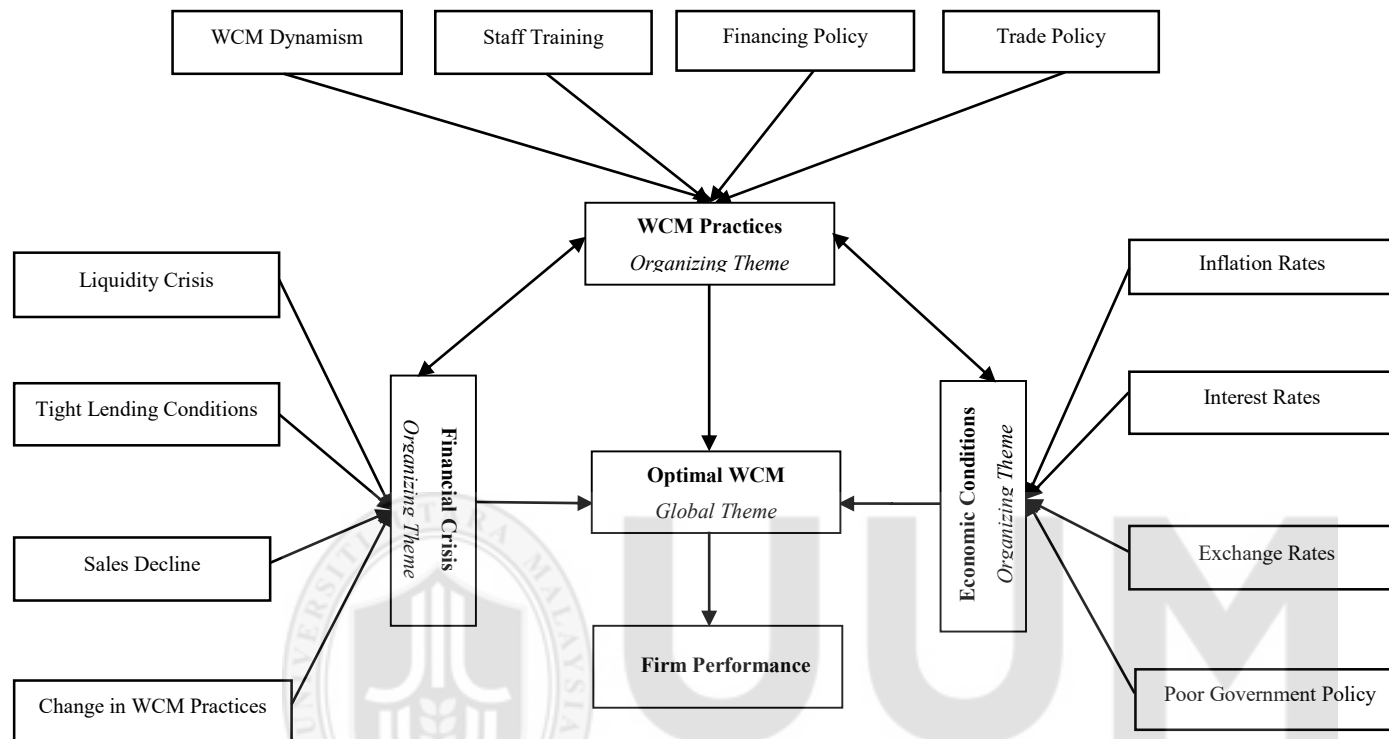


Figure. 5.1
Thematic Network Analysis of Data

As Figure 5.1 shows, there are strong links between the sub-themes elicited by the findings of this study. These sub-themes are themselves by-products of primary themes, the core of which are three, namely, financial crisis, WCM practices and economic conditions. Linking these primary themes together led to optimal WCM, which in turn produced effective firm performance. That is to say, effective firm performance is a function of three (3) core elements, namely, financial crisis, WCM practices and economic conditions, all interacting with each other and reinforcing a complex process that ultimately leads to optimal WCM, which produced effective firm performance.

5.4 Summary of the Chapter

This chapter reported the findings from in-depth interviews held with six participants on issues related to WCM practices. Based on the transcripts, participants' views were analyzed and interpreted using the thematic networks (Attride-Stirling, 2001) to further shed light on the moderating effect of economic conditions on the relationship between WCM and firm performance in Nigeria. The analysis revealed many factors that were divided into three organizing themes, namely, financial crisis, WCM practices and economic conditions. The next chapter concludes this thesis. It summarizes, integrates and embeds the results from both the quantitative and qualitative methods from which the conclusions and recommendations of this study were made.

CHAPTER SIX

DISCUSSION OF RESULTS AND CONCLUSION

6.1 Introduction

This chapter recapitulates the essential issues discussed in the previous chapters. The chapter is organized as follows: Section 6.2 presents the overview of the study, followed by Section 6.3 which summarizes the findings of the study. The contributions of the study are presented in Section 6.4, while in Section 6.5, the limitations and potential suggestions for further research are presented. Section 6.6 concludes the chapter.

6.2 Overview of the Study

The poor performance of firms in Nigeria has been attributed to the liquidity squeeze often experienced by firms operating in Nigeria. This situation is due to the inability of firms to acquire inventory for production (Ahiuma-Young, 2016; Alli, 2016). Others scholars (Akinlo, 2012; Barine, 2012; Olusegun, 2013; Ojo & Ololade, 2014; Kola, 2014; Edith, 2015; Frank, 2015) have attributed the low performance of Nigerian firms to high costs of transactions, high inflation rates, high interest rates and inaccessibility of funds. All these factors have made the Nigerian business environment to be considered as a high-risk area for doing business (World Bank Group, 2016). Drawing insights from the study conducted by Eljelly (2004), this study further argues that implementing an effective and efficient WCM system is a better measure for firms to improve their liquidity, and consequently,

their performance. WCM, therefore, has become important in this regard because it provides free cashflow that firms can use to finance operational activities.

Such a mechanism that can provide free cashflow is necessary because a firm that does not make or report profit may survive, but a firm without cash (cashflow) to finance its operational activities can run into financial trouble, which either will lead to insolvency or liquidation. While profit making is good for the image of a firm, the profit level of a firm does not sufficiently represent its financial position or standing because it can be manipulated at any point. Unlike profits that can be manipulated, cash flow provides a statement that shows a straightforward report of the available cash in the firm that can be used to serve several purposes, including, for instance, replenishing stock or inventory and paying expenses, which guarantee that a firm is a going concern. This is also necessary as it sustains a firm in terms of its cash cycle and covers the gap between a firm's receivables and payables periods, which credit sales necessitate. Hence, the importance of cashflow that can be generated through efficient and effective WCM cannot be overemphasized.

Considerable research has been conducted to analyze the relationship between WCM and firm performance (Deloof, 2003; Lazaridis & Tryfonidis, 2006; Afrifa & Padachi, 2016). Consistent with the pecking order theory, which states that firms should adhere to a hierarchy of financing sources and prefer internal financing which WCM represents, most research has found an association between WCM and firm performance in both developed and developing countries. However, many of these studies have found the results of the relationship between WCM and firm performance to be mixed and inconsistent (Filbeck &

Krueger, 2005; Makori & Jagongo, 2013; Salman et al., 2014; Yazdanfa & Ohman, 2014). Filbeck and Krueger (2005), Ali and Khan (2011) and Mathuva (2014) attributed this to the effect of macroeconomic instability of the environment in which firms operate; while Filbeck and Krueger (2005) specifically explained the inconsistency in part to “the effect of macroeconomic factors: changes in interest rates, rate of innovation and competition are likely to impact on working capital management” (p. 17). Ali and Khan (2011) stated that the external economic environment in which a firm operates exerts pressure on WCM. Furthermore, the study of Mathuva (2014) established that “in times of rising inflation, working needs increase” (p. 191). These studies (Filbeck & Krueger, 2005; Ali & Khan, 2011; Mathuva, 2014) have recommended that further research should consider the effects of these factors when studying WCM. The issue addressed by this study is that this recommendation has remained unexplored, as no other study, either from developed or developing countries, has incorporated these variables appropriately.

In other words, the interactions of macroeconomic factors, such as inflation rates, interest rates and GDP on the relationship between WCM and firm performance have received less attention (Mirza & Javed, 2013; Wasiuzzaman & Arumugum, 2012; Mathuva, 2014). Hence, this study fills the gap by placing these macroeconomic variables (inflation rates and interest rates) as moderators, having drawn insights from the study of Baron and Kenny (1986) and the contingency theory (Donaldson, 2001). Arising from this, the present study provides a framework that explains the incorporation of these macroeconomic conditions as factors in the WCM system. The framework involves linking WCM variables, macroeconomic factors (which are referred to as economic conditions in this study) and

firm performance underpinned by the pecking order theory and contingency theory. This study further provides empirical evidence that economic conditions measured by inflation and interest rates have detrimental effects on WCM and firm performance.

Along this line, several arguments have been made concerning the inconsistent findings in WCM studies. While some studies have argued that the relationship is linear (Deloof, 2003; Lazaridis & Tryfonidis, 2006), others have argued that the relationship is non-linear and should therefore be referred to as quadratic (Afrifa & Padachi, 2016). This is the reason this study evaluates the quadratic relationship between WCM and firm performance in Nigeria. In addition, several other studies (Wasiuzzaman, 2015; Murthy, 2015) have stated that WCM gained more academic interest during the financial crisis of 2007-2008, while others (Charitou et al., 2010; Sen & Oruc, 2009) have stated that WCM always plays a role but may be more important when firms face liquidity challenges, especially during a financial crisis. This also motivated the decision to compare practices of WCM during and after the financial crisis of 2007-2008 using Cramer's Z-statistic (Cramer, 1980).

The various issues raised in the preceding paragraphs motivated this study and are grouped into different objectives. These objectives are further divided into five to deal specifically with the various issues raised: 1) to determine the relationship between working capital management and firm performance; 2) to determine the moderating effect of economic conditions on the relationship between working capital management and firm performance; 3) to determine the quadratic relationship between working capital management and firm performance; 4) to determine the differences in the relationship between working capital

management and firm performance during and after the financial crisis of 2007-2008; and 5) to determine how managers perceive the effectiveness of working capital management practices on firm performance in Nigeria.

Several hypotheses were consequently formulated along these objectives. The results obtained were derived from data collected from the Nigerian Stock Exchange and World Bank database for 75 firms between 2007 and 2015, resulting in a total sample of 675 observations. The financial data for the firms' WCM variables and control variables were collected from each company's annual financial report as provided by the Nigerian Stock Exchange, while the variables for economic conditions (inflation and interest rates) were collected from the World Bank database.

The panel data analytical technique was employed to analyze the data using STATA version 13 statistical software. The analysis was mainly done using the FE model (other methods applied are specified in the methodology section) while the pre- and post-estimation tests were conducted to confirm the appropriateness of the technique employed for the specified models to avoid misleading results. In addition, the study also sought the perceptions of managers by interviewing them on the various issues raised to deepen the knowledge about WCM in enhancing firm performance. The interview was conducted with six participants, i.e., two finance directors and four managers, and their responses were found to be aligned with the results obtained from the regression analysis. The following section therefore, presents the summary of the findings as obtained from the analysis and in the order previously discussed in the preceding chapters.

6.3 Summary of Research Findings

In this section, the various findings discussed in chapters four and five are summarized with respect to the objectives of the study as stated in Chapter One. In specific terms, subsection 6.3.1 summarizes the research findings based on objective one, which determined the relationship between WCM and firm performance. Subsection 6.3.2 summarizes research findings based on objective two which determined the moderating effect of economic conditions on the relationship between WCM and firm performance. Economic conditions as previously discussed was proxied using inflation and interest rates. Therefore, findings relating to inflation rates are discussed in sub-subsection 6.3.2.1, while sub-subsection 6.3.2.2 discusses findings relating to interest rates. Subsection 6.3.3 summarizes the research findings based on objective three, which determined the quadratic relationship between WCM and firm performance, while subsection 6.3.4 summarizes research findings based on objective four which determined the differences in the relationship between WCM and firm performance during and after the economic crisis of 2007-2008.

