

Article

Financial Performance and Working Capital Management Practices in the Retail Sector: Empirical Evidence from South Africa

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Abstract: This study examines the relationship between the financial performance and working capital management practices of South African retail firms listed on the Johannesburg Stock Exchange. The study sample comprised a panel of 16 South African retail firms for the period 2010–2019. A fixed-effects estimator was employed in the analysis. The working capital management was proxied by average age of inventory (AAI), average collection period (ACP), average payment period (APP), and cash conversion cycle (CCC), while the financial performance was proxied by net operating profit margin (NOPM), return on assets (ROA), and return on equity (ROE). The key findings of the study documented the following: (1) There is 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. (4) The cash conversion cycle and net operating profit margin variables were found to be negatively related. The study concludes that working capital management practices influenced the financial performance of the South African retail firms. 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; financial sustainability



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1. Introduction

The South African economy has seen a structural shift from the primary (mining and manufacturing) to the tertiary (wholesale and retail trade) sector since the 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. The retail and wholesale sectors, specifically, employ an estimated 22% of the national labor force. This positions the retail sector as an important sector in the overall South African economy (Stats SA 2021).

The term “working capital management” refers to the management of current assets and liabilities. It entails the management of current assets and liabilities in direct proportion to a company’s liquidity and profitability (Deloof 2003; Afrifa et al. 2014).

The management of working capital has a huge impact on financial liquidity and the efficiency of current assets management (CCC). Appropriate levels of liquidity are required to ensure that firms can meet their short-term financial obligations. At the same time, managers have to ensure that excess cash is not tied up in working capital (Akbar et al. 2021). Liquidity refers to the company’s ability to meet its commitments on time. To put it another way, it is the company’s ability to convert current assets into cash so that current liabilities

can be paid when they are due. A company's ability to continue operating depends on its ability to maintain liquidity.

Working capital management (WCM) is of great significance, as it affects the profitability and decisions of a firm, which in turn influence its financial performance. Appropriate and efficient working capital management is a necessary component of the retail business. As a result, to maintain stability and remain competitive, firms must maintain a balance between current assets and current liabilities. The objective of a business is to make profit, 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 the cost of capital, is an important concept in finance management (supporting long-term financial decisions). Working capital management is a common factor that has a direct impact on the profitability and liquidity of a firm. An understanding of working capital can provide a significant competitive advantage; conversely, inefficient working capital management can result in significant losses (Virkala 2015). As a result, it is critical to investigate the relationship between working capital management and firm performance.

Kwenda and Matanda (2015) claim that the management of working capital is critical to the achievement of shareholders' wealth maximization goals. Working capital management has received significant attention in both theoretical and empirical research at the expense of capital budgeting and capital structure decisions.

Tanveer et al. (2016) state that working capital management is one of the controversial issues in corporate finance. It involves a set of financial decisions that is both difficult and key to the success of any given firm because it has an influence on return and profitability. Working capital management is highly complicated because it concerns current assets and current liabilities.

One of the key challenges facing financial managers within the corporate sector is to determine how working capital management influences firm performance. Among the questions raised by these financial managers are, "Do working capital management practices influence firm performance?" and "What is the implication of the variations in the variables under study (financial performance and working capital management)?"

Despite ample research, there is still 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. A lack of consensus continues to exist as to the optimal level of working capital and how it can affect a firm's profitability.

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 is intended to bridge this knowledge gap by examining the relationship between working capital management and financial performance in the context of South Africa.

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

This study contributes to knowledge on the relationship between working capital management and financial performance, as working capital management practices may be improved to increase financial performance and the long-term viability of firms. A working capital strategy should define the amount of money invested in each form of working capital asset to implement acceptable operational strategies and identify unsuccessful parts. The rest of this paper is arranged as follows. Section 2 reviews the related literature. Section 3 describes the research methodology applied in the study. Section 4 presents and discusses the empirical findings. Section 5 concludes the paper.

2. Review of Related Literature

2.1. Theoretical Literature

The significance of working capital relates to the impact it has on profitability. Irrespective of a 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 a business.

Working capital management efficiency is critical in corporate finance to maximize shareholder wealth. It is a form of short-term resource management that has a significant link with short-term finance and investment decisions. WCM that is effective has a significant influence on profitability; this link is essential in business conditions (Akbar et al. 2021).

