WORKING CAPITAL MANAGEMENT AND FINANCIAL PERFORMANCE: AN EMPIRICAL STUDY OF THE SOUTH AFRICAN RETAIL SECTOR

by

GARIKAI MANDIPA

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SUPERVISOR: PROFESSOR ATHENIA BONGANI SIBINDI

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ABSTRACT

The main aim of the study was to determine the relationship between working capital management and the financial performance of South African retail firms listed on the Johannesburg Stock Exchange. The study examined the effect of working capital management on the financial performance of 14 South African retail firms for the period 2010–2019. Panel data techniques, namely pooled ordinary least squares, fixed effects, and random effects estimators were employed to test the relationship between working capital management and financial performance. Working capital management was proxied by average age of inventory, average collection period, average payment period and cash conversion cycle, while financial performance was proxied by net operating profit margin (NOPM), return on assets (ROA) and return on equity.

The first objective was to determine the relationship between average age of inventory and the financial performance of South African retail firms. The second objective was to ascertain whether average collection period had an influence on the financial performance of the South African retail firms. The third objective was to determine whether average payment period had an influence on the financial performance of the South African retail firms. The fourth objective was to test whether the cash conversion cycle had an impact on the financial performance of South African retail firms.

The key findings of the study were the following: (1) There was a negative relationship between average collection period and financial performance; (2) a negative relationship between average age of inventory and financial performance measures (NOPM and ROA) was found; (3) the average payment period was found to be negatively related to return on equity; and (4) the cash conversion cycle and NOPM variables were found to be negatively related.

The study concluded that working capital management practices influenced the financial performance of the South African retail firms for the period of this study. It is recommended that South African retail firms observe prudent optimal working capital management practices, as these influence their financial performance.

Keywords: working capital management, financial performance, retail sector, South Africa, average age of inventory, cash conversion cycle, average collection period, average payment period

NGAMAFITJHAZANA

Ihloso ekulu yerhubhululo bekukuthola ubudlelwano obuphakathi kwehlelo lezokuphathwa kwekhaphithali yemisebenzi yangamalanga (*working capital management)* kanye nobujamo beemali bamafema womkhakha weritheyila eSewula Afrika, okumafema lawo atloliswe kuZiko lezokuThengwa kwamaTjhezi (JSE). Irhubhululo beliphenya umthelela wokuphathwa kweemali zemisebenzi yangamalanga malungana nobujamo beemali bamafema ali-14 weritheyila eSewula Afrika esikhathini esiphakathi 2010-2019. Amano we-*Panel data* asetjenzisiwe, ngalendlela, *pooled ordinary least squares* (*pooled OLS*), imithelela engatjhugulukiko kanye neenlinganisi zemithelela eyenzeka nanyana bunjani (*random effects estimators*) zisetjenzisiwe ukuhlola ubudlelwano obuphakathi kwehlelo lokuphathwa kwekhaphithali yemisebenzi yangamalanga kanye nobujamo beemali. Isilinganiso seminyaka ye-inventhri (*Average age of inventory (AAI)*, isikhathi esilingeneko sokubuthelela (ACP), isikhathi esilingeneko sokubhadela (APP) kanye nesayikeli yokutjhugululwa kwemali (*cash conversion cycle (CCC)* kusetjenziswe njengesijameleli sokuphathwa kweemali zemisebenzi yangamalanga kanti ubujamo bezeemali bona bujanyelwe yi-*net operating profit margin (NOPM)*, inzuzo yokutjalwa kweemali ngepahla eligugu (ROA) kanye nenzuzo evela ku-ikhwithi (ROE) zisetjenziswe njengeenjameli zobujamo bezeemali.

Ihloso yokuthoma bekukuthola ubudlelwano obuphakathi kwesilinganiso esilingeneko seminyaka ye-inventhri kanye nobujamo bezeemali malungana namafema weritheyila eSewula Afrika. Ihloso yesibili bekukuqinisekisa ukobana mhlambe ngabe isikhathi esilingeneko sokubuthelelwa kwedatha sibe nomthelela phezu kobujamo bezeemali bamafema amaritheyila weSewula Afrika. Kwesithathu, irhubhululo belifuna ukuthola ukuthi mhlambe ngabe isikhathi esilingeneko sokubhadela sibe nomthelela phezu kobujamo bezeemali bamafema weritheyila weSewula Afrika.

Ilwazi eliqakathekileko elitholakeleko lilandela ngalendlela: (1) Kutholakele ubudlelwano obumbi phakathi kwesikhathi esilingeneko sokubuthelela idatha kanye nobujamo bezeemali. (2) Kutholakele ubudlelwano obumbi phakathi kwesikhathi esilingeneko se-inventhri kanye nemizamo yobujamo bezeemali (NOPM kanye ne-ROA. (3) Kutholakele ukuthi isikhathi esilingeneko asikhambisani kuhle nenzuzo ku-ikhwithi. (4) Kutholakele ukuthi Isayikeli yokutjhugululwa kwemali (*cash conversion cycle*) kanye namavarebuli wenzuzo engezelelweko (*net operating profit margin variable*) azihlobani kuhle.

Irhubhululo liphethe ngokuthi iinkambiso zokuphathwa kwekhaphithali yemisebenzi yangamalanga zibe nomthelela phezu kobujamo bezeemali bamafema weritheyila weSewula

Afrika, esikhathini sokwenza leli rhubhululo. Kunconywe ukobana amafema weritheyila weSewula Afrika ayazilandela iinkambiso eziphephileko nezinenzuzo ephezulu zokuphathwa kwekhaphithali yemisebenzi yangamalanga, njengombana leziinkambiso zinomthelela phezu kobujamo bezeemali.

Amagama aqakathekileko: Ukuphathwa kwekhaphithali yemisebenzi yangamalanga, ubujamo bezeemali, umkhakha wezeritheyila, iSewula Afrika.

ISISHWANKATHELO

Injongo engundoqo yesi sifundo yayikukuqwalasela ulwalamano phakathi kolawulo lwemali yokusebenza kunye nempumelelo yentsebenzo yamashishini entengiso eMzantsi Afrika, mashishini lawo akudweliso lwe*Johannesburg Stock Exchange (JSE)*. Esi sifundo siphonononge ifuthe lendlela elawulwa ngayo imali yokuqhuba umsebenzi ekuphumeleleni kwamashishini ali-14 aseMzantsi Afrika kwisithuba seminyaka yama2010-2019. Kwasetyenziswa amacebo ahlukeneyo okuqokelela iinkcukacha zolwazi ngokuqwalasela iqela, macebo lawo afana ne*pooled ordinary least squares (pooled OLS), fixed effects* kunye ne*random effects estimators* ekuvavanyeni ulwalamano phakathi kolawulo lwemali yokusebenza kunye nempumelelo yentsebenzo yamashishini. Kwaqwalaselwa ixesha elithatyathwa ekuthengiseni iimveliso (AAI), ixesha elithatyathwa ekuhlawuleni amatyala kwishishini (ACP), ixesha elithatyathwa lishishini ekuhlawuleni awayo amatyala (APP) kunye nexesha elithatyathwa ekuguquleni iimveliso zibe yimali (CCC) njengemilinganiselo yolawulo lwemali yokusebenza lo gama intsebenzo yamashishini yalinganiselwa ngokuqwalasela inzala eyenziweyo (NOPM), imali eyenziwa ngokusebenzisa iiasethi (ROA) nengeniso kwizabelo (ROE).

Isiphumo esibonakalayo sokuqala yaba kukufumanisa ulwalamano phakathi kwexesha elithatyathwa ekuthengiseni iimveliso nentsebenzo yamashishini entengiso oMzantsi Afrika. Isiphumo esibonakalyo sesibini yaba kukuqinisekisa ukuba ingaba ixesha elithatyathwa ekuhlawuleni amatyala kwishishini linefuthe na kwintsebenzo yamashishini entengiso oMzantsi Afrika. Okwesithathu, esi sifundo sazama ukufumanisa ukuba ingaba ixesha elithatyathwa lishishini ekuhlawuleni awayo amatyala linefuthe na kwintsebenzo yamashishini entengiso oMzantsi Afrika.

Okuphambili okwafunyaniswa sesi sifundo kumi ngolu hlobo: (1) Aluluhle ulwalamano phakathi kwexesha elithatyathwa ekuhlawuleni amatyala kwishishini nentsebenzo yamashishini. (2) Aluluhle ulwalamano phakathi kwexesha elithatyathwa ekuthengiseni iimveliso nentsebenzo yamashishini (iNOPM neROA. (3) Ixesha elithatyathwa lishishini ekuhlawuleni awayo amatyala lafumaniseka liyichaphazela kakubi ingeniso kwizabelo. (4) Ixesha elithatyathwa ekuguquleni iimveliso zibe yimali nenzala eyenziweyo zafumaniseka zingahambelani kakuhle.

Esi sifundo sagqiba kwelokuba iinkqubo zolawulo lwemali yokusebenza ziye zayichaphazela intsebenzo yamashishini entengiso oMzantsi Afrika kwixesha leminyaka yolu phando. Kucetyiswa ke ngoko ukuba amasishini entengiso oMzantsi Afrika asebenzise iinkqubo

zobulumko kulawulo lwemali yokusebenza ngoba ezo nkqubo zinefuthe kwintsebenzo yamashishini.
Amagama aphambili: ulawulo lwemali yokusebenza, intsebenzo yamashishini, icandelo lentengiso, uMzantsi Afrika.

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DECLARATION

Name: **GARIKAI MANDIPA**

Student number: **50432990**

Degree: **MASTER OF PHILOSOPHY IN FINANCIAL MANAGEMENT**

Exact wording of the title of the dissertation as appearing on the electronic copy submitted for examination:

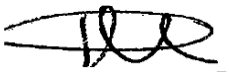
WORKING CAPITAL MANAGEMENT AND FINANCIAL PERFORMANCE: AN EMPIRICAL STUDY OF THE SOUTH AFRICAN RETAIL SECTOR

I declare that the above dissertation is my own work and that all the sources that I have used or quoted have been indicated and acknowledged by means of complete references.

I further declare that I submitted the dissertation to originality checking software and that it falls within the accepted requirements for originality.

I further declare that I have not previously submitted this work, or part of it, for examination at Unisa for another qualification or at any other higher education institution.

(The dissertation will not be examined unless this statement has been submitted.)



28 September 2021

SIGNATURE DATE

List of abbreviations and acronyms

AAI	Average age of inventory
ACP	Account collection period
APP	Average payment period
CCC	Cash conversion cycle
CD	Cross-sectional dependence
FE	Fixed effect
FMCG	Fast-moving consumer goods
FTSE	Financial Times Stock Exchange
ICP	Inventory conversion period
JSE	Johannesburg Stock Exchange
LM	Lagrange multiplier
NOPM	Net operating profit margin
NPM	Net profit margin
OLS	Ordinary least squares
RE	Random effect
ROA	Return on assets
ROE	Return on equity
SMEs	Small and medium enterprises

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CHAPTER 1

INTRODUCTION AND BACKGROUND

1.1 INTRODUCTION

The relationship between working capital management and financial performance has attracted extensive attention over the years as academics or researchers strive to establish the link between working capital management and financial performance internationally, as well as in Africa and South Africa. Because of variations in empirical outcomes, their research has received mixed reviews (Deloof, 2003; Li, Dong, Chen & Yang, 2014; Louw, 2015; Madugba & Ogbonnaya, 2016; Padachi, 2006; Singhania & Mehta, 2017; Sathyamoorthi, Mapharing & Selinkie, 2018; Yahaya, 2016). To maximise profitability, it's vital to handle working capital as efficiently as possible. The two most critical factors of a firm's success are profitability and liquidity.

Despite the fact that Kwenda and Matanda (2015) claim that working capital management is critical to achieving the shareholders' wealth maximisation goal, it has received unrestricted attention in both theoretical and empirical research at the expense of capital budgeting and capital structure decisions. Due to inconclusive empirical evidence, the relationship between working capital management and financial performance is being studied further (Garg & Gumbochuma 2015; Konak & Güner, 2016; Mabandla, 2018; Nyabuti & Alala, 2014; Qurashi & Zahoor, 2017; Zawaira & Mutenheri, 2014).

Garg and Gumbochuma (2015:127) state that in today's global world of competitive rivalry, essentially all firms have little choice but to reduce operating costs in order to compete effectively and financially healthy. Therefore, effective working capital management is an essential component of a firm 's strategy for enhancing shareholder wealth. According to Myers and Majluf (1984), firms prefer to fund investments first with internal cash, then with debt, and lastly through equity. This structure is very important for the firm, as it minimises the need for external financing.

Working capital management is highly valued in the retail industry in order to achieve a high turnover rate of current assets. As a result, working capital is a critical strategic

resource that influences strategic decisions (Li, Dong,Chen & Yang, 2014). Financial managers in the retail sector must grasp all aspects of working capital management to properly implement or make decisions that improve firms' profitability and maximise firm value.

Kwenda (2015:24) posits that because funds locked up in working capital can be dipped into and diverted to promote business growth, it can be thought of as a reservoir of internal financial resources. Managers can tap into this hidden reserve of working capital and pursue profitable investment opportunities without going to the capital market to issue expensive and risky securities and avoid the negative signals associated with external securities by pursuing efficient working capital management policies.

Working capital management is imperative as it affects a firm's profitability and decisions, which in turn affects its financial performance. According to Wang (2020), working capital management (WCM) is critical to a business's performance viability as it has a significant effect on liquidity. Appropriate and efficient working capital management is a requisite of the retail sector. As a result, firms must maintain a balance between current assets and current liabilities to maintain stability and remain competitive. Profit is the objective of any business, but it is also critical for management to maintain a healthy level of working capital.

Working capital management, in addition to capital structure, capital budgeting, dividends, and cost of capital, is an important concept in finance management (long-term financial decisions). Working capital management is a common factor that has a direct impact on the profitability and liquidity of a firm. Working capital understanding can provide a significant competitive advantage; conversely, inefficient working capital management can result in significant losses (Virkkala, 2015). As a result, it is critical to investigate the relationship between working capital management and firm performance. Working capital management that is effective assists the company in raising internal funds, as a result, it is regarded as a source of funding.

Setianto and Pratiwi (2019) maintain that whenever the proportion of working capital available matches the optimal amount required, neither exceeding (overinvestment)

nor falling below (underinvestment), working capital management is regarded to be optimal.

It is the hope of the study that, since according to the reviewed literature, working capital components affect firms' financial performance at varying degree and statistical significance, the study would help investors and policymakers in understanding working capital components that influence profitability and risk return trade-offs for their investment decisions. The information would be important for decision architects to identify various variables.

1.2 BACKGROUND OF THE STUDY

In South Africa, retail sales at the constant price have increased by 12.68% from R822 787 million in 2013 to R927 135 million in 2018 (Stats SA, 2019). Retail, together with wholesale, is the second-largest source of formal employment in South Africa, employing 3.4 million people according to data from Stat's SA 2019 third-quarter survey. The increases in job creation in the sector can have a substantial impact on unemployment reduction and will therefore contribute substantially to one of the core priorities of the National Development Plan, namely job creation. Therefore, it is essential to examine the working capital management and financial performance of firms in this sector to ensure that they remain sustainable. However, even though it is the second-largest provider of formal employment, the sector has been unstable in increasing and reducing jobs from one quarter to another.

The South African economy has seen a structural shift from the primary (mining and manufacturing) to the tertiary (wholesale and retail trade) sector since early 1990s, and among the key sectors are retail and wholesale trade, which keep the economic engine of South Africa moving. In relation to other sectors, the retail sector has been on the rise and therefore a critical assessment is of great significance to drive economic growth.

Kok (2006) asserts that retailing in South Africa is evolving into an extremely active industry with changes in technology, a shift in consumer shopping behaviour, saturating markets, increased competitive forces and globalisation. Hence, it is pivotal to conduct research on the working capital management and financial performance of the retail sector. Firms in the retail industry rely heavily on working capital for their day-

to-day operating activities, and therefore it is relevant to prudentially manage working capital to gain profitability and alleviate illiquidity.

Unsatisfactory performance in the retail sector has a negative effect on the entire economy, because the reduction in retail sales leads to less manufacturing required and therefore a smaller labour force is needed. At the same time, government suffers from low revenues collected from few employed people. According to the Gauteng Quarterly Bulletin (2012), the retail sector plays a vital role in the South African economy and excellence in this industry will benefit retailers, consumers, and the economy at large. This calls for attention in the retail sector to boost economic activities as well as gross domestic product growth.

Regardless of ample research, there still exists a gap owing to the shortfall in factual evidence to justify the best optimal level of working capital required by firms to influence their profitability. Deficiency in consensus continues to exist on the optimal level of working capital and how it can affect a firm's profitability.

Bagh, Nazir, Khan, Khan and Razzaq (2016) observe that working capital management is one of the argumentative issues in corporate finance. It is the key as well as a tricky financial decision for any given firm, because it has an influence on return and profitability. The goal of working capital management decisions is to maintain a stable balance between risk and return to maximise shareholders' value (Louw, 2015:29). Determining the optimal level of working capital in a firm is a daunting task. It raises questions regarding the appropriate amount of working capital as well as the financing of these assets (Rakočević, Latinović, & Milosavljević, 2014:255).

Although existing research has been conducted to determine whether working capital management policies influence firm profitability (Bagh *et al*., 2016, Enow & Brijlal, 2014; Sathyamoorthi *et al*., 2018; Solomons, 2014), there has been very little research in the South African retail sector (Garg & Gumbochuma, 2015; Louw, 2015).

In order to deploy working capital resources strategically and efficiently, decision makers within a firm must have a thorough awareness of the association between working capital management and financial success to maximise shareholders' wealth and ensure sustainability. Failure to maintain working capital results in legal troubles from creditors, liquidation of assets as well as bankruptcy.

1.3 AN OVERVIEW OF THE SOUTH AFRICAN RETAIL SECTOR

In comparison to the of the continent, South Africa's retail sector is the largest. The market is ranked 20th-largest in the world, with a few retail groups that dominate the sector. According to Stats SA (2018), the South African retail sector is subdivided into the following seven distinct categories:

- General dealers
- Textiles and clothing
- Food and beverages
- Hardware, paint and glass
- Pharmaceuticals, cosmetics and toiletries
- Household furniture and appliances
- All other retailers.

Figure 1.1 shows the seven distinct categories of the retail sector in South Africa as well as their percentage contribution towards the retail sales of the entire sector. According to the figure, general dealers account for almost half of the total retail trade sales with 44%, followed by textiles and clothing at 18%. All other retailers contribute 11% towards retail trade sales. Food and beverages contribute 9% of the sales. Hardware, paint, and glass as well as pharmaceuticals, cosmetics and toiletries all contribute 7% per category. The least as per contribution is household furniture and appliances at 4%.

Figure 1.1 shows the seven distinct categories of retail sector as with the percentage contribution in total sales.

Figure 1.1: Percentage contribution of retail sales per category

Source: Stats SA (2018)

The trends in retail sales for the study period between 2010-2019 are depicted in figure 1.2 below.

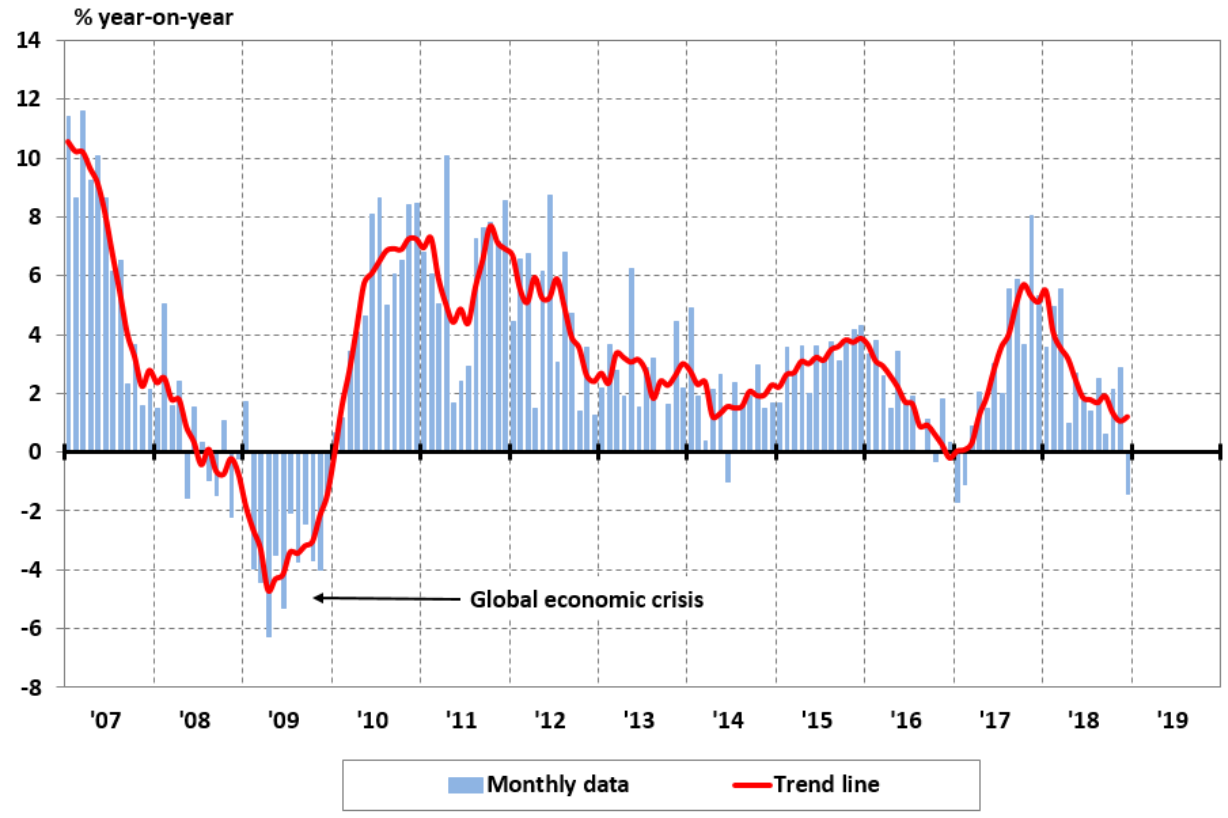

Figure 1.2: Retail trade sales volume: Year-on-year growth rate

Source: Stats SA (2019)

Figure 1.2 illustrates the growth rate of retail sales year on year from 2007 until 2019. With reference to the figure above, after a high annual growth rate of approximately 12% in 2007, It then falls abruptly between 2008 and 2009, to nearly a negative 5% as a result of the global economic crisis. This crisis impacted purchasing power because of recessionary conditions. Thereafter, the retail sales volume trended up in 2010 to 7% and dropped slightly in 2011. Between 2011 and 2012, the annual growth rate rose again, then started to decline until 2013 and 2014. A recovery from 2014 until in-between 2015 and 2016 is also indicated, before dropping down to a breakeven point. The period between 2016 and 2017 shows an upward trend in the annual growth rate, thenceforth it follows a downward trend until 2018 and 2019. It is evident from the figure above that it is the duty of a financial manager to ensure that working capital is kept at an optimal level under all economic conditions.

1.4 PROBLEM STATEMENT

One of the most difficult challenges for corporate financial managers is determining how working capital management affects firm performance. Among the questions posed by these financial executives is the extend on which working capital management can influence profitability.

Previous research on the relationship between working capital management and firm performance has yielded conflicting results in both developed and emerging economies, and the topic is still being debated. The studies by Usman, Shaik and Khan (2017); Robles (2016); Moussa (2018); Charitou, Elfani and Lois (2016); and Khalid, Salif, Gondal and Sarfraz (2018) have observed a positive relationship between working capital management and profitability. In contrast, Deloof (2003), Rezael and Pourali (2015), Qurashi and Zahoor (2017) and Garg and Gumbochuma (2015) show an inverse relationship between working capital management and financial performance. However, none of the studies has fully explained the best working capital management policies of firms.

According to Singhania and Mehta (2017), a non-linear relationship exists between the profitability of a firm and its working capital management. In line with Singhania and Mehta (2017), a study carried out by Korent and Orsag (2018) discovered that net working capital and return on assets (ROA) have a non-linear, concave quadratic relationship.

The contradictory results justify further study, precisely because there is still a lack of systematic empirical evidence. This discrepancy in empirical studies necessitate the study to determine the nature of the relations between the variables.

From the extant literature reviewed by the researcher, it was found that few studies conducted focused on the South African context. Kasozi (2017) claims that there are little empirical research's in South Africa on the association between working capital management practices and financial performance. On the African continent, several studies on working capital management and financial performance have been conducted but they mainly focused on West and East Africa as well as other industries besides the retail sector (Anokye, Quansah & Kawor, 2017; Irene & Ondigo, 2018; El-Maude & Shuaib, 2016; Ironkwe & Wokoma, 2017; Simon, Sawandi & Abdul-Hamid, 2018; Nyakundi, Ombuki, Zablon & Jared 2016; Takon & Atseye, 2015; Yahaya, 2016).

The empirical research suggests that the direction of the relationship between working capital management and financial performance that generates shareholder value remains controversial. This study intended to bridge that knowledge gap by examining the relationship between working capital management and financial performance in the context of South Africa.

1.5 PURPOSE OF THE RESEARCH

The primary aim of this study was to investigate the nexus between working capital management policies and the financial performance of firms listed on the Johannesburg Stock Exchange (JSE) within the South African retail sector.

1.6 RESEARCH QUESTIONS

The following research questions were formulated to guide the study:

1. Is there a relationship between average age of inventory and the financial

performance of South African retail firms?

2. What is the relationship between average collection period and the financial performance of South African retail firms?

3. Is there a relationship between average payment period and the financial performance of South African retail firms?

4. Does the cash conversion cycle have an impact on the financial performance of South African retail firms?

1.7 RESEARCH OBJECTIVES

The objectives of the study were formulated as follows:

1. To examine the relationship between average age of inventory and the financial performance of South African retail firms
2. To establish the relationship between average collection period and the financial performance of South African retail firms
3. To examine the relationship between average payment period and the financial performance of South African retail firms
4. To ascertain whether the cash conversion cycle has an impact on the financial performance of South African retail firms.

1.8 JUSTIFICATION OF THE STUDY

This study contributes to knowledge on the relationship between working capital management and financial performance, as working capital management practices may be improved in order to increase financial performance and the long-term viability of the firm.

More importantly, the study is significant because it helps in enhancing understanding of the dynamics that are occurring within the industry, for example a shift from shop floor jobs to high-tech jobs, with South African firms nevertheless still employing the traditional approach. The research will impact mainly by contributing to the literature on the association between working capital management and financial performance in an emerging economy. Furthermore, the contribution of this research is the broadening of the range of empirical tests that were applied to probe each variable. The argument of this study based on the literature is that it took its cue from Louw

(2015) but applied it to the era of e-commerce. Moreover, unlike Louw (2015), who covers both the pre- and the post-recession period, this study solely examined the post-recession period.