With respect to research objective five that sought the opinions of managers through interviews concerning the practices of WCM and how they affect firm performance in Nigeria, the findings obtained were used to corroborate the findings from the quantitative analysis that addressed objectives one to four, thus providing a summary of how the results of these two methods (quantitative and qualitative) converged to fill several gaps in the existing literature on WCM. This is also in line with the opinion of Creswell and Plano Clark (2007) that the essence of combining two methods is to compare, confirm or

disconfirm the results of an analysis or study. Hence, providing a summary that merges and embeds results yielded from both methods provides in-depth insights that reflect the real business situation of firms in Nigeria, while the recommendations produced are adequate to improve the situation of firms and to ultimately, increase their performance.

6.3.1 Findings Based on Objective One

As defined and discussed in Chapters Three and Four, the WCM proxies used in this study are ARM, APM, INVM, CCC and CCE, while firm performance was measured using ROA, ROE and TQ. These variables were estimated for 75 non-financial firms for the period of 2005 to 2015. The results reveal that WCM variables have different degrees of influence on the various performance measures examined. This means that no consistency is present in terms of WCM predictability on all the measures of firm performance (ROA, ROE and TQ).

The results of the ARM model are negatively and insignificantly related to both ROA and ROE but positively and significantly related to TQ. The results of the relationship between ARM with ROA and ROE indicate a negative relationship, which means that a decrease in ARM is associated with an increase in ROA and ROE, corresponding to their various coefficient values. The result implies that credit sales is a good business strategy and further establishes that to optimize investment in WCM, time is of the essence because time is money. Hence, the result suggests that the faster a firm collects the amount due from its debtors, the more it reduces the amount of money tied up, meaning that firms will be able to generate adequate cash to finance their operational activities. Therefore, they may not

be burdened by borrowing to finance operations. This will consequently lead to an increase in profit margins and in the performance of firms, generally. However, when delay sets in and a longer period is allowed or granted as the result of the relationship between ARM and TQ reveals, the cost of borrowing to finance operations and carrying costs, in addition to other costs associated with such delay, will erode projected profits.

The results found are consistent with those of Deloof (2003), Lazaridis and Tryfonidis (2006), Makori and Jangongo (2013), Aileman and Folashade (2014), Yegon et al. (2014), El-Maude and Shuaib (2016) and Samiloglu and Akgun (2016). They stated that a shorter accounts receivable period leads to increased firm profitability. However, the results of the relationship between ARM and ROA and ROE are statistically insignificant. The probable reason for such insignificant findings is the poor economic situation of Nigeria as earlier discussed in Chapter Two.

In addition to the various reasons enumerated in the discussion of hypotheses 1a and 2a, this study argues that when salaries of staff (workers) are not paid when due because of an economic downturn, payment for goods advanced to them becomes difficult. Such a situation threatens the existence of firms in Nigeria as non-payment of debt creates a cash-gap that will in turn, require external funding for firms. Although the results are insignificant, they support the assumption advanced by the pecking order theory (Myers & Majluf, 1984), which states the financing preference of firms. Applying the pecking order theory would mean that firms should plan more strategies to realize accounts receivable early enough to increase their cashflow and consequently, their performance.

In contrast, the positive relationship between ARM and TQ suggests that a longer period of ARM is associated with a higher TQ. This result is not entirely new because the studies of Abuzayed (2012) and Sharma and Kumar (2011) have reported such a positive and significant relationship between ARM and firm profitability. The result explains the business conditions of firms in Nigeria because in a poor economic situation such as that which Nigeria experiences, the only way to lure customers to patronize a firm's products is by offering a longer credit period that will result in higher accounts receivable periods. This method contradicts the assumptions of the pecking order theory.

The relationships between ARM with ROA, and ROE and TQ are inconsistent, suggesting mixed findings. This is consistent with the findings of Filback and Krueger (2005), Makori and Jagongo (2013), Salman et al. (2014) and Yazdanfar and Öhman (2014) who stated that the relationship between WCM and profitability of firm is mixed. Moreover, the mixed findings confirm and fit the conditions necessitating moderation as Baron and Kenny (1986) stipulated. Similarly, it confirms the opinions of participant 1 and participant 2 who stated that WCM is dynamic.

The study also found that APM is positively and significantly related to ROA and negatively but insignificantly related to ROE as well as negatively and insignificantly associated with TQ. The relationship between APM and ROA suggests that firms can improve their performance by delaying payment to their suppliers. In this way, their suppliers will indirectly contribute positively to the cashflow generation of their firms.

Similar findings were obtained by Mathuva (2010), Azam and Haider (2011) and Nurein et al. (2015). The result is also consistent with the pecking order theory.

With respect to ROE and TQ, the results suggest that early payment of debt is associated with a higher performance. These findings are consistent with the studies of Deloof (2003), Enqvist et al. (2014) and Yazdanfar and Ohman (2017), that only non-profitable firms wait longer (extend) to pay debts. In other words, profitable firms pay debts early to qualify them for discounts and many other benefits. These results for ROE and TQ are insignificant in the context undertaken because of high inflation and interest rates; they also contradict the assumptions of the pecking order theory (Myers & Majluf, 1984). However, early payments have benefits and costs. While early payments benefit firms when creditors offer discounts for the early payments, they may have a significant and negative effect on a firm's cashflow if discounts are not offered. Though paying suppliers on time is good, payments, should however, never be too early to the detriment of a firm's policies of generating free cashflow.

The results of APM that demonstrate inconsistencies confirm the opinion of participant 2 (results of interview conducted) who stated that in dealing with suppliers, no uniform practice exists. Instead, a firm's practice reflects the peculiar circumstances the firm finds itself in. The participant further pointed out that when a discount is offered and such a discount is substantial and compensates the opportunity cost of holding on to payment, then early payment should be encouraged; if otherwise, delaying payments becomes the best option to guarantee adequate cash flow. Again, the inconsistency in the findings and

implementation of practices that reflect the business environment as participant 2 suggested, confirms the assumptions necessitating moderation as Baron and Kenny (1986) proposed.

The results presented in Tables 4.10, 4.11 and 4.12, show that INVM is negatively and significantly related to ROA but positively and significantly related to ROE; while it is positively but insignificantly related to TQ. The negative relationship between INVM and ROA means that a shorter INVM conversion period leads to a higher ROA. The finding is consistent with many previous studies, such as those conducted by Deloof (2003), Samiloglu and Demirgunes (2008) and Yogen et al. (2014), which recognized that a shorter INVM conversion period enhances the profitability of firms. The positive relationship found between INVM and ROE and TQ, on the other hand, suggests that a longer INVM conversion period or holding of large INVM is associated with higher performance. This finding is not surprising as it is consistent with the studies conducted by Mathuva (2010) and Makori and Jagongo (2013), but contradicts the findings of Deloof (2003), Raheman and Nasr (2007), Samiloglu and Demirgunes (2008) and Yogen et al. (2014).

However, Mathuva (2010) and Makori and Jagongo (2013) stated that maintaining high inventory levels and conversion periods reduces the consequences of possible interruptions that may occur due to a stock-out situation. Similarly, maintaining high inventory levels reduces cost of supply and protects firms from increases in price (price fluctuations) that may occur due to unstable macroeconomic factors (Blinder & Maccini, 1991). Thus, when inflation or interest rates (macroeconomic factors) become high, firms with a large INVM

will benefit and will not run out of stock but firms with a low INVM may be affected. Based on the positive relationship between INVM and ROE and TQ in the Nigerian setting, a conclusion can be made that such a result could reduce agency problems (Jensen & Meckling, 1976) and generally, create an enabling environment for firms to thrive. This is because the policy inconsistencies of the Nigerian government can affect the purchasing decision of firms. For example, policies relating to FOREX funds change “daily” while the government also lays on and lifts embargoes on certain items continuously. This has caused an economic challenge which has stunted economic growth for firms operating in Nigeria, as reported by Chima (2016). In addition, the United Kingdom’s Economic Transformation Reports states that the inconsistency in policies has caused an economic transformation gap in Nigeria (*Nigeria Times*, 2016).

From the perspective of WCM, such inconsistency affects access to raw materials (INVM) that firms consider as essential for their production (Ahiuma-Young, 2016; Alli, 2016). As a result, firms in Nigeria find it difficult to access FOREX funds due to inconsistent government policies on FOREX. Where such difficulties exist, purchasing large amounts of inventory (INVM) is not a bad idea. This situation can support a large inventory level because such raw materials (inventory) cannot be totally sourced from within Nigeria. Another possible interpretation is premised on the high interest rates often experienced by firms in Nigeria. High interest rates create a high risk for firms in Nigeria because when prices are high, firms that are unable to acquire inventory in a large quantity, face the risk of additional costs which may reduce their profits. The issue is that competition will hinder these firms from increasing their prices to reduce the effects of such increases in price.

Therefore, the explanations provided above strongly support the positive and insignificant relationship between INVM and ROE and TQ in the Nigerian context.

Meanwhile, the results also show that not all firms in Nigeria have adopted such a strategy to manage their inventory because the relationship between INVM and ROA shows that some firms in the sample have maintained a low inventory and have still made profits (ROA). Of particular importance, the negative relationship between INVM and ROA supports the views of the pecking order theory which asserts that holding an optimal inventory level remains a significant channel through which firms can prevent severe financing and trade shocks, whereas the positive relationship between INVM with ROE and TQ opposes the views of the pecking order theory. The inconsistency in government policies may also account for the insignificant relationship obtained and their deviation from expectations. Also, the Nigerian business setting is mainly characterized by an inefficient capital market and economic stagnation (Shodipo, 2010), and when a market suffers from such imperfections, taking advantage of the market to generate returns is important.

These strategies are also aligned with the opinions of participants 1 and 2 in the interview session. The participants acknowledged the dynamism of WCM components, but participant 1 specifically explained that the strategies to manage WCM change from time to time, depending on the customers' demand, economic situation and the internal mechanism. He cited inventory level or management changes, which reflect the reasons given above. Meanwhile, participant 2 argued that adequate knowledge of stock or

inventory movement and forecast is necessary to avoid a mismatch and to determine the appropriate technique to be adopted to manage inventory requisition. Therefore, the interpretation can be made that in the Nigerian context, a majority of the firms keep a large inventory to avoid the uncertainties that may lead to a loss of sales and reduced profits.

This study also found a positive and insignificant relationship between CCC and ROA. Relating to ROE and TQ, CCC is found to be negatively and insignificantly related to ROE but negatively and significantly related to TQ. These results can be interpreted to mean several things. One is that the positive relationship between CCC and ROA implies that an increase in the CCC leads to an increase in ROA, while the negative relationship between the CCC and ROE and TQ means that firm performance, in terms of ROA and TQ, can be enhanced by decreasing CCC.

While the relationship found with respect to ROA and ROE is not statistically significant, the relationship found with respect to TQ is statistically significant at the 10% level. These results can be interpreted to mean that the majority of the firms in Nigeria keep a shorter CCC as revealed by ROE and TQ. These findings are consistent with the assumptions of both WCM and the pecking order theory. However, the findings of the relationship between CCC and ROA prove to be an exception to the rule. One common assumption of WCM is a shorter CCC which suggests that cash is being tied up for a shorter period. Hence, the cash gap created within the conversion cycle will require no external funding because it is minimal, but when a longer period is involved, external funding will be required to fill the

cash gap. External funding is not easily accessible, and when accessible, it always comes with a high interest rate that may reduce firm profits.

As the results demonstrate, the major findings presented (relationship between CCC and ROE and TQ) are consistent with previous research conducted by Deloof (2003), Nobanee et al. (2011), Murugesu (2013), Iqbal and Zhuquan (2005) and El-Maude and Shuaib (2016). Though the relationship between CCC and ROE is statistically insignificant, its direction (sign) suggests the efficiency and effectiveness of the system.

Several factors may have contributed to this result. First, because Nigeria experienced a financial crisis from 2007 to 2009 and its effects brought about a severe liquidity crisis, most firms devised appropriate strategies to manage their finances. This is also in line with the approach described by participant 5 during the interview session. He disclosed that specific approaches were developed to deal with financial and other related issues. The issue is that, while some strategies adopted worked for some firms, they may not have worked for others. Second, the high inflation and interest rates also made the various efforts of these firms worthless. This is because the value of cash was reduced in such a way that it could no longer replace inventory or finance the normal level of activities.