The concept of working capital has been analyzed in different situations (Chang et al. 2019; Zimon and Tarighi 2021; Akbar et al. 2021).

Firm performance is determined by profitability measures. From a financial performance standpoint, a company can be said to be performing well if it makes greater use of its assets than its rivals or competitors (Morara and Sibindi 2021, p. 3). Al-Abass (2018, p. 137) states that profitability is made up of two words: profit and ability. Profit refers to the total income or return from a business, while ability refers to the power that is used by the business to earn profit and how efficiently management makes this profit by utilizing all available resources. Among the available resources a company has is the efficient management of working capital to generate positive returns. Profitability is the excess of revenue over costs, which generates a higher internal rate of return.

Kwenda and Matanda (2015) posit that following efficient working capital management strategies, managers can utilize reserves of working capital and seek profitable investment opportunities without going to the capital market to issue expensive and high-risk 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 a very cheap approach compared to external financing. By not looking to the external market to raise funds, therefore, efficient working capital management is imperative for mitigating the risk of insolvency.

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 and Jagongo 2013). In the framework of working capital management, a 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. In all business activities, working capital management is a critical component of financial management. It is primarily concerned with the liquidity components of a company's short-term current assets and current liabilities (Aktas et al. 2015).

According to Ukaegbu (2014), the goal of working capital management is to ensure that a company can meet its operating expenses while, at the same time, paying its short-term debt when due. Furthermore, to maximize 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 a firm's current assets and current liabilities to strike a balance between profitability and risk that contributes positively to the value of the firm. Firms are required to maintain a certain amount of working capital to function effectively and efficiently. For instance, if the level of working capital is too low, the firm is vulnerable to an additional risk of insolvency. Excessive working capital diminishes firms' profitability and insufficient working capital jeopardizes firms' solvency (Aravind 2016, p. 58).

2.1.1. Working Capital Management Policy Framework

Mengesha (2014, p. 20) describes “working capital policy as the strategy that provides guidelines for managing current assets such as accounts receivable, inventory and cash, and 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 indicates 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 from how it finances working capital (Rehn 2012, p. 6).

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

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

2.1.2. Working Capital Strategies

According to Enqvist et al. (2014), working capital strategies emphasize the liquidity of current assets in order to meet current liabilities. Liquidity is more important because if a firm’s liquidity is extremely high, it has a significant amount of idle capital to handle, and it must accept the cost of these idle assets.

Louw et al. (2016) argue that the management of working capital varies among industries and state, and that 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: aggressive, conservative, or moderate. For example, a firm with a high volume of sales requires more financing in current assets, whereas one with low sales growth requires less financing.

Firms might adopt a high-risk approach by funding current assets with short-term debt since this provides a low-interest rate. However, the risk associated with short-term debt is greater than that associated with long-term debt (Dhole et al. 2019). Aggressive financing involves financing all temporary current assets, permanent current assets, and some fixed assets with short-term debt and non-spontaneous debt, and long-term financing is used for remaining fixed assets. If a business maintains a small proportion of its total assets in the form of current assets or uses a high portion of short-term debt, this could result in an aggressive strategy. As a result, this policy will result in increased profits and a greater risk of the company defaulting. Aggressive strategies are designed to keep current assets low compared to current liabilities. The high level of receivables is because sales based on trade credit are directed to regular customers and to low credibility (see for instance; Enqvist et al. 2014; Zimon 2020; Zimon and Tarighi 2021).

According to Kwenda (2017, p. 49), “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”. 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. A firm with an aggressive working capital policy offers customers a short credit term, has less inventory on hand, and has fewer liquid assets (Chen and Kieschnick 2018).

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 entails keeping a high level of cash on-hand, as well as a low level of customer receivables and supplier debts (Zimon 2020, p. 226). Thus, if a firm follows a conservative working capital strategy, there is plenty of cash on-hand, plenty of inventory in the warehouses, and all of the payables are current. This viewpoint is buttressed by Zimon and Tarighi (2021), who also contend that the conservative strategy is associated with a high level of liquidity. 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 and Brigham 2013, p. 256). The disadvantages of this approach include its higher cost of financing and the fact that large investment is blocked by temporary working capital.

According to Paramasivan and Subramanian (2009) firms employ a moderate approach by utilizing long-term debt and equity to finance their fixed assets and the main parts of their current assets.