A working capital policy should define the amount of money invested in each form of working capital asset to implement acceptable operational strategies and identify unsuccessful parts. Recommendations should be made to ensure that firms are not affected by unavailing decisions and therefore attract more investors. Scholars in the South African context (Enow & Brijlal, 2014; Kasozi, 2017; Kwenda, 2014; Solomons, 2014) have chiefly focused on all the listed firms of various sectors, rather than on one specific industry, such as the retail sector.

This study will add to the prevailing literature by providing insights into the dynamic relationship between working capital management and the financial performance of the retail industry as well as relative businesses.

1.9 DISSERTATION OUTLINE

The rest of the dissertation is structured as follows:

Chapter 2: Literature review

This chapter examines theoretical and empirical research on working capital management and financial performance. The chapter will begin with a theoretical examination of working capital management and financial performance. The fundamental concepts of working capital management are also reviewed to ensure that they are consistent with the existing literature. The chapter concludes with an investigation of the empirical evidence.

Chapter 3: Research methodology

This chapter discusses the study's research design and methodology. It describes the research design and introduces the empirical framework. This chapter also describes the panel data methodologies and estimating framework used in this study, as well as the formal specifications tests utilised.

Chapter 4: Research findings and discussion

The empirical results of the statistical and econometric tests conducted out to assess the relationship between working capital management and financial performance are

presented and discussed in this chapter. It includes descriptive statistics utilised in the study as well as descriptions of trends over time. It also presents and discusses the correlation matrix. The chapter outlines the diagnostic tests performed and the panel regression models employed and then presents the study's empirical findings.

Chapter 5: Summary of findings and recommendations for future research

This chapter begins by summarising the study's primary conclusions based on both the literature review and the results of this investigation. Based on the study's limitations, the chapter concludes with recommendations and proposals for future research.

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

There is a lot of literature on the nexus between working capital management and financial performance. Although there is a wide variety of studies pertaining to working capital management and financial performance globally, the relationship between working capital management and financial performance remains inconclusive. In a challenging and contemporary business environment, effective management of working capital becomes a key component to succeed, as it is a decision from within the firm.

This chapter covers both theoretical and empirical literature of prior studies contributions towards the topic of working capital management and financial performance. The review of literature is divided into two sections, namely, an examination of theoretical concepts of working capital management and financial performance in firms, and an examination of empirical evidence from developed and developing countries. To ensure consistency with the existing literature, the fundamental concepts of working capital management were reviewed.

2.2 THEORETICAL LITERATURE REVIEW

This section offers a review of theoretical literature on working capital management and financial performance, which includes important definitions and a review of relevant theory in relation to the study topic and objectives. The theoretical literature review also covers the importance of working capital, working capital management components and financial performance, and the working capital policy framework and theories associated with working capital management, such as the trade-off theory, agency cost theory, perking order theory and Keynesian liquidity preference theory. The relationship between working capital management and financial performance can be either positive or negative, depending on the working capital policy adopted by the firm.

2.2.1 Definitions of terms

Section 2.2.1 provides working definitions and explanations of key terms and concepts that comprise the working capital management and profitability issues surrounding this important topic in the literature. The terms to be explained in the subsequent sections include working capital management, cash conversion cycle, profitability, financial performance, net working capital, gross working capital, current assets, and current liabilities.

- ***Working capital management***

Gill, Biger and Mathur (2010) describe working capital management as the management of short-term assets and obligations, as well as the financing of these assets. Working capital management according to Jagongo and Makori (2013:1), is the ability to regulate current assets and current liabilities effectively and efficiently in a manner that provides the firm with the best return on its assets while minimising payments for its liabilities. As a result, working capital management is the process of determining the best balance concerning current assets and current liabilities.

- ***Cash conversion cycle***

The cash conversion cycle (CCC), according to Costa (2014), is a metric that quantifies the period taken by firms to transform resources into cash flows. According to Jana (2018), the CCC is the time span from the disbursement of cash to the supplier to the receipt of payment from the customer. This measure shows how resourceful a firm is in managing its liquidity. It is used as a comprehensive measure of working capital (Deloof, 2003; Padachi, 2006). According to Richards and Laughlin (1980), the CCC combines data from the statement of financial position and the income statement to produce a measure that focuses on the net time delay between cash flow payments and receipts. This reveals the liquidity of a firm.

- ***Current assets***

According to Stats SA (2019), current assets are those assets that can be easily liquidated within a period of a single financial year, such as cash and inventory. This reveals that current assets are a good indicator of the financial health of a firm if they

can be easily converted into cash to meet ongoing short-term financial obligations. If the current assets outweigh the current liabilities, a firm's liquidity is not risky.

- ***Current liabilities***

Current liabilities are a measure of short-term debt due within a year, which includes creditors and short-term loans. Timely and prompt payments of these short-term financial obligations maintain the liquidity of a firm. A higher level of current liabilities indicates a higher risk of a firm's liquidity.

- ***Working capital***

Working capital deals with short-term financing of current assets and current liabilities and is a measure of a firm's liquidity (Enow & Brijlal, 2014:8). El-Maude and Shuaib (2016:13) define working capital as circulating capital or revolving capital that is organisational capital used to invest in the current assets and to settle current liabilities. Working capital refers to the capital that a company needs to run its operations (Hagberg & Johansson, 2014: 10). In other words, working capital is the short-term financial position of a firm, which specifies its general efficiency.

- ***Gross working capital***

This refers to the total of current assets. Current assets include inventory, accounts receivable, cash, prepayments, and marketable securities. These assets represent the liquidity of a firm, as they can easily be converted into cash. The higher the current assets, the more liquid a company is when it comes to short-term financial obligations, and the reverse holds for lower current assets.

- ***Net working capital***

This is the variation between current assets and current liabilities and measures the liquidity of a firm. A positive net working capital indicates the good health of a firm, as the working capital is sufficient to cover current liabilities when they become due. A negative net working capital symbolises a red signal for the firm, which requires immediate attention because of its unfavourable effects on the financial obligations of the firm (Stats SA, 2019).

- ***Financial performance***

Financial performance, according to Verma (2017), refers to the extent to which financial objectives are met or have been met. It is also used as a broad indicator of a firm's long-term financial health (Nyabuti & Alala, 2014:213). According to Odhiambo (2014:4), few profitability ratios such as net profit margin (NPM), return on equity (ROE), and return on assets (ROA) can be used to analyse a firm's financial health. This metric measures how effectively a firm uses its resources to increase shareholders' returns.

- ***Profitability***

According to Umoren and Udo (2015), profitability is a benchmark to measure the operating efficiency of a firm. This measure is a solid indicator of the firm's efficiency in utilising its resources. The higher the profitability ratio, the more efficient the firm is in utilising its resources.

2.3 OVERVIEW OF WORKING CAPITAL

Managing working capital is a significant function in the corporate world. Therefore, the emergence of working capital management plays an important role in the finance field, as it is mainly related to investment and financing in the short term (Makori & Jagongo, 2013). In the framework of working capital management, the financial manager's aim is to focus on the short-term operations of the business and to confirm that funds are available to sustain operations. The goal of working capital management according to Ukaegbu (2014), is to ensure that the firm can meet its operating expenses while paying its short-term debt when it is due. Furthermore, to maximise profitability and sustain liquidity levels, working capital management necessitates the management of both current assets and current liabilities.

The purpose of working capital management is to keep track of the firm's current assets and current liabilities in order to strike a balance between profitability and risk that contributes positively to the value of the firm. Firms must keep a certain amount of working capital on hand in order to function effectively and efficiently. For instance,

if the level of working capital is too low, the firm would be vulnerable to an additional risk of insolvency. The excessive working capital will diminish the firm's profitability and insufficient working capital will jeopardise the solvency of the firm (Aravind, 2016:58).

Working capital refers to the firm's liquidity, and it represents the amount of cash available to cover its daily operational expenses. A firm need to maintain an efficient level of working capital to curb the risk of failing to meet its operational needs. Efficient management of working capital should improve liquidity, minimise risk and maximise profitability.

2.3.1 Importance of working capital

The significance of working capital relates to the impact it has on the profitability. Irrespective of the firm's size and business nature, efficient working capital management is the key component that guarantees and ensures sustainability. Preserving adequate working capital is not only beneficial for short-term financial needs, but also for the long-term existence of the business.

Aktas, Croci and Petmezas (2015) elucidate that the efficient management of working capital would provide a new source of internally generated funds that could be used in more profitable investment opportunities for the benefit of the firm's shareholders. Therefore, effective management of working capital presents a company with additional funds from retained earnings, which can be channelled to finance other in-house projects.

Kwenda and Matanda (2015) posit that following efficient working capital management strategies, managers can utilise reserves of working capital and seek profitable investment opportunities without going to the capital market to issue expensive and risky securities, thereby avoiding the negative signals associated with external securities. In addition, proper working capital management is paramount because it unlocks funds within a company, which is very cheap relative to external financing. By not looking at the external market to raise funds, therefore, efficient working capital management is imperative in mitigating the insolvency risk.

Nandom, Mubarik and Abul-Aziz (2017) contend that working capital management is one of the important components of financial management that has a direct effect on the financial performance of an organisation. Insufficient working capital may generate a loss for the firm. In cases when substantial amounts of capital are tied up in current assets, for example debtors and inventories, the business is not earning any return on these funds. If working capital is funded by debt, such as a bank overdraft, it attracts high-interest costs, which will reduce profits. The management of working capital is indispensable to ensure that the firm can move forward with its operations and has enough cash flow to satisfy both maturing and short-term debt as well as upcoming operational expenses without interrupting the day-to-day running of the firm.

Optimal working capital management is salient, as firms need to attain high profit while at the same time mitigating the risk of illiquidity. A company's central objective is profit generation and maximisation that will result in business growth, and one way of achieving this is through efficient management of working capital (Sathyamoorthi *et al*., 2018:83). Therefore, it is crucial that all working capital management components are managed efficiently to support the operations of the business and increase shareholders' value.

However, given the significance of working capital towards the profitability of a firm, there are challenges, such as the inability to balance working capital and to convert inventory or trade receivables into cash, customers taking long to pay and costs rising due to excessive inventory. As a result, the goal of working capital management is to maximise profitability while minimising risk to liquidity. A firm should maintain stability between liquidity and profitability.

In addition, despite firms striving to uphold consistent, positive working capital, excessive working capital may indicate that a firm is not investing its excess funds optimally, or else that it is more concerned about liquidity than investment. More so, excess working capital may show that a firm is overinvested in current assets, which may highlight inadequacy in operations.

2.3.2 Working capital management components

The purpose of working capital management is to manage the firm's current assets and current liabilities to accomplish a balance between profitability and risk that can add value to the firm. Effective working capital management is critical to a firm's financial health. In fact, efficient use of company resources through proper working capital management increases profitability and limits finance cost.

2.3.2.1 The cash conversion cycle

The concept of the CCC was initiated by Richards and Laughlin (1980) as an extension of operating cycle theory. The operating cycle fails to consider liquidity requirements as affected by the time pattern of cash flow requirements.

The cash conversion cycle (CCC) is the time it takes for funds to be locked up in working capital, or the time it takes between paying for working capital and receiving cash from its sale (Brigham and Houston, 2007). Cash conversion cycle is vital in working capital management since it is a crucial indicator for determining how efficiently a firm can turn its inventory into sales and then into cash. Cash conversion cycle can either be positive or negative. According to Al-Abass (2017:298), if the cash conversation cycle is negative, it is more favourable since the shorter the time of CCC, the more efficiently the company's working capital is managed. Positive CCC indicates that the company must pay its supplier for inventory purchases, but it has not received cash from its customers.

To understand how working capital is managed, CCC and its components should be analysed. The following equation is an illustration of how CCC is calculated.

CCC = AAI + ACP - APP……. [Equation 2.1]

Where:

AAI = average age of inventory

ACP = average collection period

APP = average payment period.

Figure 2.1 indicates the flow of cash conversion cycle

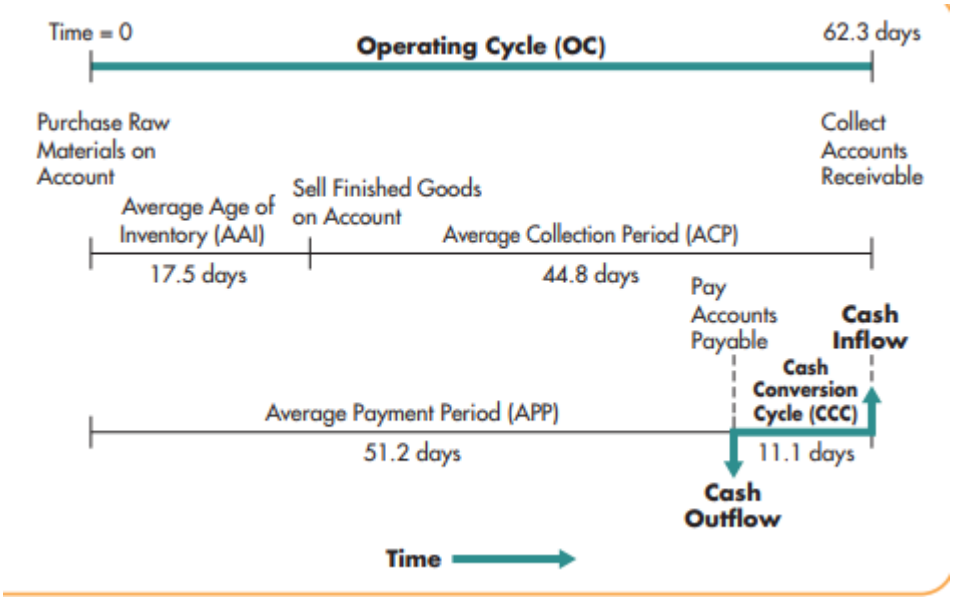

Figure 2.1: Cash conversion cycle

Source: Zutter and Gitman (2011:605)

It has been widely used by various researchers as the proxy for measuring working capital management (Bagh *et al*., 2016; Deloof, 2003; Kasozi, 2017; Padachi, 2006; Raheman, Afza, Qayyum & Bodla, 2010).

Managing the CCC requires a critical analysis between liquidity and profitability. Firms can exploit their value by having an optimal level of cash conversion period. Large inventory and generous trade credit policy stimulate sales and reduce the risk of stock-outs. On the other hand, trade credit and inventories are money locked up in working capital (Muscettola, 2014).

This CCC is of paramount importance for retailers and similar businesses, as their operations rely heavily on buying inventory and selling it to consumers. It illustrates how quickly a firm can convert its products into cash through sales. The shorter the timeframe, the less capital is tied up in the business processes and vice versa. Working capital management policies should ensure that the CCC is not compromised.

Conversely, Deloof (2003) and Garg and Gumbochuma (2015), after using CCC as a proxy for working capital and operating profit margin as a profitability measure, found a statistically negative relationship between working capital and profitability.

Shin and Soenen (1998) argue that the negative relationship between profits and CCC could be explained by market powers such as a shorter CCC due to the bargaining power of suppliers and/or customers as well as highly profitability due to market dominance.

2.3.2.2 Inventory management and financial performance

Inventory management is an important aspect of working capital management. Firms need materials to produce finished goods, as such efficient management of inventory will influence their financial performance. Better inventory management improves the financial performance of a firm (Ahmad, 2016:3192).

Inventory management is the backbone of efficient production because it ensures that a company has smooth operations without interruptions. Proper inventory management is a possibility to meet the reported demand at the appropriate level and to avoid production surplus and deficit by inventory monitoring and forecasting (Golas & Bieniasz, 2016).

Inventories should always be available in sufficient quantities, not more nor less than what is required. Insufficient inventory has a negative impact on the smooth running of a business, whilst an excess of it incurs extra costs, thereby lowering profits (Kakeeto, Timbirimu, Kiizah & Olutayo, 2017). Therefore, understanding inventory management is very decisive for the smooth flow of operations.

Prior research into the link between inventory management and financial performance has shown that lowering inventory level boosts profitability. For instance, Deloof (2003), García (2011), Konak and Güner (2016) and Rezaei and Pourali (2015) found a negative relationship between inventory management and profitability. However, Asaduzzaman and Chowdhury (2014), Agha (2014) and Yahaya (2016) contradict that a positive relationship exists.

Shardeo (2015) states that inventories are the goods that are stocked and have a resale value to gain some profit. It is the main costs for retail firms and wholesalers. Normally, it consists of 20 to 30 % of the total investment of the firm. Therefore, it should be managed in order to avail the inventory at the right time in the right quantity. Managing inventory levels is therefore paramount for the business to remain sustainable and profitable.

There are common types of costs linked to inventory, which include carrying costs and ordering costs (Jacobs, Berry, Whybark & Vollmann, 2011). Jacobs *et al*. (2011) describe carrying costs or holding costs as costs that are caused by storing stocks. A positive relationship between carrying costs and inventory level exists, meaning that the higher the inventory levels, the higher the carrying costs. In other words, keeping too much inventory results in additional cost in the form of storage costs, spoilage or even theft, which reduce profitability. However, low levels of inventory also lead to loss of sales once the demand increases. Consequently, a certain amount of inventory should be kept to reduce the costs associated with it such as holding and carrying costs

Ordering costs are associated with costs involved when placing or processing an order from a supplier. The financial manager's role is to ensure that both ordering and carrying costs are minimised at an optimal level in order to mitigate excess costs.

The core aim of inventory management is to preserve an appropriate level of inventory to elude shortfalls and surplus of inventory, as they are both unfavourable for the business. In addition, the goal of inventory management is to have the right product, at the right time and at the right place. Understanding inventory management is crucial for a business to minimise cost and maximise profitability.

2.3.2.3 Trade receivable management and financial performance relationship

Trade receivables are the most significant part of any given business. The management of trade receivable involves making decisions on whether to offer credit or not and to monitor and control the trade receivables in the business. Effective trade receivable management is dominant for the cash flows of the business (Abubakar & Olowe, 2019).

A firm's success is partly dependent on how effective it manages its receivables (Yunos *et al*., 2018:75). These authors further emphasise that if the company collects its receivables quickly, it may not have a cash crisis to maintain operations costs.

Because of bad trade receivables, Oware, Samanhyia and Ampong (2015) proved that when a firm does not spend well in the collection of trade receivables, the profitability firm profitability will stagnate resulting in unmanageable debt. The longer

it takes to collect trade receivables, the more daunting a task it becomes for the firm to invest in the next production levels. If the business fails to control working capital and takes long to collect outstanding balances, it ties up working capital, which leads to long business cycles. This signifies that the business should collect all owed amounts in a timely manner to mitigate liquidity woes.

Padachi (2006) studied the relationship between working capital management and corporate profitability. The outcome of the study revealed that overinvestment in receivables is linked with lower profitability. This illustrates those decisions concerning credit sales should be critically analysed to add value to the performance of a business, instead of exposing it to a financial crisis.

Duru, Ekwe and Okpe (2014) examined trade receivable management and the corporate performance of companies in the food and beverage industry in Nigeria from 2000 to 2011. The study found a negative and non-significant link between trade receivables and profitability.

Odondi, Nteere and Njeru (2017) analysed the effect of receivable management practices on financial performance with emphasis on Deloitte East Africa Limited using both qualitative and quantitative methods. The empirical findings of the study included that receivable have a significance effect on the financial performance of a business. The significant effect of receivables means that they should be managed in a manner that can positively affect the business.

Mugo (2016) states that the term ‘trade receivables’ refers to an amount owed to a business by its customers arising from the sale of goods or the provision of a service on credit terms. It is a set of policies, procedures and practices applied by a firm to manage credit sales, such as a credit policy, a credit standard, etc. Managing trade receivables is paramount to the financial health of a business, as it stabilises cash flows, profitability as well growth in sales. In the statement of financial position, trade receivables are one of the most important components of current assets.

Jindal, Jain and Vartika (2017) investigated the effect of receivable management on profitability in India. They found a significant positive relationship between debtors’ turnover ratio and the profitability of the firm. This means that receivable management should be a vital focus point for improving the profitability of firms.

Research by Louw, Hall and Brümmer (2016) within the South African retail sector discovered that reducing inventory and receivables while increasing payables appears to improve the profitability of retail firms.

Trade receivable optimisation helps businesses to ensure that they are not in liquidity strain but remain profitable. However, given the importance of trade receivables towards firm performance, inconsistency in managing credit sales may have a negative impact on the profitability of a firm.

2.3.2.4 Trade payable management and financial performance

Kraus and Litzenberger (1973) proposed the trade-off theory of financial leverage, which indicates that an increase in the accounts payable level will increase the risk of bankruptcy and financial distress, hence lessening the value of a company. This illustrates that it is significant to maintain optimal utilisation of credit facilities and timing of payments to create a balance between working capital and liquidity.

Ikechukwu and Nwakaego (2015) describe accounts payable as suppliers' invoices for goods and services that have been processed but not yet paid. This is recognised as one of the most important short-term funding sources.

Achode and Rotich (2016) assessed the effects of accounts payable as a source of financing on the performance of listed manufacturing firms at the Nairobi Securities Exchange. The study revealed a direct positive relationship between accounts payable and the profitability.

Moodley, Ward and Muller (2017) investigated the link between the management of payables and the return to investors in JSE-listed companies. The findings of the research revealed a substantial positive link between variations in payable days and shareholder return, which supports the general theory of working capital management.

Effective trade payables management can improve a firm's short-term cash flow position by optimal timing of payments to suppliers. Nevertheless, critical consideration should be given to excessive financing, as this has a positive impact on the credit risk of the company and its short-term liquidity. In other words, when the liabilities outweigh the assets, it means a company has a negative net working capital, which is a signal of a lack of liquidity and potential insolvency.

2.3.3 Factors determining working capital

According to Darun, Roudaki and Radford (2015:992), various factors affect working capital management practices. These factors can be classified as external and internal factors. They further stress that external factors affect many firms globally and across industries, while internal factors affect the firm as whole. However, these factors vary from industry to industry as well as among firms.

The following subsection discusses some factors which determines working capital:

2.3.3.1 Nature of business or industry

The amount of working capital required by a firm is mostly determined by the type of business or industry in which it operates (Akinlo, 2012). Therefore, the working capital requirements are influenced by the nature of the business. For example, manufacturing firms invest more in non-current assets as well current assets in comparison to retail firms, which have a large amount of current assets such inventory, accounts receivable and cash. As the retail industry is completely engaged in trading, more investment in working capital is required. Similarly, working capital investment fluctuates based on the product's nature.

2.3.3.2 Business size

The working capital requirement can be determined by the size of a business. Large firms are expected to have larger working capital requirements as a result of their huge day-to-day operational needs (Lyngstadaas & Berg, 2016; Niresh & Thirunavukkarasu, 2014).

2.3.3.3 Credit policy of the business

The amount of working capital required by a firm is determined by the terms of credit granted to customers. Firms with strict credit policies require less investment in working capital as than firms with lenient credit policies, which require more investment in working capital.

2.3.3.4 Business growth and expansion

As the firm grows and expands, its sales also increase, which in turn requires more working capital to maintain its growth. According to Kwenda and Holden (2014:571), the working capital requirements of a firm depend on its sales volume. On the other hand, if a firm is not growing and expanding, less working capital is required to minimise losses. Therefore, business growth and expansion are positively related to working capital requirements.

2.3.3.5 Period of cash conversion cycle

The cash conversion cycle is the time taken to convert inventory and trade receivables into cash. The longer the cash conversion cycle period, the more working capital is required, and the reverse holds for a shorter cash conversion cycle period where less working capital is needed (Akinlo, 2012; Nazir & Afza, 2009). In other words, the operating cycle and working capital requirements are positively correlated.

2.3.3.6 Economic and business cycle

The upswing and downswing in economic activities influence the working capital determinants a firm (Kwenda & Holden, 2014:572). The working capital determinants of a company depend on whether the economic activity is in a boom period or a recession. During a boom period, when the business is doing well, there is a greater need for working capital due to an increase in sales. In times of depression, on the other hand, business contracts, sales decline, difficulties in collecting from trade receivables are encountered, and firms may have a large amount of working capital lying idle. This further requires firms to decrease their need for working capital. Enqvist, Graham and Nikkinen (2014) affirms that different phases in the business cycle affect working capital management practices differently, depending on the financial planning a company has established. Firms need to consider these different phases when formulating working capital management strategies.

2.3.3.7 Unanticipated situations

Unpredicted situations, such as the Covid-19 pandemic. To provide a greater possibility of effectively overcoming the many problems, businesses must adapt quickly to the severe changes and adopt a proactive strategy to working capital.

In conclusion, it is therefore crucial for every firm to identify these forces and observe them effectively to curtail adverse effects on their performance.

2.4 WORKING CAPITAL MANAGEMENT POLICY FRAMEWORK

Working capital policy according Mangesha (2014:20) is plan for managing current assets such as accounts receivable, inventory and cash, as well as current liabilities such as accounts payable and accruals.

The working capital approach can determine the type of financing used to fund variable and permanent current assets. Fisher's (1930) separation theorem indicated that a company should avoid confusion between an investment in current assets and financing current assets. This theory has to do with working capital, because a company should always separate how much it invests in working capital against how it would finance working capital (Rehn, 2012:6).

Firms choose different policies to support their working capital and thereby their operations. Accordin to Nyabuti and Alala (2014) ,a firm can choose aggressive conservative working capital management policy. The financial managers of any firm should keep a close eye to check the working capital levels to keep the cash requirements on the right track. Deficiencies in working capital investment attention may result in shortages of cash.

Irene and Ondigo (2018) allude to the notion that investment policy indicates how much current assets a firm has invested. A large amount of working capital reflects conservativeness, whereas less investment in current assets symbolises aggressiveness.

2.4.1 Current asset financing approaches

Louw *et al*., (2016) propound that the management of working capital varies among industries and state it would be more useful to test the association between working capital management and profitability within one specific industry. Investment in current assets and financing decisions can be approached in three ways, namely aggressive, conservative, or moderate. Thus, profitability of a firm can be determined depends on

the approach followed. The different asset financing approaches are discussed in the following sections.

2.4.1.1 Aggressive approach

Firms mighty take a risky approach by funding current assets with short-term debt since it provides a low-interest rate. However, the risk associated with short-term debt is greater than that associated with long-term debt (Dhole, Mishara, & Pal, 2019). Pursuing an aggressive working capital investment approach promotes firm profitability and implies high liquidity, which also reduces the firm's risk *ceteris paribus*. This working capital investment approach results in a short CCC and indicates that the firm is receiving payments from its customers quickly, while delaying payments to suppliers close to the due date (Kwenda, 2017:49). Although this approach is cheaper, it is also riskier due to short-term fund fluctuations (interest rates) that may not always be available when needed.