Regarding the positive findings on the relationship between CCC and ROA which deviated from expectations, several reasons may be advanced to account for such a result. First, while some firms have recovered from the financial crisis and learned from the impacts created due to the unwillingness of banks to grant credits, other firms have yet to recover, make significant changes and move on. In addition, and as stated before, firms in the oil

and construction industries have different operating cycles that could result in a longer CCC, while the unwillingness of debtors to repay debt arising from the economic conditions may also be responsible for such an insignificant result. This is also evidenced in the response of the participants who stated that high interest and inflation rates resulted in their companies underperforming as contracts were abandoned due to the high costs of materials. In such a condition, an insignificant result could evolve.

The study also provides weak evidence on the relationship between CCE and firm performance. Theoretically, CCE relates to the efficiency with which cash is realized early from sales. The earlier the cash is realized, the more cashflow firms have to finance operational activities. The results of this study reveal that only the relationship between CCE and ROA supports this assertion. The results show that CCE is positively and significantly related to ROA. This denotes that the higher the CCE, the higher the ROA. However, CCE is negatively and insignificantly associated with both ROE and TQ. These results suggest that the lower the CCE, the higher the ROE and TQ. From the above results, the notion that a higher CCE will lead to an increase in firm performance is contradicted. However, previous studies, such as Genesan (2007) and Nasser et al. (2010), have found similar results.

Drawing on the context of the study, certain features may give insights into a logical explanation of these results, for example, the political ideology of Nigerian leaders and the effect of their attitude on firms. This is especially true for firms that enjoy contracts under a particular government. This is because once the government is changed (i.e., the leaders),

such contract(s) will typically be discontinued (abandoned) and the amount committed will not be reimbursed. This has led to abandoned projects and contracts in Nigeria, especially for the politically-connected firms; this may nullify the efforts of firms to recover such money as revealed by the fact that CCE is negative. This is because continuous efforts to recover money under such conditions will amount to additional costs; thus, less effort may be required to prevent such additional costs being incurred.

Also essential in explaining the negativity is the policy of firms in relationship to credit. Most firms are eager to grant credit to customers without proper evaluation of such customers' creditworthiness, thereby making recovery difficult and exposing the firms to unnecessary risk. In the light of this, efforts made by firms to recover cash (money owed by customers) may lead to additional expenses that will drag down profits. Thus, the best option in such a situation would be to commit less effort and consider these as bad debts because their predicament is known. This is a better option than the continuous commitment of resources to ensure recovery as well as the time spent in so doing, which may, in the end, not yield a positive result.

With regards to the control variables used for objective one, FIRMSIZE is positively related to ROA but negatively related to both ROE and TQ. The relationship between FIRMSIZE with ROA and ROE is statistically insignificant, but the relationship between FIRMSIZE and TQ is statistically significant. The results reveal that for most of the firms considered in this study, size is not a factor that influences high performance of firms in Nigeria.

SALESGROWTH is positively related to the three measures of firm performance (ROA, ROE and TQ) and suggests that an increase in sales leads to an increase in firm performance. However, the result of ROA and TQ is statistically significant while the result of ROE is insignificant. FDR is negatively and significantly related to ROA. This is in line with the pecking order theory and the assumption of the WCM theory. On the other hand, FDR is positively related to ROE and TQ, although only ROE is statistically significant while TQ is insignificant. The results deviate from expectations as they contradict the view advanced by the pecking order theory and the WCM theory. These theories encourage low debt and high exploitation of internally generated cashflow mechanisms.

Given that all the WCM variables considered in this study (ARM, APM, INVM, CCC and CCE) have relationships with firm performance proxied by ROA, ROE and TQ, that are either positive or negative and significant or insignificant, this study therefore, concludes that objective one is achieved, implying that a relationship exists between WCM and firm performance.

6.3.2 Findings Based on Objective Two

This section discusses the findings based on objective two. It is specifically divided into two subsections: subsection 6.3.2.1 discusses findings relating to the moderating effect of INFLAR on the relationship between WCM and firm performance, while subsection 6.3.2.2 discusses the findings relating to the moderating effect of INTER on the relationship between WCM and firm performance.

6.3.2.1 Moderating Effect of Inflation Rates on WCM and Firm Performance

This section argues that changes in price level occasioned by inflation significantly affect the WCM requirements of firms. This is because inflation affects the generation process of cashflow, increases the price of raw materials and other expenses and causes sales to decline. Hence, understanding the effect of INFLAR on the relationship between WCM and firm performance is imperative since its neglect in the past has led to a misfit situation that caused many firms to fail while others performed below expectations.

The results of the evaluation show that the coefficient of ARM*INFLAR is negatively related to all the measures of firm performance used in this study (ROA, ROE and TQ). This indicates that a negative relationship exists between ARM*INFLAR with ROA, ROE and TQ. Statistically, the negative relationship between ARM*INFLAR and ROA is significant at the 5% level and supports the hypothesis which predicted that INFLAR significantly moderate the relationship between ARM and ROA. However, the negative relationship between ARM*INFLAR and ROE is statistically insignificant and does not support the hypothesis which predicted that INFLAR significantly moderate the relationship between ARM and ROE. Meanwhile, the relationship between ARM*INFLAR and TQ is statistically significant at the 5% level, and therefore, provides adequate support for the hypothesis which predicted that INFLAR significantly moderate the relationship between ARM and TQ. The findings with respect to the ARM*INFLAR model are consistent with all the measures of firm performance adopted in this study in terms of their coefficients but mixed in terms of their statistical significance. Therefore, the

findings indicate that the relationship between ARM*INFLAR and ROE is an exception to the assumptions of this study.

However, the literature review of this study indicated that no study undertaken in the past has attempted to study the moderating effect of INFLAR on the relationship between ARM and firm performance. However, several studies have investigated the direct relationship between ARM and firm performance, with which these findings are consistent in terms of their coefficients. Among these studies are those undertaken by Makori and Jagongo (2013) and Akinlo (2012), who found a negative and insignificant relationship between ARM and firm profitability. These studies differ in terms of their statistical significance with Deloof (2003) and Tauringana and Afrifa (2013), who similarly found a negative and significant relationship between ARM and firm performance. These studies have argued that early collection of ARM increases cashflow availability for firms to use to finance their operational activities.

The results of ARM*INFLAR with ROA and TQ suggest that high INFLAR significantly affect the ability of firms to recover debt early and consequently, affect firm performance. This is in line with the findings from the interviews conducted. This is because during such periods, debtors (ARM) repay their debts or amounts owed with a depreciated value of Naira that may not be adequate to finance the same activity level. Hence, the results show that early realization of debt is beneficial to firms. This result is in tandem with the pecking order theory and the contingency theory. Regarding ROE which reveals a negative and insignificant relationship between ARM*INFLAR and ROE, the finding suggests that

INFLAR do not significantly moderate the relationship between $ARM*INFLAR$ and ROE. The result demonstrates that some firms in the sample of this study have internal mechanisms that adequately respond to the effects of inflation in the short-term that mitigate the effect of unexpected inflation or any shock that may arise.

For example, with respect to firms that purchase inventory in large quantities, once inflation occurs and the prices of inventory change, firms that have purchased inventory at the old prices and in large quantities are not likely to experience the new price shock, which will be noticeable to their competitors. They will sell the resulting finished goods/products arising from such old prices of inventory at a new market price. This will make them generate higher profits and may make the value of ARM to be insignificant. This notion is supported by the interview findings which acknowledge that the effect of inflation rates differ from firm to firm, but there is consensus that inflation rates affect all firms, but in varying degrees.

Second, this study also found that the coefficient of $APM*INFLAR$ is positively and insignificantly related to ROA but is positively and significantly related to both ROE and TQ. The findings for the relationship between $APM*INFLAR$ and ROA provide no statistically significant evidence to support the hypothesis which predicted that INFLAR significantly moderate the relationship between APM and ROA. However, the regression results for the relationship between $APM*INFLAR$ and ROE support the hypothesis which predicted that INFLAR significantly moderate the relationship between APM and ROE because the relationship is statistically significant at the 10% level. Additionally, the

relationship between $APM \cdot INFLAR$ and TQ provides strong evidence supporting the hypothesis which predicted that INFLAR significantly moderate the relationship between APM and TQ.

These findings (excluding the ROA model) suggest that high INFLAR affect APM and decrease firm performance. The results are not all supported significantly but their coefficient signs (direction) are consistent with several studies (Mathuva, 2010; Azam & Haider, 2011; Jagongo & Makori, 2013; Narein et al., 2015). These studies have stated that extending the payment period to suppliers constitutes a source of free cashflow, especially during a period in which firms face a cash shortage. However, the coefficients of these results contradict the findings of Deloof (2003), Lazaridis and Tryfonidis (2006) and Yazdanfar and Ohman (2017), who viewed late payment (extending payment to suppliers) as a sign of inefficiency and ineffectiveness. To them, it is only non-profitable firms that extend payment periods.

The result found in this study largely supports the WCM assumption that considers credit line offered by suppliers as a short-term financing option. In addition, it supports the assumptions of the pecking order theory and the contingency theory as discussed in Chapter Two. More precisely, the findings reveal that during inflationary periods, extending the payment period to suppliers becomes the best option to guarantee free cash- flow to firms.

Understanding this concept is vital and makes economic sense because by extending the payment period, firms will be able to pass on the effects of inflation to suppliers rather than solely bear the burden. This is because it reduces the volume of debt a firm pays to its

suppliers. The benefits of such an extension to firms are twofold. The implication of these results is that firms in this study are affected directly by INFLAR. The insignificant relationship between $APM*INFLAR$ and ROA implies that no sufficient evidence exists to conclude that INFLAR negatively affect the relationship between APM and ROA. However, the relationship between $APM*INFLAR$ with ROE and TQ is significant and implies that INFLAR moderate the relationship between APM and ROE and APM and TQ.

The insignificant relationship between $APM*INFLAR$ and ROA may have plausible explanations. For example, this study considered different sectors; it therefore argues that the effect of INFLAR differs from firm to firm, and that while some firms suffer from a big effect, others do not (Comley, 2013). This effect, therefore, depends on the nature of transactions a firm undertakes. Differences in the nature of transactions make firms face different vulnerability. For example, firms in pharmaceutical/health industries may not be affected seriously by a high inflation rate because the nature of their business transactions or services rendered is largely upfront and unaffected by higher inflation (Comley, 2013). Hence, for such firms, an insignificant result could be expected.

Second, the opinion of participant 2 from the interviews conducted can also help explain such insignificant results. According to the view of the participant, the evaluation of payment conditions informs his firm's decisions whether to pay early or late. Hence, where a payment is made promptly as a result of a discount offered, such an insignificant result could be anticipated. The result therefore suggests that the prevailing conditions of firms

and their systems prior to the inflation period determine the degree of the impact/effect that a firm will be likely to experience.

Third, this study also found that the coefficient of $INVM*INFLAR$ is negatively and statistically significant in relation to all the measures of firm performance (ROA, ROE and TQ) adopted in this study, suggesting that a negative and significant relationship exists between $INVM*INFLAR$ with ROA, ROE and TQ, therefore validating that INFLAR significantly moderate the relationship between INVM and firm performance measured by ROA, ROE and TQ.

The findings between $INVM*INFLAR$ and firm performance are supported empirically, conceptually and theoretically. The sign (direction) of the coefficients as revealed in the results are not new in the empirical literature of WCM. For example, Deloof (2003), Samiloglu and Demirgunes (2008), Karaduman et al. (2010) and Yegon et al. (2014) found a negative and significant relationship between INVM and firm profitability. They explained that managers can increase corporate profitability by reducing the number of days of inventory conversion while holding an optimal level of inventory.

Theoretically, these findings are consistent with the pecking order theory and the contingency theory. Generally, the results suggest that inflation has a detrimental effect on firms' inventory and financial performance. During inflationary periods, prices of raw materials increase as experienced by firms in Nigeria (Ahiuma-Young, 2016). During such periods, firms experience a decline in sales while the workforce is demoralized (Kotler, 1984) due to increases in the standard of living brought on by inflation without a

concomitant increase in salaries and allowances of the staff. These two conditions, this study argues, lead to falling productivity and result in underutilized capacity.