2.2. Empirical Literature Review

Deloof (2003) examined the relationship between working capital management and profitability in a sample of 1009 large Belgian non-financial firms over 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 firms' productivity by decreasing the number of accounts-receivable days and inventories.

Following Deloof (2003), another study, carried out by García-Teruel and Martínez-Solano (2007), in Spain, on 8872 small and medium enterprises (SMEs) from 1996 to 2002, revealed that shortening the CCC improves a firm's profitability. The results imply that there is a negative association between working capital components and profitability.

Raheman and Nasr (2007) conducted a study to probe the ties 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.

Aktas et al. (2015) analyzed data from 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, improved their stock and operating performance.

A study by Chang et al. (2019), which determined the effects of the 2008 financial crisis on the working capital management policies of U.S. enterprises, revealed that the cash conversion cycle had no significant effect on the results, showing that a financial crisis has no effect on the efficiency with which working capital is collected. Firms with relatively low current and quick ratios, on the other hand, should pay more attention to their liquidity management strategies or take action prior to the onset of a financial crisis to avoid slipping into a liquidity crisis, which weakens their financial situation and leads to financial difficulties.

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 on the South African retail sector by Louw et al. (2016) 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 (Kasozi 2017).

A study of the relationship between working capital management and the financial performance of food and beverage firms listed on the JSE in South Africa from 2007 to 2016,

by [Mabandla \(2018\)](#) documented a constructive association between an aggressive working capital management policy and financial performance. Moreover, the study found that the CCC and profitability moved in opposite directions.

A study by [Adam et al. \(2017\)](#) 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 asset investment and financing policies have highly significant positive effects on returns on shareholders' equity in the long run.

[Sathyamoorthi et al. \(2018\)](#) examined the impact of working capital on profitability in 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.

[Mukaddam and Sibindi \(2020\)](#) examined the relationship between the financial performance and corporate governance practices of South African retail firms. The results of their study documented that board size was negatively related to financial performance. In addition, the study found that board independence and firm size were positively related to financial performance. They reasoned that the relationship between corporate governance and financial performance is not very strong among retail firms in South Africa.

[Akbar et al. \(2021\)](#) investigated how working capital management influenced the operating and market risk returns of firms from 12 different industrial segments for a time span of ten years between 2005–2014 in Pakistan. They found that higher working capital levels were linked to lower stock price volatility.

3. Data and Methodology

3.1. Sample Description and Data Sources

This study seeks to examine the relationship between the financial performance and working capital management practices of retail firms listed on the Johannesburg Stock Exchange. The main reason for choosing the retail sector lies in the fact that the sector depends more on current assets and current liabilities than other sectors, such as mining, agriculture, finance, and manufacturing. The population of the study included all retail companies listed on the JSE for a -year consecutive period from 2010 to 2019. The sample consisted of only 16 retail firms. To arrive at our final sample, we eliminated firms with financial statements covering less than ten years from the study. The criteria were essential to enable easy comparison with similar research and to allow the use of unbalanced panel data, which has the advantage of more degrees of freedom and reduced multicollinearity across variables, according to [Gujarati \(2003\)](#).

The data set comprised 160 observations, based on the financial statements of the South African retail firms listed on the JSE for a ten-year period extracted from the Orbis database. The data collected from the financial statements of the retail firms was analyzed using descriptive statistics, a correlation matrix, and panel regression models.

The financial performances of the firms were measured using profitability ratios as the dependent variables. The dependent variables were measured by ROA, ROE, and NOPM to assess how efficient the South African retail firms were at generating profits. The metrics for working capital management, which included AAI, ACP, APP, and CCC, were used as independent variables in the study. The control variables in this study were leverage, firm size, and current ratio. Leverage is measured as the amount of debt a firm uses to finance assets. It is a measure of a firm's risk. Firm size is the logarithm of the total assets of any given firm. It is assumed that as the company grows, its sales also increase. Current ratio is a liquidity measure that indicates whether a firm has current assets to cover for its short-term financial obligations. It evaluates current assets to its current liabilities. The variables are defined in Table 1.

Table 1. Explanation of variables.

