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Working Capital Management and Profitability of Listed Companies in Zambia

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Abstract
The purpose of this study was to examine the effect of working capital management on the profitability of selected listed companies in Zambia. The primary research question was: To what extent does working capital management affect the profitability of listed companies in Zambia? To address the research question, return on assets was computed as the dependent variable to measure company profitability. Independent variables such as inventory turnover period, receivable collection period, payables payment period, cash conversion cycle, and other factors that affect company profitability such as company size, leverage and growth were also computed. The analysis included descriptive statistics, multicollinearity analysis, and fixed effects regression modeling using dummy variables, based on panel data from eight listed companies in Zambia for the period 2017 to 2022. The findings of the study indicate that effective working capital management positively influences the profitability of listed companies in Zambia. Specifically, the inventory turnover period had a negative and statistically significant relationship with return on assets. Similarly, payables payment period and the cash conversion cycle showed a negative correlation with profitability, although these were not statistically significant. Conversely, the receivables collection period had a positive, but not statistically significant, effect on profitability. Furthermore, the study found that using the receivables collection period and payables payment period as working capital variables, instead of the cash conversion cycle, resulted in a higher R-square change and squared multiple partial R when regressed on return on assets. Therefore, managing receivables and payables as distinct components of working capital is more effective for listed companies in Zambia than focusing on the cash conversion cycle.
Keywords: cash conversion cycle, payables payment period, receivables collection period, return on assets, working capital management.
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1. Introduction

The aim of this study was to evaluate the effect of working capital management on profitability of selected listed companies in Zambia. The research question that guided this study was: *To what extent does working capital management affect the profitability of listed companies in Zambia?*

This study is important because it establishes the extent to which practices adopted in managing working capital affects profitability of listed companies in the country. As the bloodline of a business, working capital is critical in ensuring that a company remains profitable in a manner that enables it to meet its short-term obligations as they fall due.

To answer the research question above, the return on assets was computed as a measure of company profitability, the dependent variable. Measures for independent variables such as inventory turnover period, receivable collection period, payables payment period, cash conversion cycle and other factors that affect company profitability, namely, company size, growth and leverage were also computed. Descriptive statistics, multicollinearity analysis, and fixed effects regression modeling using dummy variables were then used to analyse panel data for eight listed companies in the country for the period 2017 to 2022.

Based on the study's findings, we conclude that effective working capital management positively impacts the profitability of listed companies in Zambia. In terms of the individual components of working capital, the inventory turnover period had a negative statistically significant relationship with company return on assets. Similarly, payables payment period and the cash conversion cycle had negative correlation with return on assets, although not statistically significant. On the other hand, we found that receivables collection period had positive correlation with company profitability, albeit not statistically significant.

The study also found that regressing return on assets with receivables collection period and payables payment period in place of cash conversion cycle resulted in higher R-square change and squared multiple partial R. Therefore, managing receivables and payables as separate components of working capital is more effective for listed companies in Zambia than using the cash conversion cycle.

The remainder of the paper is organised as follows. Section 2 provides a brief review of the prior literature, while the methodology and dataset are described in Section 3. Empirical results are presented in Section 4, and Section 5 offers concluding remarks.

2. Literature survey

2.1 Introduction

The literature on corporate financial management concerning the relationship between working capital management (WCM) and firm performance can be categorized into two groups: studies on financial institutions and studies on non-financial institutions. This distinction mirrors the differing compositions of working capital among firms. Non-financial institutions, unlike banks and other financial institutions, typically maintain substantial inventory balances, including raw materials, work in progress, and finished goods, as part of their working capital. Consequently, research findings for financial institutions may not be applicable to non-financial institutions. Given that this study focuses on non-financial institutions, only literature pertaining to this sector was reviewed.