Succinctly put, keeping a low (moderate) inventory level as this result reveals can minimize the costs of storage and many other opportunity costs of funds tied up in inventory, while the high cost of inventory during an inflationary period, if not transferred into the prices of finished goods, may have negative consequences for firms. Therefore, to avert such consequences, the strategies that these results demonstrate, i.e., keeping a minimal inventory conversion period and optional inventory level, can in turn, reduce the extent of the effect on firms, both during inflationary and stable times.

In addition, the managers interviewed unanimously agreed that a high inflation rate imposes some direct costs on the firms, thereby reducing their profits. Supporting the earlier argument made above, participant 1 explained during the interview session that the effect led to the loss of experienced staff by some firms due to low capacity utilization arising from a decline in sales. Participant 4 reported that due to low contract and reduced patronage arising from high inflation rates, their workforce was downsized by 10%. Therefore, given the empirical findings and the implications buttressed by the views of participants from the interviews conducted on the implication of a high inflation rate on inventory, providing measures to reduce the additional costs and other costs associated with holding a large inventory brought about by high inflation, can enhance firm performance and bring about sustainable growth.

Fourth, the results of this study show that the coefficient of CCC*INFLAR is positively and significantly associated with firm performance measured by ROA, ROE and TQ. These results suggest a positive relationship between CCC*INFLAR and firm performance, validating that INFLAR significantly moderate the relationship between CCC and firm performance. These results indicate that high INFLAR can disrupt business effectiveness and have implications that lead to a longer CCC.

The notion of a longer CCC as these results reveal is also consistent with Padachi (2006), Abuzayed (2012), Zakari and Saidu (2016) and Nijam (2016), who determined the direct relationship between CCC and firm performance. They argued that a longer CCC retains customers' confidence because such a period enables customers to evaluate products before payment. This perception defies the traditional shorter CCC frequently highlighted by the WCM and the pecking order theories that suggest efficiency and the empirical studies conducted by Deloof (2003), Nobanee et al. (2011) and El-Maude and Shuaib (2016). These studies have found a negative relationship between CCC and firm performance.

Generally, the positive relationship between CCC*INFLAR and firm performance as revealed in this study, describes the volatile effect of high INFLAR on firms' short-term and long-term plans. A probable reason why CCC is longer during inflationary times could be the result of lower purchasing power of the customers. During inflationary periods, customers will be sensitive to the price a firm offers and may lead them to compare prices offered by different firms. They may also postpone purchasing decisions to a later period. These characteristics commonly demonstrated by customers during inflationary times lead

to a decline in sales and falling productivity. Thus, in a situation in which sales turnover is low and the level of productivity is reduced, inventory will be in excess. This kind of attitude demonstrated by customers when considering the purchase of goods, repayment of debts and their influence on changing inventory levels, may lead to a longer CCC. Under this condition, firms will be logically forced to grant longer credit terms to enjoy customers' continuing patronage.

Hence, a conclusion can be reached that INFLAR have both direct and indirect effects on CCC. INFLAR directly reduce the value of a currency that affects the economic growth of a firm because of the loss of purchasing power; INFLAR also impact CCC through the behavior or actions and inactions of both customers and creditors. This notion is in line with the various opinions of the managers as articulated during the interview session. From the interviews, there is a clear consensus that INFLAR affect all the firms but in different ways. However, in the relationship to CCC, participant 6 explained that high INFLAR would result in a mismatch between supply and demand, thereby making firms lose their customers with the resultant effect of low sales and reduced profitability.

Fifth, this study found that the coefficient of $CCE*INFLAR$ and ROA is negatively and statistically insignificant, while $CCE*INFLAR$ is negatively and significantly related to ROE. Both indicate a negative relationship between $CCE*INFLAR$ and ROA and ROE. However, the coefficient of $CCE*INFLAR$ is positively and insignificantly related to TQ, indicating a positive relationship between $CCE*INFLAR$ and TQ. The negative relationship between $CCE*INFLAR$ and ROA is statistically insignificant and suggests

that INFLAR do not significantly moderate the relationship between CCE and ROA. Similarly, the positive relationship between CCE*INFLAR and TQ is statistically insignificant, and therefore, provides no evidence suggesting that INFLAR significantly moderate the relationship between CCE and TQ. But, the relationship between CCE*INFLAR and ROE is negatively and statistically significant, implying that INFLAR significantly moderate the relationship between CCE and ROE.

The negative relationship between CCE*INFLAR with ROA and ROE is in tandem with the findings obtained by Ganesan (2007) and Nasser et al. (2010), who evaluated the direct relationship in that regard. The negative relationship suggests that less time and effort committed to realize cash from sales made on credit is associated with a higher performance. This result demonstrates a process that occurs when firms earn little or nothing from their resources committed to recover cash from debtors (customers).

Firms adopt many strategies to recover and ensure that cash is realized early enough to protect them against insolvency. Prominent among the strategies adopted which aims at recovery to save cost (money) is by reducing the amount committed to recover debts. Because sales are also difficult at such time, firms resort to informal means as stated by the participants interviewed. These informal means include persuading customers to pay their debts. Such strategies entail making personal calls and mail processes that are cost-effective and efficient. These processes affect the economic behavior of firms because all plans and strategies are based on speculation as inflation brings uncertainty about a firm's plans. Hence, in order not to commit enormous resources (money) and not realize any

tangible results (good amount), firms may decide to maintain a certain level of resources and efforts committed to recovery to avoid a mismatch. This is necessary as many customers will begin to exhibit behavior that is suggestive of slow payment, as explained by participant 1.

This model also includes some control variables. For example, FIRMSIZE is positively and significantly associated with ROA but negatively associated with both ROE and TQ. While the relationship between FIRMSIZE and ROE is statistically insignificant, the relationship between FIRMSIZE and TQ is statistically significant. SALESGROWTH is positively associated with both ROA and TQ but negatively associated with ROE. The association between SALESGROWTH and ROA is statistically significant; however, SALESGROWTH is insignificantly associated with both ROE and TQ. FDR is negatively associated with ROA but positively associated with both ROE and TQ. Finally, the relationship with respect to ROA and ROE is statistically significant while TQ is statistically insignificant.

6.3.2.2 Moderating Effect of Interest Rates on WCM and Firm Performance

In line with the second objective, this section explains the moderating effect of INTER on the relationship between WCM and firm performance. The section therefore argues in line with the economic theory's assumption that firms operating in an environment in which the interest rate is low, enjoy a relatively low cost of borrowing, thereby increasing the firms' cashflow; whereas firms that operate in an environment characterized by a high interest rate tend to incur high costs of borrowing, which makes cashflow scarce, and this

in turn, makes it difficult for these firms to finance operational activities. Succinctly put, firms operating in an environment characterized by a high interest rate require more strategies to maintain an optimal level of investment in WCM variables, such as accounts receivable, accounts payable, inventory management, cash conversion cycle and cash conversion efficiency. Optimizing these various variables is key to improving the internally generated cashflow that a firm needs to support its transactions.

This notion is empirically demonstrated in this study. The results of this study reveal that the effect of INTER on WCM variables depends on the conditions prevailing when firms face high interest rates and probably firms' policy regarding purchases and cashflow. For example, this study found that the coefficient of $ARM*INTER$ is negatively and significantly related to all the measures of firm performance (ROA, ROE and TQ). The results imply that a negative and significant relationship exists between $ARM*INTER$ and firm performance. These results therefore validate that INTER significantly moderate the relationship between WCM and firm performance.

These results are similar to the findings obtained by Deloof (2003), Akinlo (2012), Makori and Jagongo (2013) and Tauringana and Afrifa (2013). They found a negative relationship between ARM and firm profitability from different contexts. They concluded that a shorter ARM increases the amount of cashflow a firm holds to finance its operational activities and leads to increases in their profitability. The results of this study are consistent with the pecking order theory and the contingency theory.

As the results demonstrate, to improve a firm's cashflow and avoid the cost of a high interest rate, the best option is to reduce the ARM period. This is because early collection is extremely important for firms to finance operational activities and growth strategy. The reason is that customers may be tempted to hold on to cash for a longer time because of the high interest rate; this may constitute a credit risk to firms and consequently lead to increases in their bad-debt profile and other interest expenses. Consistent with the foregoing discussion, all the participants interviewed affirmed that a high interest rate increases the cost of borrowing. This, according to the participants, has implications that decrease cash flow and consequently, lower firms' profitability. Some participants acknowledged that a shorter ARM period is key, especially during such periods of a high interest rate.

The findings between $APM*INTER$ and firm performance show that the coefficient of $APM*INTER$ is positively and insignificantly associated with ROA. The result indicates a positive relationship between $APM*INTER$ and ROA, whereas $APM*INTER$ is positively and significantly associated with both ROE and TQ, thereby validating that INTER have a detrimental effect on the relationship between APM and ROE and TQ.

The coefficients of these results are in line with the prior findings of Mathuva (2010), Azam and Haider (2011) and Nurein et al. (2015). They found a positive relationship between APM and firm profitability. This school of thought believes that the timing of a payment to suppliers has a significant influence on WCM; when payments are strategically delayed in a way that does not affect the firm's relationship with its suppliers, it will increase cash-

flow availability for firms to use. This is in line with the assumptions of the WCM and pecking order theories. Conversely, another school of thought believes that early payment is a sign of efficiency and allows firms to enjoy discounts for prompt payments. They argued that only non-profitable firms wait longer to pay debts. This viewpoint is consistent with the findings of Deloof (2003), Lazaridis and Tryfonidis (2016), Enqvist et al. (2004) and Yazdanfar and Ohman (2017), which have found a negative relationship between APM and firm profitability.

However, the positive relationship of APM*INTER with ROA, ROE and TQ as revealed in this study demonstrates that a high interest rate affects WCM through borrowing at higher costs. In a nutshell, a high interest rate is an impeding factor that leads to longer payment period for firms as these results demonstrate. Majority of the participants from the interview conducted shared this view. The participants recognized that payment of debts is difficult during such periods. This is true since firms will be under increasing pressure to pay huge debts. Despite this, other participants agreed that extending payment constitutes an adequate strategy that a firm can adopt to increase free cashflow. Particularly, two of the participants from the interviews alluded to the fact that the choice of the decision of whether to pay early or to extend the payment period to suppliers, depends on a critical evaluation of the benefits and costs.

This relates to whether or not discounts are offered and whether or not the benefits of extending payment compensate for the opportunity costs of early payment that guarantee discounts. Another consideration highlighted is whether or not a penalty exists for default

or failure to pay on a particular (scheduled) date. Such should be evaluated to know if it compensates for an extension of payment period. In summary, firms must work out strategies to extend payment periods to their suppliers as economically as possible and to qualify them for early payment as well. Striking a balance in this regard is necessary to avoid paying early and losing out on free cashflow or paying late and incurring penalties.

The findings in respect of the relationship between $INVM*INTER$ and firm performance reveal that the coefficient of $INVM*INTER$ is negatively and significantly related to ROA, ROE and TQ. These results indicate a negative relationship between $INVM*INTER$ and firm performance, thereby validating that $INTER$ significantly moderate the relationship between $INVM$ and ROA, between $INVM$ and ROE and between $INVM$ and TQ. The results are in line with many prior studies that have determined the direct relationship between $INVM$ and firm profitability, such was Deloof (2003), Samiloglu and Demirgunes (2008), Falope and Ajilore (2009), Stephen and Elvis (2011) and Yegon et al. (2014). The findings between $INVM*INTER$ and firm performance are also consistent with the pecking order theory and the contingency theory.

These results demonstrate that $INVM*INTER$ is inversely related to firm performance. The implication of this result is that the amount of stock of inventories firms hold depends on the interest rate, which is a function of the expected price. This means that the interest rate has a significant effect on the amount of inventory a firm holds. Therefore, a high interest rate alters firms' inventory level. Under circumstances like these, the profitability of firms will decline. This finding is reinforced by the results of the interview conducted,

where the participants suggested that firms need to evaluate their inventory consumption patterns to determine how much inventory to hold. This can be done by accurately forecasting inventory needs, using the various inventory techniques. Therefore, the need to align demand with supply to determine the optimal level of inventory to hold is important. This will enable firms to meet their customers' demands without the need to also hold a large inventory. As explained by participants 1 and 2, such frequent decisions are imperative for firms to enable them to mitigate the detrimental effect of a high interest rate and to enhance performance.