Variables	Description	Measurement
ROA	Return on assets	Net income ÷ total assets
ROE	Return on equity	Net income ÷ total equity
NOPM	Net operating profit margin	EBIT ÷ total revenue
AAI	Average age of inventory	Cost of goods sold ÷ inventory × 365 days
ACP	Average collection period	Accounts receivable ÷ net sales × 365
APP	Average payment period	Accounts payable ÷ cost of sales × 365
CCC	Cash conversion cycle	AAI + ACP – APP
SIZE	Firm size	Logarithm of total assets
LEV	Leverage	1 – (equity ÷ total assets)
CR	Current ratio	Current assets ÷ current liabilities
E	Error term	Standard error term
<i>I</i>	Cross-sectional dimensions	Ranging from 1 to 10
<i>T</i>	Time-series dimensions	Ranging from 1 to 10
$\beta_0, \beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6, \beta_7$	Regression coefficients	

Source: Researcher's own compilation.

Panel data techniques were used to control for heterogeneity caused by the retail firms' varying nature, complexity, and size. To ensure that the estimated models were robust and well specified, diagnostic tests were carried out. These included the Hausman specification test to decide whether to apply the FE or the RE model, the multicollinearity test for high intercorrelations among two or more independent variables in a multiple regression model, the Breusch–Pagan Lagrange multiplier (LM) test for the heteroskedasticity in the linear regression model, the applied Chow test to determine whether the pooled effect or FE model was the most appropriate to use in estimating panel data, the modified Wald test to establish whether the residual in the estimated FE model was homoscedastic, and the test for cross-sectional dependence (CD).

3.2. Model Specification

The models used to test the relationship between financial performances and working capital management strategies are as follows:

$$\text{Model 1: ROA} = \beta_0 + \beta_1 AAI_{it} + \beta_2 ACP_{it} + \beta_3 APP_{it} + \beta_4 LEV_{it} + \beta_5 SIZE_{it} + \beta_6 CR_{it} + \varepsilon_{it} \quad (1)$$

$$\text{Model 2: ROE} = \beta_0 + \beta_1 AAI_{it} + \beta_2 ACP_{it} + \beta_3 APP_{it} + \beta_4 LEV_{it} + \beta_5 SIZE_{it} + \beta_6 CR_{it} + \varepsilon_{it} \quad (2)$$

$$\text{Model 3: NOPM} = \beta_0 + \beta_1 AAI_{it} + \beta_2 ACP_{it} + \beta_3 APP_{it} + \beta_4 LEV_{it} + \beta_5 SIZE_{it} + \beta_6 CR_{it} + \varepsilon_{it} \quad (3)$$

3.3. Diagnostic Tests

Several tests were conducted on the pooled OLS, fixed effects, and random effects models. These included the tests for the joint validity of the cross-sectional individual effects, the [Breusch and Pagan \(1980, p. 239\)](#) LM test for random effects, and the [Hausman \(1978, p. 1251\)](#) specification test for heteroscedasticity.

4. Empirical Results

4.1. Descriptive Statistics

Table 2 displays the summary of the descriptive statistics for the variables' central measures of tendencies, such as the mean, median, standard deviation, and minimum and maximum values for the sample of retail firms under consideration.

Table 2. Summary of descriptive statistics.

Variable	Mean	Median	Standard Deviation	Minimum	Maximum
NOPM	0.0710	0.0634	0.2170	−0.9644	0.6660
ROA	0.0863	0.0877	0.1260	−0.5256	0.3312
ROE	0.2023	0.2169	0.2777	−1.2907	2.1256
CCC	81.82	28.51	117.99	−65.10	611.00
ACP	81.32	36.00	112.62	3.00	677.00
AAI	38.62	41.36	23.58	0	127.62
APP	34.81	33.00	19.40	0	103.00
LEV	0.5275	0.5550	0.2252	0.0900	0.9300
CR	2.06	1.34	1.45	0.53	6.82

On average, the South African retail firms achieved a CCC of 81.82 days, with minimum and maximum values ranging from −65.10 days to 611 days, respectively. This implies that there was a high variability in CCC, possibly because of the different credit policies of the retail firms.