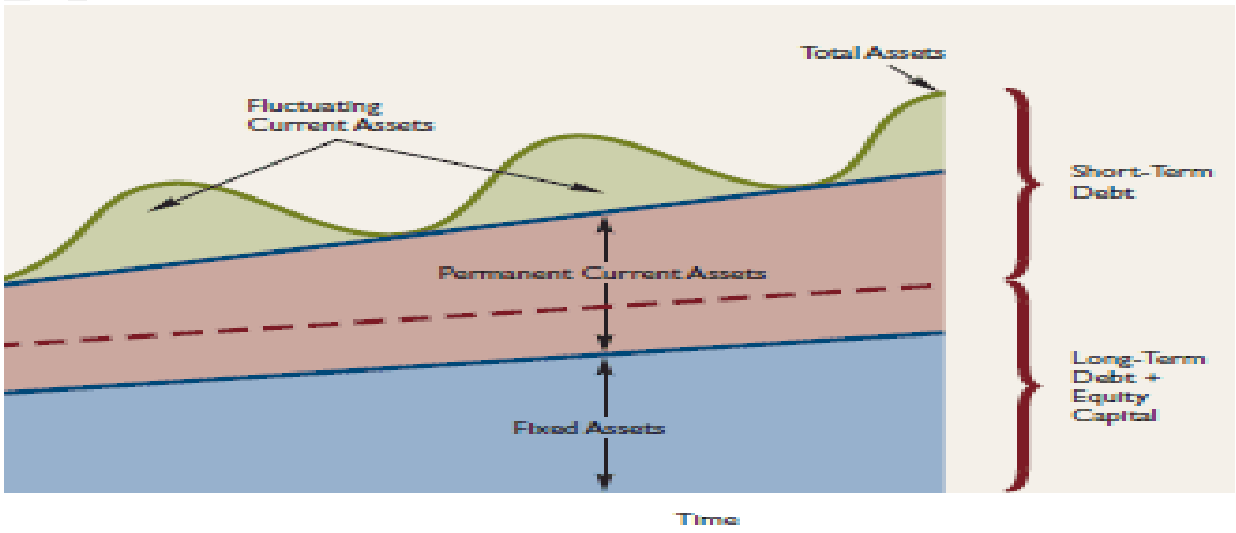

Figure 2.2: Aggressive financing approach

Source: Besley, Brigham and Sibindi (2015)

2.4.1.2 Conservative approach

In a conservative approach, non-current assets, perpetual current assets and some temporary current assets are all funded with long-term debt. The remaining short-term assets are financed through short-term debt. This approach involves lower risk due to

repayments spread over a prolonged period and lower returns. Under this approach, the firm is less profitable because of unnecessary liquidity (Besley & Brigham, 2013:256). The disadvantages of this approach include higher cost of financing and large investment is blocked in temporary working capital.

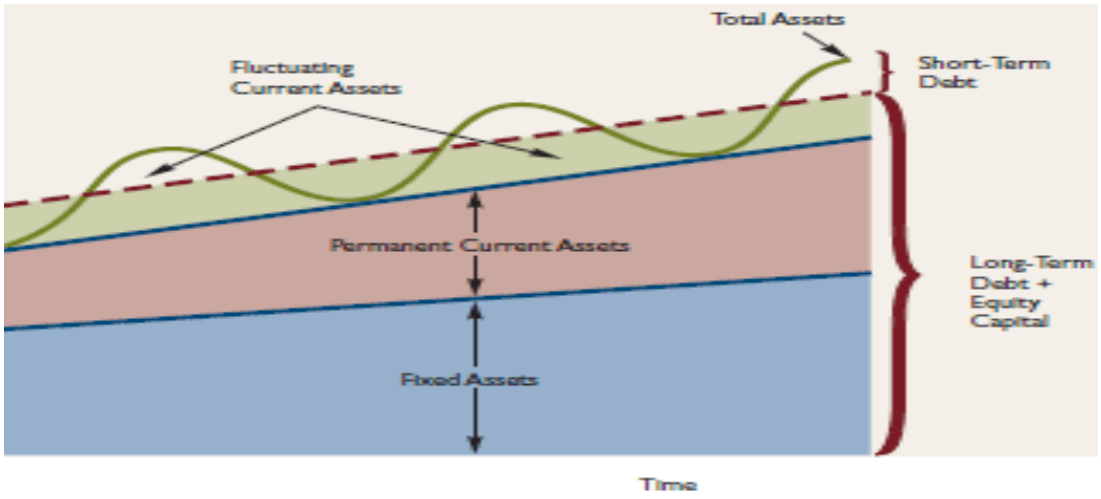

Figure 2.3: Conservative approach

Source: Besley and Brigham (2013:255)

2.4.1.3 Moderate approach

According to Paramasivan and Subramanian (2009) firms employ moderate approach by utilising long-term debt and equity to finance their fixed assets and main parts of current assets. In this policy, the firm concern can implement a financial plan which best fits the estimated life of assets with the anticipated life of the sources of funds gained to finance assets.

This approach is preferred by firms that operate in an uncertain environment in terms of demands, prices, and interest rates.

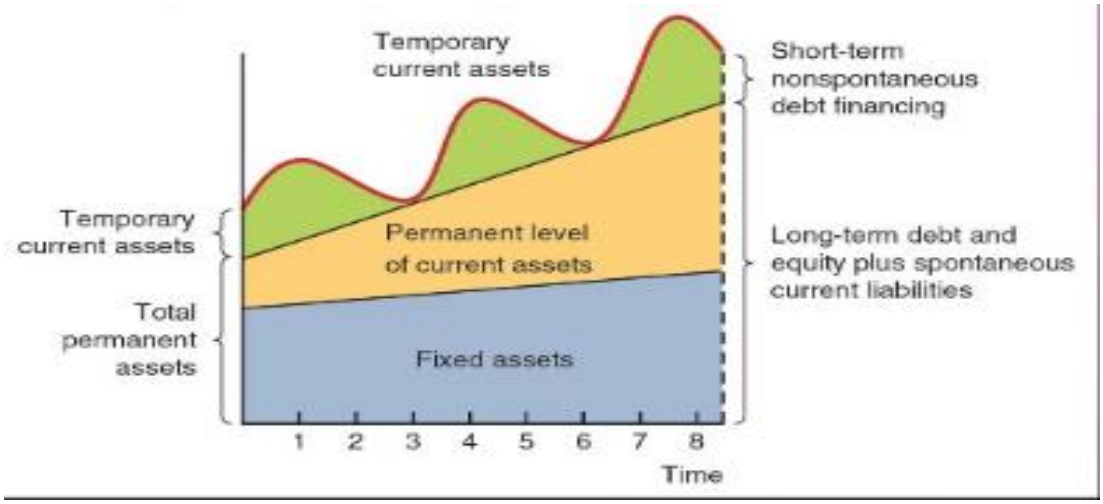

Figure 2.4: Moderate approach

Source: Besley and Brigham (2013:255)

Table 2.1 demonstrates the relationship between liquidity, profitability and risk return among the three different working capital investment.

When a firm implements an aggressive strategy, it means that a small portion of total asset is in the form of current assets. Because of this approach, high short-term debt means low liquidity, but higher profitability and higher risk.

Table 2.1: Working capital approaches

Approach	Liquidity	Profitability	Risk
Conservative	High	Low	Low
Moderate	Average	Average	Average
Aggressive	Low	High	High

Under the conservative approach, a firm with higher liquidity is accompanied by low profitability and insignificant risk due to an elevated level of total assets, which are current assets. In pursuing a moderate approach, a firm maintains an optimal level of liquidity, profitability and risk. This approach lies in-between the aggressive and conservative approaches. The objective of the financial manager is to adopt a strategy that enhances the shareholders' wealth by increasing the firm's financial position.

2.4.2 Current asset investment policies

The current asset investment policy of a company refers to the amount or level of investment in current assets as portion of its total assets (Irene & Ondigo, 2018). Current assets should be kept at a level that considers accelerated customer demand against the possibility of cash flow drawback. For instance, higher levels of investment in current assets can lead to a short-term cash crunch if sales do not sustain the increased inventory.

Regarding current asset investment policies, there are three alternatives that a firm may use based on the financial manager's attitude concerning risk, liquidity and profitability.

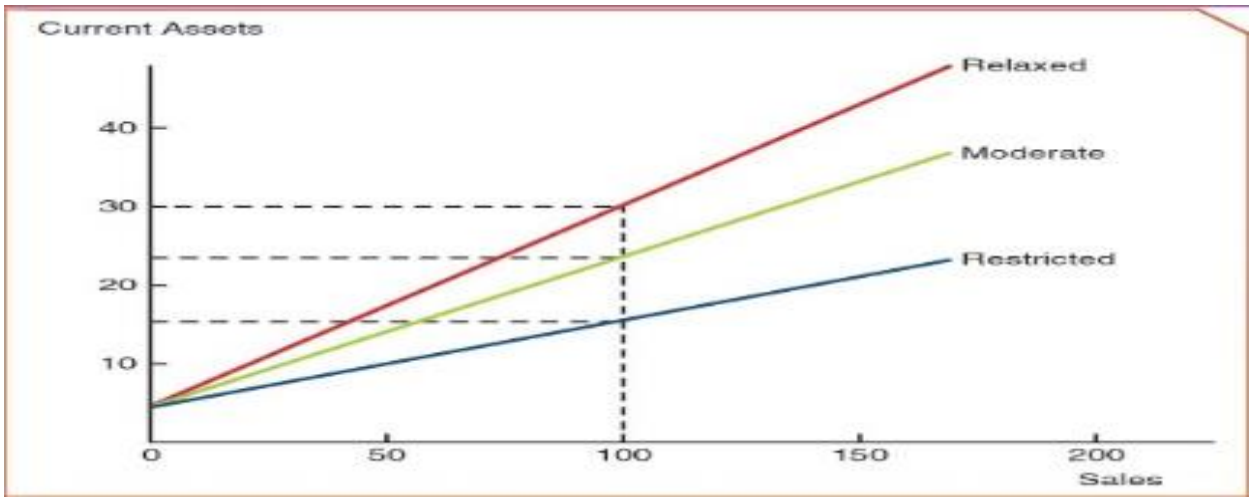

Figure 2.5: Different types of current asset investment policies

Source: Besley and Brigham (2013:607)

Figure 2.5 illustrates the current asset investment policies that can be applied by any given firm. A restrictive policy implies that a firm holds a minimised level of trade receivables. This can be achieved through a reduction in the accounts collection period, cash discounts and inventory level, which increases profitability because of quick turnovers. This strategy of current asset investment indicates that a firm will uphold a low level of current assets. Under this policy, a firm holds more cash and marketable securities and minimises inventories.

Under a relaxed policy, there is an elevated level of trade receivables held by a firm. This indicates an extension in the accounts receivable period and an increase in cash discounts. Firms that adopt this policy presume a risk-free or low-risk advantage.

However, despite the low risk, this policy is associated with lower returns on investment due to a larger outlay in current assets, which attracts higher interest rates and hence reduces profitability. A relaxed policy in current asset investment creates a higher level of inventory and accounts receivable, meaning a longer inventory conversion period (ICP), ACP and finally a longer CCC. The longer the CCC, the higher the chances of liquidity risk, as there will be no cash generated fast to cater for financial obligations as they become due.

Besley *et al*. (2015) state that a moderate policy lies in-between the two extremes in relation to both expected risk and return. In addition, this policy leads to a CCC that is somewhere between the restrictive and relaxed policies. The major benefit of this policy is that it guarantees the smooth operation of the working capital cycle with moderate profitability.

2.5 WORKING CAPITAL MANAGEMENT AND RELATED THEORIES

The money that businesses use in their day-to-day operations is known as working capital. As a result, it's the difference between current assets and current liabilities. Theoretically, there are no direct theories that describe how to manage working capital. Working capital management may, however, be explained in the context of capital structure, therefore theoretical underpinnings of capital structure can be utilized to explain it. As a result, two capital structure theories that serve as foundations for working capital management. The agency cost and pecking order theories are explained

2.5.1 Working capital management and associated theories

The relationship between working capital and financial performance can be explained by various theories in corporate finance and economics. In this study, five theories were adopted, namely CCC theory, profitability, and liquidity theory (trade-off theory), agency cost theory, pecking order theory and the Keynesian liquidity preference theory. These are discussed below.

2.5.1.1 Cash conversion cycle theory

The CCC theory proposed by Richards and Laughlin (1980) presumes that, *ceteris paribus*, efficient working capital management (such as a short CCC) will increase a

firm's liquidity, profitability and consequently its value, while inefficient working capital management for (example, long CCC) will lead to lower profitability and lower firm value. In line with this theory, management should focus on reducing the components of working capital, such as ACP and AAI, to increase profitability. The theory assumes that working capital follows a cycle and in that managing its components it is very significant to convert current assets into cash. The theory posits that the aim of working capital management is to ensure that efficiency requirements are met so that investments in working capital components are neither not too high nor too low (Aminu & Zainudin, 2015).

2.5.1.2 Profitability and liquidity theory (trade-off theory)

The profitability and liquidity theory, or the trade-off theory, of working capital management advanced by Hirigoyen (1985) and Eljelly (2004) suggests that firms seek to maintain optimal liquidity levels to ensure a balance between the cost and benefits of holding cash. The theory also states that working capital requirements influence the firm's liquidity and profitability.

If a company chooses profitability over liquidity, it would be at the expense of liquidity and the other way around. For any given level of current assets and current liabilities, the financial manager should ensure that funds are distributed to the targeted level of profitability and liquidity. Sefideh and Asgari (2016) asserted that firms with a lot of cash on hand may be low risk and low profitability conversely, a firm with limited working capital, faces a significant risk with great efficiency.
In addition, companies need to consider both profitability and risk strategies to create value for their shareholders. As a result, if the purpose of the business is to maximise shareholder value through profit maximisation, the firm must strike a balance between profitability and liquidity.

2.5.1.3 Agency cost theory

Jensen and Meckling (1976) advanced this theory, which originated from the relationship between principals (shareholders) and agents (managers). The agency cost theory explains the conflict of interest between managers and owners of a firm. It helps us to understand and explain problems between the principals and manager in

the day-to-day operations of the business. As many decisions that affect the shareholders financially are made by the agent, differences in views and even priorities and interests can arise. The importance of the agency cost theory to working capital management can be seen from the perspective of the finance manager, who acts on behalf of the shareholders of a firm and makes all critical decisions in terms of current asset's investment and financing decisions. Receivables, payables, inventory as well as liability decisions of a company rest on the financial manager, which could affect the investment and liquidity of a firm. Conflicts of interest are bound to arise as a result of distinct ownership from managers, where managers may carry out actions for their personal benefit at the expense of the owners (Jensen & Meckling, 1976). As a result of the conflict of interest between owners and managers, managers' investment and liquidity decisions may be influenced.

Teruel and Solano (2006) studied the working capital management and profitability of small and medium-sized businesses in Spain from 2000 to 2005. During this research, they discovered that the working capital management policies of any firm are determined by the manager. Managers can implement various policies that affect working capital levels, liquidity, and profitability, as well as determining the firm's value.

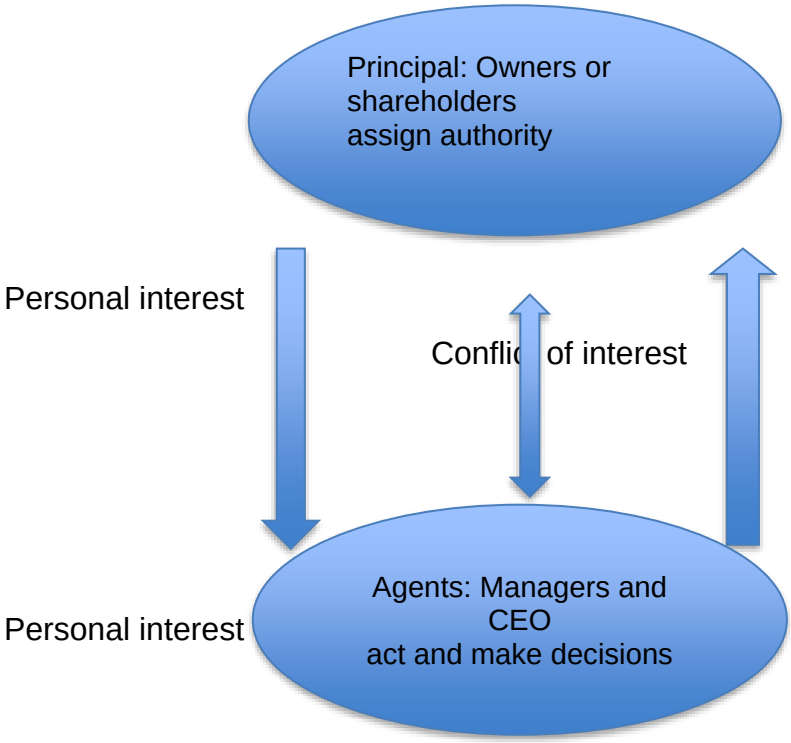

Figure 2.6 Agency cost theory

Figure 2.6 represents the relationship between shareholders and managers within a firm. Shareholders appoint managers to act and make decisions on their behalf, but a problem arises when managers choose actions that are more beneficial to them instead of the shareholders. Decisions concerning working capital management should be taken to improve shareholders' wealth. In general, managers do not always act in the best interests of their investors and as a result, investors must be informed Because of the separation of ownership and control within a firm, managers may put in insufficient effort, take bonuses, choose inputs or outputs that suit their own preferences, or otherwise fail to maximise firm value (Berger & Di Patti, 2006:1066).

2.5.1.4 Pecking order theory

The pecking order theory was proposed by Myers and Majluf (1984:219), which reasons that it is generally better to issue safe securities than risky ones. Firms should seek capital from external bond markets, but, if possible, raise equity through retention. The pecking order theory in finance posits that as information becomes more uneven, costs of funding rises. Due to information asymmetry, the theory defines a hierarchy of funding decisions made by a company. Managers prefer internal finance over external financing, and if internal funds are insufficient, debt financing is preferable over equity financing, according to the pecking order principle. From the working capital management viewpoint, perking order theory is relevant because effective working capital management generates internal funds, which can be used to finance other business operations.

Internal financing is less costly relative to external financing because of transaction costs involved. Internal funds represent the most liquid assets of the company, as funds can be available at any time to cover obligations as they arise, thereby avoiding external funds.

Internal financing
Retained earnings

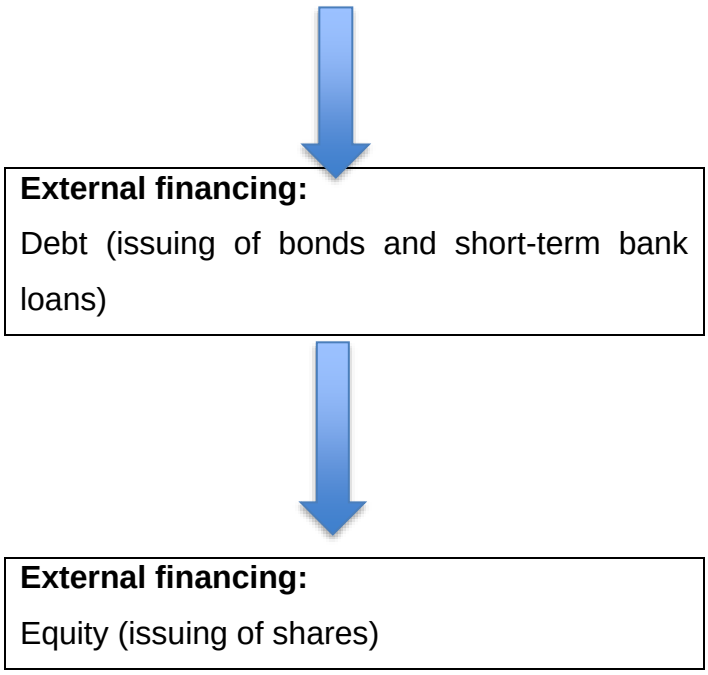

Figure 2.7: The hierarchy of the pecking order theory

Figure 2.7 depicts that when firm managers are faced with financing problems, they first exhaust internal financing over external financing due to the costs and risk associated with external financing. If a firm decides to use external financing, it uses debt first and then equity as the last option. According to this theory, there is no targeted capital structure used to finance the business (Myers & Majluf, 1984:576).

2.5.1.5 The Keynesian liquidity preference theory

Another theory that underpins working capital management is the Keynesian liquidity preference theory, which was proposed by economist John Keynes in 1936. According to the hypothesis, as long as other factors remain equal, investors prefer liquid investments over illiquid ones, and there is always a demand for premium on longer-term investments. People store cash or inventory for these reasons, according to this theory: transaction, speculative, precaution, and compensation. The requirement for working capital to run day-to-day business operations is an unavoidable requirement. Firms must set aside sufficient capital for current assets to ensure the smooth operation of their operations (Abuzayed, 2016)

2.6 EMPIRICAL LITERATURE REVIEW

This section covers previous empirical research on working capital management and financial performance undertaken in both developed and developing economies.

2.6.1 Empirical evidence of working capital management practices of firms from the developed countries

Previous research into the relationship between working capital management and financial performance found positive, negative, and non-linear associations from the empirical evidence in developed countries (see for instance Afrifa & Tingbani, 2018; Aytac, Hoang, Lahiani & Michel, 2020; Deloof, 2003; Konak & Güner, 2016; Padachi, 2006; Qurashi & Zahoor, 2017, among others).

Deloof (2003) examined a sample of 1 009 large Belgian non-financial firms on the relationship between working capital management and profitability for four years. The study revealed an inverse relationship between accounts receivable days, inventory, accounts payable and gross income as measured using the CCC. Therefore, managers can grow a firm productivity by decreasing the number of accounts receivable days and inventory.

The relationship between working capital management and profitability of listed firms on the Athens Stock Exchange was examined by Lazaridis and Tryfonidis (2006) using a sample of 131 firms for the period 2001–2004. The results of the study showed that there was a statistical significance between profitability, measured through gross operating profit, and the CCC.

Pursuant to Deloof (2003), a study conducted by Garcia-Teruel and Martinez-Solano (2007) in Spain on 8 872 small and medium enterprises (SMEs) from 1996 to 2002 found that reducing the CCC improves a firm’s profitability. The findings suggest that there is a negative relationship between working capital components and profitability.

Russo (2013) conducted a study on working capital management and the determinants and effect on profitability using a sample of 1 192 SMEs in Portugal from 2009 to 2011. The findings of the study indicated a non-relationship between working capital management and SMEs' profitability. However, Pais and Gama (2015) examined working capital management and SMEs of 6 063 Portuguese SMEs for the period 2002–2009 and a found a negative relationship between working capital management components and profitability.

Muscettola (2014) conducted an analysis of CCC and firms' profitability on a sample of 4 226 manufacturing SMEs in Italy covering the period 2007–2010. The researcher found a significant positive link between ACP and profitability.

Aktas *et al*. (2015) analysed data of US firms from 1982 to 2011 to determine whether working capital management enhances value. Their results showed that the existence of an optimal level of working capital policy and convergence by firms to that optimal level, by either decreasing or increasing their investment in working capital, improve their stock and operating performance.

Robles (2016) used regression analysis on a sample of 400 UK unlisted firms from 2006-2014 to estimate the impact of working capital on profitability in different business cycles. Working capital management and profitability were found to have a statistically significant positive link in the study.

Qurashi and Zahoor (2017) found a negative relationship between profitability and working capital in their study of UK pharmaceuticals listed on the FTSE 350 Index from 2009 to 2014. They used panel data and ordinary least squares (OLS) estimation to investigate the UK pharmaceuticals listed on the FTSE Index from 2009-2014.

Silva (2017) determined working capital management and financial constraints among a sample of German listed firms from different industries between 1999 and 2014 using panel data. The results revealed a non-linear relationship between all working capital accounts and firms' profitability. A study by Korent and Orsag (2018) on the impact of working capital management on the profitability of Croatian software companies also observed the existence of a non-linear, concave quadratic relationship between net working capital and ROA.

Afrifa and Tingbani (2018) investigated the working capital management and performance of 802 British SMEs listed on the Alternative Investment Market for the period 2004–2013 employing panel regression analysis. The study revealed that working capital had a significant statistically negative influence on SMEs' performance.

Aytac *et al*. (2020) analysed the working capital management and profitability of wine farms in France. The findings showed that the CCC had an inverse impact on the profitability of France wine farms, implying the need for a proactive approach to working capital.

Kayani, De Silva, and Gan (2020) investigated the link between working capital management and firm performance of Australasian listed firms, which include Australia and New Zealand. By using the system generalised method of moments, their empirical results showed that working capital management has a significant influence on financial performance. Furthermore, the CCC and ICP revealed a negative relationship with financial performance. However, ACP and APP differed in both countries. ACP showed a non-significant association in Australia, whereas the APP had a positive effect on financial performance.

In light of the foregoing empirical finding from the developed countries, it is reasonable to infer that the results were inconclusive. Different methodologies, variable employed in the studies, or the periods in which the investigations were done could be the reason for these contradictory outcomes in the studies. It is critical to evaluate the literature on emerging countries, particularly the South Africa.

2.6.2 Empirical evidence of working capital management practices of firms from the developing countries

In developing countries, numerous research on the relationship between working capital management and financial performance have been conducted. Despite this fact, the empirical evidence in terms of the best optimal working capital management is still mixed.

Raheman and Nasr (2007) conducted a study to probe the tie between working management and profitability in 94 Pakistan firms listed on the Karachi Stock Exchange for the period 1999–2004. The results showed an opposing link between working capital management variables and firm profitability.

Similarly, between 2005-2009, Ukaegbu (2014) conducted a study on the importance of working capital management and profitability among manufacturing firms in developing economies in Africa, which included Egypt, Kenya, Nigeria, and South Africa, during the period 2005–2009. The study used gross operating profit as the dependent variable to measure profitability, while accounts receivable, ICP, accounts payable and CCC were used as independent variables to measure working capital. The results revealed a negative relationship between accounts receivable and profitability. Furthermore, a positive relationship was found between profitability and ICP. In addition, the findings indicated a positive relationship between profitability and accounts payable in Egypt, but a negative relationship in the other countries.

To determine the effects of working capital management on the financial performance of pharmaceutical firms in Nigeria, Yahaya (2016) used a sample of six pharmaceutical firms listed on the Nigerian Stock Exchange from 2006 to 2013. The study utilised multiple regression techniques and found that accounts receivable and inventory were significantly and positively related with financial performance, while accounts payable was found to be significantly but negatively related to financial performance.