2.2 Sub-Saharan Africa

In the African context, Kiptoo, Kariuki, and Maina (2017) examined the trend in working capital management practices and financial performance of tea processing firms in Kenya. The study showed a positive correlation between the payables payment period (PPP) and financial performance. In Mauritius, Padachi (2016) investigated the association between working capital management and financial performance of firms. His results demonstrated that massive investment in inventories and receivables is connected with poorer profitability. He also revealed that firm profitability is statistically inversely correlated with inventory turnover period (ITP) and cash conversion cycle (CCC). The study of Aregbeyen (2013) on the effectiveness of working capital management on the profitability of 48 large manufacturing firms on the Nigerian Stock Exchange (NSE) between 1993 and 2005 shows that WCM significantly reduces the profitability. The article concludes that improving WCM efficiency is essential and recommends that Nigerian manufacturing companies shorten the average collection period, average payment period, inventory turnover period, and cash conversion cycle.

However, each study above only looked at one country, but firms in other countries might be affected by different factors. A broader study by Ukaegbu (2014) examined the significance of working capital management in determining firm profitability in developing economies in Africa. The study considered four African countries by adopting a quantitative approach using balanced data from 2005 to 2009. The findings revealed a strong negative relationship between profitability and cash conversion cycle across different industrialization typologies in Egypt, Kenya, Nigeria and South Africa.

Contrary to the studies above which suggest that extended PPP improves company returns, Makori and Jagongo's (2013) research which focused on the influence of working capital management on the profitability of manufacturing and construction firms in Kenya found a negative relationship between the payables payment period and profitability. They concluded that delayed payments to suppliers were linked to decreased profitability due to increased costs and deteriorating supplier relationships.

2.3 Europe

In Europe, Wajahat and Hammad ul Hassan (2010) used a sample of 37 listed companies on the OMX Stockholm stock exchange from 2004 to 2008 to investigate the relationship between working capital policy and profitability of Swedish firms. They found that managers cannot increase profitability by adopting a relaxed working management capital policy. In the context of SMEs in the Eurozone, Lima, Martins, and Brandão (2015) found such factors as average collection period, average payment period, average inventory period, cash conversion cycles are negatively associated with profitability. Botoc and Anton (2017) found an inverse U-shaped relationship between working capital level and firm's profitability, pointing out the importance of short-term financial decisions in enhancing high-growth firms' profits. Research conducted in Western Europe has shown a favourable correlation between profitability and efficient WCM, as demonstrated by the findings of Enqvist, Graham, and Nikkinen (2014). Their research, which focused on Finnish businesses, showed that

profitability is greatly increased by efficient inventory, receivables, and payables management. The research highlights how crucial it is to address WCM holistically to maximise overall financial success.

Research from Eastern Europe, such as Michalski (2008), suggests that WCM techniques are essential to the success of businesses in this area. According to the study, despite the frequent economic instability in these markets, companies in Eastern Europe that efficiently manage their working capital components often achieve better profitability. The research also emphasised the need for WCM tactics tailored to the particular setting in order to handle particular regional issues. A recent study in Croatia by Korent and Orsag (2023) affirmed the view that effective WCM has a significant positive effect on profitability of firms.

Research on Greek businesses conducted in Southern Europe by Lazaridis and Tryfonidis (2006) has shown a strong correlation between profitability and effective WCM. According to the survey, businesses that have efficient cash conversion cycles, inventory control, and receivables/payables management do better financially. The significance of tailoring WCM procedures to the business settings and economic realities of Southern European markets is emphasised by the writers.

Although most studies suggest that reducing RCP and increasing PPP enhances profitability, Deloof (2003) investigated the working capital management of Belgian firms and found that extending the receivables collection period and reducing the payables payment period was associated with higher profitability. The rationale was that more lenient credit terms could enhance sales, thereby increasing profits, while firms that took longer to pay their suppliers had lower profitability, possibly due to the cost of lost discounts and strained supplier relationships. Garcia-Teruel and Martinez-Solano (2007) reached similar conclusions in respect of their study on SMEs.

2.4 Asia

In Asia, Altaf and Shah (2017) conducted a study on working capital management, firm performance, and financial constraints using the two-step generalized method of moments (GMM). They found a positive correlation between cash management, firm performance, and financial constraints. However, they did not consider other factors such as contingency, cash conversion cycle, and RCP that could affect firm performance and financial constraints. Vijayakumaran and Vijayakumaran (2017) found that when working capital is low, the relationship between WCM and profitability is positive, while when the level of working capital is high, this relationship is reversed. The researchers recommend that the optimal working capital for businesses is to balance the costs and benefits of maintaining working capital and maximizing operational efficiency.