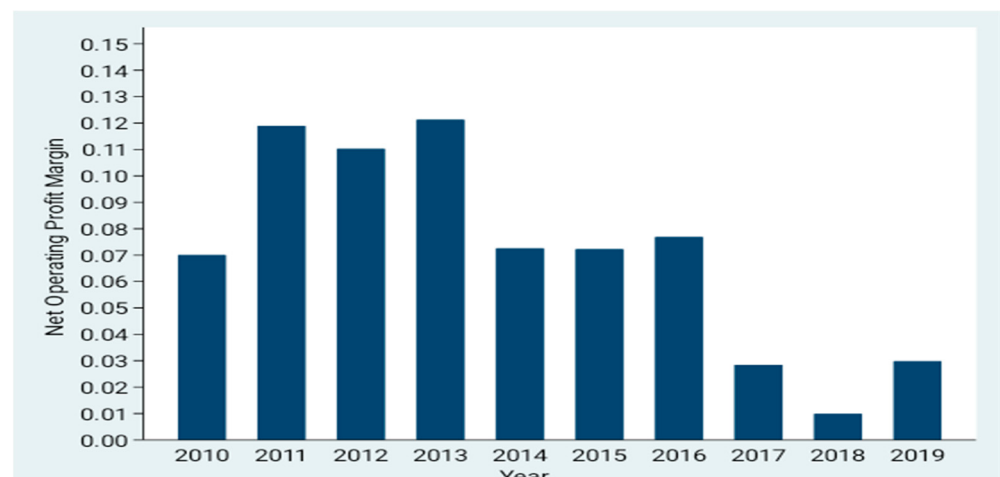
The results showed that South African retail firms took 49.81 days, on average, to collect from debtors. This means that the retail firms had to wait for more than a month after their credit sales. The AAI, which measured how long it took to sell the goods recorded by South African retail firms, was, on average, 42.08 days, with 0 minimum days and a maximum of 127.62 days.

The mean value of the APP reported by the 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 average ROA for the South African retail firms listed on the JSE was 8.63 percent, which implies that every rand invested in assets generated R8.63 in earnings. The South African retail firms recorded an ROE of 20.23%, on average, which showed efficiency in the use of shareholders' capital. Furthermore, the South African retail firms in the current study achieved a NOPM of 7.10% on average.

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.

The trends in the retail sector are depicted in Figures 1–3. The average financial performance of the South African retail firms can be seen from the NOPM, ROA, and ROE.

**Figure 1.** Trends in net operating profit margin.

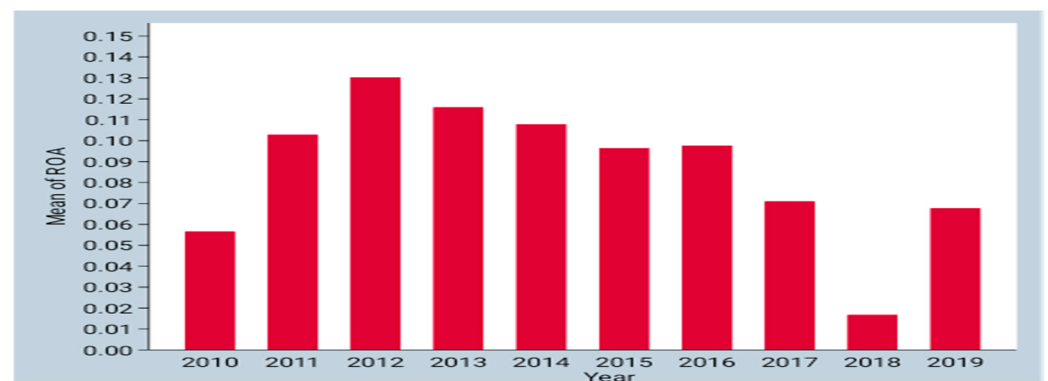


Figure 2. Trends in return on assets.