Singhania and Mehta (2017) investigated the effects of working capital management on firms' profitability in 11 emerging market countries in Asia from 2004 to 2014. They observed a non-linear relationship between NPM and short-term debt, turnover days and CCC.

A study by Adam, Quansah and Kawor (2017) to ascertain the effects of aggressive or conservative current asset investment and financing policies on six manufacturing firms on the Ghanaian Stock Exchange from 2000 to 2013 disclosed that current assets investment and financing policies have highly significant positive effects on returns to shareholders' equity in the long run.

An empirical study by Khalid *et al.* (2018) on electrical equipment firms listed on the Karachi Stock Exchange from 2007 to 2012 showed a positive relationship between working capital management and profitability.

Similarly, Jana (2018) examined the impact of working capital management on the profitability of selected listed fast-moving consumer goods (FMCG) firms in India from 2013 to 2017 applying panel data analysis. The results showed a statistically positive and negative relationship between working capital management and profitability.

Sathyamoorthi *et al,* (2018) examined the impact of working capital on profitability in the retail stores listed on the Botswana Stock Exchange for the period 2012–2016. The study indicated a non-linear association between working capital and firm profitability by using ROA as a dependent variable and CCC components as independent variables

In research carried out by Moussa (2018) using panel data analysis and general moments methods from 2000–2010 on 68 industrial firms listed on the Egyptian Stock Exchange, both models showed that firm performance is linked to CCC.

In determining the relationship between working capital management and the financial performance of 75 non-financial firms in Nigeria covering the period 2007–2015, Simon, Sawandi and Abdul-Hamid (2018) concluded that working capital management variables had an inconsistent relationship with the measures of performance adopted, trade receivables management and inventory management were negatively linked with ROA, while accounts payable management, CCC and cash conversion efficiency were positively associated with ROA.

An empirical study carried out by Prempeh (2018) on 11 manufacturing firms listed on the Ghanaian Stock Exchange found that a linear positive relationship exists between working capital management and profitability. The study revealed a quadratic relationship between working capital management and firms' profitability.

Wassie (2021) used a sample of 164 Ethiopian exporters to determine the impact of working capital management on firm performance. The study employed a multiple regression model, with working capital management measured by the accounts receivable period, CCC and the accounts payable period, with ROA and return on investment as the performance metrics. The results found a statistical positive association.

In conclusion, research on the relationship between working capital management and financial performance in developing countries has produced mixed results, with some researchers finding a both negative and positive association, while others observing a non-linear relationship.

2.6.3 Empirical evidence of working capital management practices of firms from South Africa

In both developed and developing countries, there is insufficient and conflicting evidence on the relationship between working capital management and financial performance. It was therefore imperative to examine the connection between working capital management and financial performance to expand the existing body of knowledge in the South African context. In South Africa there have been few research on the relationship between working capital management and financial performance. Ngwenya (2012), on the other hand, examined the relationship between working capital management and profitability of 69 JSE listed firms from 1998 to 2008. The researcher discovered a statistically negative association between gross operating profit, CCC and average receivable days in the study. Furthermore, the study discovered a statistically significant positive association between profitability and average payable days and ICP.

Garg and Gumbochuma (2015), in their investigation of the relationship between working capital management and profitability in the retail sector from 2004 to 2013, found a negative relationship between working capital management and profitability.

The study conducted in South Africa by Louw *et al*. (2016) in the retail sector showed that a strategy to reduce investment in inventory and trade receivables, while increasing trade payables, appeared to improve the profitability of South African retail firms. Therefore, an inverse relationship was observed.

An investigation of the effect of working capital management on profitability among 69 listed manufacturing firms in South Africa from 2007 to 2016 showed that ACP and APP were negatively related to profitability. A positive relationship between AAI and profitability was found to exist (Kasozi, 2017).

Working capital management and shareholders' wealth creation of non-financial firms listed on the JSE were investigated by Oseifuah and Gyekye (2017). The study investigated 75 firms for a period of 10 years between 2003 and 2012 to determine the relationship between working capital management and profitability. Based on the results, a significant positive relationship between firm value and both AAI and ACP was found. More so, a significant positive relationship between APP and profitability was found.

Mabandla (2018) found a positive link between aggressive working capital management and financial performance in a study of food and beverage companies listed on the JSE in South Africa from 2007 to 2016. Furthermore, the study discovered a statistically significant positive association between profitability and average payable days and ICP.

Considering the above, research on working capital management has yielded varied findings. This necessitated more research into the topic.

2.6.4 Synthesis of findings from the empirical literature review

Various findings were discovered while reviewing the literature from existing studies on the relationship between working capital management and firm performance.

The apriori expectation was that reducing working capital components would enhance financial profitability. Firstly, the empirical studies reviewed revealed that the relationship between CCC and profitability was negative (e.g. Deloof, 2003; Garcia, 2011; Raheman & Nasr, 2007; Ukaegbu, 2014). On the other hand, studies by Charitou *et al*. (2016), Prempeh and Peprah-Amankona (2018) found a positive relationship. Moreover, Yahaya (2016) and Singhania and Mehta (2017) found a non-linear relationship.

Secondly, from the review of literature on the relationship between ACP and profitability, researchers such as Garg and Gumbochuma (2015), Kasozi (2017) and Yunos *et al.* (2018) found an inverse relationship between ACP and profitability. To the contrary, Usman *et al*. (2017) found a positive association between ACP and profitability, while Mutenheri and Zawaira (2014); Muminović and Barać (2018) found a non-linear relationship.

Third, some empirical studies examined revealed a negative relationship between AAI and profitability (for example Konak & Guner, 2016; Louw et al., 2016; Oseifuah, 2018; Temtime, 2016). Yahaya (2016) and Kasozi (2017), on the other hand, revealed a positive relationship.

Fourth, the empirical studies on the relationship between APP and profitability revealed an inverse relationship in the studies of Bagh et al. (2016) and Temtime

(2016). Prempeh and Peprah-Amankona (2018), on the other hand, found a positive relationship.

The table below depicts prior empirical evidence from both developed and developing countries on the relationship between working capital management and financial performance.

Table 2.2: Summary of prior empirical evidence of working capital management and firm performance

Authors	Unit of analysis and period	Key findings
Lyngstadaas and Berg (2016)	21 075 Norwegian SMEs; 2010–2103	Negative relationship between CCC and profitability
Usman *et al*. (2017)	Firms operating in major developed Scandinavian states (Denmark, Norway and Sweden); 2003–2015	Positive relationship between working capital management and ROA
Robbles (2016)	UK unlisted firms; 2006–2014	Statistically substantial connection between working capital management and profitability
Muminović and Barać (2018)	Croatian and Slovenian in the dairy processing industry; 2007–2014	No working capital management components significantly affect profitability; significant relationship between CCC and profitability
Aytac *et al*. (2020)	Wine farms in France; 2003–2014	Negative relationship between CCC and firm performance
Pais and Gama (2015)	6 063 Portuguese SMEs; 2002–2009	Negative relationship between working capital management components and profitability
Deloof (2003)	1 009 large Belgian non-financial firms; 1992–1996	capital management components has an inverse relationship with gross income
Temtime (2016)	176 US publicly traded manufacturing firms; 2004–2013	Inverse relationship between gross operating income and accounts receivable days, inventory and accounts payable
Korent and Orsag (2018)	Croatian software firms; 2008–2013	Non-linear, concave quadratic relationship between net working capital management and ROA

Padachi and Afrifa (2016)	6 926 non-financial SMEs in the UK; 2005–2010	Concave relationship between working capital level and firm profitability
Mehtap (2016)	110 manufacturing firms listed on Borsa Istanbul; 2005–2014	CCC has a significant and negative impact on firm profitability; there was a negative relationship between average collection period and profitability, as well as a positive relationship between average payment period and profitability.
Qurashi and Zahoor (2017)	UK pharmaceutical firms listed on the FTSE 350 Index; 2009–2014	Negative relationship between profitability and working capital management
Högerle, Charifzadeh, Ferencz and Kostin (2020)	115 firms listed on the German Prime Standard; 2011–2017	Shorter CCC has positive impact on profitability
Botoc and Anton (2017)	High-growth firms in Central, Eastern, and Southeastern Europe; 2006–2015	Inverted U-shape relationship between working capital level and profitability
Garanina and Petrova (2015)	720 Russian firms; 2001–2012	Inverse relationship between CCC and return on net operating assets
Öztürk and Vergili (2017)	Firms listed on the Istanbul Stock Exchange; 2009Q4–2015Q3	The relationship between ROA and inventory period was positive; the relationship between cash conversion cycle and accounts collection period was negative.
Rezaei and Pourali (2015)	98 Iranian firms listed on the Tehran Stock Exchange; 2008–2012	Negative relationship between inventory period, accounts receivable, accounts payable, CCC and profitability
Charitou *et al*. (2016)	43 industrial firms listed on the Cyprus Stock Exchange; 1998–2007	CCC associated with profitability

Konak and Guner (2016)	29 firms listed on the BIST SME Industrial Index (Borsa Istanbul); 2011–2014	Inverse relationship between NPM and short-term debt, turnover days and CCC
Kayani *et al.* (2020)	Australasian (Australia and New Zealand) publicly listed firms; 2008	CCC, ICP and financial performance negatively related in both countries; ACP and APP results vary in both countries
Singhania and Mehta (2017)	11 economies of the Asia Pacific region (Hong Kong, China, South Korea, Singapore, Malaysia, Indonesia, Thailand, Vietnam, India, Pakistan, Myanmar, Sri Lanka, Bangladesh, Japan and Taiwan); 2004–2014	Non-linear relationship between profitability and working capital management
Khalid *et al*. (2018)	Electrical equipment firms listed on the Karachi Stock Exchange in Pakistan; 2007–2012	Positive effect of working capital management on profitability
Aravind (2016)	100 Indian manufacturing during the financial year 2005-2015	CCC positively correlated to net profit return but negatively related to ROE
Yunos *et al*, (2018)	803 firms listed on Bursa Malaysia; 2010–2014	Lower inventory days and days sales outstanding associated with higher ROA; no impact of working capital measures on Tobin's Q
Firmansyah, Siregar and Syarifuddin (2018)	Property and real estate firms in Indonesia; 2013–2017	CCC significant and negative effect on operating profit margin, ROA and ROE
Sharif and Islam (2018)	10 pharmaceutical firms in Bangladesh; 2010–2014	Significant effect of working capital management on profitability
Raheman and Nasr (2007)	94 Pakistani firms listed on the Karachi Stock Exchange; 1999–2004	Negative relationship between working capital management variables

Jana (2018)	FMCG in India; 2013–2017	Positive and negative relationship between working capital management and profitability
Sathyamoorthi *et al*. (2018)	All listed retail stores on the Botswana Stock Exchange; 2012–2016	No statistically significant association between working capital management and profitability
Nwakaego and Ikechukwu (2015)	Selected food and beverage manufacturing firms in Nigeria from 2000–2011	Positive effect between accounts receivable and profitability
Ukaegbu (2014)	Manufacturing firms in Egypt, Kenya, Nigeria and South Africa; 2005–2009	CCC negative relationship with net operating profit
Mutenheri and Zawaira (2014)	32 non-financial firms listed on the Zimbabwe Stock Exchange; 2010–2012	Contrary relationship between APP and profitability; ACP, APP and CCC have no link with profitability
Moussa (2018)	68 industrial firms listed on the Egypt Stock Exchange; 2000–2010	Firm performance positively associated with CCC length
Ironkwe and Wokoma (2017)	Oil and gas firms listed on the Nigerian Stock Exchange; 2010–2014	Substantial relationship among investing and financing rules and ROA; neutral and minor relationship amid both financing and investing policies and earnings per share
Yahaya (2016)	6 pharmaceutical firms listed on the Nigerian Stock Exchange; 2006–2013	Accounts receivable and inventory positively related with profitability; accounts payable negative link with financial performance; CCC no link with financial performance
Prempeh (2018)	11 listed manufacturing firms in Ghana; 2011–2017	Linear direct relationship between working capital management and profitability
Nyabuti and Alala (2014)	10 firms listed on the Nairobi Stock Exchange in Kenya; 2008–2012	Relationship between working capital management policy and financial performance

Garg and Gumbochuma (2015)	Retail firms in South Africa from 2004–2013	Inverse relationship between working capital management and profitability
Kasozi (2017)	69 listed manufacturing firms in South Africa; 2007–2016	ACP and APP negative and significant for profitability; positive relationship between AAI and profitability
Mabandla (2018)	12 food and beverage firms listed on the JSE; 2007–2016	Positive relationship between aggressive working capital management policy and financial performance
Oseifuah and Gyekye (2016)	75 non-financial firms listed on the JSE; 2003–2012	Negative relationship between working capital management and firm profitability
Louw *et al*. (2016)	18 South African retail firms listed on the JSE; 2004–2012	Reduction in AAI and average accounts receivable and increase in APP improve profitability

2.7 CHAPTER SUMMARY

This chapter discussed theory and empirical studies related to working capital management and financial performance. The working capital components and their relationship with firm performance were also discussed, where a significant impact on firm performance was noticed. Working capital management and financial performance were discussed in both developed and developing countries, with empirical evidence revealing disparities. Working capital policies, which include aggressive, conservative and moderate policies, were examined. The chapter also presented the theories associated with working capital management, such as pecking order theory, agency cost theory, profitability and liquidity theory, and the Keynesian liquidity preference theory.

Nonetheless, given the theory and empirical studies used to address the gap in findings, there was no precise conclusion on the ideal level of working capital, as the results indicated negative, positive and non-linear relationships. The following chapter presents and discusses the study's research methodology.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 INTRODUCTION

This chapter describes the research methodology that was used to carry out the research. According to Leedy and Ormrod (2015:389), research methodology is the general approach a researcher takes when conducting a research study, such as a quantitative or qualitative approach. The study employed quantitative techniques, namely panel data estimators, to answer the research questions underpinning this research effort. This chapter discusses the research design, nature, population, timescale, and sample size of the study. The data collection instruments, ethical considerations, reliability and validity of data are also described.

The remainder of the chapter is structured as follows: The empirical framework is described in Section 3.2. The research design used in the study is discussed in Section 3.3. The panel data analysis and estimation framework used in this study is described in Section 3.4. Section 3.5 describes the formal specifications tests that were used, and Section 3.6 concludes the chapter.

3.1.1. Research Paradigm

Guba (1990) asserted that research paradigm can be characterized by way scientists respond to three basic questions: ontological, epistemological, and methodical questions. In this research, post-positivism paradigm was employed. Driessnack, Sousa, and Mendes (2007) suggested that post-positivist paradigm examine cause, and how different causes interact and or influence outcomes. Post-positivist paradigm adopts the philosophy that reality can be discovered, however, only imperfectly and in a probabilistic sense. The approach is typically deductive- where most ideas or concepts are reduced into variables and the relationship between or among them are tested. They further claimed that the knowledge that results is based on careful observation and measurement and interpretation of objective reality.

This method is one in which the researcher primarily uses post positivist claims for developing knowledge such as cause and effect thinking, reduction to specific variables and hypothesis, and questions, use of measurement and observation. This approach employs strategies of inquiry such as experiments and collects data on predetermined instruments that yield statistical data (Creswell, 2009).

3.2 EMPIRICAL FRAMEWORK

In accordance with the purpose of the study to investigate the relationship between working capital management and financial performance, this section covers the empirical framework related to the study. The primary goal was to ascertain the relationship between working capital management and the financial performance of South African retail firms listed on the JSE. The study's econometric models were based on prior research on working capital management and financial performance, such as Deloof (2003); Padachi and Afrifa (2003). (2016).

Using hierarchical linear mixed estimators, Wang, Akbar, and Akbar (2020) investigated the relationship between working capital management and financial performance across the corporate lifecycle. The study's findings revealed a negative relationship between working capital management and firm performance. Similarly, Bhatia and Srivastava (2016) investigated the relationship between working capital management and financial performance in emerging economies using pooled OLS, fixed and random effect (RE) models, and the generalised method of moments on 179 firms listed on the S & P Bombay Stock Exchange. The study revealed a negative link between working capital management and firm performance. This suggests that working capital management and firm performance are inversely related.

During the period 2013-2019, Osama and Al-Gazzar (2020) conducted research in the Middle East and North Africa on the working capital management and financial performance of 134 consumer goods companies listed in 12 Middle Eastern and North African countries. The generalised method of moments (GMM) was used in the study to analyse consumer goods. According to the findings, net working capital levels have a non-linear effect on profitability when using ROA as a proxy for profitability and a insignificant effect when using ROE as a proxy for profitability.

Singh, Kumar, and Colombage (2017) found a negative relationship between working capital management and profitability in a meta-analysis study. Overall, there was an inverse relationship between CCC and profitability.

Ncube (2012) discovered a positive relationship between ACP days, CCC, and profitability in his study of the effects of working capital on the profitability of South African firms listed on the JSE using the pooled OLS regression model. This was supported further by Enow and Brijlal (2014), who used multiple regression analysis to examine the effects of working capital management on the profitability of SMEs in South Africa. According to the study's findings, there was a positive relation between ACP and profitability. CCC, on the other hand, was found to have a negative relationship with profitability.

Working capital management actions of retail firms were analysed in the current study using panel data analysis. The study employed ROA, ROE and net operating profit margin (NOPM) (dependent variables) to measure profitability. The independent variables included CCC components, namely AAI, ACP and APP. Firm size, current ratio and leverage ratio were applied as control variables that were held constant to prevent any manipulation of the conclusions of the study.

3.3 RESEARCH DESIGN

According to Salkind (2018), a research design is the technique and structure of an inquiry chosen by the researcher to collect and analyse data. The research design is the conceptual framework within which research is carried out; it serves as the blueprint for data collection, measurement, and analysis (Kothari, 2004:31). An effective and appropriate research method should be used to obtain quality and reliable results.

3.3.1 Research design approaches

Creswell (2009) distinguishes three approaches to research design: quantitative, qualitative, and mixed method. A quantitative research approach was used in this study.

3.3.1.1 Quantitative research approach

According to Babbie (2013), the quantitative research approach is a tool used to express numerical data in terms of numbers or measurements.

This method involves the researcher primarily using post-positivist claims to develop knowledge, such as cause and effect thinking, reduction to specific variables, hypotheses, questions, measurement, and observation. This method employs inquiry strategies such as experiments and collects data on predetermined instruments to produce statistical data (Creswell, 2009).

According to Walliman (2017), a quantitative research design allows for systematic investigation, measuring, quantifying, and testing of hypotheses, as well as establishing the relationship between variables. This aids the researcher in locating evidence to support or refute the hypothesis regarding the relationship between working capital management and financial performance.

Table 3.1 presents the features of the quantitative research approach.

Table 3.1 Features of the quantitative research approach

Characteristics	**Explanation**
Aim	Counting things in order to explain what is observed
Purpose	Prediction, generalizability, and casual explanations
Data collection	Structured
Output	Numbers or statistics are examples of data.
Sample	Large sample representing the population
Objective	Seek precise measurement and analysis
Researcher's role	Independent from the subject matter
Analysis	Statistical

Source: MacDonald and Headlam (2008:9)

The use of numbers allows for greater precision in reporting results, and powerful mathematical analysis methods in the form of computer software can be used (Fox & Bayat, 2008:78). This facilitates data analysis. Using quantitative research methods allows the study to be replicated, analysed, and compared to other studies.

However, there are several limitations associated with the quantitative research approach used in this study. To begin with, the quantitative research design does not consider the perspectives of individual retail firms, as opposed to the qualitative research design, which does. Second, a quantitative research strategy does not address the complexities of a phenomenon, and a large sample of the population must be studied for more accurate results (Williams, 2007:70).

3.3.1.2 Qualitative research approach

The qualitative research method is based on evaluating attitudes, behavior, and opinions. This includes non-numeric data or data that has not been quantified, according to Saunders, Lewis, and Thornhill (2016:724). It is a method for investigating and comprehending the meaning that individuals or groups ascribe to a social or human problem (Creswell, 2014:246-247). A qualitative approach is one in which the inquirer frequently makes knowledge claims based primarily on constructivist perspectives (the multiple meanings of individual experiences, meanings socially and historically constructed, with the goal of developing a theory or pattern) or advocacy/participatory perspectives (political, issue-oriented, collaborative or change-oriented)

In contrast to the quantitative research method that is typically linked with a positivist and objectivist approach, qualitative research is allied with an interpretivist and constructivist approach (Alasuutari, Bickman & Brannen, 2008:9).

3.3.1.3 Mixed-method approach

The mixed-method approach combines quantitative and qualitative data, integrating the two types of data and employing unique designs that may include philosophical assumptions and theoretical frameworks (Kumar, 2018).

The central premise of this approach is that combining quantitative and qualitative approaches yields a more comprehensive understanding of a research problem than

either approach alone. It is used when either the quantitative or qualitative research methods do not yield sufficient results.

According to Sekaran and Bougie (2013), mixed-method research aims to answer questions that quantitative and qualitative approaches alone cannot answer. The appeal of this approach is that it allows the researcher to use both inductive and deductive reasoning and more than one research method to solve a problem. The mixed-method approach, on the other hand, complicates the research design and necessitates a clear presentation to allow the reader to sort out its various components.

The purpose of this study was to investigate and analyse the relationship between working capital management and financial performance in South Africa's retail sector. A quantitative approach was used in this study to generate measurable data by employing statistical and logical techniques.

To interpret the impact of working capital management on firm performance, exploratory and quantitative techniques were used. In the empirical quantitative analysis, the exploratory analysis included the use of descriptive statistics such as means, medians, standard deviations, and correlation coefficients. Panel regression analysis was used to examine the impact of working capital management on the performance of South African listed retail firms. The descriptive research method was used because it aids in the description of a phenomenon in a study (Yahaya, 2016).

3.3.2 Population and sample description

The population of study included all retail companies listed on the JSE for a 10-year consecutive period from 2010 to 2019. A sample was drawn from all listed retail firms selected randomly for this study. Random sampling eradicates sampling bias and offers an equal chance of selection.

A sample is a subset of measurements drawn from a larger population (Welman, Kruger & Mitchell, 2005). A sample is defined as a subset of the population chosen to represent the entire population, or a subset of the population or universe.

Sampling is classified into two types: probability sampling and non-probability sampling. In this study, simple random sampling was used as a sampling technique. This sampling technique is best suited for selecting from a target population because it provided each firm with an equal chance of being chosen and eliminated sampling bias.

Table 3.2: Retail companies listed on the JSE and their codes

Company name	**Code**	**Sector**
Shoprite Holdings Ltd	SHP	Food and drug retailers
Clicks Group Ltd	CLS	Food and drug retailers
Woolworths Holdings Ltd	WHL	General retailers
Mr Price Group Ltd	MRP	General retailers
The Foschini Group Ltd	TFG	General retailers
Pick n Pay Stores Ltd	PIK	Food and drug retailers
Italtile Ltd	ITE	General retailers
Truworths International Ltd	TRU	General retailers
Cashbuild Ltd	CSB	General retailers
Lewis Group Ltd	LEW	General retailers
Wescoal Holdings Ltd	WSL	General retailers
Tradehold Ltd	TDH	General retailers
PBT Group Ltd	PBG	General retailers
Nictus Ltd	NCS	General retailers
Imbalie Beauty Ltd	ILE	General retailers
Massmart Holdings Ltd	MSM	Food and drug retailers

Source: Researcher's own compilation

3.3.3 Data sources

The study sought to investigate the relationship between working capital management and the financial performance of JSE-listed retail firms. The financial statements of South African retail firms listed on the JSE were used to compile the data for this study over a 10-year period. The information came from the Orbis database. The JSE firms were deemed favourable due to the availability and dependability of data derived from financial statements, which are audited by recognized audit firms and highly professional personnel in accordance with International Financial Reporting Standards.

3.3.4 Variable measurements

In light with the research objectives, the proxies employed for the dependent variable as well as independent variables used in this study and their measurement are discussed next.

3.3.4.1 Dependent variables (exogenous)

Profitability ratios were used as dependent variables to assess the firms' financial performance. The three profitability proxies used in the study were return on assets, return on equity, and net operating profit margin. The calculations for the dependent variables are as follows:

(i) Return on assets

This ratio denotes the percentage of a firm's assets that are profitable in terms of generating revenue. The higher the ratio, the higher the ROA as measured by total assets, and the lower the ratio, the lower the ROA as measured by total assets.

$$ROA = net\ income \div total\ assets \times 100$$

(ii) Return on equity

This is a profitability metric that indicates the shareholder's return on capital invested. It simply refers to how much profit each rand is generating from the shareholders' equity. This is a key metric used by potential investors to gauge how efficient a firm

can generate net income from its funds. More so, it indicates how efficient management can use equity financing to fund operations and grow the business.

$$ROE = net\ income \div total\ equity \times 100$$

(iii) Net operating profit margin

The firm's NOPM, also known as the 'return on sales', indicates how well it is being managed and how risky it is. It is a profitability measure used to calculate the percentage of profit a company produces from its operations. A higher NOPM symbolises that a firm is more efficient in converting sales into actual profit, and the reverse holds for a lower NOPM.

$$NOPM = EBIT \div total\ revenue$$

Where:

NOPM= Net operating profit margin

EBIT= Earnings before interest and taxes

3.3.4.2 Independent variables (endogenous)

An independent variable is the factor that is deliberately varied, manipulated or selected by the researcher to determine its relationship to an observed phenomenon (Brynard & Hanekom, 2006). The independent variables used in this study are discussed further below, including the average age of inventory, the average collection period, and the average payment period.