Napompech (2012) found an inverse relationship between operating gross profit and ITP and RCP in Thailand, suggesting that managers can increase profitability by reducing the CCC, ITP, and receivable collection period. However, these companies cannot raise their profitability by deferring payments to their suppliers. Song, Liu, and Chen (2012) found that engineering working capital turnover ability, inventory turnover, liquid assets turnover, and receivables turnover have a positive impact on market competition performance, while the cash conversion cycle and liquidity of working capital have a negative impact on competitive activities in the market.

Contrary to the studies above which revealed that shortening RCP enhances profitability, Dong and Su (2010) examined the impact of working capital management on corporate profitability in Vietnam and found a positive correlation between the receivables collection period and profitability. They argued that longer collection periods could lead to higher sales and subsequently higher profits. Nobanee and AlHajjar (2009) reached similar conclusions in respect of firms listed on the Tokyo Stock Exchange.

2.5 Middle East and North Africa

In the Middle East and North African (MENA) countries, Abbas *et al*. (2017) found a negative relationship between the cycle of net trade and the profits of construction firms listed in the Kingdom of Bahrain, but also showed a positive and important relationship between the net trade cycle and the profitability of construction companies during the non-crisis period. In Iran, Alipour (2011) found a strong reverse link between CCC and profitability in companies listed on the Tehran Stock Exchange, with RCP and ITP having a significant negative relationship with profitability. Similarly, Soukhakian and Khodakarami (2019) found that the cash conversion cycle is negatively related to an asset's rate of return. Macroeconomic variables are positively and significantly related to return on assets, but do not adjust the relationship between WCM and business performance. Vural, Sökmen, and Çetenak (2012) studied 75 listed manufacturing firms on the Istanbul Stock Exchange for the 2002-

2009 period and concluded that the CCC and PPP are negatively related to profitability. This means that managers can raise profitability by reducing the collection period of accounts payables and CCC.

Although most studies suggest that reducing RCP enhances profitability, Lazaridis and Tryfonidis (2006) analyzed the relationship between working capital management and profitability for companies listed on the Athens Stock Exchange and found that extending the receivables collection period was associated with higher profitability. The rationale was that firms that allowed longer credit periods had improved profitability, likely due to increased sales volumes.

2.6 America

In America, research in the United States, such as Shin and Soenen (1998), has demonstrated a significant relationship between efficient WCM and profitability. The study found that firms with shorter cash conversion cycles tended to be more profitable. Raheman and Nasr (2007) confirmed these findings, emphasizing the importance of optimizing each component of working capital to enhance overall profitability.

Studies from Canada, including Moussawi *et al*. (2006), indicate that efficient WCM practices are crucial for the profitability of Canadian firms. The research suggests that Canadian firms that effectively manage their inventories, receivables, and payables tend to achieve higher profitability. The study also highlights the role of industry-specific factors in shaping WCM strategies.

In Latin American countries, research by Banos-Caballero *et al*. (2014) shows that WCM significantly impacts profitability. The study, which included firms from Brazil, Mexico, and Argentina, found that firms with optimized working capital components experience better financial performance. The authors emphasize the need for context-specific WCM strategies due to varying economic conditions and market dynamics in different Latin American countries.

Contrary to the studies above which revealed that increasing the PPP enhances profitability, Gill, Biger, and Mathur (2010) examined the relationship between working capital management and profitability for firms listed on the New York Stock Exchange and the results indicated a negative correlation between the payables payment period and profitability. They concluded that firms that extended their payables period had lower profitability, likely due to higher financing costs and potential damage to credit ratings.

2.7 Zambia

In Zambia, our literature search identified three published studies on WCM and profitability. Mwanza *et al.'s* (2023) study of selected supermarkets in one city found that supermarkets encounter liquidity issues, diminished profitability, a weaker competitive stance, increased capital tied up in working capital, and an inability to free up funds to support growth. This study was limited in scope, covering selected supermarkets in one city only. The other two published studies by Kayombo (2023) and Fungai (2024) investigated WCM in financial institutions; the findings might therefore not be generalizable to non-financial institutions.