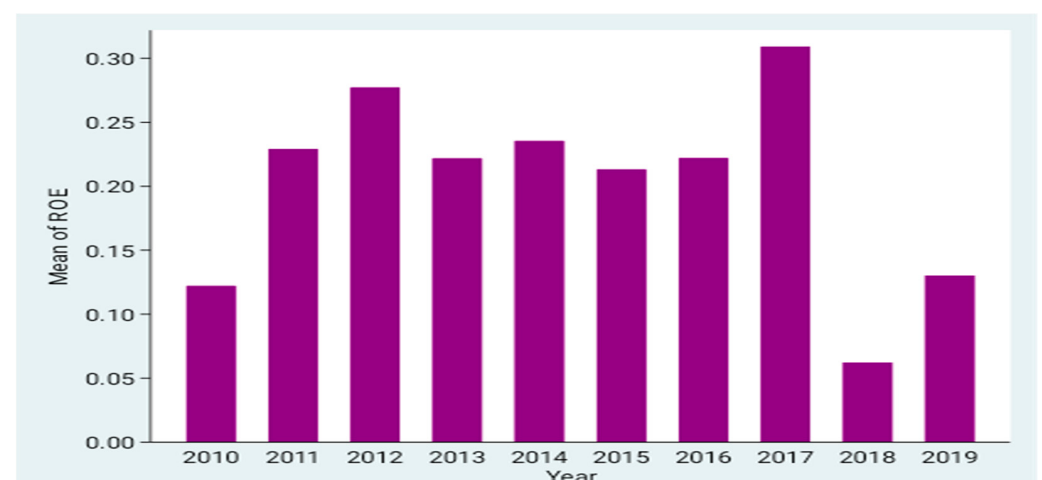


Figure 3. Trends in return on equity.

Figure 1 depicts the trends in NOPM for the 10-year consecutive period from 2010 to 2019 for South Africa retail firms. The sector reported a positive NOPM from 2010 to 2019. 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 1, there was a fluctuation in the NOPM between 2011 and 2013. This fluctuation ended in 2013; thereafter, a decline was experienced in 2014 relative to the three preceding years. This necessitates firms increasing their revenue or decreasing the cost of their goods sold. In the two years up to 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 have been 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. In 2019, there was a slight increase in NOPM.

Figure 2 depicts the trends in the ROA of the South African retail firms for the period under consideration. The figures are given as percentages of ROA. Overall, the 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, the ROA increased dramatically from 5.8% to 13% (the highest ROA recorded during the 10-year period). This could have been due to the 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 3. It is evident that a positive ROE was achieved over the period under study by the South African retail firms. There was a steady positive trend in ROE throughout the study period. The

positive ROE indicates that the retail firms were efficient at using equity to generate income and grow the shareholder capital invested in the firms. The 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 level 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 the other years. The retail firms' ROE was significantly lower in 2018, at 6%, the highest drop observed during 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 achieved, 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, the least being in 2012 and 2013, at 48%, and the highest being in 2016, at approximately 57%. The figure displays that the South African retail firms' leverage ratio was more than 50% for the period under review, except in 2012 and 2013, which recorded almost 48%, suggesting that nearly half of the firms' assets were financed by debt.

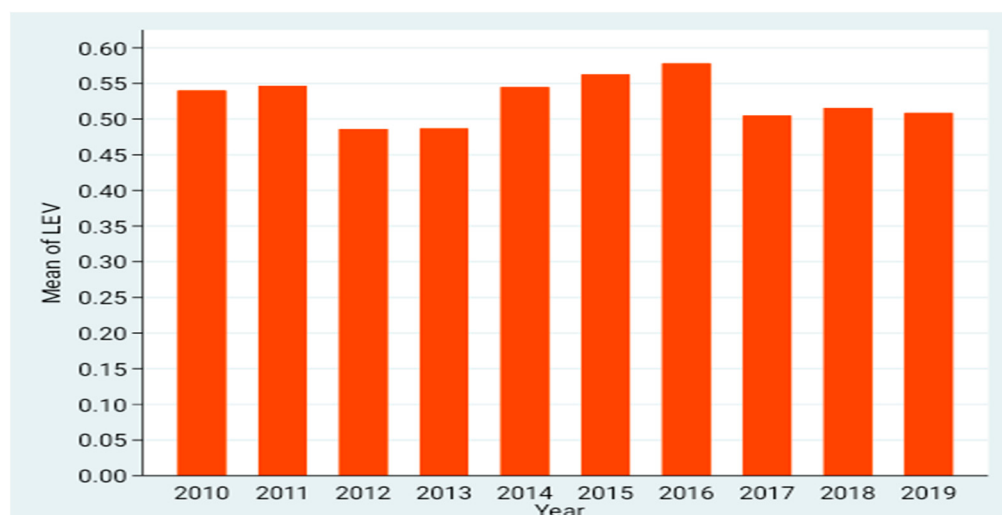


Figure 4. Trends in leverage.