(i) Average age of inventory

This demonstrates how long it takes a firm to sell its inventory. It is a useful measure for assessing the market risk of a firm. The longer it takes to sell the product, the higher the risk to become obsolete. For any given firm to operate efficiently and maintain a high level of working capital, a considerable inventory should be available to meet customers' needs, while minimising unnecessary inventory that ties up working capital for a long period before it is transformed into cash.

$$AAI = inventory \div 365$$

(ii) Average collection period

This ratio indicates the period between the dates of credit sale and when the payment is received. This measure is useful for evaluating credit and collection policies. A lower ACP is more preferred than a higher ACP. The lower ratio indicates that a firm is

collecting payments faster and that it has strict credit policies. On the other hand, the higher ratio symbolises those payments are collected at a slow rate due to relaxed credit terms. It is imperative to ensure that a firm has a favourable collection policy to mitigate cash flow dilemmas, as it shows the liquidity of the firm's accounts receivable.

$$ACP = accounts\ receivable \div net\ sales \times 365$$

(iii) Average payment period

This metric counts the number of days it takes a firm to pay its trade payables or creditors. It also indicates how well a firm is managing its short-term liabilities (accounts payable). The higher the ratio, the better credit terms a firm obtains from suppliers and vice versa.

$$APP = accounts\ payable \div cost\ of\ sales \times 365$$

3.3.4.3 Control variables

A control variable is one that does not change in order to analyse or clarify the relationship between two other variables. The following control variables were used in the study:

(i) Leverage

This is the amount of debt a firm uses to finance its assets. It is a measure of a company's risk. The two most commonly used leverage measures are as follows:

- Debt ratio: The debt ratio indicates the percentage of a firm's assets that are financed by external debt. Many studies, including those by Deloof (2003), Raheman and Nasr (2007), and Sharma and Kumar (2008), used this ratio as a control variable (2011).

$$Debt\ ratio = total\ debt \div total\ assets$$

- Debt-to-equity ratio: This assesses debt relative to equity. When a firm depends more on debt than on equity, it is more likely exposed to risk. Higher debt is positively correlated with cash outflows, therefore upsurges the chances of liquidity risk.

$$Debt - to - equity\ ratio\ = total\ debt \div total\ equity$$

(ii) Firm size

This is the logarithm of total assets of any given firm. It is assumed that as the company grows, its sales also increase. Bigger firms require more working capital than smaller ones. Niresh and Thirunavukkarasu (2014) postulate that the size of the firm is one of the main factors in determining a firm's profitability. This is rooted in the concept of economies of scale, which was founded on the traditional neoclassical view of working capital management. As businesses grow, their unit costs start to fall due to bulk buying, which reduces costs and increases the profit margin.

$$\textit{Firm size} = \ natural\ logarithm\ of\ total\ assets$$

(iii) Current ratio

This is a liquidity measure that indicates whether a firm has current assets to cover its short-term financial obligations. It evaluates current assets relative to current liabilities. In many instances, investors prefer firms with a higher current ratio than those with a lower current ratio, as such a firm is more likely to settle its creditors.

$$Current\ ratio\ = current\ assets \div current\ liabilities$$

3.4 PANEL DATA ANALYSIS

The researcher used panel data analysis in this study to elucidate the relationship between working capital management and financial performance, as well as to test whether a relationship exists between the two variables. Panel data regression allowed a combination of the information from both a cross section of the retail sector and across time from 2009 to 2019 and hence made the data more generalisable and informative, and provided more degrees of freedom, less collinearity and high efficiency (see Brooks, 2008). Panel data analysis advantages, limitations as well as models are discussed on the following sections.

3.4.1 Advantages of panel data analysis

Panel data analysis has the following advantages according to Baltagi (2008:6–8) :

- Panel data provide more informative data, greater variability, less collinearity among variables, greater degrees of freedom, and greater efficiency.
- Panel data are better suited than cross-sectional data for studying the dynamics of change.

- Panel data analysis is better in detecting a measuring effect that cannot be observed in either cross-sectional or time series data.
- Panel data analysis is suitable because it can minimise or eradicate the effects of aggression bias from aggregating firms or individuals into groups.
- Panel data analysis allows one to study constructs and test more complicated behavioural models than purely cross-sectional or time-series data.
- Panel data analysis may take explicit account of individual-specific differences. Panel data imply that firms, countries, or individuals are heterogeneous, as opposed to time series or cross-sectional data, which do not account for heterogeneity and may yield biased results.

3.4.2 Limitations of panel data analysis

Despite the fact that panel data analysis is used to explain the relationship between working capital management and financial performance, it has some limitations. The following are the limitations of the panel data analysis:

- This analysis entails data collection drawbacks related to sampling, coverage, design as well as non-response.
- Measurement errors may arise due to faulty responses due to unclear questions, memory errors or deliberate distortion of responses.
- Macropanels based on countries or regions with long time series that do not account for cross-country dependence may produce misleading results.
- Typical micro panels involve annual data covering a short time span for everyone. This means that asymptotic arguments rely crucially on the number of individuals tending to infinity.
- Selectivity problems such as self-selectivity, non-response and attrition may be encountered.

Having weighed the benefits and shortcomings of panel data, the researcher concluded that panel data were more suitable for the research. The study's main advantage was that it controlled for panel heterogeneity in the sample of retail firms,

ensuring that the researcher's inferences were not biased. The primary advantage of a panel data set over a cross section is that it provides the researcher with a great deal of flexibility in modelling differences in behaviour across individuals (Greene, 2012). Greene (2012) defines the general modelling framework for analysing panel data as the following regression model:

$yi,_t = \boldsymbol{x}i, t'\boldsymbol{\beta} + \boldsymbol{z}i'\boldsymbol{\alpha} + \varepsilon i, t$ ..... [Equation 3.1]

$= \boldsymbol{x}i,t'\boldsymbol{\beta} + ci + \varepsilon i,t$

Where:

$y_{i,\,t} =$ dependent variable observed for individual **i** (entity) at time **t**

$\boldsymbol{x}i,\ t =$ independent variable

$\boldsymbol{\beta} =$ coefficient for independent variable

$\boldsymbol{\alpha} =$ unknown intercept for each entity

$\boldsymbol{z}i =$ a constant term and a collection of individual or group-specific variables that can be observed

$\varepsilon i,\ t =$ error term.

3.4.3 Panel data models

Panel data models are classified into three types according to (Greene, 2012:386–387):

- Fixed effect (FE) model
- RE model
- Pooled OLS.

The research objective of the study and data guided the model. More so, a diagnostic test was carried out to choose the best model.

3.4.3.1 Fixed effect model (least square dummy variable model)

This is a statistical model with fixed or non-random model parameters. This is in contrast to RE and mixed models, which consider all or some of the model parameters to be random variables. The FE model examines the relationship between predictor and outcome variables within an entity (country, person, company, etc.). Each entity has its own individual characteristics that may or may not influence the predictor variables (Torres-Reyna, 2007).

When unobserved heterogeneity remains constant over time or is correlated with regressors, the FE model has a greater influence on control.

FE model:

$y_{i,\,t} = \boldsymbol{x}i,\, t'\boldsymbol{\beta} + \alpha i + \varepsilon i,\, t$ ..... [Equation 3.2]

If $\boldsymbol{zi}$ is unobserved but correlated with $\boldsymbol{x}ii$, then the least squares estimator of **β** is biased and inconsistent because of an omitted variable. If the unobserved variable does not change over time, then any changes in the dependent variable must be due to influences other than these fixed characteristics.

Where:

$y_{i,\,t}$ = dependent variable observed for individual i at time t

$\boldsymbol{\beta}$ = k × 1 matrix of parameters

$\boldsymbol{x}_{i,\,t}$ = time variant 1 × k (number of independent variables) regressor vector

α_i = unobserved time-variant individual effect

$\varepsilon_{i,\,t}$ = error term.

3.4.3.2 Random effect model

The RE model considers the variation across entities to be random and uncorrelated with the independent variables included in the model (Torres-Reyna, 2007). The important distinction between the FE and RE models is whether the unobserved individual effect embodies elements that are correlated with the regressors in the model, not whether these effects are stochastic or not (Greene, 2008:183).

Because the RE model assumes that the entity's error term is uncorrelated with the predictors, time-invariant variables can serve as explanatory variables (Torres-Reyna, 2007).

Kouassi, Kandem, Mougoue, and Brou (2014) demonstrated that a RE model is chosen when there is no correlation between the individual specific effects and the explanatory variables. However, when the differences are reflected on the dependent variable, the REs become more appropriate.

RE model:

$yit = \beta xit + \alpha + ui,t + \varepsilon it$ ..... [Equation 3.3]

Where:

$u_{i,t}$ = between-entity error

ε_{it} = within-entity error.

3.4.3.3 Pooled ordinary least squares

OLS regression is a generalised linear modelling technique that, as the name suggests, models linear relationships (Hutcheson, 2011). This model is used in estimating the unknown parameters in a linear regression model.

OLS model specification:

$yi,t = xi,t'\beta + \alpha + \varepsilon i,t$ ..... [Equation 3.4]

Pooled models are based on the assumption that regressors are independent. If $\boldsymbol{zi}$ only contains a constant term, the OLS provides consistent and efficient estimates of the common and slope vectors **β** (Greene, 2012).

3.4.4 Model specification

This study sought to explore the relationship between working capital management and the financial performance of retail firms listed on the JSE. To determine the effect of working capital management on financial performance, panel data regression analysis was used. Financial performance was proxied by ROA and ROE as well as NOPM as the dependent variables, and measures of profitability were evaluated. Working capital management was proxied by CCC, which consisted of ACP plus AAI minus APP. The control variables in this study were leverage, firm size and current ratio as this affect profitability as well. The empirical framework that was adopted in this study is specified in the following equations:

Model 1: ROA = $\beta_0 + \beta_1 AAI_{it} + \beta_2 ACP_{it} + \beta_3 APP_{it} + \beta_4 LEV_{it} + \beta_5 SIZE_{it} + \beta_6 CR_{it} + \varepsilon_{it}$ ..... [Equation 3.5]

Model 2: ROE = $\beta_0 + \beta_1 AAI_{it} + \beta_2 ACP_{it} + \beta_3 APP_{it} + \beta_4 LEV_{it} + \beta_5 SIZE_{it} + \beta_6 CR_{it} + \varepsilon_{it}$ .....[Equation 3.6]

Model 3: NOPM = $\beta_0 + \beta_1 AAI_{it} + \beta_2 ACP_{it} + \beta_3 APP_{it} + \beta_4 LEV_{it} + \beta_5 SIZE_{it} + \beta_6 CR_{it} + \varepsilon_{it}$ ..... [Equation 3.7]

Model 4: ROA = $\beta_0 + \beta_1 CCC_{it} + \beta_2 LEVit + \beta_3 SIZEit + \beta_4 CRit + \varepsilon_{it}$ ..... [Equation 3.8]

Model 5: ROE = $\beta_0 + \beta_1 CCC_{it} + \beta_2 LEVit + \beta_3 SIZEit + \beta_4 CRit + \varepsilon_{it}$..... [Equation 3.9]

Model 6: NOPM = $\beta_0 + \beta_1 CCC_{it} + \beta_2 LEVit + \beta_3 SIZEit + \beta_4 CRit + \varepsilon_{it}$ ..... [Equation 3.10]

The explanation of the variables used in the study are explained in table 3.3.

Table 3.3: Explanation of variables

Variables	Type of variable	Description	Measurement
ROA	Dependent	Return on assets	$Net\ income \div total\ assets$
ROE	Dependent	Return on equity	$Net\ income \div total\ equity$
NOPM	Dependent	Net operating profit margin	$EBIT \div total\ revenue$
AAI	Independent	Average age of inventory	$Cost\ of\ goods\ sold \div inventory \times 365\ days$
ACP	Independent	Average collection period	$Accounts\ receivable \div net\ sales \times 365$
APP	Independent	Average payment period	$Accounts\ payable \div cost\ of\ sales \times 365$
CCC	Independent	Cash conversion cycle	$AAI + ACP - APP$
SIZE	Control	Firm size	$Logarithm\ of\ total\ assets$
LEV	Control	Leverage	$1 - equity \div total\ assets$
CR	Control	Current ratio	$Current\ assets \div current\ liabilities$
E		Error term	$Standard\ error\ term$
I		Cross-sectional dimensions	$Ranging\ from\ 1\ to\ 10$
T		Time-series dimensions	$Ranging\ from\ 1\ to\ 10$
B_0, β_1, β_2, β_3, β_4, β_5, β_6, β_7		Regression coefficients	

3.5 FORMAL TESTS OF SPECIFICATION

Several tests were carried out to ensure that the estimated models were robust and well specified. The Hausman specification test, the multicollinearity test, the Breusch-Pagan Lagrange multiplier (LM) test, the applied Chow test, the modified Wald test, and the cross-sectional dependence test were among them.

3.5.1 Hausman specification test (1978)

A Hausman specification test, as recommended by Brooks (2008), was used to select the appropriate model specification and estimate the regression equation This test helps to decide whether to apply the FE or the RE model. The Hausman specification test was set below the 5% level of significance to find the suitability application models (see Greene, 2008).

The FE model's fundamental discourse is that if the unobserved variable does not change over time, any change in the response variable must be due to other elements (Gujarati, 2003). Inconsistent with the RE model, the variation across entities is assumed random and uncorrelated with the predictor in the model, enabling time-invariant characteristics to be included in the model as predictors (Gujarati, 2003).

The null hypothesis was that the preferred model is the RE model, while the alternative hypothesis was that the model was fixed. The Hausman specification test can be used to differentiate between the FE model and the RE model in panel analysis.

	H_0 is true	H_1 is true
B_1 (RE estimator)	Consistent Efficient	Inconsistent

B_0 (FE estimator)	Consistent Inefficient	Consistent

If the null hypothesis was true, the RE model would have been the most appropriate model, but if the null hypothesis was rejected, the FE model would have been the most suitable model to be used in the study. The hypotheses were stated as below:

$$H0: E(Xit) = 0$$
$$HA: E(Xit) \neq 0.$$

3.5.2 Multicollinearity tests

The presence of high intercorrelations between two or more independent variables in a multiple regression model is referred to as multicollinearity. According to Williams (2015), a value closer to 1 indicates slight multicollinearity, but a value closer to 0 indicates that multicollinearity may be a problem. Multicollinearity is a problem because it undermines an independent variable's statistical significance. The researcher increased the sample size and removed one or more of the highly correlated independent variables to avoid multicollinearity. The presence of multicollinearity in the data made it difficult to reject any study's null hypothesis.

3.5.3 Breusch-Pagan LM test

Trevor Breusch and Adrian Pagan developed the Breusch-Pagan test in 1979 to test for heteroskedacity in a linear regression model. The Breusch-Pagan LM test is used to assess homoscedasticity and serial correlation. For this test, the null hypothesis was that the variance of the error term was equal. The alternative hypothesis was that the error term's variance was not equal. The hypotheses were stated as follows:

H_0: $\delta\mu 2 = 0$ (constant variance across firms)

H_A: $\delta\mu 2 \neq 0$.

3.5.4 Applied Chow test

The applied Chow test is used to determine whether the pooled effect or FE model is the most appropriate to use in estimating panel data. The applied Chow model tests whether the coefficients estimated over a group of the data are equal to the coefficients estimated over another group.

$H_{0:}$ Pooled effect model

H_A: FE model.

The hypotheses of the applied Chow test were as follows:

H0: $\alpha 1 = \alpha 2 = \alpha n - 1 = 0$ (There are no individual effects: All cross sections have the same intercept.)

HA: $\alpha 1 \neq \alpha 2 \neq \alpha n - 1 \neq 0$.

The test statistic is calculated as follows, according to Baltagi (2005:55):

Where:

$F = \frac{RRSS - URSS}{N-1} \div \frac{URSS}{NT-N-K} \sim F(N-1), (NT - N - K)$ ..... [Equation 3.11]

RRSS = restricted residual sum of squares being that of OLS on the pooled model

URSS = unrestricted residual sum of squares being that of LSDV regression.

The null hypothesis would have been rejected if F > F_{crit}. As a result, the FEs were valid, and the firms were heterogeneous and should not have been pooled. Furthermore, if the null hypothesis was rejected, the pooled OLS estimation framework would also have been rejected and the researcher would have proceeded to estimate using FEs.

3.5.5 Modified Wald test

To determine whether the residual in the estimated FE model is homoscedastic, the modified Wald test is used. The modified Wald test null hypothesis assumption was that the coefficients of the omitted variable were equal to zero.

The following hypotheses present the modified Wald test:

H_0: $\delta i2 = \delta$ for all *i* (constant variance)

H_0: $\delta i2 \neq \delta$ for all *i*.

3.6 CHAPTER SUMMARY

This chapter described the research methodology used to carry out this study. The chapter first discussed the empirical framework and research design, describing and elucidating the variables, data sources, population, and sample. The use of panel data analysis, as well as panel data models, was highlighted in the chapter. Finally, the model specifications for selecting the best model for the study were explained. The following chapter presents and discusses the study's empirical findings

CHAPTER 4

RESEARCH FINDINGS AND DISCUSSION

4.1 INTRODUCTION

The empirical results of statistical and econometric tests conducted to investigate the relationship between working capital management and the financial performance of retail firms listed on the Johannesburg Stock Exchange (JSE) in South Africa are presented and discussed in this chapter. Predominantly, four objectives resolved. The first objective was to establish a link between AAI and the financial performance of South African retail firms. The objective goal was to determine whether ACP had an impact on the financial performance of South African retail firms. The third objective was to determine whether average payment had an impact on the financial performance of South African retail firms. The fourth objective was to test whether CCC had an impact on the financial performance of South African retail firms. To conduct the analysis, panel data econometric techniques were employed.

The remainder of the chapter is organised as follows: Section 4.2 examines the descriptive statistics of the variables used in the study and describes trends over time. The correlation matrix is presented and discussed in Section 4.3. The diagnostic tests used, and the panel regression models used are discussed in section 4.4, and the section also presents the study's empirical findings. Section 4.5 presents and discusses the study's empirical findings in relation to previous research. Section 4.6 concludes the chapter with a summary.

4.2 DESCRIPTIVE STATISTICS

This section summarises the descriptive statistics for all variables used in the study. For the dependent, independent, and control variables, descriptive statistics were computed. The data set comprised 160 observations. The dependent variables were measured by ROA, ROE and NOPM in order to assess how efficient the South African

retail firms were in generating profits, assets and shareholder value. The metrics for working capital management, which included AAI, ACP, APP, and CCC, were used as independent variables in the study.

Table 4.1 shows the descriptive statistics for the variables' central measures of tendency, such as mean, median, standard deviation, minimum and maximum values, as well as skewness and kurtosis, for the sample of retail firms under consideration

Table 4.1: Summary of descriptive statistics

Variable	Mean	Median	Standard deviation	Minimum	Maximum	Skewness	Kurtosis	Observations
NOPM	0.0710	0.0634	0.2170	-0.9644	0.6660	-1.8370	11.2731	160
ROA	0.0863	0.0877	0.1260	-0.5256	0.3312	-1.5731	9.2389	160
ROE	0.2023	0.2169	0.2777	-1.2907	2.1256	0.4917	22.2737	160
CCC	81.82	28.51	117.99	-65.10	611.00	2.0454	7.6654	160
ACP	81.32	36.00	112.62	3.00	677.00	2.63	11.44	160
AAI	38.62	41.36	23.58	0	127.62	0.433	3.460	160
APP	34.81	33.00	19.40	0	103.00	0.5006	3.1241	160
LEV	0.5275	0.5550	0.2252	0.0900	0.9300	-0.2028	1.9980	160
CR	2.06	1.34	1.45	0.53	6.82	1.27	3.68	160

The average ROA for South African retail firms listed on the JSE was 8.96 percent, which means that every rand invested in assets generated R8.96 in earnings. South African retail firms achieved a maximum ROA of 33.12 percent and a minimum ROA of -52.56 percent. The distribution of ROA for South African retail firms was skewed to the left (-1.58), indicating the distribution was negatively skewed. The standard deviation of 13.34 percent indicated that there was no significant variation in the distribution of this measure. The wide range in ROA might have been due to different asset structures used by the retail firms as well as different revenues.

The South African retail firms recorded an ROE of 21.63% on average, which showed efficiency in the use of shareholders' capital. The standard deviation and maximum and minimum values were 29.33%, 212.56% and -129.07%, respectively, and were positively skewed (0.35). The ROE differed from firm to firm due to different equity and net incomes, hence the great range in the study. Mabandla (2018) found a mean of 16 percent in an analysis of the relationship between working capital management and the financial performance of food and beverage firms in South Africa, which is almost similar to the current study. More so, the South African retail firms in the current study achieved an NOPM of 4.42% on average. Furthermore, the results documented a range from -96.44% to 27.75 in comparison with the study of Garg and Gumbochuma (2015), who reported a range from -50.09% to 29.45% in listed South African retail firms.

From these findings, it appears that the ROE achieved by South African retail firms was higher and above both the ROA and the NOPM as profitability measures. This indicates that South African firms were using shareholders' equity effectively and resourcefully to generate income. Furthermore, based on the descriptive statistics presented in Table 4.1, firms in the retail sector under study achieved positive returns over a 10-year period from 2010 to 2019.The results showed that South African retail firms took 49.81 days on average to collect from debtors. This means that the retail firms had to wait for more than a month after their credit sales. The standard deviation of the ACP experienced by South African retail firms was 52.92 days with maximum and minimum values of 299 days and 3 days, respectively. Kasozi (2017) found nearly the same number, reporting that the ACP for listed South African manufacturing firms was on average 48.99 days, with a maximum value of 172.32 days and a minimum value of 0.3920 days. AAI, which measures how long it takes to sell the goods

recorded by South African retail firms, was on average 42.08 days, with 0 minimum days and a maximum of 127.62 days. This range is relatively large and could result in the CCC being large as well. AAI varies depending on the nature of the goods sold; for example, a grocery retail store turns inventory quickly in comparison to a furniture store. The zero minimum AAI days could be explained by some companies embracing the just-in-time stock management policy.

The mean value of the APP reported by South African retail firms was 37.77 days, with a median value of 35.97 days. What stands out is that the mean and median values were almost identical, indicating a symmetrical data distribution. The minimum value of the APP recorded by South African retail firms was 4 days, yet on the other hand, 103 days was the maximum value recorded. The standard deviation of 17.96 days did not suggest a wide variation. A prolonged APP could result in damaging the reputation of the firm with its creditors.

On average, the South African retail firms achieved a CCC of 49.95 days, with minimum and maximum values ranging from -65.10 days to 358.41 days, respectively. This implies that there was a high variability in CCC, perhaps because of the different credit policies of the retail firms. A negative CCC could be since firms were collecting from customers before paying their suppliers.

Figure 4.1 depicts the trends in NOPM for the 10-year consecutive period from 2010 to 2019 for South Africa retail firms.

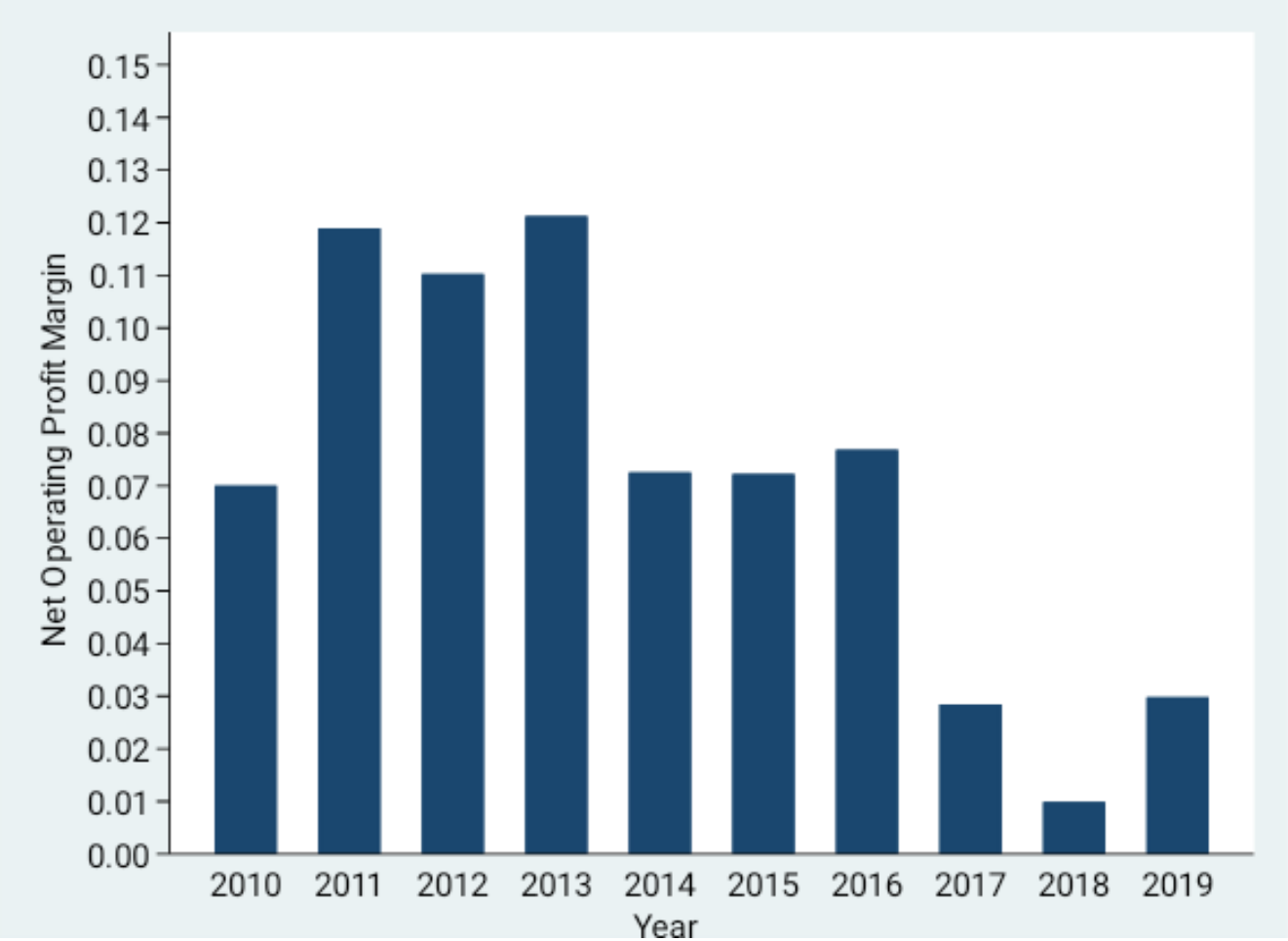

Figure 4.1: Trends in net operating profit margin

Source: Researcher's own compilation

The sector reported a positive NOPM from 2010 to 2019. The NOPM displays the amount of net profit earned for every rand of revenue gained. The typical NOPM of a firm varies by industry and firm size. Positive returns were realised with a peak in 2013 and a low in 2018.

In 2010, South African retail firms achieved a 7% NOPM on average. The NOPM went up from 7% in 2010 to 12% in 2011. As depicted in Figure 4.1, there was a fluctuation in the NOPM between 2011 and 2013. Following a fluctuation in the NOPM, it ended in 2013, thereafter a decline was experienced in 2014 relative to the three preceding years. This necessitates firms increasing their revenue or decreasing their cost of goods sold. In the two years ending 2015, the NOPM remained constant, close to 7%. Compared to the previous three years, a rapid fall in the NOPM was experienced in 2017. This may be due to a decline in real gross domestic product, which affects the purchasing power of consumers, and which might lead to a decline in revenues. Furthermore, the declining trend continued until 2018.

Figure 4.2 depicts the trends in ROA of South African retail firms for the period under consideration.