Other participants acknowledged that proper training of staff is sacrosanct to enable them to gain adequate knowledge about the right time to make requisitions, the quantity to be demanded and the delivery times. These can help in maintaining an adequate level of inventory that can mitigate the negative effect brought on by a high interest rate. On the other hand, it can prevent large or excess inventory. Rafuse (1996) and Alipour (2011) described this technique as a lean supply chain inventory management and a lean WCM, respectively. Thus, firms can maintain an optimal inventory level and at the same time, meet additional demands from customers without being trapped by the interest rate or keeping a large inventory level.

Another relationship examined from objective two was between CCC*INTER and firm performance. The result reveals a positive and significant relationship between CCC*INTER with ROA, ROE and TQ. These findings validate that INTER significantly moderate the relationship between CCC and ROA, between CCC and ROE and between

CCC and TQ. The coefficients of the results are in line with the studies of Padachi (2006), Abuzayed (2012), Sharma and Kumar (2011), Ademola (2014) and Nijam (2016), which have argued that a longer CCC increases a firm's profitability since it enables adequate time for customers to access products before payment. This demonstrates proof of quality products and has the ability to retain customers' patronage. The result is consistent with the contingency theory. On the other hand, the result contradicts both the pecking order theory's assumptions and the findings of Deloof (2003) and Lazaridis and Tryfonidis (2006). The latter belongs to a school of thought that advocates a shorter cash conversion cycle.

The results of this study further demonstrate that INTER lower many indices of firms due to the economic uncertainty it brings. It makes the acquisition of inventory difficult, reduces payment morale of customers and decreases sales level. All these lead to deterioration in the operational activities of firms and explain the longer CCC experienced by firms (the positive relationship between CCC*INTER and firm performance). There are many reasons for a longer (positive relationship) CCC experienced by firms during periods of high interest rates according to the participants interviewed. Specifically, participant 4 stressed that a high interest rate often experienced by firms operating in Nigeria brings about adverse consequences, which lead to projects being abandoned due to the inability to purchase the necessary inputs for work. In addition, participant 1 stated that such difficulty often leads to low capacity utilization, whereby some staff are laid off. Such layoffs have the effect of increasing the workload on the remaining staff, thereby leading to a longer CCC. These various factors illustrated above could therefore account for the

positive relationship between CCC*INTER and firm performance. Furthermore, all the participants interviewed affirmed that INTER affect the viability of WCM and negatively affect firm performance.

With regards to CCE, this study found that the coefficient of CCE*INTER is negatively and insignificantly related to both ROA and ROE. The results indicate a negative and insignificant relationship between CCE*INTER and ROA and ROE. These findings show that INTER do not significantly moderate the relationships between CCE and ROA and between CCE and ROE. The results are not consistent with the predictions of the pecking order theory and the contingency theory. However, they support the prior results of Ganesan (2007) and Nasser et al. (2010), who found a negative relationship between CCE and firm profitability. Significantly, the results illustrate that a high interest rate does not affect the ability of firms to generate cash from operations or sales; however, the negative coefficients suggests inefficiency. Typically, during periods of a high interest rate, customers/debtors will be unwilling to pay. Such unwillingness to pay debt as the participants in the interview alluded, robs a firm of its ability to recover debts, which is indicative of the inefficiency associated with the high interest rate.

The results of this study also show that CCE*INTER is positively and insignificantly associated with TQ. This result indicates a positive and insignificant relationship between CCE*INTER and TQ, implying that INTER do not significantly moderate the relationship between CCE and TQ. At the same time, the result suggests that the ability of firms to generate cash from operations or sales is not stagnated by a high interest rate. The result is

also not consistent with the predictions of the pecking order theory and the contingency theory.

Control variables were also included in the models for objective two. Their results reveal that the coefficient of FIRMSIZE is positively and insignificantly related to ROA but negatively and insignificantly related to ROE. FIRMSIZE is also negatively and significantly associated with TQ. SALESGROWTH is positively and insignificantly associated with ROA but negatively and insignificantly associated with ROE. However, SALESGROWTH is positively and significantly associated with TQ. The coefficient of FDR is negatively and significantly associated with ROA but positively and significantly associated with ROE. Moreover, FDR is positively but insignificantly associated with TQ. Given the various relationships found, objective two of this study is achieved.

6.3.3 Findings Based on Objective Three

This section discusses the findings of objective three, which determined the quadratic relationship between WCM and firm performance in Nigeria. The findings of this study confirm that the relationship between WCM and firm performance is quadratic or non-linear. To be precise, Table 4.19 shows that both high and low investments in WCM have implications for firm performance. The result further demonstrates that CCC, which denotes low investment in WCM, is negatively related to all the measures of firm performance (ROA, ROE and TQ), while CCC², which denotes high investment in WCM, is positively related to all the measures of firm performance (ROA, ROE and TQ). These findings therefore, suggest that the relationship between WCM and firm performance is

quadratic and is consistent with the studies of Nha and Loan (2015) and Afrifa and Padachi (2016).

The findings imply that investment in WCM improves firm performance up to a point until additional investment in WCM will begin to lower firm performance or profitability (the profit generated from additional WCM investment will be decreasing). This suggests that an optimal level exists at which investment in WCM will yield maximum returns. In other words, the result shows that WCM performance reacts to changes in the magnitude/amount of investment in it; this is similar to the findings of objective two, which reveal that the effectiveness and efficiency of WCM reacts to changes in both inflation and interest rates.

Objective three further considered testing whether or not deviation from the optimal level of investment in WCM affects firm performance. The result as presented in Table 4.20 shows that DEVIATION is negatively and significantly related to ROA, but negatively and insignificantly related to both ROE and TQ. These results indicate that a negative relationship exists between DEVIATION and firm performance, implying that a deviation from the optimal level of investment in WCM negatively affects firm performance. Nha and Loan (2015) and Afrifa and Padachi (2016) obtained similar findings.

Further analysis was conducted to determine whether or not deviation below or above the optimal point of investment in WCM affected firm performance, by introducing the terms DEVIATION and INTERACT. The findings as reported in Table 4.21 reveal that DEVIATION is negatively and significantly related to ROA but negatively and insignificantly related to both ROE and TQ, while INTERACT is positively and

significantly related to ROA. With regards to ROE, it is positively and insignificantly related. Surprisingly, INTERACT is negatively and insignificantly related to TQ. To confirm the results mathematically, the coefficients of β_1 were expected to be less than zero, while the coefficients of $\beta_1 + \beta_2$ were expected to be less than zero. The ROA model's coefficient for $\beta_1 + \beta_2$ is -0.0003398, while the ROE model's coefficient for $\beta_1 + \beta_2$ is -0.0117562 and the TQ model's coefficient is -0.378855. Because all the values of β_1 are less than zero and the summations of $\beta_1 + \beta_2$ have negative values, this study therefore, concludes that DEVIATION below or above the optimal point of investment affects firm performance.

This study extended the models of Nha and Loan (2015) and Afrifa and Padachi (2016) to derive these findings. Unlike the studies undertaken by Nha and Loan (2015) and Afrifa and Padachi (2016), the findings obtained with reference to TQ deviating from expectations is because INTERACT showed a positive relationship with TQ; however, its summation with DEVIATION still yielded a total ($\beta_1 + \beta_2 < 0$) that was negative. The peculiarity of this result is that it demonstrates that TQ, which is a market measure, does not totally rely on WCM investments alone; hence, it reacts in a major way to market forces.

Hence, the negative relationship between INTERACT and TQ shows that its effect on firm performance is clear when a firm deviates from the optimal level of investment in WCM. Overall, objective three, which aimed at determining the quadratic relationship between WCM and firm performance, is achieved as the results obtained show that the effectiveness and efficiency of WCM and its impact on firm performance is contingent on the amount of

investment in it. Therefore, the results of this study suggest that investment in WCM is non-sequential and harbors the propensity to deviate.

6.3.4 Findings Based on Objective Four

Objective four was set to determine the differences of the relationship between WCM and firm performance in Nigeria during and after the financial crisis of 2007 to 2008. The results show that the R^2 of the post-crisis period is greater than the R^2 during the crisis period for all the measures of firm performance (ROA, ROE, and TQ). These results indicate that the predictive influence of WCM on firm performance was less during the crisis period than during the post-crisis period. Thus, WCM can be said to be affected during crisis and was more effective during the period after the crisis, i.e., the normal period. The results imply that during a financial crisis which is characterized by uncertainties, most firms suffered from the effect of macroeconomic instability. During such a period, the value of capital (cash) a firm held depreciated while the cost of debt increased and banking credits became restricted. Banks introduced stringent guidelines and tightened credit standards. These effects resulted in a greater liquidity crisis for firms and impacted on the effectiveness and efficiency of WCM.

Additionally, the statistical significance of the differences in the period after crisis over the crisis period was confirmed by the Cramer's Z-statistic (Cramer, 1987). The result of Cramer's Z-statistic reveals that ROA and TQ models are statistically significant at the 5% and 10% levels, respectively, while the ROE model is statistically insignificant. These results indicate that the differences are only significant for the ROA and TQ models but

insignificant for the ROE model. This means that significant differences exist in the relationship between WCM and ROA and TQ during and after the financial crisis of 2007 to 2008. These findings support the arguments of Wasiuzzaman (2015) and Murthy (2015) that WCM is more effective during normal times and requires more attention during a financial crisis period. However, Cramer's Z-statistic result for ROE is statistically insignificant, validating that there are no significant differences in the relationship between WCM and ROE during and after the financial crisis of 2007 to 2008. The result supports the arguments of Sen and Oruc (2009), Charitou et al. (2010) and Mohamad and Saad (2010) that WCM is important at all times but may be more important to firms that are financially constrained.

The significant differences established for ROA and TQ models by the Cramer's Z-statistic are not surprising, because stakeholders have lamented the consequences of the financial crisis on both economic and social development. Moreover, studies have shown that macroeconomic instability resulting from such a crisis is undesirable for the effectiveness of WCM and could account for their mixed findings (Filbeck & Krueger, 2005). However, the insignificant result for ROE model as revealed by Cramer's Z-statistic can be explained from two perspectives. First, all the participants interviewed acknowledged that the financial crisis had a detrimental impact on the economy. The impact was of varying degrees, thus suggesting that firms that were proactive in managing WCM were less affected and were hugely profitable. In such a situation, an insignificant result may be expected. This is because firms that have managed their WCM effectively and have

maintained strict adherence to their principles will have a competitive advantage over firms that are less-strategic in managing WCM once a crisis erupts.

Second, the strategies firms adopted to manage their liquidity during the crisis could account for this result. For example, majority of the participants from the interview alluded to the fact that they strategically devised other means of managing their WCM. Specifically, participant 3 gave an example of how his company facilitated early collection of debt through dialogue. This could help to collect a debt that might otherwise have been written off and contributes significantly to the firm's survival during a crisis.

In summary, by the nature of their transactions, some firms may be less affected by a financial crisis. In such a situation, the present result can be expected. The decision by CBN to revive some companies by injecting €200m to enable them to acquire raw materials for production (Alli, 2016) could also account for such insignificant results. Generally, firms need to be proactive with the approach they adopt to manage their WCM during good times to forestall serious negative impacts once a crisis erupts.

6.4 Contributions of the Study

This study has made several contributions that cuts across a body of knowledge that comprises theory, methods, and managerial practices, with some policy implications.

6.4.1 Contribution to Theory

The findings reported in this study contribute to the existing literature by advancing the discussion on WCM. More specifically, this study considers CCE as an important variable in studying WCM. Most previous studies determined the relationship between WCM and firm performance by focussing mainly on ARM, APM, INVM and CCC. Meanwhile, CCE is important in studying WCM because it reveals the ability of a firm to generate cash from sales and other operational activities. Therefore, this study contributes to the body of knowledge by demonstrating the efficacy of CCE to the cash flow of firms. This equally adds to the overall knowledge of WCM, particularly in a developing economy like that of Nigeria.