The trend shows a steady increase in the use of debt to finance company assets, from 48% in 2013 until it reached its peak, of 57%, in 2016; it 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, although the debt ratio remained above 50%. This could have been because of an increased use of retained earnings to finance the firms' assets.

The movements of the working capital management components over a ten-year period are depicted in Figure 5. The cash conversion cycle (CCC) showed an upward trend from 2011–2016; it then started to decline until 2019. The increase in CCC was accompanied by higher levels of average collection period (ACP) and average age of inventories (AAI) with low average payment periods (APPs) throughout the study period. Thus, it is evident that the series exhibited some form of a conservative working capital management strategy.

An aggressive cash conversion cycle strategy comprises the pursuit of shorter ACP and AAI while relying heavily on shorter-term financing from trade payables through longer APP. A more conservative CCC strategy, on the other hand, entails holding high volumes of trade receivables and inventories while relying on short-term credit financing. A conservative CCC strategy is essentially a reflection of the use of long ACP, AAI, and shorter APP.

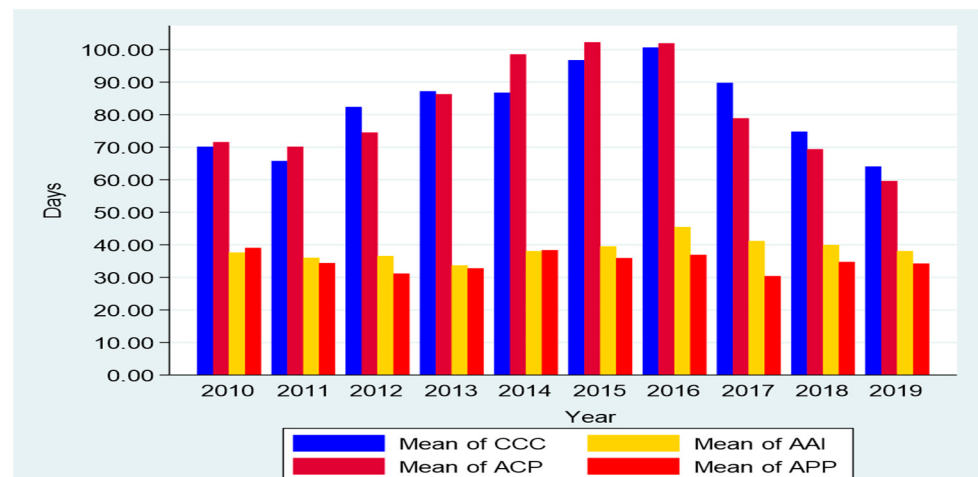


Figure 5. Trends in working capital management components.

4.2. Empirical Findings

Before estimating the relationship between financial performance and working capital management, diagnostic tests were performed. The panel regressions were estimated using three models, namely pooled OLS and RE and FE models. The diagnostic tests were performed to choose the preferred model.

The results are presented in Tables 3–6. The regression models employed NOPM, ROA, and ROE as the performance indicators and CCC, AAI, ACP, and APP as the measures for working capital management.

Table 3. 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.

Table 4. 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.

Table 5. 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 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 6. Summary of the key results.

Dependent Variables	Independent Variables	Coefficient	Effect and Significance
ROA	AAI	−0.0024 ***	Negative ***
	ACP	−0.0024 ***	Negative ***
	APP	−0.0013	Negative
ROE	AAI	0.0017	Positive
	ACP	−0.0003	Negative
	APP	−0.0042 **	Negative **
NOPM	AAI	−0.0024 ***	Negative **
	ACP	−0.0024 ***	Negative **
	APP	−0.0013	Negative

** Significant at 5%, and *** significant at 1%.

Table 3 presents the panel regression results with NOPM as the dependent variable. 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 Samiloglu and Akgün (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.

The results are summarized in Table 6. The results from all the regressions indicate that the average collection period and financial performance had a negative relationship on the retail firms' NOPM, ROA, and ROE. A negative relationship between average age of inventory and financial performance measures (NOPM and ROA) was found. The average payment period was found to be negatively related to return on equity and the cash conversion cycle and the NOPM variables were found to be negatively related.

For ACP and NOPM, it was established that the values were inversely related. This finding is consistent with the findings of Samiloglu and Akgün (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 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 in NOPM.