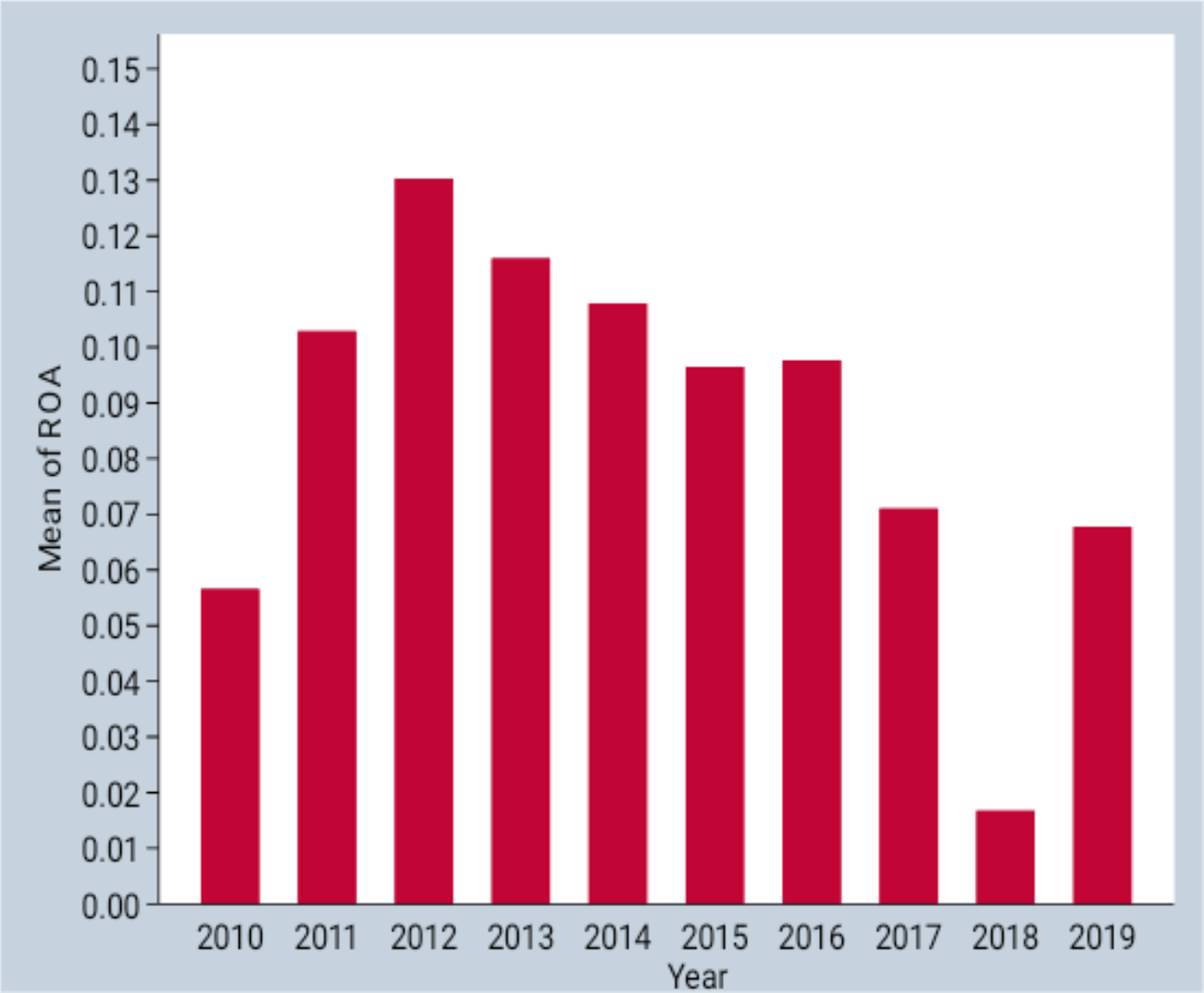

Figure 4.2: Trends in return on assets

Source: Researcher’s own compilation

The figures are given as percentages of ROA. Overall, ROA was positive during these years, which shows the efficient use of assets to generate revenue. When examining the trends over time, it is evident that from 2010 to 2012, ROA increased dramatically from 5.8% to 13% (the highest ROA recorded for a 10-year period). This could be due to economic growth experienced during this period, which resulted in enhanced sales and therefore increased revenues. However, after reaching its peak in 2012, ROA slowed down from 2012 until 2015. Between 2016 and 2018, there was a decline in ROA, which may be attributed to reduced profit levels.

The trends in ROE for the South African retail firms are presented in Figure 4.3

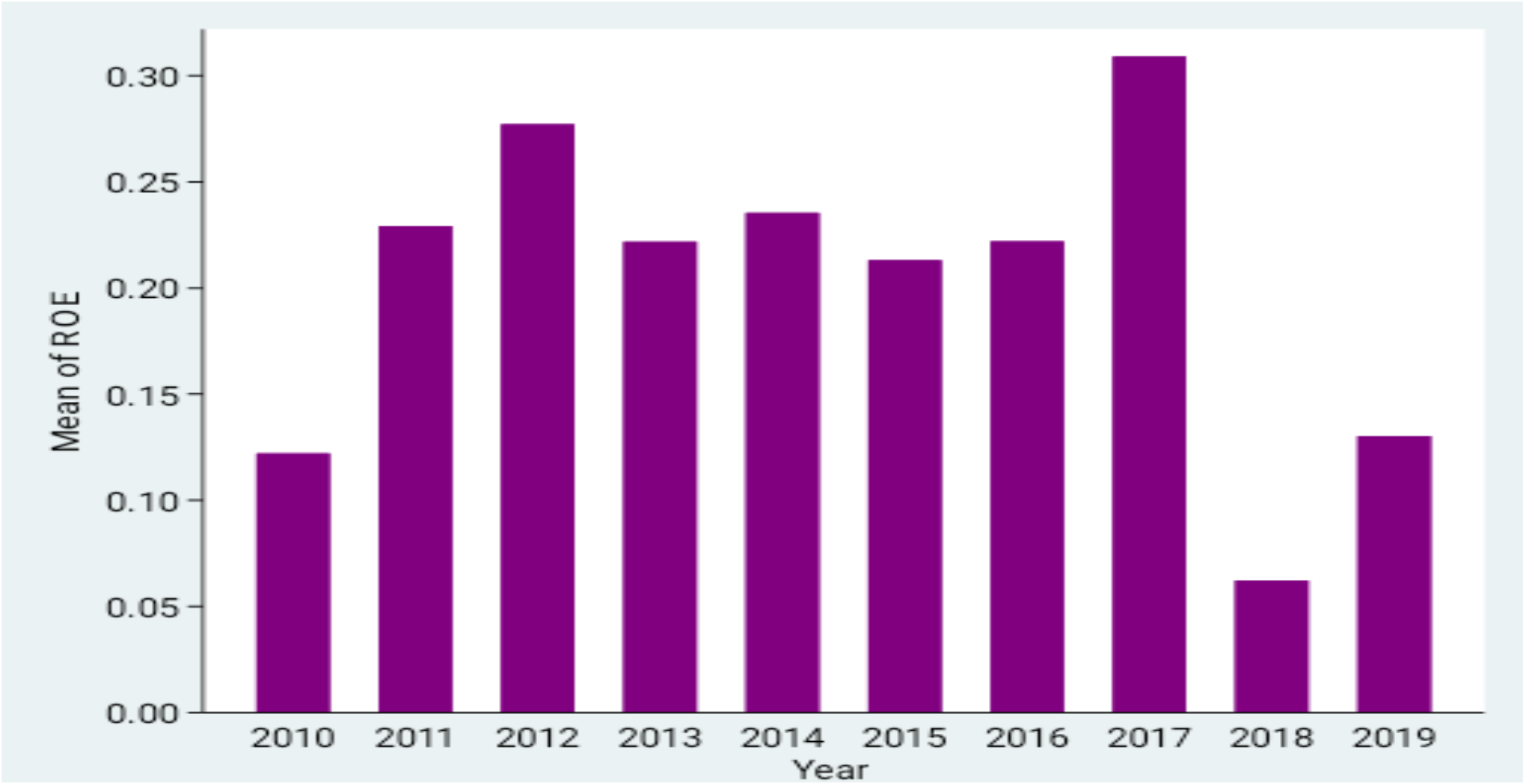
Mean of ROE
0.30
0.25
0.20
0.15
0.10
0.05
0.00
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
Year

Figure 4.3: Trends in return on equity

Source: Researcher's own compilation

It is evident that a positive ROE was achieved over the period under study by the South African retail firms. There was a positive steady trend in ROE throughout the study period. The positive ROE is indicative that retail firms were efficient at using equity to realise income and grow the shareholders' capital invested in the firms. ROE ranged from 6% to 32%, with the highest recorded in 2017 and the lowest in 2018. Between 2010 and 2011, a rise in ROE from 12.5% to 23% was experienced. In 2012, the ROE for the sector grew by 4%, but slowed down to 22% in 2013 and grew slightly by 2% in 2014. During the 2015 fiscal year, the average ROE lowered to 21%. The ROE of 2016 was levelled with that of 2013 at 22%. The South African retail firms recorded their peak ROE in 2017 at 32%, a significant increase of approximately 10% compared to all other years. The retail firms' ROE was significantly lower in 2018 at 6% – the highest margin in the drop for the study period. A decline in ROE could be because of an increase in debt, in other words equity is equal to assets minus liabilities, therefore an increase in debt reduces equity, which is the denominator in ROE. Thereafter, in 2019, an increase in ROE was realised with approximately 14% in 2019.

Leverage indicates the amount of debt applied by a company to finance assets. The trend in leverage is depicted in Figure 4.4, the least being 2012 and 2013 at 48% and the highest being 2016 at approximately 57%. The figure displays that South African retail firms' leverage ratio was more than 50% for the period under review, except in 2012 and 2013, which recorded almost 48% – nearly half of the firms' assets were financed by debt.

The trend shows a steadily increase in the use of debt to finance company assets from 48% in 2013 until it reached its peak of 57% in 2016 and then fell to a low of 51% in 2017, before it increased again to 52% in 2018. However, the trend was reversed slightly in 2019, but the debt ratio remained above 50%. This could be because of an increased use of retained earnings to finance the firms' assets.

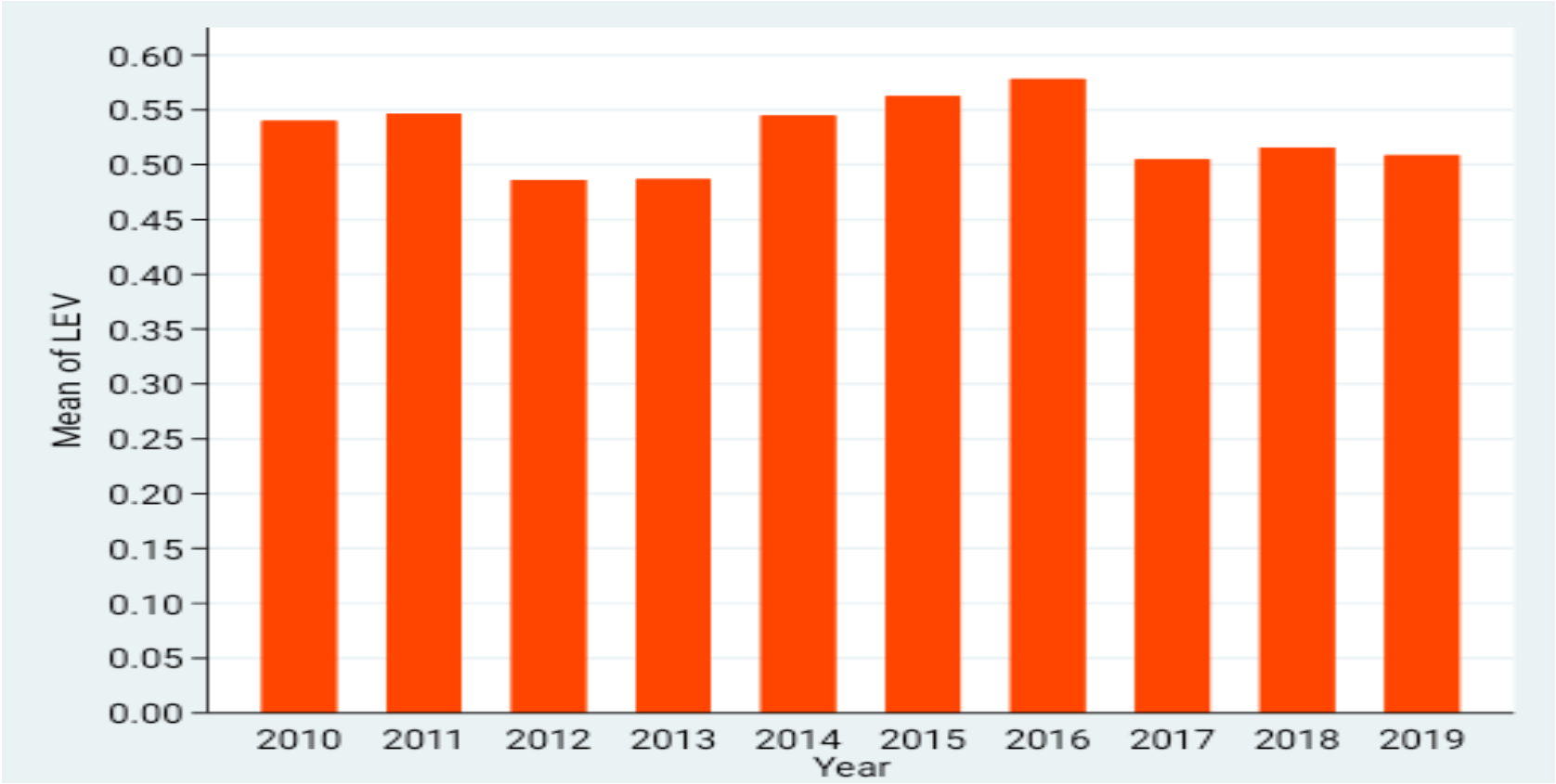

Figure 4.4: Trends in leverage

Source: Researcher's own compilation

The movements of CCC and its components over a ten-year period is depicted in Figure 4.5

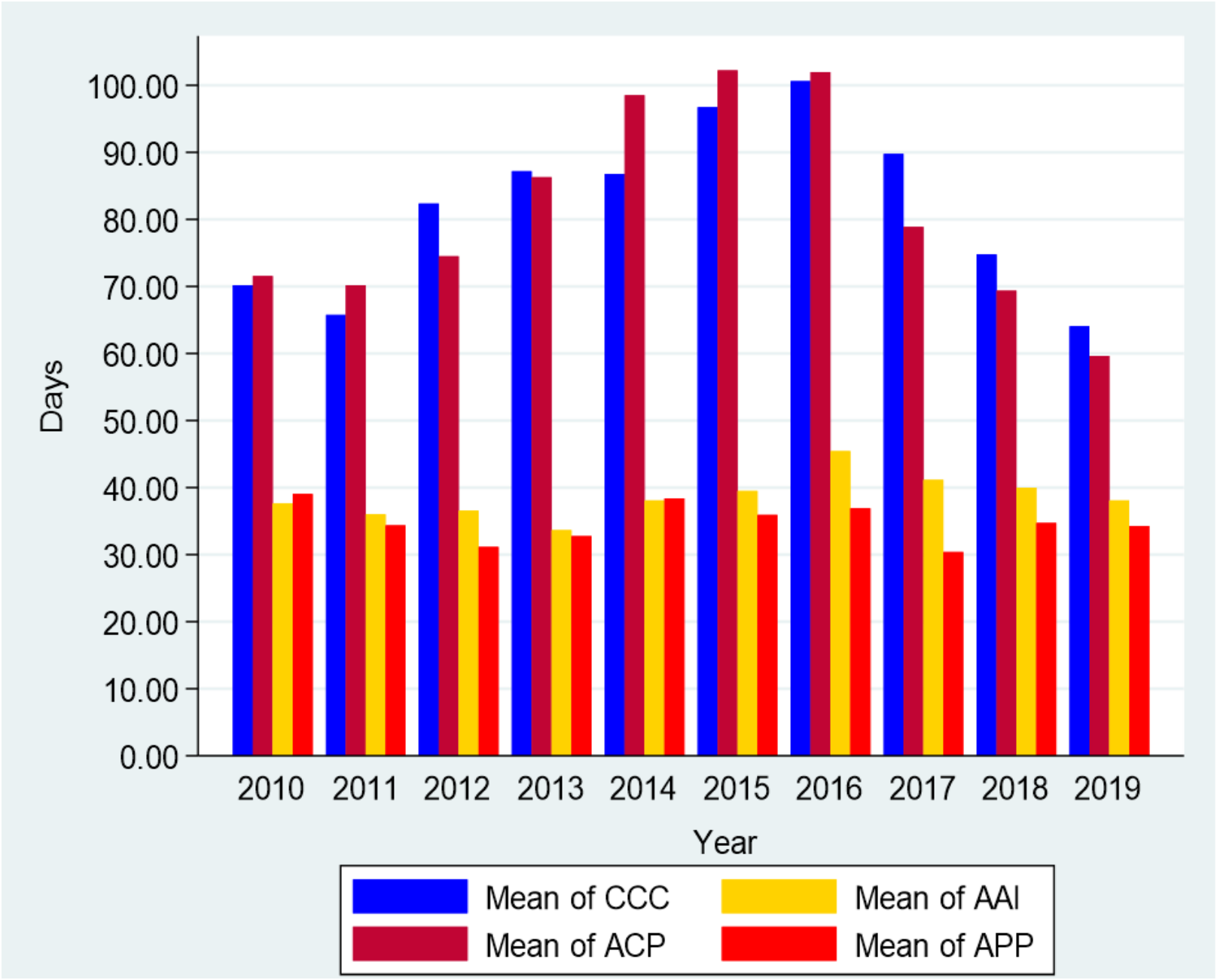
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Days
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
Year
Mean of CCC
Mean of AAI
Mean of ACP
Mean of APP

Figure 4.5: Trends in cash conversion cycles and their constituents

Source: Researcher's own compilation

The highest mean of CCC was reported in 2016 with 100 days and the lowest in 2019 with 65 days. The main reason for a higher CCC is because of a higher ACP. Furthermore, a higher CCC indicates that working capital is being held for an extended period and that the firm is experiencing illiquidity.

Figure 4.5 demonstrates that ACP recorded its highest in 2015 with 102 days and the lowest in 2018 with 69 days. AAI reached its highest days in 2016 and the lowest in 2013. APP was recorded highest in 2010 and 2017 (30 days).

From Figure 4.5, the CCC had an upward trend from 2010 until 2016. An increase in CCC was due to a high ACP. However, from 2016 until 2019, there was a downward trend in CCC. This could be attributable to a lower ACP and AAI, which was accompanied by a lower APP.

4.3 CORRELATIONAL ANALYSIS

The correlational matrix for the relationship between working capital management and financial performance of South African retail firms listed on the JSE is presented in this section. Correlational analysis is a bivariate statistical technique that assesses the strength and direction of a relationship between two sets of variables (Baltagi, 2005). The correlation coefficient's value can range between +1, indicating a strong positive association between two variables, and -1, indicating a negative perfect association between two variables. According to Baltagi (2005), a statistical significance test yields a p-value, which expresses the likelihood that the result could be explained by chance.

A correlation matrix was created to dissect the variables for multicollinearity in order to determine whether they were highly correlated with each other (multicollinearity). Likewise, the correlation coefficient among the independent variables was less than 0.005, therefore there was no problem of multicollinearity among them.

Table 4.2 displays the correlation matrix for all variables included in the analysis, which was based on data from 160 observations collected between 2010 and 2019.

Table 4.2 CORRELATION MATRIX FOR THE MAIN VARIABLES USED IN THIS STUDY

	NOPM	ROA	ROE	CCC	ACP	AAI	APP	SIZE	LEV	CR
NOPM	1.0000									
ROA	0.3748***	1.0000								
ROE	0.2693***	0.5775***	1.0000							
CCC	0.0301	0.0060	-0.1231	1.0000						
ACP	0.0092	-0.0393	-0.1381*	0.9530***	1.0000					
AAI	-0.4558***	0.0148	-0.0616	-0.0422	-0.2041***	1.0000				
APP	-0.1750***	-0.1320	-0.0490	-0.4902***	-0.3543***	0.0452	1.0000			
SIZE	0.1002	0.3590***	0.3429***	-0.2696***	-0.2674***	0.0052	0.2631***	1.0000		
LEV	-0.3503***	-0.2811***	-0.0376	-0.2970***	-0.1964**	0.0655	0.4438***	0.2086***	1.0000	
CR	0.3045***	0.3609***	0.0913	0.5088***	0.4395***	-0.0884	-0.4689***	-0.0173	-0.8068***	1.0000

*, ** and *** indicate the 10%, 5% and 1% level of significance, respectively

Source: Researcher's own compilation

CCC and ROA had a non-significant positive association with a coefficient of 0.0060. As a result, effective CCC management boosts profitability. These findings back up the findings of Louw et al. (2016) and Kasozi (2017), who found a positive relationship between CCC and ROA. In this study, an inverse relationship between CCC and ROA was predicted.

The study's findings also revealed a negative correlation between CCC and ROE, though the relationship was found to be insignificant. The findings disclosed that if firms increased their CCC, ROE moved to the opposite direction. The results vary from *a priori* expectations.

According to the correlation matrix, the relationship between ACP and ROE was negative, and the result was statistically significant at the 1% level of significance. This shows that an increase in any one of the CCC components by firms reduces the profitability as measured by ROE. Furthermore, ACP was discovered to be negatively related to ROA. At the 5% level of significance, the relationship between ROA and APP was statistically significant, whereas the relationship between ROA and ACP was insignificant. However, AAI and ROA were positively related, but statistically insignificant. These results were in line with the *a priori* expectations.

At the 5% level of significance, Table 4.2 shows a negative relationship between ACP and NOPM. This means that as the collection period lengthens, the profitability decreases (NOPM). Furthermore, at the 5% level of significance, the variables APP and NOPM were found to be inversely related. Moreover, the relationship between AAI and NOPM was found to be positive and statistically significant. This indicates that any changes in AAI positively affects NOPM.

The current ratio, as a measure of firm liquidity, showed a significant positive relationship with ROA, with a correlation coefficient of 0.03045. Similarly, a significant positive association between current ratio and NOPM was found. According to the findings, any positive change in working capital management improved financial performance. This explains why effective management of current assets and current liabilities contributed to the profitability of retail firms.

In terms of control variables, the study discovered a positive relationship between size and profitability measures (ROA and ROE) at the 1% level of significance. This implies that firms' assets were used efficiently to generate profits. More so, an increase in total assets was accompanied by rising profitability. These findings are supported by Mabandla (2018)'s study, which discovered a positive relationship between size and gross operating profit in South Africa's retail sector. As a result, the findings indicate that larger firms were more profitable than smaller ones. This is rooted in the economies of scale concept, which is founded upon the traditional neo-classical view of working capital management. As businesses grow, their unit costs start to fall due to bulk buying, which reduces costs and increases the profit margin (Niresh & Thirunavukkarasu, 2014). This was in line with *a priori* expectations. The study also found a statistically significant inverse relationship between ROA and leverage, with a correlation coefficient of -0.2811 at the 1% level of significance.

The study likewise observed an inverse association between NOPM and leverage with a -0.3503 correlation coefficient. Meanwhile, the leverage variable was negatively correlated to ROE and the strength of the relationship was statically insignificant. This inverse relationship indicates that as the firms increased their debt, their profitability declined. A similar study conducted by Garg and Gumbochuma (2015) among JSE-listed retail firms discovered a negative relationship between net operating profit margin and leverage. This simply means that as firms depend more on debt, their cash outflow increases, which reduces their profitability. It was expected that leverage and ROA would move in opposite directions.

4.4 EMPIRICAL FINDINGS

This section presents the study's empirical findings. Before estimating the relationship between working capital management and financial performance, diagnostic tests were first performed. To estimate a robust model, diagnostic tests were performed. Second, this section discusses the panel regression method for estimating working capital management and financial performance in South African retail firms.

4.4.1 Diagnostic tests

everal tests were carried out on the pooled OLS, FE, and RE models. The joint validity of cross-sectional individual effects tests, the Breusch-Pagan LM test for REs, and the Hausman specification test for heteroscedasticity were among them. The first test was to determine the joint validity of cross-sectional effects by using the Chow test or F-test to determine poolability or individual effects as well as the validity of cross-sectional effects. The Breusch-Pagan LM test, which tested for homoscedasticity or serial correlation, was the second test. The third test applied was the Hausman specification test, which was employed to determine whether to select the FE model over the RE model. Finally, the one-way model was tested for cross-sectional dependence using the Pesaran (2004) cross-sectional dependence test. This test's null hypothesis was that the preferred model is the RE model, and the alternative hypothesis was that the preferred model is the FE model. The FE model estimator was used as the solution to heteroscedasticity problems. The diagnostic tests were performed on the different estimation models of the financial performance variables and working capital management variables. The first set of diagnostic tests was

conducted on the estimation with NOPM as the dependent variable. The same procedure was repeated for the models employing ROA and ROE as the dependent variables.

4.4.1.1 Diagnostic tests with NOPM as the dependent variable

Table 4.3 summarises the results of these tests. The initial test tested for the joint validity of cross-sectional individual effects. The F-statistic (5.46) was greater than the test statistic, confirming the significance of cross-sectional individual effects (0.0000). These tests confirmed that the firms were heterogeneous and that working capital management influenced their financial performance. As a result, when FEs are present, the pooled OLS estimation method becomes inconsistent and unsuitable.

The second test was the Breusch-Pagan LM test, which confirmed the significance of the difference in variance across firms and the presence of REs. Therefore, the RE model became more preferred.

The Hausman specification test was the third test. Because the p-value (0.0198) was less than 0.05, the Hausman test results clearly showed that the null hypothesis ((H_0), which stated that the “random effect model is appropriate,” was rejected. The FE model panel data analysis was appropriate for this model based on the Hausman test results. The heteroscedasticity test confirmed that the variance of the error term was not constant and found that heteroscedasticity was present.

Finally, using a one-way model, the Pesaran CD test confirmed the cross section as independent. The null hypothesis of sectional independence was rejected because the statistic was significant at the 1% level of significance. The coefficient of correlation was 0.369. These findings revealed CD among the South African retail firms.