Furthermore, this study contributes to the body of knowledge of firm performance. This study considers TQ, which is a market measurement of firm performance in addition to accounting measures such as ROA and ROE that were commonly used by previous studies to measure firm performance. This combination of ROA, ROE and TQ is an important contribution to firm performance. Thus, this study contributes by incorporating both the accounting and market measures of firm performance in determining the implications of WCM and macroeconomic variables.

Additionally, previous studies have demonstrated mixed and inconsistent findings on the association between WCM and firm performance. These studies attributed the inconsistent effect of WCM on firm performance to changes in macroeconomic variables. This study, therefore, moved beyond firm specific determinants of WCM to consider macroeconomic

factors, viz, inflation rates and interest rates as moderators of the relationship between WCM and firm performance. This is appropriate because the present study demonstrates the importance of incorporating macroeconomic factors in formulating WCM policies and policies related to improving a firm's financial performance. Hence, the findings of this study revealed that both inflation rates and interest rates significantly moderate the relationship between WCM and firm performance.

Unlike previous studies that focused on SMEs, this study adopts the CCC to evaluate large companies in the determination of the quadratic relationship between WCM and firm performance. This evaluation revealed an optimal level of investment in WCM that guarantees a balance between adequate liquidity and higher performance. Consequently, any deviation from the optimal level can lead to negative consequences for the firm concerned.

Furthermore, this study contributes to the WCM literature by providing strategies on how firms can respond to financial constraints through focusing on WCM, not just on short term basis, but on medium and long term basis as well. This is because the study found that during a financial crisis, liquidity traps or shortages tend to occur, and WCM is negatively affected, unlike the period after a crisis when normalcy returns to financial management decision making.

In specific theoretical terms, the findings of this study have exhibited a handful of implications, more specifically, that it upholds the pecking order theory's assumptions. According to Myers and Majluf (1984), the pecking order theory proffers the order in

which firms should finance their operations and specifically such hierarchy includes internal financing as the first option, followed by debt and equity if external financing is required. Based on the findings reported in this current study, it is evident that the effect of financial crisis on macroeconomic factors resulted in severe consequences on WCM practices, particularly on the liquidity position of firms, and the reason why firms underperform, and have low contributions to GDP.

What this study established, therefore, is the application of pecking order theory in the context of a developing economy like Nigeria, with implications for continental replication of these findings. Thus, for firms to be competitive and sustain economic growth, this study demonstrates that firms, not just in the context of Nigeria, but even in more advanced economies, must resort to efficient management of working capital to generate adequate cash flow internally, as the pecking order theory posits. Therefore, the pecking order theory is found useful in explaining the relationship between WCM and firm performance.

Contingency theory, on the other hand, was adopted in this study to lay the context for a more holistic understanding of firm performance. And evidence from the analysis shows that the findings significantly upheld contingency theory's assumption in both quantitative and qualitative terms. The introduction of macroeconomic factors as moderating variables to explain the relationship between WCM and firm performance was guided by theoretical perspectives derived from contingency theory. Theorists of contingency theory unanimously uphold that contingency variables such as economic conditions have implications for firm performance. The findings reported in this research corroborate this

claim. Therefore, this study provides empirical evidence that supports proponents of contingency theory within the discourse of WCM and firm performance. This merging of theories is the central contribution of this study to the discipline of financial management. The study amalgamated pecking order theory, which is firm focused, and contingency theory, which is context focus, to build a more rounded and holistic picture of WCM, firm performance, and the changing environment within which they operate.

6.4.2 Contribution to Methodology

Methodologically this study contributes to the literature on WCM by employing a combination of quantitative and qualitative approaches to examine the moderating effects of economic conditions on the relationship between WCM and firm performance. This automatically suggests a methodological inclination to mixed methods, unlike previous studies that approached the question of firm performance and WCM from a largely quantitative paradigm. The quantitative method was dominantly used here for analysing the panel data, while the qualitative findings were used to corroborate the quantitative findings. The use of these two methods, unlike the emphasis of prior studies on quantitative methodology, provides an insight into areas of financial management research that was mainly ignored as a result of over attachment to quantification at the expense of an in-depth understanding of managerial behaviour elicited through interviews and close observation of field practices and personal motives. These attributes can only be captured by in-depth exchanges with managers as this study did, thereby deriving the benefits of mixed methods, without being handicapped by any one sided methodological disposition.

The use of the mixed method, therefore, availed the researcher the opportunity to explore the internal WCM practices of firms beyond what is reported in the financial reports of the listed firms. This is in addition to the metrics that are provided in financial reports. As such, the analysis of both quantitative and qualitative data was used to establish the association between WCM and firm performance and the moderating effect of economic conditions in this study rather than the singular approach mostly adopted by previous studies.

Additionally, this study adopted the Cramer Z-statistic to determine the difference in the relationship between WCM and firm performance during and after the financial crisis. Cramer Z-statistic is mostly used in accounting studies to determine value relevance but have rarely been adopted in WCM studies. Hence, the study contributes to the existing methods of evaluating WCM by examining the R^2 s of the various regressions rather than coefficients that have been the major concern of previous studies and employing the Cramer Z-statistic. Yet, the Cramer Z-statistic was employed not only to strengthen the quantitative component of the study, but within the context of a mixed method approach that leveraged qualitative experience in the treatment of WCM and firm performance in complex and volatile economic environments.

6.4.3 Managerial and Policy Implications

The findings of this study have several implications for managers and policy-makers. Managers here refers to those engaged in the day-to-day management of the financial resources of firms. Policy makers are subsumed under this category. Their conduct of firm financial affairs is laden with several implications, as the findings of this study has

revealed. First among these implications is the results of the impact of WCM variables on firm performance, which demonstrated mixed findings, as revealed by the empirical analysis. This is supported by the outcome of participants' interviews, which indicated that firms adopted strategies suitable to their specific needs. This highlights the salient point that WCM variables need to be understood in the context of a firm's condition. These explain that no one recommendation applies to all the firms, but there should be a guide for a minimum benchmark applicable to all firms. However, in the context of Nigeria, to foster high performance, a framework needs to be designed by firms to generally ensure that accounts receivable management, inventory management, and cash conversion cycle are reasonably reduced to the barest minimum possible. Equally, an effective way of extending payment periods to suppliers should be designed to enable firms to take absolute advantage of the cash flow trends that may ensue.

First, managers can specifically reduce accounts receivable management by proactively evaluating customers' credit worthiness through ensuring that their financial behaviours are consistent with established and up-to-date firm credit standards. This is to avoid a longer ARM and cash tied up in the hands of customers for unduly long periods. Hence, a policy aimed at strengthening the financial anticipation skills of managers in dealing with and realizing accounts receivables early is encouraged.

Second, as the participants of the interviews observed, a basic understanding of the movement of the market for products needs to be acquired by firm managers and policy makers to enable them to become conversant with the need for inventory levels to be

adequate enough to guarantee that supply matches demand. This is to avoid a mismatch and reduce the risk of losing valuable customers to their competitors because of a stock-out situation. As such an optimal level of inventory is encouraged to avoid inventory overload, which is associated with increased cost of maintenance in the form of insurance, damage, warehouse and others.

Third, managers are encouraged to prudently evaluate payment periods, specifically when contemplating an extended payment period to suppliers, or payment as and when due. Such an evaluation has become imperative to determine if extending payment periods compensates for the opportunity costs of the discount offered for early payments. This is to avoid losing out when suppliers offer a significant discount.

Effective mechanisms for improved interpersonal relationships with customers and suppliers needs to be developed so as to pave way for seamless cash from sales without any delay. Such mechanisms are important as the inflow of cash they could trigger can be used for operational activities and expansion strategies. Overall, the methods and strategies advanced here for firms to adopt are aimed at reducing the CCC and at guaranteeing higher performance.

Moreover, the findings associated with the moderating relationship of this study demonstrate that the external environment in which a firm operates significantly affects the relationship between WCM and firm performance. Specifically, this study found that high inflation and interest rates impede the viability of WCM. Thus, managers and policy makers should align firm structure to the contingents identified in this study to create a fit

between firm internal structure, signified by its WCM, and the external environment, thereby stimulating high and sustainable firm performance. This will decrease misfit conditions that could lead to poor performance. Hence, three key aspects that managers and policy makers need to focus attention on are as following. First, managers should strategically be able to transfer both direct and indirect additional costs incurred due to high inflation and interest rates to the price of a product. Second, managers and policy makers should ensure that payments for all products are made promptly, to avoid loss associated with inflation and retain high firm performance. Third, a general approach should be encouraged whereby managers and policy makers devise means of keeping both prices and volumes up, while lowering the cost of operations at all periods.

Where the quadratic nature of WCM is concerned, the results reported in this study are beneficial to firms operating within African countries, as the quadratic framework developed in this study is consistent with best practices needed to promote optimal WCM investment levels among firms operating in Nigeria and, by extension, Africa as a whole, to enhance performance and create sustainable growth.

These recommendations are supported by the results of the Cramer Z-statistic, which found that WCM is significantly affected during periods of crisis, indicating that a difference exists between WCM practices during such periods and after. In other words, managers and policy makers should be aware of the implications of the volatility of the external environment on the short, medium and long term performance of firms. They should be aware that, as a crisis period stimulates liquidity problems, so too should they draw the

appropriate conclusion that WCM needs are negatively affected during such periods, especially in terms of liquidity squeeze. Therefore, to foster higher performance, managers and policy makers need to develop a framework that guarantees adequate liquidity at no cost to boost productivity on a sustainable basis.

6.5 Limitations and Recommendations for Future Study

There are five limitations to this study. First, compared to previous studies conducted in developed countries (e.g., Deloof, 2003 Afrifa & Padachi, 2016), this study has a relatively small size in its quantitative analysis. Only seventy-five (75) firms met the criterion set for inclusion in this study as against the one hundred and twenty-five (125) proposed. This is probably because the study adopted a long period of time (nine years) that was basically utilized to enable a comparison between the crisis period and post-crisis period. Within these periods, it is likely that some firms had merged, and others were delisted along with many other reasons that could lead to the exclusion of about fifty (50) firms.

Despite these challenges, the sample size of seventy-five (75) considered in this study seems to be one of the largest sample sizes ever considered in relationship to WCM studies in the Nigerian context as compared to the studies of Abosede and Luqman (2014), Owolabi and Alu (2012), Ailemen and Folashede (2014), Kurawa and Gaba (2014) and Lawal et al. (2015). Nonetheless, a larger sample would be preferred due to its advantage in research. Thus, future research is therefore encouraged to consider a larger sample, which might provide more robust and reliable findings on WCM studies and similarly with a limited number of years (like four or five years). This is because, larger periods, like the

one considered in this study, may not uncover business challenges and practices because of changes in the business cycle and policies.

A second limitation is that the study only considered non-financial firms, whereas the NSE comprises both financial and non-financial firms. This has a consequence of limiting the extent of generalization of findings. Because financial and non-financial firms have different characteristics and definitions, their vulnerability and degree of impact to changes in the macroeconomic instability (high inflation and interest rates) of the economy differs. This difference again necessitates the call for further studies to determine how economic conditions (changes in inflation and interest rates) affect the relationship between WCM and performance of financial firms or both financial and non-financial firms. Further research in this area will help to ascertain the sensitivity of changes in inflation and interest rates to all the sectors of the economy and add to the robustness of the findings of this study as well as enable generalization of the findings.

Third, the argument that the contingency theory's postulation advances that no one contingency factor or contingent applies to all economies is also demonstrated in this study. This means that WCM reacts to several external variables and that the adoption of a contingent is subject to time lag and situational factors. Thus, firms and researchers should interpret and generalize the findings of this study with caution because this study utilized high inflation and interest rates as contingents of Nigeria's business environment, and they may not be the same over time in Nigeria and may not be the same for other countries. Thus, future studies should determine the contingents of their operating environment and

evaluate how such moderate the relationship between WCM and firm performance using this study's framework. Hence, such variables or factors like market conditions, exchange rates, business competitions, business strategies, economic recession and others should be examined in relationship to WCM and firm performance.