The varying results regarding the impact of working capital management policies and practices on the profitability of non-financial institutions, as shown in the literature, indicate that findings from one region may not be applicable in different economic contexts. For example, Jaworski and Czerwonka (2024) reviewed 43 scholarly articles published between 2003 and 2018, encompassing nearly 62,000 enterprises in 35 countries. The results reveal a consistent negative relationship between profitability and the cash conversion cycle, observable across various countries and economic contexts. A statistically significant negative relationship was also found between profitability and the RCP, PPP and ITP. Additionally, the researchers identified that macroeconomic and institutional factors moderate these dependencies. Specifically, in wealthier economies, the negative impact of CCC on profitability is weaker. Similarly, stronger protection for receivables and payables diminishes the negative relationship between profitability and ITP. Conversely, higher inflation strengthens the negative relationship between profitability and RCP and PPP, while higher unemployment exacerbates the negative impact of CCC, RCP and PPP. Greater availability of credit amplifies the negative relationship with PPP, and a more developed capital market intensifies the negative relationship with CCC and RCP.

This study is therefore warranted, as the Zambian economic environment is distinct, and results from studies in other Sub-Saharan African countries cannot be reliably used to manage working capital in Zambia.

3. Data and methodology

In this section, we provide a description of the data and data sources we used in the study. We also define the measure adopted to compute firm profitability. Finally, we describe the empirical model employed in the study.

3.1 Data and Sources

We collected financial data for the study from annual reports of non-financial firms listed on the Lusaka Securities Exchange (LuSE). The data comprised audited financial statements for eight of the 22 listed companies for the period 2017 to 2022. The eight companies were selected conveniently because they were either involved in agriculture or manufacturing or trading or value addition and were therefore expected to hold large amounts of working capital, particularly inventory.

The financial data collected enabled computation of profitability as measured by Return on Assets (ROA) as the dependent variable and various associated independent variables such as receivables collection period, payables payment period, inventory turnover period, and cash conversion cycle. Company size, growth, and leverage were used as control variables.

3.2 Data Analysis Model

We generated descriptive statistics to better understand the data used in our study. To test multicollinearity among the variables, we conducted Variance Inflation Factor (VIF) and correlation analyses.

The data set we used included both time-series and cross-sectional elements, which allowed us to employ panel data methodology for the analysis. This approach offers the advantage of incorporating cross-sectional observations over multiple time periods and controlling for individual heterogeneity due to hidden factors, thus avoiding biased results.

For the analysis, we used fixed effects (panel) regression via the Least Squares Dummy Variable approach in SPSS. This method was chosen for its ability to handle unbalanced and correlated data (SPSS Inc., 2005). Since the data set had missing data for a few companies in some years, we preferred the fixed effects model over General Linear Models (GLM). The fixed effects model is asymptotically efficient (minimum variance), whether the data are balanced or not. Kayombo (2023) used this technique to good effect in a similar study on the effect of working capital management on profitability of banks in Zambia. Additionally, Yeboah and Yeboah (2014) found that fixed effects regression analysis yielded better results compared to ordinary least squares modelling in a similar study. The dummy variables in the model were designed to control all possible differences between cases/companies on any measured and unmeasured predictors. Accordingly, the fixed effects regression model takes the form:

$$y_{ij} = \alpha_0 + \beta_1 x_{1ij} + \beta_2 x_{2ij} \ldots \beta_n x_{nij} + \varepsilon_{ij} \quad (1)$$

where y_{ij} is the value of the dependent variable for a particular ij case, $\alpha 0$ is the constant, β_1 through β_n are the fixed effect coefficients, x_{1ij} through x_{nij} are the fixed effect variables (predictors) for observation j in group i, and ε_{ij} is the error for case j in group i.