TABLE 4.3: DIAGNOSTIC TESTS WITH NOPM EMPLOYED AS THE DEPENDENT VARIABLE

Test	Test statistic	Critical value	Inference
Joint validity of cross-sectional individual effects ***H₀ :*** $\alpha_1 = \alpha_2 = \cdots \alpha_{N-1} = 0$ ***H_A:*** : $\alpha_1 \neq \alpha_2 \neq \cdots \alpha_{N-1} \neq 0$	F = 5.46	p = 0.0000	Cross-sectional individual effects are valid.
Breusch-Pagan LM test for REs ***H₀:*** ${\delta_\mu}^2 = 0$ ***H_A*:** ${\delta_\mu}^2 \neq 0$	LM = 16.75	p = 0.000	There is a significant difference in variance across the entities. REs are present. The RE model is preferred.
Hausman specification test ***H₀*:** $E(X_{it}) = 0$ ***H_A*:** $E(X_{it}) \neq 0$	m_3 = 15.05	p = 0.0198	Because regressors are not exogenous, the FE specification is correct.
Heteroscedasticity ***H₀:*** ${\delta_i}^2 = \delta$ for all *i* ***H₀:*** ${\delta_i}^2 \neq \delta$ for all *i*	LM = 310 000	p = 0.0000	The error term's variance is not constant. Heteroscedasticity exists.
Pesaran CD test ***H₀:*** $\rho_{ij} = \rho_{ji} = cor(\mu_{it}, \mu_{jt}) = 0$ ***H_A:*** $\rho_{ij} \neq \rho_{ji} = 0$	CD = 1.947 (0.369)	p = 0.0515	Cross sections are independent.

4.4.1.2 Diagnostic tests with ROA as the dependent variable

Table 4.4 sums up the results of these tests. The first test looked at the joint validity of cross-sectional individual effects. The findings proved the significance of cross-sectional individual effects, as the F-statistic (5.46) was greater than the test statistic (0.0000). The test confirmed that the firms were heterogeneous and that their working management decisions were influenced by their unique characteristics. As a result, when FE is present, the pooled OLS estimation method becomes unpredictable and ineffective.

The Breusch-Pagan LM test was used as the second test. The test confirmed that there was a significant difference in variance across firms. As a result, the RE model was chosen. However, since the regressors were not constant, the Hausman specification test results preferred the use of the FE model over the RE model. The researcher also reviewed the heteroscedasticity of the error term and observed that it existed.

Subsequently, the researcher used the Pesaran (2004) CD test to screen for CD. The results of the tests confirmed the retail firms' cross-sectional independence. As a result, they did not rely on one another when it came to working capital management decisions.

4.4.1.3 Diagnostic tests with ROE as the dependent variable

The results of the diagnostic tests with ROE as the dependent variable are shown in Table 4.5. The first testing searched at the joint validity of cross-sectional individual effects. The F-statistic (3.07) was higher than the test statistic, confirming the significance of cross-sectional individual effects (0.0006). These tests confirmed that the firms were heterogeneous, and that working capital management affected financial performance. As a result, when FE is present, the pooled OLS estimation becomes inconsistent and inefficient.

Furthermore, the presence of REs was confirmed by the Breusch-Pagan LM test. Nonetheless, because the regressors were not exogenous, the Hausman specification test supported the use of the FE specification as valid. The heteroscedasticity tests confirmed that the error term's variance was not constant, and that heteroscedasticity existed. Finally, the Pesaran (2004) CD test confirmed the retail firms' independence

in South Africa. These findings indicated that working capital management decisions in South African retail firms were made autonomously.

TABLE 4.4: DIAGNOSTIC TESTS WITH ROA EMPLOYED AS THE DEPENDENT VARIABLE

Test	Test statistic	Critical value	Inference
Joint validity of cross-sectional individual effects ***H₀ :*** $\alpha_1 = \alpha_2 = \cdots \alpha_{N-1} = 0$ ***H_A:*** : $\alpha_1 \neq \alpha_2 \neq \cdots \alpha_{N-1} \neq 0$	F = 5.46	p = 0.0000	Cross-sectional individual effects are valid.
Breusch Pagan LM test for REs ***H₀:*** $\delta_\mu{}^2 = 0$ ***H_A*:** $\delta_\mu{}^2 \neq 0$	LM = 19.05	p = 0.000	There is a significant difference in variance across the entities. REs are present. The RE model is preferred.
Hausman specification test ***H₀*:** $E(X_{it}) = 0$ ***H_A*:** $E(X_{it}) \neq 0$	m_3 = 17.31	p = 0.0082	Regressors are not exogenous, hence the FE specification is valid.
Heteroscedasticity ***H₀:*** $\delta_i{}^2 = \delta$ for all *i* ***H₀:*** $\delta_i{}^2 \neq \delta$ for all *i*	LM = 2 200 000	p = 0.0000	The variance of the error term is not constant. Heteroscedasticity is present.
CC test ***H₀:*** $\rho_{ij} = \rho_{ji} = cor(\mu_{it}, \mu_{jt}) = 0$ ***H_A:*** $\rho_{ij} \neq \rho_{ji} = 0$ **Pesaran CD test**	CD = 1.261 (0.395)	p = 0.2073	Cross sections are independent.

TABLE 4.5: DIAGNOSTIC TESTS WITH ROE EMPLOYED AS THE DEPENDENT VARIABLE

Test	Test statistic	Critical value	Inference
Joint validity of cross-sectional individual effects ***H₀ :*** $\alpha_1 = \alpha_2 = \cdots \alpha_{N-1} = 0$ ***H_A:*** : $\alpha_1 \neq \alpha_2 \neq \cdots \alpha_{N-1} \neq 0$	F = 3.07	p = 0.0006	Cross-sectional individual effects are valid.
Breusch Pagan LM test for REs ***H₀:*** $\delta_\mu{}^2 = 0$ ***H_A*:** $\delta_\mu{}^2 \neq 0$	LM = 7.21	p = 0.0036	There is a significant difference in variance across the entities. REs are present. The RE model is preferred.
Hausmanspecification test ***H₀*:** $E(X_{it}) = 0$ ***H_A*:** $E(X_{it}) \neq 0$	m_3 = 8.37	p = 0.2121	Regressors are exogenous, hence the RE specification is valid.
Heteroscedasticity ***H₀:*** $\delta_i{}^2 = \delta$ for all *i* ***H₀:*** $\delta_i{}^2 \neq \delta$ for all *i*	LM = 18 882	p = 0.0000	The variance of the error term is not constant. Heteroscedasticity is present.
CD test ***H₀:*** $\rho_{ij} = \rho_{ji} = cor(\mu_{it}, \mu_{jt}) = 0$ ***H_A:*** $\rho_{ij} \neq \rho_{ji} = 0$ **Pesaran CD test**	CD = 7.265 (0.401)	p = 0.2045	Cross sections are independent.

4.4.1.4 Diagnostic tests with ROE employed as the dependent variable and CCC

Table 4.6 summarizes the results of these tests. The initial tests studied the joint validity of cross-sectional individual effects. The F-statistic (3.13), which was greater than the test statistic, confirmed the significance of cross-sectional individual effects (0.0005). These tests established that the firms' working capital decisions were divergent and that their working capital management decisions were based on their individual factors.

The second test was the Breusch-Pagan LM test, which confirmed the presence of REs and thus the preference for the RE model over the FE model. Nonetheless, because the regressors were not exogenous, the Hausman specification test was preferred. The heteroscedasticity tests confirmed that the error term's variance was not constant and thus existed.

4.4.1.5 Diagnostic tests with ROA employed as the dependent variable and CCC

Table 4.7 encapsulates the results of these tests. The F-statistic (5.52) was greater than the test statistic in the first test on the joint validity of cross-sectional individual effects, confirming the significance of cross-sectional individual effects (0.0000). These tests substantiated that the retail firms varied in terms of making working capital decisions, as these were based on individual factors. Furthermore, the Breusch-Pagan LM test for REs concluded that here was a significant variance across the firms. Consequently, the REs were present, and the RE model was preferred. Nevertheless, the Hausman specification test confirmed the use of the FE model relative to the RE model.

TABLE 4.6: DIAGNOSTIC TESTS FOR THE PANEL REGRESSION OF ROE EMPLOYED WITH CCC

Test	Test statistic	Critical value	Inference
Joint validity of cross-sectional individual effects ***H₀ :*** $\alpha_1 = \alpha_2 = \cdots \alpha_{N-1} = 0$ ***H_A*:** : $\alpha_1 \neq \alpha_2 \neq \cdots \alpha_{N-1} \neq 0$	F = 3.13	p = 0.0005	Cross-sectional individual effects are valid.
Breusch Pagan LM test for REs ***H₀*:** $\delta_\mu{}^2 = 0$ ***H_A*:** $\delta_\mu{}^2 \neq 0$	LM = 7.61	p = 0.0029	There is a significant difference in variance across the entities. REs are present. The RE model is preferred.
Hausman specification test ***H₀*:** $E(X_{it}) = 0$ ***H_A*:** $E(X_{it}) \neq 0$	m_3 = 9.76	p = 0.0446	Since regressors are not exogenous, the FE specification is correct.
Heteroscedasticity ***H₀*:** $\delta_i{}^2 = \delta$ for all *i* ***H₀*:** $\delta_i{}^2 \neq \delta$ for all *i*	LM = 45 550	p = 0.0000	The error term's variance is not constant. Heteroscedasticity exists.
CD test ***H₀*:** $\rho_{ij} = \rho_{ji} = cor(\mu_{it}, \mu_{jt}) = 0$ ***H_A*:** $\rho_{ij} \neq \rho_{ji} = 0$ **Pesaran CD test**	CD = 6.591 (0.358)	p = 0.0000	Cross sections are dependent.

TABLE 4.7: DIAGNOSTIC TESTS FOR THE PANEL REGRESSION OF ROA WITH CCC

Test	Test statistic	Critical value	Inference
Joint validity of cross-sectional individual effects ***H₀ :*** $\alpha_1 = \alpha_2 = \cdots \alpha_{N-1} = 0$ ***H_A*****:** $: \alpha_1 \neq \alpha_2 \neq \cdots \alpha_{N-1} \neq 0$	F = 5.42	p = 0.0000	Cross-sectional individual effects are valid.
Breusch Pagan LM test for REs ***H₀:*** $\delta_\mu{}^2 = 0$ ***H_A*****:** $\delta_\mu{}^2 \neq 0$	LM = 16.66	p = 0.0000	There is a significant difference in variance across the entities. REs are present. The RE model is preferred.
Hausman specification test ***H₀*****:** $E(X_{it}) = 0$ ***H_A*****:** $E(X_{it}) \neq 0$	m_3 = 16.60	p = 0.0023	Regressors are not exogenous, hence the FE specification is valid.
Heteroscedasticity ***H₀:*** $\delta_i{}^2 = \delta$ for all *i* ***H₀:*** $\delta_i{}^2 \neq \delta$ for all *i*	LM = 420 000	p = 0.0000	The variance of the error term is not constant. Heteroscedasticity is present.
CD test ***H₀:*** $\rho_{ij} = \rho_{ji} = cor(\mu_{it}, \mu_{jt}) = 0$ ***H_A:*** $\rho_{ij} \neq \rho_{ji} = 0$ **Pesaran CD test**	CD = 0.083 (0.389)	p = 0.9342	Cross sections are independent.

the RE model. The fourth test for heteroscedasticity found that the variance of the error term was not constant, therefore heteroscedasticity was present.

Finally, the Pesaran (2004) CD test confirmed independence among the South African retail firms. As such, their working capital management decisions were not related to one another.

4.4.1.6 Diagnostic tests with NOPM employed as the dependent variable and CCC

Table 4.8 displays the results of these tests. The initial test for joint validity of cross-sectional individual effects was performed. The F-statistic (5.67) outweighed the test statistic in determining the significance of cross-sectional individual effects among retail firms (0.0000). These tests confirmed the firms' heterogeneity.

Second, because the p-value for the Breusch-Pagan LM test for REs was less than the 5% level of significance, there was significant evidence to reject the null hypothesis, confirming the presence of RE in the model. As a result, the RE model was chosen.

Thirdly, the Hausman specification test confirmed that the FE model was appropriate and therefore the panel regression result was based on the FE model. The tests revealed a p-value (0.000) less than the 5% significance level, implying that the null hypothesis was rejected and the RE model was unsuitable. The heteroscedasticity confirmed that the variance of the error term was not constant, indicating the presence of heteroscedasticity.

Finally, the Pesaran (2004) CD test revealed that cross sections were dependent. These tests proved that the South African retail firms were autonomous in terms of working capital management.

TABLE 4.8: DIAGNOSTIC TESTS FOR THE PANEL REGRESSION OF NOPM WITH CCC

Test	Test statistic	Critical value	Inference
Joint validity of cross-sectional individual effects ***H₀ :*** $\alpha_1 = \alpha_2 = \cdots \alpha_{N-1} = 0$ ***H_A*:** $: \alpha_1 \neq \alpha_2 \neq \cdots \alpha_{N-1} \neq 0$	F = 5.67	p = 0.0000	Cross-sectional individual effects are valid.
Breusch Pagan LM test for REs ***H₀*:** $\delta_\mu{}^2 = 0$ ***H_A*:** $\delta_\mu{}^2 \neq 0$	LM = 23.61	p = 0.0000	There is a significant difference in variance across the entities. REs are present. The RE model is preferred.
Hausman specification test ***H₀*:** $E(X_{it}) = 0$ ***H_A*:** $E(X_{it}) \neq 0$	m_3 = 13.08	p = 0.0109	Regressors are not exogenous, hence the FE specification is valid.
Heteroscedasticity ***H₀*:** $\delta_i{}^2 = \delta$ for all *i* ***H₀*:** $\delta_i{}^2 \neq \delta$ for all *i*	LM = 16 000 000	p = 0.0000	The variance of the error term is not constant. Heteroscedasticity is present.
CD test ***H₀*:** $\rho_{ij} = \rho_{ji} = cor(\mu_{it}, \mu_{jt}) = 0$ ***H_A*:** $\rho_{ij} \neq \rho_{ji} = 0$ **Pesaran CD test**	CD = 2.924 (0.416)	p = 0.0035	Cross sections are dependent.

4.4.2 Panel regression results

The panel regression results are presented in this section. The first panel regression results present the outcomes with NOPM as the dependent variable. The subsection then goes on to present the panel regression results with ROA as the dependent variable. The results of the panel regression with ROE as the dependent variable are then discussed. For comparison, the pooled OLS and RE estimation results are also shown. For most variables, the estimated coefficients and signs of the RE and FE estimation outputs are comparable. Nonetheless, the FE model was used in the analysis. The FE model fit well and was well specified.

4.4.2.1 Panel regression results with NOPM ratio as the dependent variable

The regression results of these tests are shown on Table 4.9 with NOPM as the dependent variable.

For comparison, the regression output reported the pooled OLS and RE estimation results. Analysis of the results was based on the FEs with Driscoll and Kray's (1998) estimation results. The FE model was a good fit and was well specified. The F-statistic value was 6.06 and was statistically significant at the 1% level of significance. The Within-R-squared correlation was at 0.2450.

In testing the relationship between financial performance proxied by NOPM with ACP, it was established that they were inversely related. This finding is consistent with the findings of Saniloglu and Akgun (2016), who found a significant negative relationship between ACP and NOPM. This implies that early collection from customers improves a firm's performance by providing cash flow to support both operational and financing activities. The FE estimator revealed that a 1% increase in ACP and AAI resulted in a 0.24 percent decrease in NOPM, which was statistically significant at the 1% level of significance. This bolstered the argument that the shorter the ACP and AAI, the higher the asset turnover, and thus the higher the profitability. An increase in AAP, on the other hand, resulted in a decline.

TABLE 4.9: PANEL REGRESSION RESULTS WITH NOPM RATIO AS THE DEPENDENT VARIABLE

Dependent variable	Pooled OLS NOPM	Random effects NOPM	Fixed effects NOPM
ACP	-0.0019*** (-6.24)	-0.0020*** (-4.98)	-0.0024*** (-4.21)
AAI	-0.0017*** (-3.19)	-0.0022*** (-3.17)	-0.0024*** (-3.10)
APP	-0.0006 (-0.76)	-0.0014* (-1.65)	-0.0013 (-1.51)
SIZE	0.0169** (2.38)	0.0160 (1.51)	0.0007 (0.05)
LEV	-0.0480 (-0.44)	0.0575 (0.50)	0.1917 (1.57)
CR	0.0798*** (4.10)	0.0561*** (2.74)	0.0260 (1.19)
Constant	-0.1524 (-1.46)	-0.0946 (-0.61)	0.1497 (0.70)
Number	140	140	140
Adjusted R^2	0.5476	0.5102	0.2450
F-statistic			6.06***

*, ** and *** indicate the 10%, 5% and 1% level of significance, respectively. Time dummies estimated for the FE and RE models are not reported here. The t-statistics for the pooled and FE models as well as the z-statistics for the RE models are reported in parentheses.

4.4.2.2 Panel regression results with ROA ratio as the dependent variable

Table 4.10 displays the panel regression results for the relationship with ROA as a financial performance measure.

The regression output reported the pooled OLS and RE estimation results for comparison. The analysis of the results was based on the FEs with Driscoll and Kray's (1998) estimation results. The FE model was of good fit and was well specified. The F-statistic value was 6.06 and was statistically significant at the 1% level of significance. The Within-R-squared correlation was at 0.2450.

The test results confirmed an inverse relationship between ROA and ACP, which was highly significant at the 1% level of significance. In addition, ROA and AAI were also found to be negatively related, and the relationship was statistically significant. The research findings are aligned with those of Kasozi (2017). Louw *et al*. (2016), Mabandla (2018) and Panigrahi and Sharma (2013). On the other hand, Yahaya (2016) found that both accounts receivable and inventory were significantly and positively related with financial performance.

Further, the results of the study indicated that when firms reduce their ACP and AAI, CCC decreases, and this may lead to an increase in profitability. However, in testing the relationship between ROA and APP, the study established an inverse relationship, but one that was non-significant. The findings were in contrast to those of Knauer and Wohrmann (2013), Makori and Jagongo (2013), and Usman, Kanwal, Bashir, and Mahmood (2017), who unearthed a positive relationship between ROA and APP.

The size and financial performance of South African retail firms were found to be positively related when the association between size and financial performance was tested. According to the pooled OLS results, a 1% increase in size results in a 2.47 percent increase in ROA.

TABLE 4.10: PANEL REGRESSION RESULTS WITH ROA AS THE DEPENDENT VARIABLE

Dependent variable	Pooled OLS ROA	Random effects ROA	Fixed effects ROA
ACP	-0.0002 (-0.78)	0.0002 (0.69)	-0.0024*** (-4.21)
AAI	0.0002 (0.62)	0.0012** (2.05)	-0.0024*** (-3.10)
APP	-0.0008 (-1.17)	-0.0010 (-1.52)	-0.0013 (-1.51)
SIZE	0.0247*** (4.14)	0.0169* (1.89)	0.0007 (0.05)
LEV	-0.0141 (-0.15	0.0169 (0.18)	0.1917 (1.57)
CR	0.0431*** (2.66)	0.0286* (1.68)	0.0260 (1.19)
Constant	-0.3331*** (-3.82)	-0.2540* (-1.93)	0.1497 (0.70)
Number	140	140	140
Adjusted R^2	0.3070	0.2239	0.2450
F-statistic			6.06***

*, ** and *** indicate the 10%, 5% and 1% level of significance, respectively. Time dummies estimated for the FE and RE models are not reported here. The t-statistics for the pooled and FE models as well as the z-statistics for the RE models are reported in parentheses.

Based on RE, a similar trend and results were observed, namely that a 1% increase in size resulted in a 1.69% increase in ROA, which was significant at the 1% level of significance. For inference, the FE estimator indicated that a 1% increase in size would result in a 0.07% increase in ROA, but the result was statistically insignificant. A positive association between firm size and ROA implies that larger firms were more profitable relative to smaller ones. The RE and FE estimators documented that this relationship was positive. The inverse results revealed that an increase in debt was negatively associated with firm performance. The results between ROA and leverage were insignificant. This suggests that as firms increase their debt, it may help to invest in profitable assets that generate extra income.

In determining the association between current ratio and ROA, the results indicated a positive significant effect under pooled OLS and the RE estimator at the 1% and 10% level of significance, respectively. The insignificant results were observed under the FE estimator given the positive relationship.

4.4.2.3 Panel regression results with ROE as the dependent variable

The regression output presented in Table 4.11 used ROE as the dependent variable with ACP, AAI and APP as the independent variables. When the FE model was examined, the F-statistic value was 1.82, which was statistically significant at the 1% level of significance. The adjusted R-squared correlation coefficient was 0.0854. The results of the study revealed that a negative relationship between ACP and ROE existed, but it was statistically insignificant. Furthermore, an inverse relationship between ROE and APP was observed, which was statistically significant at the 5% level of significance. The findings were consistent with Kraus and Litzenberger's trade-off theory (1973), which states that an increase in accounts payable will increase the risk of bankruptcy and financial distress and hence reduces the value of the firm. On the other hand, a positive relationship between ROE and AAI was found to exist, but the result was statistically insignificant. These results were in line with those of Yahaya (2016), who found a positive relationship between inventory management and profitability. The empirical results in Table 4.11 document that the size and credit risk (CR) yielded a statistically insignificant positive association with ROE. In contrast, a negative relationship between ROE and leverage was observed, but it was insignificant. As such, these results were inconclusive.

TABLE 4.11: PANEL REGRESSION RESULTS WITH ROE AS THE DEPENDENT VARIABLE

Dependent variable	Pooled OLS ROE	Random effects ROE	Fixed effects ROE
ACP	-0.0008 (-1.45)	-0.0007 (-1.45)	-0.0003 (-0.27)
AAI	-0.0010 (-0.90)	0.0010 (0.15)	0.0017 (1.01)
APP	-0.0037** (-2.29)	-0.0041** (-2.41)	-0.0042** (-1.51)
SIZE	0.0452*** (3.10)	0.0464** (2.35)	0.0430 (1.30)
LEV	0.1708 (0.76)	-0.0730 (-0.31)	-0.2888 (-1.06)
CR	0.0501 (1.27)	0.0222 (0.52)	0.0168 (0.34)
Constant	-0.4414*** (-2.07)	-0.3144 (-1.09)	-0.2170 (-0.46)
Number	140	140	140
Adjusted R^2	0.1412	0.1556	0.0854
F-statistic			1.82***

*, ** and *** indicate the 10%, 5% and 1% level of significance, respectively. Time dummies estimated for the FE and RE models are not reported here. The t-statistics for the pooled and FE models as well as the z-statistics for the RE models are reported in parentheses.

TABLE 4.12: PANEL REGRESSION RESULTS WITH ROE AS THE DEPENDENT VARIABLE AND CCC

Dependent variable	Pooled OLS ROE	Random effects ROE	Fixed effects ROE
CCC	-0.0003 (-0.60)	0.0001 (0.18)	0.0006 (0.94)
SIZE	0.0462*** (3.30)	0.0448** (2.49)	0.0258 (0.80)
LEV	-0.0064 (-0.03)	-0.2203 (-1.02)	-0.4067 (-1.53)
CR	0.0436 (1.17)	0.0150 (0.37)	0.0115 (0.24)
Constant	-0.5563*** (-2.70)	-0.3827 (-1.44)	-0.0079 (-0.02)
Number	140	140	140
Adjusted R^2	0.1130	0.1240	0.0405
F-statistic			1.26

*, ** and *** indicate the 10%, 5% and 1% level of significance, respectively. Time dummies estimated for the FE and RE models are not reported here. The t-statistics for the pooled and FE models as well as the z-statistics for the RE models are reported in parentheses.

4.4.2.4 Panel regression results with ROE as the dependent variable and CCC

Table 4.12 reports the panel regression results between ROE and CCC. In testing the relationship between ROE as a financial performance metric measure with CCC, a measure of working capital management, it was revealed that they were related in a positive way. The coefficient of CCC using the FE model was 0.0006, although it was statistically insignificant. Likewise, the RE estimators predicted a positive relationship between ROE and CCC, but it was statistically insignificant. In contrast, the pooled OLS documented a negative relationship between ROE and CCC, yet it was statistically insignificant.

The results of testing the relationship between size and financial performance revealed that they were positively related based on pooled OLS, RE, and FE. The pooled OLS revealed that a 1% increase in firm size resulted in a 4.62 % increase in firm performance, which was statistically significant at the 1% level of significance. The RE results indicated that a 1% increase in size would lead to a 4.48% increase in profitability, which was statistically significant at the 5% level of significance. However, although a positive relation existed between size and ROE under the FE estimators, it was statistically insignificant.

4.4.2.5 Panel regression results with ROA as the dependent variable and CCC

The panel regression results between ROA as the dependent variable and CCC, a measure of working capital management, are shown in Table 4.13. According to the table, there was a statistically significant positive relationship between ROA and CCC at a 1% level of significance when using the FE estimators. This emphasises that an increase in CCC will result in an increase in ROA.

TABLE 4.13: PANEL REGRESSION RESULTS WITH ROA AS THE DEPENDENT VARIABLE AND CCC

Dependent variable	Pooled OLS ROA	Random effects ROA	Fixed effects ROA
CCC	0.00001 (0.07)	0.0004* (1.81)	0.0007*** (2.81)
SIZE	0.0248*** (4.40)	0.0171** (2.13)	-0.0119 (-0.99)
LEV	-0.0569 (-0.71)	-0.0190 (-0.22)	0.1409 (1.43)
CR	0.0393** (2.63)	0.0292* (1.79)	0.0202 (1.12)
Constant	-0.3321*** (-4.01)	-0.2344** (-1.99)	-0.1247 (-0.73)
Number	140	140	140
Adjusted R^2	0.3075	0.2745	0.0031
F-statistic			3.06

*, ** and *** indicate the 10%, 5% and 1% level of significance, respectively. Time dummies estimated for the FE and RE models are not reported here. The t-statistics for the pooled and FE models as well as the z-statistics for the RE models are reported in parentheses.

CCC had a positive effect on the level of profitability (ROA) of South African retail firms, according to the results of hypothesis testing. The positive relationship means that the higher the value of CCC or the longer the period of CCC, the greater the increase in profit. The results of these empirical tests corresponded with the study conducted by Usman, Kanwal, Bashir, and Manhood (2017). However, contradictory results on the relationship between ROA and CCC were reported by researchers such as Deloof (2003), Garg and Gumbochuma (2015), Lyngstadaas and Berg (2016) and Padachi (2006), who showed a negative association between ROA and CCC.

According to the results presented in Table 4.14, the coefficients for CCC were noted to be significantly negative in relationship with NOPM at the 1% level of significance in all three models. The current empirical findings confirmed that CCC, as a proxy for working capital management, had a significant influence on profitability, with firms with a longer CCC being less profitable. In other words, as ACP and inventory turnover days' rise, firm profitability will fall. One possible explanation for the inverse relationship between CCC and NOPM, a profitability proxy, is that higher levels of inventory and accounts receivable increase working capital and thus working capital maintenance costs. Maintaining a higher-than-optimal level of working capital will result in the use of financial resources in non-paying cases.