Fourth, as can be observed from Table 4.21, one of the control variables (FIRMSIZE) of this study was dropped because of multicollinearity when INTERACT was introduced for the ROA model. This contradicts the result of the variance inflation factor (VIF) and correlation analysis reported in Section 4.5.1, which suggests that multicollinearity is not a threat in the study. This inconsistency may be attributed to the effect of the control variables examined in this study. As such, further studies with more control variables, with or without the omitted one (FIRMSIZE) in this study, are recommended. This will help to determine the sensitivity of FIRMSIZE to INTERACT. Moreover, a general recommendation is that more research needs to be done on the quadratic relationship between WCM and firm performance. This call is informed by the result of this thesis that has demonstrated that either a high or a low investment in WCM has implications and can pose serious risk to firms in achieving sustainable growth.

Fifth, the interviews conducted to determine the practices of WCM were limited to six participants from the twelve firms selected. Therefore, to generalize the findings of this study, especially to listed firms on the Nigerian Stock Exchange, a bigger sample size (more participants) needs to be considered in order to gain more in-depth knowledge of WCM practices and from different perspective. In addition, the interviews only focused on

three different sectors, it would be interesting to compare WCM practices of different sectors to identify the practices of different sectors.

6.6 Conclusion

This study generally examined the moderating effect of economic conditions on the relationship between WCM and firm performance. In specific terms, the study determined the moderating effect of inflation rates and interest rates on the relationship between WCM and firm performance in Nigeria. It further determined the quadratic relationship between WCM and firm performance in Nigeria and similarly compared the practices of WCM of firms in Nigeria during and after the financial crisis of 2007 to 2008 to determine if WCM was affected by the financial crisis.

First, this study found that inflation rates and interest rates moderate the relationship between WCM and firm performance. The results imply that the effectiveness of WCM on firm performance is contingent on a moderate level of inflation rates and interest rates. Second, the study found that the relationship between WCM and firm performance is quadratic and not linear, suggesting that an optimal level exists at which investment in WCM yields maximum returns. Furthermore, the findings revealed that deviation from this optimal level of investment in WCM affects firm performance negatively. Third, with respect to the financial crisis of 2007 to 2008, this study found that WCM variables were more significantly affected during the financial crisis period than during the period after the crisis, suggesting that significance differences existed between WCM practices during and after the crisis.

These findings contributed to the body of knowledge by advancing research on the evaluation of WCM by considering the influence of inflation rates and interest rates on WCM effectiveness and profitability. This study also has some practical implications that firms can adopt to overcome their financial constraints to address the issue of poor performance. The results further indicate that aligning the policies of firms to the contingents of their operating environment will improve firm performance. Thus, policies aimed at realizing accounts receivable early and delaying payments to suppliers strategically will provide adequate cash flow to finance operational activities. Overall, maintaining an optimal level of investments in WCM is imperative in enhancing the performance of firms in Nigeria. This is because deviation from optimal level of investment in WCM has negative implications.



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Appendix A

Interview Protocol 1



**Pusat Pengajian Perakaunan
Tunku Puteri Intan Safinaz**

TUNKU PUTERI INTAN SAFINAZ SCHOOL OF ACCOUNTANCY

Universiti Utara Malaysia

Dear Participants,

I am a Ph.D. candidate in the business school at the Universiti Utara Malaysia. I am conducting research work on the impact of economic conditions on working capital management and firm performance in Nigeria. The objective of this research is to identify the macroeconomic and environmental factors that influence the association between working capital management and firm performance in Nigeria. Thus, this study aims to develop a framework that will help align the internal strategies of firms to the contingents of their environment so that these strategies are fit. This is because a firm whose strategies are fit enjoys higher performance while a misfit lowers firm performance and has serious negative implications for a company's survival.

Your participation in this interview is voluntary and will take about one hour of your valuable time. Information provided during the interview will be noted and recorded and will be used solely for this research purpose as part of the researcher's Ph.D. programme. The results will be published in academic journals to meet the requirements of graduation for a Ph.D. in accounting from the Universiti Utara Malaysia, Sintok, Malaysia.

Any complaints or further enquiries should be directed to Dr. Norfaiezah Sawandi (ezah@uum.edu.my) or Prof. Muhammed Ali Abdul-Hamid (malizai25@gmail.com). They will be happy to provide you with individual responses.

Your kind and objective participation would be appreciated in this interview, as it will significantly contribute to the achievement of the aforementioned objective.

Thank you

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Appendix B

Interview Protocol 2



**Pusat Pengajian Perakaunan
Tunku Puteri Intan Safinaz**
TUNKU PUTERI INTAN SAFINAZ SCHOOL OF ACCOUNTANCY
Universiti Utara Malaysia

The focus of this interview is to understand managers' perceptions on the effectiveness of working capital management practices on firm performances in Nigeria.

Interview Objective	Interview Questions
To explore the working capital management practices of firms in Nigeria	(1) How would you describe the working capital management practices in your company? (2) What are the important components of working capital management in your company? (3) How would you describe the implications of working capital management on the financial performance of your company?
To investigate the effect of economic conditions of firms on the effectiveness of working capital management	(4) What are the key economic constraints affecting your company? (5) To what extent have these factors affected the performance and growth of your company? (6) How would you describe the strategies adopted against the economic constraints faced by your company?
To investigate the differences in working capital management efficiency during and after financial crisis of 2007-2008.	(7) In your opinion, was there a difference in the efficiency of working capital management during and after the financial crisis in your company? (8) Did your company face an economic crisis during the period from 2007 to 2008 and did the crisis affect the efficiency of working capital management of your company based on your experience?

Appendix C

Interview Consent Letter

Perception of Managers on the effectiveness of Working Capital Management Practices on Firm Performance in Nigeria

I hereby grant Sunday Simon permission to document this interview through audio recording and transcription of the oral interview as part of his Ph.D. research at the School of Accounting, Universiti Utara Malaysia. The purpose and nature of the interview has been explained to me. On this basis, I agree to participate as a subject in the research, and I consent to publication of the results of the project with the understanding that anonymity will be preserved. I understand also that I may withdraw from the project, including withdrawal of any information I have provided in seven days' time from the interview date.

Signature of the Participant

Name

Company/Position

ID: ____ (This number will be recorded with your data, so we can withdraw it at your request)

Appendix D

Thematic Analysis Checklist by Braun and Clarke (2006)

A 15 - Point Checklist of Criteria for Good Thematic Analysis

Process	No.	Criteria
Transcription	1	The data have been transcribed to an appropriate level of detail, and the transcripts have been checked against the tapes for 'accuracy'
	2	Each data item has been given equal attention in the coding process
Coding	3	Themes have not been generated from a few vivid examples (an anecdotal approach), but instead the coding process has been thorough, inclusive and comprehensive.
	4	All relevant extracts for all each theme have been collated
	5	Themes have been checked against each other and back to the original data set.
	6	Themes are internally coherent, consistent, and distinctive.
Analysis	7	Data have been analyzed - interpreted, made sense of - rather than just paraphrased or described.
	8	Analysis and data match each other - the extracts illustrate the analytical claims.
	9	Analysis tells a convincing and well-organised story about the data and topic.
	10	A good balance between analytic narrative and illustrative extracts is provided.
Overall	11	Enough time has been allocated to complete all phases of the analysis adequately, without rushing a phase or giving it a once -over-lightly.
Written report	12	The assumptions about, and specific approach to, thematic analysis are clearly explicated.
	13	There is a good fit between what you claim you do, and what you show you have done - i.e., described method and reported analysis are consistent.
	14	The language and concepts used in the report are consistent with the epistemological position of the analysis.
	15	The researcher is positioned as <i>active</i> in the research process; themes do not just 'emerge'.

Appendix E

Breusch and Pagan Lagrangian Multiplier Test Results

Table 4. 9A: Breusch and Pagan Lagrangian Multiplier Test for Random Effects

	Direct Relationship		
	Model 1	Model 2	Model 3
Variables	ROA	ROE	TQ
chibar2(01)	377.41	255.21	549.04
Prob > chibar2	0.0000	0.0000	0.0000

. xttest0

Breusch and Pagan Lagrangian multiplier test for random effects

ROA[ID,t] = Xb + u[ID] + e[ID,t]

Estimated results:

	Var	sd = sqrt(Var)
ROA	.009494	.0974374
e	.0042957	.0655412
u	.0028819	.0536833

Test: Var(u) = 0

chibar2(01) = 377.41
Prob > chibar2 = 0.0000

. xttest0

Breusch and Pagan Lagrangian multiplier test for random effects

ROEE[ID,t] = Xb + u[ID] + e[ID,t]

Estimated results:

	Var	sd = sqrt(Var)
ROEE	.0508581	.2255173
e	.0287938	.1696874
u	.0146725	.1211299

Test: Var(u) = 0

chibar2(01) = 255.21
Prob > chibar2 = 0.0000

. xttest0

Breusch and Pagan Lagrangian multiplier test for random effects

TOBINSQ[ID,t] = Xb + u[ID] + e[ID,t]

Estimated results:

	Var	sd = sqrt(Var)
TOBINSQ	2.284725	1.511531
e	1.031444	1.0156
u	1.003358	1.001678

Test: Var(u) = 0

chibar2(01) = 549.04
Prob > chibar2 = 0.0000.

Appendix F

Letter of Recommendation for Data Collection



OTHMAN YEOP ABDULLAH
GRADUATE SCHOOL OF BUSINESS
Universiti Utara Malaysia
06010 UUM SINTOK
KEDAH DARUL AMAN
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KEDAH AMAN MAKMUR • BERSAMA MEMACU TRANSFORMASI

UUM/OYAGSB/R-4/4/1
24 August 2016

TO WHOM IT MAY CONCERN

Dear Sir/Madam,

LETTER OF RECOMMENDATION FOR DATA COLLECTION AND RESEARCH WORK

This is to certify that **Simon Sunday (Matric No: 900783)** is a student of Othman Yeop Abdullah Graduate School of Business, Universiti Utara Malaysia pursuing his Doctor of Philosophy (PhD). He is conducting a research entitled **"The Impact of Economic Conditions on Working Capital Management and Firm Performance in Nigeria"** under the supervision of Prof. Dr. Mohamad Ali bin Abdul Hamid.

In this regard, we hope that you could kindly provide assistance and cooperation for him to successfully complete the research. All the information gathered will be strictly used for academic purposes only.

Your cooperation and assistance is very much appreciated.

Thank you.

"KNOWLEDGE, VIRTUE, SERVICE"

Yours faithfully


ROZITA BINTI HAMLI
Assistant Registrar
for Dean

Othman Yeop Abdullah Graduate School of Business

c.c - Supervisor
- Student's File (900783)