The specific models employed in the study are listed below, while the variables are defined in Table 1.

$$ROA_{ij} = \alpha_0 + \beta_{1CCC1ij} + \beta_{2TDAij} + \beta_{3SIZEij} + \beta_{4ITPij} + \beta_{5GROij} + \varepsilon_{ij} \quad (2)$$

$$ROA_{ij} = \alpha_0 + \beta_{1PPP1ij} + \beta_{2RCPij} + \beta_{3TDAij} + \beta_{4SIZEij} + \beta_{5ITPij} + \beta_{6GROij} + \varepsilon_{ij} \quad (3)$$

Table 1 Variable definitions (Source: Adapted from Kayombo (2023)

Variable	Type	Definition	Expected correlation between variables
Profitability (ROA)	Dependent	Return on Assets which is profit/loss after tax divided by total assets.	
Cash Conversion Cycle (CCC)	Independent	The difference between receivables collection period and payables payment period.	Negative
Payables Payment Period (PPP)	Independent	The number of days a company takes to pay off its accounts payable (Payables/cost of sales X 365 days).	Positive
Receivables Collection Period (RCP)	Independent	The number of days a company takes to collect payments from its customers after a sale has been made (Receivables/Turnover X 365 days).	Negative
Inventory Turnover Period (ITP)		The number of days it takes for a company to sell its entire inventory during a specific period (Inventory/Cost of Sales X 365 days).	Negative
Leverage (TDA)	Independent (control variable)	The ratio of total debt to total net assets.	Positive
Company Size (SIZE)	Independent (control variable)	The log of total assets	Positive
Growth (GRO)	Independent (control variable)	Percentage growth in annual turnover (Revenue_1 – Revenue_0/Revenue_0)	Positive

4. Empirical results

4.1 Descriptive Statistics

As shown in Table 2 below, the average Return on Assets (ROA) for the companies was 6.69%. The negative minimum value of -37.39% indicates that some companies experienced significant losses, while the maximum ROA of 57.00% shows that others were highly profitable. The high standard deviation of 13.67 suggests substantial variability in profitability among the companies.

On average, companies took 46.47 days to collect receivables. The collection period ranged from 11 days to 119 days, indicating that some companies were able to collect their receivables quickly, while others took much longer. The standard deviation of 28.24 days reflects moderate variability in the time taken to collect receivables.

Table 2 Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Return on Assets	39	-37.39	57.00	6.6936	13.67104
Receivables Collection Period	34	11.00	119.00	46.4706	28.24164
Payables Payment Period	30	22.00	462.00	106.5000	107.48047
Inventory Turnover Period	38	17.00	499.00	125.5263	95.23080
Cash Conversion Cycle	34	-1026.00	39.00	-110.4412	209.22471
Company Size	34	13.00	17.00	14.6471	.98110
Growth	30	-36.00	155.00	20.1000	40.46229
Leverage	32	13.00	544.00	87.9688	105.50814
Valid N (listwise)	19				

The average period for paying payables was 106.50 days. The minimum payment period was 22 days, while the maximum was 462 days, indicating a wide range in how quickly companies settled their payables. The high standard deviation of 107.48 days suggests significant variability in payment practices among the companies.

On average, it took companies 125.53 days to turn over their inventory. The inventory turnover period varied from 17 days to 499 days, showing that some companies managed their inventory very efficiently, while others took much longer to sell their stock. The standard deviation of 95.23 days indicates considerable variability in inventory management efficiency.

The average Cash Conversion Cycle (CCC) was -110.44 days, suggesting that, on average, companies received cash from sales before they paid for their inputs. The negative minimum value of -1,026 days indicates that some companies had very efficient cash cycles, while the maximum value of 39 days shows less efficiency for others. The very high standard deviation of 209.22 days reflects substantial variability in cash management practices.

With respect to the control variables, the average company size, measured as the log of total assets, was 14.65. Company sizes ranged from 13 to 17, indicating relatively low variability, as evidenced by the standard deviation of 0.98. The average growth rate for the companies was 20.10%. Growth rates ranged from -36.00% to 155.00%, indicating that while some companies experienced significant declines, others saw substantial growth. The high standard deviation of 40.46% reflects large differences in growth rates among the companies. The average leverage ratio was 87.97%, suggesting that companies, on average, had substantial debt relative to equity. Leverage ratios varied widely from 13.00% to 544.00%, indicating significant differences in financial structure among the companies. The high standard deviation of 105.51% underscores this variability.