Aside from the findings, size, leverage, and current ratio all showed a relatively insignificant positive relationship with NOPM. The pooled OLS model, on the other hand, revealed a significant positive relationship between size and NOPM. However, the pooled OLS model indicated a significant positive relationship between size and NOPM. Furthermore, the study also documented a positive link between leverage and NOPM. More so, the RE model also produced a significant positive relationship between size and NOPM. The findings supported the idea that as firms increase their assets, their profitability rises and vice versa. These findings were consistent with those of Raheman and Nasr (2007:291), who found a positive relationship between profitability and firm size in their study. Nonetheless, in their study, Abbadi and Abbadi (2013:72) used company size as a control variable and observed a negative but significant relationship between company size and profitability. Because of their higher volume of sales, larger firms may require more investment in short-term assets.

TABLE 4.14: PANEL REGRESSION RESULTS WITH NOPM AS THE DEPENDENT VARIABLE AND CCC

Dependent variable	Pooled OLS NOPM	Random effects NOPM	Fixed effects NOPM
CCC	-0.0011*** (-4.80)	-0.0009*** (-3.22)	-0.0008*** (-2.64)
SIZE	0.0280*** (3.78)	0.0247** (2.26)	0.0032 (0.20)
LEV	-0.2910*** (-2.76)	-0.1501 (-1.30)	0.0402 (0.31)
CR	0.0500** (2.53)	0.0348 (1.62)	0.0089 (0.38)
Constant	-0.2650** (-2.42)	-0.2734* (-1.70)	-0.0022 (-0.01)
Number	140	140	140
Adjusted R^2	0.4507	0.4449	0.0916
F-statistic			2.01*

*, ** and *** indicate the 10%, 5% and 1% level of significance, respectively. Time dummies estimated for the FE and RE models are not reported here. The t-statistics for the pooled and FE models as well as the z-statistics for the RE models are reported in parentheses.

4.5 DISCUSSION OF FINDINGS

This section discusses the findings that resulted from the study objectives. The purpose of this study was to investigate the relationship between various working capital management components and the firm performance of South African retail firms listed on the JSE.

4.5.1 Finding 1

The first objective was to determine the relationship between AAI and the financial performance of South African retail firms. According to the study's findings, reducing working capital investment has a positive impact on firm profitability. These findings are consistent with those of Louw et al. (2016), who examined the working capital management of South African retail firms and concluded that a strategy of reducing inventory investment appears to improve South African retail firm profitability.

The findings are consistent with Rezaei and Pourali (2015) and Konak and Güner (2016), who revealed an inverse relationship between AAI and financial performance. Agha (2014) and Kasozi (2017), on the other hand, found a positive correlation between AAI and financial performance.

4.5.2 Finding 2

The second objective of this study was to ascertain whether ACP influences the financial performance of South African retail firms.

The results established that a highly negative relationship existed between ACP and NOPM. Additionally, the findings revealed a statistically significant negative relationship between ACP and ROA. In addition when ACP was regressed against ROE, the results were negative, but statistically insignificant. These results were consistent with those of Samiloglu and Akgun (2016), Deloof (2003) and Lazaridis and Tryfonidis (2006). This negative relationship implies that quick collections from trade receivables increase profitability. In order for retail firms to enhance their profitability, management should reduce the credit period days granted to their customers.

4.5.3 Finding 3

The third objective was to determine whether APP influences financial performance. The findings revealed an inverse relationship between APP and financial performance. This implies that paying suppliers on time improves firm performance. Moodley *et al*. (2017) discovered a positive significant association between change in payable days and

shareholder return in their study of the relationship between payables management and the return to investors of JSE-listed industrial firms. This supports the general theory of working capital management. This suggests that the longer it takes for firms to pay their suppliers, the higher their profitability. However, these findings contradicted the findings of this study, which found a negative relationship between trade payables and financial performance. This negative association suggests that all other things remaining constant, extending or delaying payment to creditors enhances profitability without damaging the reputation of the firm.

4.5.4 Finding 4

The third objective was to ascertain whether CCC has an impact on the financial performance of South African retail firms. Overall, the study's findings revealed a link between CCC and the performance of South African retail firms. A significant negative relationship between CCC and NOPM was established. These results corroborated the findings of Samiloglu and Akgun (2016). The study also found that there was a positive relationship between CCC and ROA as well as between CCC and ROE, which was contrary to the findings of Garg and Gumbochuma (2015) and Kasozi (2017). The positive relationship between CCC and profitability measures is consistent with the findings of Malik and Bukhari (2014); Usman *et al*, 2017); Panigrahi and Sharma (2013); and Sharma and Kumar (2011). However, the positive relationship was insignificant to the study and did not influence financial performance.

4.6 CHAPTER SUMMARY

In this chapter, descriptive statistics, regression analysis, correlational analysis and the empirical findings were discussed. The study applied ROA, ROE and NOPM as the dependent variables to measure financial performance. CCC, ACP, AAI and APP were used to measure working capital management. Firm size, leverage and current ratio were used as control variables in the study.

Three models were used to estimate the panel regressions: pooled OLS, RE, and FE models. To select the preferred model, three diagnostic tests were performed. Joint validity of cross-sectional individual effects, the Breusch-Pagan LM test for REs, and the Hausman specification test for heteroscedasticity were the tests used. The FE model was used to conduct the analysis based on the results of the diagnostic test. The FE model fit well and was well specified.

The first objective was to establish whether there is a relationship between AAI and the financial performance of South African retail firms. The results from the regression output indicated that AAI had a significant influence on NOPM and ROA. Furthermore, it was found

that AAI influenced financial performance negatively and this requires of South African retail firms to reduce their inventory levels to improve profitability.

The second objective endeavoured to determine the impact of ACP on the financial performance of South African retail firms. From the regression output carried out, ACP had a statistical negative influence on NOPM and ROA.

The third objective was to ascertain the impact of APP on the financial performance of South African retail firms. The results showed that a negative relationship between APP and ROE subsisted. Lastly, the fourth objective tested whether CCC had an impact on the financial performance of South African retail firms. The results documented that CCC had a negative impact on NOPM.

The general interpretation of the results shows that a relationship existed between working capital management and the performance of South African retail firms. The next chapter presents a summary of the findings of this study and gives recommendations for future research.

CHAPTER 5

SUMMARY OF FINDINGS AND RECOMMENDATIONS FOR FUTURE RESEARCH

5.1 INTRODUCTION

Working capital management is a predominant topic in corporate finance, and extensive research illuminating the significance of working capital decisions to enhance firm performance has been conducted.

The notion of working capital management is of paramount importance within the retail sector. This is so because the retail sector relies heavily on working capital components. Therefore, establishing whether a relationship between working capital management and firm performance exists is indispensable.

Extant empirical studies have been undertaken globally to examine the nexus between working capital management and firm performance in different sectors of the economy. The rationale behind this study was to explore the association between working capital management practices and the financial performance of South African retail firms. The decision to study in South Africa was motivated by two factors: South Africa was chosen for two reasons: first, it is an emerging economy, and second, the country has a large retail sector in comparison to the rest of the continent.

The primary goal of this research was to investigate the connection between working capital components and the financial performance of South African retail firms. The study's sample included retail firms listed on the JSE. This study had four research objectives. The first objective was to establish whether there is a relationship between AAI and the financial performance of South African retail firms. The second objective was to determine the impact of ACP on the financial performance of South African retail firms. The third objective was to ascertain the impact of APP on the financial performance of South African retail firms and the fourth objective was to ascertain whether CCC had an impact on the financial performance of South African retail firms.

The remainder of the chapter is structured as follows: Section 5.2 summarises the theoretical and empirical findings on working capital management and financial performance in accordance with the study's research objectives, in order to illuminate the study's observations, arguments, and conclusions. Section 5.3 summarises the study's empirical findings, and Section 5.4 concludes the study by suggesting future research directions based on the study's limitations.

5.2 SUMMARY OF FINDINGS

This section provides a summary of the study's main findings, which are based on the four primary objectives that the researcher sought to achieve. First, a summary of the findings from the literature review is presented. This is followed by an overview of the study's methodological approach. Finally, the section provides a summary of the study's empirical findings.

5.2.1 Theoretical findings on working capital management and financial performance

The theoretical review of working capital management and financial performance undertaken in this study presented perceptions regarding understanding working capital management and its effects on the financial performance of South African retail firms. The concept of working capital management is very important to assess due to its role in the performance of firms. The main goal of every business is to succeed and ensure sustainability; therefore, within the retail sector, working capital management is a key element that ensures that firms are profitable. Inadequacy of working capital management components has a significant influence on the performance of firms as well as shareholder value.

According to the literature review, working capital management plays a significant role in determining firm profitability. Firms must maintain a certain level of working capital in order to function effectively and efficiently. For example, if the level of working capital is too low, the firm is vulnerable to an additional risk of insolvency, whereas excessive working capital reduces the firm's profitability and insufficient working capital threatens the firm's solvency (Aravind, 2016:58). In addition, theories related to working capital management were discussed. These were the profit and liquidity (trade-off) theory, the agency cost theory, and the pecking order theory.

According to the trade-off theory, an optimal level of working capital must be maintained to ensure that shareholder wealth is maximised while losses are minimised. Kraus and Litzenberger (1973) propose the trade-off theory of financial leverage, which indicates that an increase in the accounts payable level will increase the cost of bankruptcy and financial

distress, hence lessen the value of a company. This illustrates that it is significant to maintain optimal utilisation of credit facilities and timing of payments to create a balance between working capital and liquidity.

The pecking order theory, advanced by Myers and Majluf (1984:219), assumes that firms will perceive a financial hierarchy in their financing. They reason that firms prioritise their financing source by preferring internal financing first, then debt and lastly equity financing. The use of internal funds represents the most liquid assets of the company, as funds can be available at any time to cover the obligations as they arise and external funds can be avoided. In other words, the effective management of working capital generates internal funds that can be used to finance other business operations. Aktas *et al*. (2015) expound that managing working capital efficiently would provide a new source of internally generated funds that could be used in more profitable investment opportunities for the benefit of a firm's shareholders.
The Keynesian liquidity preference theory by Keynes (1973) postulates that all other things remaining constant, investors or shareholders prefer highly liquid investments above illiquid ones. Therefore, based on this theory, the effective management of working capital components such as ACP and inventory promotes liquidity within a firm.

According to Blinder and Maccini's (2001) CCC theory, if all other factors remain constant, effective working capital management will result in increased firm liquidity, profitability, and value, whereas ineffective working capital management will result in lower profitability and value. According to this theory, lowering ACP and AAI improves firm performance.

An agency cost theory exists between the firm's agent (management) and its principal (owners). If both the agent and the principal are wealth maximisers (as we assume all rational people are), then conflict is possible. The agent can take actions to maximise his or her own wealth, which may or may not be in the best interests of the principal. If there is a disparity between the goals of management and the owners (shareholder wealth maximisation), the agency problem is present. Therefore, working capital management decisions should be of the best interest of the shareholders to mitigate a conflict between the agency and firm owners.

5.2.1.1 The relationship between average age of inventory and financial performance

Inventory represents one of the largest and most tangible assets of any retail firm. It consists of three components, namely work-in-progress, raw materials and finished goods. As such,

inventory constitutes a major segment of a firm's current assets, and it is significant that sound inventory management practices should be in place to ensure the firm's growth and profitability. Therefore, the management of inventory is a vital aspect in working capital management. To produce finished goods, firms need materials, as such efficient management of inventory will affect the financial performance of the firm. Effective inventory management entails having the right stock in the right place at the right time. Inventories should always be available in proper quantity, neither more nor less than what is required to cater for working capital needs. Effective inventory management enhances the financial performance of a firm.

According to the literature review, studies on the relationship between inventory management and financial performance (Konak & Guner, 2016; Temtime, 2016; Yunos *et al*, 2018; Mutenheri & Zawaira, 2014) established a strong negative relationship. As a result, it was expected that AAI is inversely related to financial performance, which confirmed the findings of other scholars.

AAI is critical in every business because an ineffective inventory system leads to a loss of customers, sales, and, ultimately, profits. The proper management of an inventory system increases sales for a firm, which improves its performance.

5.2.1.2 Relationship between average collection period and financial performance

According to Yunos *et al*. (2018:75), a firm's success is determined by how well it manages its trade receivables. ACP is an important factor in determining a firm's cash flow. Cash flows have an impact on a firm's ability to meet its financial obligations. This is due to the fact that if cash is locked up in unpaid stock, businesses cannot continue to operate in order to meet demand.

Quick collection of debt from customers minimises a cash crisis to maintain operational costs. According to *Oware et al*. (2015), when a firm does not invest well in the collection of trade receivable, the firm's profitability will stagnate due to poor accounts receivable, resulting in unmanageable debt. If a firm fail to control working capital components and takes long to collect outstanding balances, it ties up working capital, leading to long operating cycles, which affect profitability. The prolonged period does not stimulate sales and therefore reduces the firm's financial performance. The expectation is that ACP and financial performance move in opposite directions.

Padachi (2006) observed that overinvestment in trade receivables is associated with lower profitability in his study on the relationship between working capital management and firm

profitability. As such, decisions concerning credit sales should be critically analysed to add value to the performance of a firm, instead of exposing it to a financial crisis.

Over and above, ACP significantly affects financial performance if managed effectively. The prompt collection of debt improves the cash flow position of a firm, whereas delaying collection from customers exposes a firm to financial distress, which may be caused by high bad debts. This entails that receivable management should be a vital focus point for improving the profitability of firms.

5.2.1.3 The relationship between average payment period and profitability

Kraus and Litzenberger (1973) advanced the trade-off theory of financial leverage, which states that increasing the level of trade payables increases the risk of bankruptcy and financial distress, lowering the value of a firm. Effective trade or accounts payable management may improve the firm's short-term cash flow position through optimal timing of payments to suppliers. The literature predicts a negative relationship between APP and profitability; thus, delaying paying customers promotes firm performance.

The impact of APP can be seen in terms of liquidity, as delaying payments to suppliers increases current liabilities, which has a negative impact on profitability. By prolonging payments to suppliers, the firm's liquidity is reduced. As a result, there is a trade-off between liquidity and profit.

5.2.1.4 The relationship between CCC and profitability

Depending on a firm's working capital strategies, the relationship between CCC and profitability can be positive or negative. A positive CCC indicates a long period in waiting to convert working capital into cash, whereas a negative CCC shows a short period to receive cash from working capital.

According to the pecking order theory, a shorter CCC generates internal funds that can be used to finance other business operations. Furthermore, a short CCC indicates that a firm receives payments from customers quickly while delaying payments to suppliers (Kwenda, 2017:49). The less capital is tied up in the business processes, the shorter the timeframe, and vice versa.

According to Ngwenya (2012:1204), the CCC is a powerful tool for measuring how well a firm manages its working capital. He further suggests that a company with a lower CCC is more efficient because it rotates its working capital more frequently throughout the year, allowing it to generate more sales per capital invested. A short CCC might send out a signal that the working capital is not tied up in the business, meaning that more profitability is attributable to

a quick turnover in stock, hence it was expected that a shorter CCC improves profitability. This is consistent with Ukaegbu's (2014) and Raheman and Nasr's (2014) empirical findings (2007). Managing the CCC necessitates a thorough examination of liquidity and profitability. Firms can maximize their value by maintaining an optimal cash conversion period.

From the literature review, if firms reduce their CCC, their financial performance improves and vice versa. This was confirmed by the inverse relationship between ROA, ROE, NOPM and CCC. The reduction in CCC can be achieved by a reduction in ACP and AAI. Moussa (2018) found that CCC is linked to the firm performance. He further demonstrates that a longer CCC is accompanied by low performance, while the reverse holds for a shorter CCC.

As a result, it can be concluded that South African firms can improve their financial performance by reducing working capital components such as AAI and ACP while increasing APP.

5.2.2 Empirical findings on working capital management and financial performance

There have been numerous studies conducted to determine the relationship between working capital management and firm performance. Nonetheless, the results are inconclusive. An empirical review of previous studies on the relationship between working capital management and financial performance was conducted.

Several studies, including those by Ukaegbu (2014), Firmansyah *et al*. (2018), Rezaei and Pourali (2015), and Qurashi and Zahoor (2017), have found a negative relationship between working capital management and firm financial performance.

On the other hand, there is a body of research that shows a positive relationship between working capital management and firm financial performance. Studies in this category include those of Khalid *et al.* (2018), Usman *et al*. (2017), Nwakaego and Ikechukwu (2016), Moussa (2018) and Prempeh (2018).

Robles (2016), Sathyamoorthi *et al*. (2018), and Singhania and Mehta (2017) found no link between working capital management and financial performance.

5.2.3 Summary of methodological approaches

Panel data techniques were used in the study. The benefits of using panel data regression are that it allows for the combination of information from a cross-section of the retail sector as well as across time from 2009 to 2019, making the data more generalisable and informative while also providing more degrees of freedom, less collinearity, and high efficiency. The panel

data method was ideal for the analysis because it controlled for heterogeneity caused by the various natures, complexities, and sizes of the retail firms. Diagnostic tests were also performed on the estimated model to ensure that the results were accurate.

To begin, the Chow test was run on the pooled OLS model to determine whether the FEs were valid. Second, the Breusch-Pagan (1980) LM test was used to determine whether or not REs were present. If REs were found, the Hausman test would have been useful in determining which estimator was preferable between the RE and FE estimators.

Thirdly, the modified Wald test was employed to test for group-wise heteroscedasticity. It is an important test to avoid standard errors being biased. It was established that heteroscedasticity was present. Lastly, the Pesaran (2004) CD test was conducted for CD. The impact depends on the size of correlations across retail firms. Therefore, the study employed the FE estimator, which controlled heteroscedasticity in estimating the models.

5.3 SUMMARY OF EMPIRICAL RESULTS

There were four objectives that underpinned this study. The main findings in relation to testing these objectives are discussed in turn.

5.3.1 Empirical Finding 1

This finding was based on a test of the first research objective, which sought to investigate the relationship between AAI and the financial performance of South African retail firms. The regression results using NOPM and ROA as the financial performance measures showed a negative relationship between AAI and financial performance measures. The estimation results confirmed an inverse relationship between AAI and financial performance.

As a result, it can be concluded that the financial performance of South African retail firms is affected by AAI. These findings are aligned with the view that reducing the days in stock holdings improves profitability. Among others, Mehtap (2016), Garg and Gumbochuma (2015) and Louw *et al*. (2016) found an inverse association between AAI and financial performance.

Furthermore, the correlational results provided a negative link between AAI and financial performance. The findings showed that holding inventory for a long period tied up funds, which might have affected the liquidity of the firms. Therefore, the study suggests that reducing the inventory period positively influences profitability. Furthermore, the results demonstrated that holding too much inventory led to a decline in profitability due to the associated holding costs.

5.3.2 Empirical Finding 2

The study's second objective was to establish the relationship between ACP and the financial performance of South African retail firms. The study found that ACP and financial performance had an inverse relationship. Deloof (2003), Lazaridis and Tryfonidis (2006), and Kasozi (2017) all found a negative relationship and reported similar findings. According to this line of research, firms can improve their financial performance by lowering ACP. This can be interpreted as follows: The faster customers settle their outstanding accounts, the more cash is available for other business projects, increasing profitability. On the contrary, Yahaya (2016) and Agha (2014), among others, found a positive relationship between account collection period and profitability.

Furthermore, the study suggests that tightening credit policies improves firm performance by reducing the credit period granted to customers.

5.3.3 Empirical Finding 3

This conclusion was reached after putting the third research objective, which sought to investigate the relationship between APP and the financial performance of South African retail firms, to the test. The results showed a negative relationship between APP and financial performance. An inverse relationship has been established by studies such as those of Temtime (2016), Yahaya (2016) and Rezaei and Pourali (2015), among others.

Moodley *et al*. (2016) and Louw *et al*. (2016), on the other hand, found a positive relationship between APP and financial performance. Achode and Rotich (2016) revealed a positive association between accounts payable and firm performance as well.

5.3.4 Empirical Finding 4

The fourth objective of the study sought to ascertain whether CCC had an impact on the financial performance of South African retail firms. The regression analysis models performed rendered mixed results between CCC and financial performance measures.

The empirical finding of the study documented a negative relationship between NOPM and CCC. Comparable results were found by Garg and Gumbochuma (2015), Ngwenya (2012 and Ukaebgu (2014), who found a negative link between CCC and profitability measures.

A positive relationship between CCC and ROA was found in this study. Lyngstadaas and Berg (2016) and Konak and Guner (2016) found a negative relationship between CCC and ROA. Further, Usman, Shaikh and Khan, documented a negative relationship between CCC and ROA.

According to the findings, reducing components of working capital management improves firm performance. Furthermore, a positive relationship between CCC and ROA advocates for a longer CCC in order to increase profitability. Firms explore different policies to support their working capital. According to Nyabuti and Alala (2014), a firm's working capital management policy can be aggressive or conservative. The empirical findings demonstrated the importance of a proactive working capital management policy that requires a minimum level of trade receivables and inventory.

5.4 DIRECTIONS FOR FUTURE RESEARCH

According to the literature review, the relationship between working capital management and financial performance has been an important topic studied over the years in various countries, including South Africa. Working capital management is an effective tool for firms' financial performance, according to both theoretical and empirical literature reviews.

Regardless of the existence of several studies on working capital management and financial performance, it remains an important area that requires additional research. In several ways, this study has paved the way for future research. To begin, this study's findings are based on JSE-listed retail firms. As a result, the results can be applied to firms that are not listed on the JSE. Other retail firms that are not listed on the JSE could be included in future research.

Secondly, the sample size comprised only retail firms. Therefore, the results are valid only for retail firms. Similarly, further research could be extended to other sectors such as manufacturing, mining, agriculture, finance and industry to make a comparison, as retail firms involve FMCG, which involve more working capital.

Thirdly, even though there have been few studies on the relationship between working capital management and financial performance in South Africa, this study relied on theoretical and empirical studies from other countries as a starting point. Concentrating on the South African landscape may provide a better understanding of how working capital management affects financial performance.

The global pandemic of Covid-19 altered the way business is conducted. In response to the pandemic, firms have been forced to rethink their working capital management policies. To cater affected customers, firms had to amend their credit terms and collections policies. Furthermore, because of the national lockdown, the supply chain was disrupted, and many firms were unable to pay their creditors on time. As a result, future research could look further into repercussions of Covid-19 on working capital components and financial performance.

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APPENDIX A: TURNITIN REPORT

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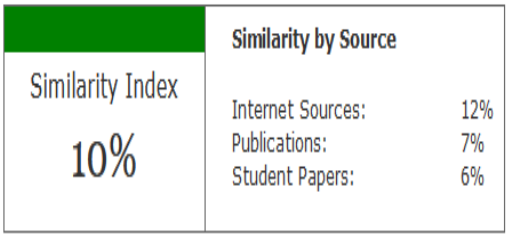

APPENDIX B: PROOF OF LANGUAGE EDITING

*Laetitia*BEDEKER

1 Semillon Close
Stonehaven Estate
Fish Hoek
Cell: 082 707 8428
E-mail: laetitiam@webmail.co.za

Proof of editing

28 September 2021

This letter serves as proof that the MPhil dissertation titled "Working capital management and financial performance: An empirical study of the South African retail sector" by Garikai Mandipa was professionally copy (language) edited. The finalisation of tracked changes and comments inserted remains the responsibility of the student.

Kind regards

LM Bedeker
BA, Postgraduate Diploma (Translation) *cum laude*, MPhil (Translation) *cum laude*
Accredited member of the South African Translators' Institute (accreditation number 1001437)
Member of the Professional Editors' Group

APPENDIX C: ETHICS CLEARANCE CERTIFICATE

UNISA

UNISA DEPARTMENT OF FINANCE, RISK MANAGEMENT AND BANKING ETHICS REVIEW COMMITTEE

Date: 31 August 2020

Dear Mr G Mandipa

ERC Ref #2020/CEMS/FRMB/010
Name : Mr G Mandipa
Student #: 50432990
Staff #:

Decision: Ethics Approval from 01 September 2020 to 31 October 2026

Researcher(s): Name Mr G Mandipa

E-mail address 50432990@mylife.unisa.ac.za, telephone 0681114251

Supervisor (s): Name Prof AB Sibindi
E-mail address sibinab@unisa.ac.za, telephone 012 429 9375

Working title of research:

Working capital and financial performance: An empirical study of the South African retail sector

Qualification: MCOM: Business Management

Thank you for the application for research ethics clearance by the Unisa DFRB Ethics Review Committee for the above-mentioned research. Ethics approval is granted for the period 01 September 2020 to 31 October 2026

*The Negligible **risk application** was **reviewed** by the DFRB Ethics Review Committee 31 August 2020 in compliance with the Unisa Policy on Research Ethics and the Standard Operating Procedure on Research Ethics Risk Assessment*

University of South Africa
Preller Street, Muckleneuk Ridge, City of Tshwane
PO Box 392 UNISA 0003 South Africa
Telephone: +27 12 429 3111 Facsimile: +27 12 429 4150
www.unisa.ac.za

The proposed research may now commence with the provisions that:

1. The researcher(s) will ensure that the research project adheres to the values and principles expressed in the UNISA Policy on Research Ethics.
2. Any adverse circumstance arising in the undertaking of the research project that is relevant to the ethicality of the study should be communicated in writing to the DFRB Committee.
3. The researcher(s) will conduct the study according to the methods and procedures set out in the approved application.
4. Any changes that can affect the study-related risks for the research participants, particularly in terms of assurances made with regards to the protection of participants' privacy and the confidentiality of the data, should be reported to the Committee in writing, accompanied by a progress report.
5. The researcher will ensure that the research project adheres to any applicable national legislation, professional codes of conduct, institutional guidelines and scientific standards relevant to the specific field of study. Adherence to the following South African legislation is important, if applicable: Protection of Personal Information Act, no 4 of 2013; Children's act no 38 of 2005 and the National Health Act, no 61 of 2003.
6. Only de-identified research data may be used for secondary research purposes in future on condition that the research objectives are similar to those of the original research. Secondary use of identifiable human research data require additional ethics clearance.
7. No fieldwork activities may continue after the expiry date (2026). Submission of a completed research ethics progress report will constitute an application for renewal of Ethics Research Committee approval.

Note:

The reference number 2020/CEMS/FRMB/010 *should be clearly indicated on all forms of communication with the intended research participants, as well as with the Committee.*

Yours sincerely,

Chair of DFRB ERC : Prof K Tsaurai
E-mail: tsaurk@unisa.ac.za

Signature
Executive Dean : Prof T Mogale
E-mail: mogalemt@unisa.ac.za

University of South Africa
Preller Street, Muckleneuk Ridge, City of Tshwane
PO Box 392 UNISA 0003 South Africa
Telephone: +27 12 429 3111 Facsimile: +27 12 429 4150
www.unisa.ac.za