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), and Mabandla (2018). On the other hand, Yahaya (2016) found that both accounts receivable and inventory were significantly and positively related with financial performance.

The regression results suggested an inverse relationship between ROE and APP, which was statistically significant at a 5% level of significance. These findings were consistent with Kraus and Litzenberger's (1973) trade-off theory, which states that an increase in accounts payable will increase the risk of bankruptcy and financial distress and, hence, reduces the value of a firm.

The results of this study indicated that reducing working capital investment would positively affect the profitability of firms. These findings resonate with those of Louw et al. (2016), who analyzed the working capital management of South African retail firms and

asserted that a strategy of reducing investment in inventories appears to improve the profitability of South African retail firms.

The general interpretation of the results shows that a relationship existed between working capital management and the performance of South African retail firms.

It can therefore be inferred that the financial performance of South African retail firms is a function of 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.

The study found that ACP and financial performance had an inverse relationship. Similar results were also reported by [Deloof \(2003\)](#), [Lazaridis and Tryfonidis \(2006\)](#), and [Kasozi \(2017\)](#), who also found a negative relationship. This strand of studies suggests that firms can improve their financial performance by decreasing ACP. This can be construed as follows. The less time it takes for customers to settle their outstanding accounts, the more cash is available for other business projects, which increases profitability. However, by contrast, a positive relationship between the accounts collection period and profitability was documented by [Yahaya \(2016\)](#) and [Agha \(2014\)](#), among others.

We examined the relationship between APP and the financial performance of South African retail firms. The results showed a negative relationship between APP and financial performance. An inverse relationship was established by studies such as those of [Temtime \(2016\)](#), [Yahaya \(2016\)](#), and [Rezaei and Pourali \(2015\)](#), among others. On the other hand, studies carried out by [Moodley et al. \(2017\)](#) and [Louw et al. \(2016\)](#) documented a positive association between APP and financial performance. In addition, [Achode and Rotich \(2016\)](#) also found a positive relationship between accounts payable and firm performance.

Firms choose different policies to support their working capital. [Nyabuti and Alala \(2014\)](#) affirm that a firm can adopt either an aggressive or a conservative working capital management policy. The empirical findings demonstrated the need for an aggressive working capital management policy, which requires a minimum level of trade receivables and inventories. The findings suggested that reducing the components of working capital management improves firm performance.

5. Conclusions

This paper investigated the nexus between financial performances and working capital management strategies in retail firms in South Africa. The results documented that working capital management strategies have a significant impact on the financial performances of retail firms. Thus, it can be concluded that the financial performances of the South African retail firms were a result of their working capital management components.

It can therefore be concluded that South African firms can improve their financial performance by optimizing their working capital components, such as AAI, ACP, and APP, as far as possible without risking the loss of customers or suppliers.

The findings of this study contribute to plugging the knowledge gap on the interaction between WCM and financial performance within the context of South Africa. This research also contributes to a better understanding of the link between working capital management and financial performance. Working capital management practices will be improved in order to increase financial performance and the long-term viability of the firm.

The practical implications of this study are that firms' decision makers should consider the importance of working capital management strategies to accelerate firm performance and ensure financial sustainability. The findings of this study documented that working capital components affect financial performance to varying degrees and significance levels. As such, the contribution of this study lies in helping investors and managers to understand that working capital components influence profitability and the risk–return trade-offs involved in their investment decisions.

Firms should invest more in current assets over current liabilities to act as a buffer for unexpected financial commitments. Likewise, firms should ensure that their net working capital (current assets minus current liabilities) is always positive.

Despite the existence of several studies on working capital management and financial performance, it remains an important area warranting further research. This study opens areas for future research in several ways. Firstly, the findings of this study are based on JSE-listed retail firms. Therefore, the results cannot be generalized for firms that are not listed on the JSE. Future research could also include retail firms that are not listed on the JSE.

Secondly, the sample size comprises only retail firms. Therefore, the results are valid for retail firms. Similar further research should be extended to cover other sectors, such as manufacturing, mining, agriculture, finance, and industry, in order to form a comparison, since retail firms involve fast-moving consumer goods (FMCG) that require more working capital. Moreover, such research could also cover other firm-specific factors that were not addressed by this study, such as asset tangibility and dividend-paying ability, as well as other factors that could have a bearing on firm liquidity.

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