The descriptive statistics reveal significant variability in financial metrics among the companies in the sample. High standard deviations across many variables suggest diverse financial performance and practices. This diversity could impact the regression analysis, highlighting the importance of considering such variability when interpreting regression results.

4.2 Multicollinearity Analysis

We assessed multicollinearity among the variables using correlation analysis and the variance inflation factor (VIF). As shown in Table 3 below, the correlation results revealed that, except for CCC, which had high correlation coefficients with PPP (-.964), TDA (-.702), and SIZE (.664), all other predictor variables exhibited either medium or low strength correlations. Cohen (1988, pp.79-81) categorizes the effect size of a correlation as small if below 0.3, medium/moderate if between 0.3 and 0.5, and large/strong if above 0.5, applicable to both positive and negative associations. To address the multicollinearity between CCC and PPP, TDA, and SIZE, we employed stepwise regression for the working capital variables. This resulted in two models: Model A, which excluded RCP and PPP and used only CCC, and Model B, which excluded CCC (the difference between RCP and PPP).

Table 3 Correlations Analysis

Correlations								
	ROA	RCP	PPP	ITP	CCC	SIZE	GRO	TDA
ROA	1							
RCP	-.383	1						
PPP	.414	.000	1					
ITP	.139	-.426	.414	1				
CCC	-.444	.202	-.964	-.436	1			
SIZE	-.277	.110	-.536	.348	.664	1		
GRO	.186	-.166	-.100	.276	.113	.065	1	
TDA	.113	.298	-.228	-.056	-.702	-.517	-.046	1

The VIF of the two models were estimated as shown in Table 4 below. The very low VIF means of Model A and B of 2.3 and 3.8 respectively, suggest the absence of multicollinearity among predictor variables in both models. This is supported by tolerance values above 0.10. According to Pallant (2020, pp.246-247) a tolerance value of more than 0.10 and VIF below 10 suggests low multicollinearity among the regressors. Having established that multicollinearity among the predictor variables was low, we proceeded to perform fixed effects regression.

Table 4 Collinearity Statistics

Collinearity Statistics				
	Model A		**Model B**	
	Tolerance	**VIF**	**Tolerance**	**VIF**
CCC	.256	3.906		
SIZE	.313	3.195	.349	2.864
GRO	.950	1.052	.866	1.155
TDA	.795	1.258	.204	4.893
ITP	.483	2.071	.267	3.747
RCP			.190	5.255
PPP			.207	4.827
Mean VIF		**2.3**		**3.8**

4.3 Fixed Effects Regression Analysis

The results for the fixed effects regression using dummy variables are presented in Table 5 below.

Table 5 Fixed Effects Regression Results for Models A and B

Variables	Model A			Model B		
	Coefficients	t-values	Significance	Coefficients	t-values	Significance
SIZE	4.191	0.785	0.448	4.881	1.037	0.330
GRO	0.114	1.056	0.313	0.292	2.499	0.037
TDA	-0.212	-2.764	0.018	-0.204	-2.634	0.03
ITP	-0.175	-3.234	0.008	-0.120	-1.968	0.085
CCC	-0.009	-0.257	0.802			
RCP				0.299	1.450	0.185
PPP				-0.121	-1.542	0.162
	R square	0.888		R square	0.938	
	Adj R square	0.786		Adj R square	0.861	
	R square change	0.332		R square change	0.389	
	F change	6.50		F change	8.38	
	Sig.	0.005		Sig.	0.004	
	Multiple $R^2_{partial}$	0.75		Multiple $R^2_{partial}$	0.86	

4.3.1 Overall regression model

The R-square change for Model A of 0.332, (Model B: 0.389), is significantly greater than zero [F(5,11) = 6.505, p<.005], {Model B: [F(6,8) = 8.38, p<.004]}. The R-square change signifies that adding time-varying regressors increases the percentage of total variation accounted for in company profitability by 33.2% (Model B: 38.9%) after accounting for between company differences. The squared multiple partial R (calculated using the formula below) shows that the time-varying predictors account for 75% of the unexplained variation in profitability after residualizing for the dummy variables for Model A (Model B: 86%).