Universiti Pengurusan Terkemuka
The Eminent Management University



Appendix G

Summary of Studies on WCM and Firm Performance

AUTHORS AND DATES	TITLE	COUNTRY	METHOD AND SAMPLE	VARIABLES		RESULT
				INDEPENDENTS	DEPENDENT (S)	
Deloof (2003)	Does working capital management affect profitability of Belgian firms?	Belgium	Fixed Effect Model 1,009 non-financial firms	1. Accounts Receivable 2. Inventory 3. Accounts Payable 4. Cash Conversion Cycle	Gross Operating Income	1. Negative/Significant 2. Negative/Significant 3. Negative/Significant 4. Negative/Significant
Sharma and Kumar (2011)	Effect of Working Capital Management on Firm Profitability: Empirical Evidence from India	Indian	OLS 263 non-financial firms	1. Accounts Receivable 2. Inventory 3. Accounts Payable 4. Cash Conversion Cycle	Return on Asset	1. Positive/Significant 2. Negative/Insignificant 3. Negative/Insignificant 4. Positive/Insignificant
Abuzayed (2012)	Working Capital Management and Firm's Performance in Emerging Markets: the Case of Jordan.	Jordan	Fixed Effect 52 non-financial firms	1. Accounts Receivable 2. Inventory 3. Accounts Payable 4. Cash Conversion Cycle	Gross Operating Income Tobin's Q	1. Positive/Significant 2. Positive/Significant 3. Negative/Significant 4. Positive/Significant 5. Negative/Significant 6. Negative/Significant 7. Positive/Significant 8. Negative/Significant
Lazaridis and Tryfonidis (2006)	The relationship between working capital management and	Greece	Regression	1. Accounts Receivable 2. Inventory 3. Accounts Payable	Gross Operating Profit	1. Negative/Significant 2. Negative/Significant 3. Negative/Significant

	profitability of listed companies in Athens Stock Exchange.		131 non-financial firms.	4. Cash Conversion Cycle		4. Negative/Significant
Akinlo (2012)	Effect of Working Capital on Profitability of Selected Quoted Firms in Nigeria.	Nigeria	Fixed Effect 66 non-financial firms.	1. Accounts Receivable 2. Inventory 3. Accounts Payable 4. Cash Conversion Cycle	Return on Asset	1. Negative/Insignificant 2. Negative/Significant 3. Negative/Insignificant 4. Negative/Insignificant
Raheman et al (2010)	Working capital management and Corporate Performance of Manufacturing Sector in Pakistan	Pakistan	Fixed Effect 204 Manufacturing firms listed on Karachi Stock Exchange.	1. Accounts Receivable 2. Inventory 3. Accounts Payable 4. Cash Conversion Cycle 5. Net Trading Cycle	Net Operating Profitability	1. Negative/Insignificant 2. Negative/Significant 3. Positive/Insignificant 4. Negative/Significant 5. Negative/Significant
Mathuva (2010)	The Influence of Working Capital Management Components on Corporate Profitability: A survey on Kenyan Listed Firms.	KENYA	Fixed Effect/OLS 30 firms listed on Nairobi Stock Exchange	1. Account Collection Period 2. Inventory Conversion 3. Average Payment Period 4. Cash Conversion Cycle	Net Operating profit	1.Negative/Significant 2.Positive/Significant 3.Positive/ Significant 4. Negative/ Significant
Falope and Ajilore (2009)	Working Capital Management and Corporate Profitability: Evidence from Panel Data Analysis of Selected Quoted Companies in Nigeria	Nigeria	Fixed Effect 50 non-financial firms	1. Accounts Receivable 2. Inventory 3. Accounts Payable 4. Cash Conversion Cycle	Return on Asset	1. Negative/Significant 2. Negative/Significant 3. Positive/Significant 4. Negative/Significant
Garcia-Teruel and Martinez-Solano (2007)	Effects of working capital management on SME profitability	Spain	Fixed Effect 8,872 SMEs	1. Accounts Receivable 2. Inventory 3. Accounts Payable 4. Cash Conversion Cycle.	Return on Asset	1. Negative/Significant 2. Negative/Significant 3. Negative/Significant 4. Negative/Significant.

Enqvist, et al. (2014).	The impact of working capital management on firm profitability in different business cycles: Evidence from Finland.	Finland	Regression 1,136 firm year observations.	1. Accounts Receivable 2. Inventory 3. Accounts Payable 4. Cash Conversion Cycle	Return on Asset Gross Operating Income	1. Negative/Insignificant 2. Negative/Significant 3. Negative/Insignificant 4. Negative/Significant 5. Negative/Insignificant 6. Negative/Significant 7. Negative/Significant 8. Negative/Significant.
Mohamad and Saad (2010)	Working Capital Management: The Effect of Market Valuation and Profitability in Malaysia	Malaysia	Regression (SPSS) 172 Listed Companies	1. Cash Conversion Cycle 2. Current Asset to Current Liabilities Ratio 3. Current Assets to Total Assets Ratio 4. Current Liabilities to Total Asset Ratio 5. Total Debt to Total Assets Ratio.	1. Tobin' s Q 2. Return on Assets 3. Return on Invested Capital	1. Negative/Significant 2. Negative/Insignificant 3. Positive/Significant 4. Negative/Significant 5. Positive/Significant 6. Negative/Significant 7. Negative/Significant 8. Positive/Significant 9. Negative/Significant 10. Negative/Significant 11. Negative/Significant 12. Negative/Significant 13. Positive/Significant 14. Negative/Significant 15. Negative/Insignificant
Tauringana & Afrifa (2013)	The relative importance of working capital management and its components to SMEs' profitability	UK	Random Effects 133 firms for both Panel data analysis and questionnaire survey.	1. Accounts Receivable 2. Inventory 3. Accounts Payable 4. Cash Conversion Cycle	Return on Assets	1. Negative/Significant 2. Negative/Insignificant 3. Negative/Significant 4. Negative/Insignificant

Osundina and Osundina (2014)	The Effect of Working Capital Management on Market Value of Quoted Food and Beverages Manufacturing Firms in Nigeria.	Nigeria	Survey research 12 quoted food and beverages manufacturing firms were chosen and 120 questionnaires were administered.	1. Accounts Collection Period 2. Inventory Conversion 3. Accounts Payable Period 4. Cash Conversion Period 5. Aggressive Investment Policy	Tobin's Q	1. Positive/Significant 2. Positive/Significant 3. Positive/Significant 4. Positive/Significant 5. Positive/Significant
Gill, Biger and Mathur (2010)	The Relationship Between working Capital management and Profitability: Evidence from The United States.	USA	Weighted Least Square 88 firms	1. Accounts Receivable 2. Accounts Payable 3. Inventory 4. Cash conversion Cycle	Gross Operating Profit	1. Negative/Significant 2. Negative/Insignificant 3. Positive/Insignificant 4. Positive/Significant
Wasiuzzaman (2015)	Working Capital and Profitability in Manufacturing Firms in Malaysia: An Empirical Study.	Malaysia	OLS 160 manufacturing firms	1. Inventory 2. Accounts Receivables 3. Accounts payables 4. Working Capital (NWC)	Return on Asset	1. Negative/Insignificant 2. Negative/Significant 3. Negative/Significant 4. Negative/Insignificant
Sharma and Kumar (2011)	Effect of Working Capital Management on Firm Profitability: Empirical Evidence from India	India	OLS 263 non-financial firms	1. Accounts Receivable 2. Inventory 3. Accounts Receivable 4. Cash Conversion Cycle	Return on Asset	1. Positive/Significant 2. Negative/Insignificant 3. Negative/Insignificant 4. Positive/Insignificant
Afeef (2011)	Analyzing the Impact of Working Capital Management on the Profitability of SME's in Pakistan	Pakistan	SPSS 40 Pakistani SMEs	1. Receivable Collection Period 2. Inventory Conversion Period 3. Payable Deferral Period 4. Cash Conversion Cycle	1 Return on Asset 2 Operating Profit to Sales	1. Negative/Insignificant 2. Negative/Insignificant 3. Negative/Insignificant 4. Positive/Insignificant 5. Negative/Significant 6. Negative/Significant 7. Negative/Insignificant

						8. Negative/Insignificant
Yegon et al (2014)	Working Capital Management and Corporate Financial Performance: Evidence from Panel Data Analysis of Selected Quoted Tea Companies in Kenya	Kenya	Fixed effect model. 6 firms	1. Average Collection Period 2. Inventory Turnover 3. Average Payment Period 4. Cash Conversion Cycle 5. Net Trading Cycle	Net Operating Profitability	1. Positive/Insignificant 2. Negative/Significant 3. Positive/Insignificant 4. Negative/Significant 5. Negative/Significant
Vahid et al (2012)	Working capital management and corporate performance: evidence from Iranian companies.	Iran	OLS 50 firms	1. Average Collection Peri 2. Inventory Turnover 3. Average Payment Period 4. Cash Conversion Cycle 5. Net Trading Cycle	Net Operating Profitability	1. Negative/Significant 2. Negative/Significant 3. Negative/Significant 4. Negative/Insignificant 5. Negative/Significant
Nha and Loan (2015)	Working Capital Management and Firm Value: Evidence from The Vietnamese Stock Market	Vietnam	Fixed Effect 450 firms	WCM	Tobin's Q	The study found that a non-linear relationship exists between firm value and WCM. The study concluded that there is an optimal level of WCM which could maximize the firm value. However, deviation from optimal level of WCM would reduce the firm value.
Afrifa and Padachi (2016)	Working capital level influence on SME profitability	UK	Random Effect 160 listed SMEs	Cash Conversion Cycle	Return on Asset Return on Capital Employed.	This study found that a non-linear, quadratic or concave relationship exists between WCM and all the measures of firms' performance adopted. These results further

					Return on Equity.	confirm the existence of a point at which WCM level maximizes firm profitability and that as firms move away from this point their profitability reduces. In addition, the findings revealed that deviation on either side of the optimal working capital level reduces firm profitability.
Nurein, et al (2015)	Nonlinear Relationship between Investment in Working Capital and Performance: Innovative Evidence from Food and Beverages Industry	Malaysia	GLS 73 firms	1. Cash Conversion Cycle 2. Square of Cash Conversion Cycle 3. Inventory turnover cycle 4. Receivables cycle 5. Account payable cycle	Tobin's Q	1. Negative/Significant 2. Positive/Significant 3. Positive/Significant 4. Positive/Significant 5. Positive/Significant They also found that a U-shaped relationship exist between WCM and firm performances
Muhammad, Jan, & Ullah (2012)	Working Capital Management and Profitability: An Analysis of Firms of Textile Industry of Pakistan	Pakistan	Regression 25 Textile Firms	1. Cash Management 2. Accounts Receivable 3. Inventory 4. Accounts Payable	Profitability	1. Positive/Significant 2. Positive/Significant 3. Positive/Significant 4. Negative/Significant

Makori and Jagongo (2013)	Working Capital Management and Firm Profitability: Empirical Evidence from Manufacturing and Construction Firms Listed on Nairobi Securities Exchange, Kenya	Kenya	OLS 10 Firms	1. Accounts Receivable 2. Inventory 3. Accounts Payable 4. Cash Conversion Cycle	Return on Asset	1. Negative/Insignificant 2. Positive/Significant 3. Positive/Significant 4. Negative/Significant
Arunkumar and Ramaman (2013)	Working capital management and profitability: A sensitivity Analysis	India	Weighted Least Squares (Generalized Least Squares). 1198 firms	1. Debtors Days 2. Inventory Days 3. Creditors Days	Return on Asset	1. Positive/Significant 2. Positive/Significant 3. Negative/Significant
Ademola (2014)	Working Capital Management and Profitability of Selected Quoted Food and Beverages Manufacturing Firms in Nigeria	Nigeria	SPSS (OLS) 12 firms	1. Accounts collection period 2. Inventory conversion period 3. Accounts payment Period 4. Cash conversion cycle. 5. Aggressive investment policy.	Net operating profit	1. Negative/Significant 2. Negative/Insignificant 3. Negative/Insignificant 4. Positive/Insignificant 5. Positive/Significant
Uwuigbe, Uwalomwa and Egbide (2012).	Cash Management and Corporate Profitability: A Study of Selected Listed Manufacturing Firms in Nigeria	Nigeria	SPSS 15 Listed manufacturing firms	1. Cash conversion cycle 2. Current ratio 3. Debt ratio 4. Sales growth	Operating Income	1. Negative/Significant 2. Positive/Insignificant 3. Negative/Insignificant 4. Positive/Significant
Uremadu, Egbide and Enyi (2012)	Working capital management, liquidity and corporate	Nigeria	OLS	1. Inventory Conversion Period 2. Debtors Collection Period 3. Creditors Payment Period	Return on Asset	1. Positive/Significant 2. Positive/Insignificant 3. Negative/Significant

	profitability among quoted firms in Nigeria: Evidence from the productive sector		25 manufacturing firms	4. Cash Conversion Period		4. Negative/Significant
Owolabi and Alu (2012)	Effective working capital management and profitability: A study of selected quoted manufacturing companies in Nigeria	Nigeria	SPSS 5 manufacturing firms	1. Inventory Conversion Period 2. Cash Conversion Period 3. Debtors Collection Period 4. Creditors Payment Period	Return on Asset	1. Negative/Insignificant 2. Positive/Insignificant 3. Negative/Insignificant 4. Positive/Insignificant
Takon and Atseye (2015)	Effect of working capital management on Firm profitability in selected Nigerian Quoted companies	Nigeria	Fixed Effect 46 Listed Firms	1. Cash Conversion Cycle 2. Liquidity 3. Age of Firm 4. Accounts Receivable 5. Accounts Payable	Return on Asset	1. Negative/Significant 2. Positive/Significant 3. Positive/Significant 4. Negative/Significant 5. Negative/Significant