$$Multiple\ R^2_{partial} = \frac{R^2_{model2} - R^2_{model1}}{1 - R^2_{model1}} = \frac{\Delta R^2}{1 - R^2_{model1}} \quad (4)$$

The statistics for the two models indicate that effective working capital management significantly impacts the profitability of companies in Zambia. This conclusion is supported by numerous studies in various regions (Shin and Soenen, 1998; Wajahat and Hammad ul Hassan, 2010; Aregbeyen, 2013; Nobanee, 2017; Vijayakumaran and Vijayakumaran, 2017). Additionally, the study found that Model B, which incorporated the receivables collection period and the payables payment period, provided a better fit for the data than Model A, which used the cash conversion cycle instead. Model B had higher R-square change and squared multiple partial R values. Consequently, managing receivables and payables as separate components of working capital is more effective for the Zambian companies than focusing solely on the cash conversion cycle.

4.3.2 Working capital management and profitability

With respect to the effect of the WCM independent variables, the ITP had a negative statistically significant relationship with company profit. This relationship is as expected and is in line with findings in other studies (Aregbeyen, 2013; Padachi, 2016; Jaworski and Czerwonka, 2024) as shorter inventory turnover period minimises pilferage, obsolescence, and damage of inventory, thereby increasing profitability.

As regards the other WCM components, our study found that PPP had a negative statistically insignificant relationship with company profitability, while RCP had a positive statistically insignificant relationship. Although most studies reveal positive and negative correlations between PPP and RCP with ROA respectively, some studies suggest that this is not always the case. For example, Gill, Biger, and Mathur (2010), Alipour (2011), and Vural, Sökmen, and Çetenak (2012) found negative relationships between profitability and PPP and concluded that profitability could be increased by reducing the PPP. Many other researchers reached similar conclusions (Makori and Jagongo, 2013). It is, therefore, imperative to manage PPP because a company could

jeopardise its relations with suppliers if the PPP is very long.

Similarly, although shorter RCP theoretically should enhance profitability due to less likelihood of customers defaulting, very shorter RCP may result in reduced sales and therefore profitability. Accordingly, although many studies reveal negative correlation between RCP and profitability (Lima, Martins, and Brandão, 2015, Jaworski and Czerwonka, 2024), some studies support our findings (Deloof, 2003; Lazaridis and Tryfonidis, 2006; Garcia-Teruel and Martinez-Solano, 2007; Nobanee and AlHajjar, 2009; Dong and Su, 2010) and recommend effective management of receivables to ensure a balance between customer defaults (shorter RCP) and revenue growth through credit sales (longer RCP).

The CCC had a very weak negative statistically insignificant association with ROA. Ukaegbu (2014) reached similar conclusions in terms of the direction of the relationship, although in this case the relationship was statistically significant. Many other researchers have found similar relationships (Alipour, 2011; Soukhakian and Khodakarami, 2019) signifying the importance of managing the cash conversion cycle.

5. Conclusion

The aim of this study was to evaluate the effect of working capital management on profitability of selected listed companies in Zambia. The study concluded that effective working capital management had a positive statistically significant impact on profitability of listed companies in Zambia. In terms of the individual components of working capital, the inventory turnover period had a negative statistically significant relationship with company return on assets. This finding was in line with our expectations because a shorter inventory turnover period minimises pilferage, obsolescence, and damage of inventory, thereby increasing profitability. Similarly, payables payment period and the cash conversion cycle had negative correlation with return on assets, although not statistically significant. On the other hand, we found that receivables collection period was positively correlated with company profitability, albeit not statistically significant. The study also revealed that Model B, which incorporated receivables collection period and payables payment period as working capital variables, provided a better fit for the data compared to Model A, which used cash conversion cycle instead. This was evident through the higher R-square change and squared multiple partial R in Model B. Consequently, for listed companies in Zambia, it is more effective to manage receivables and payables as distinct elements of working capital rather than focusing on the cash conversion cycle.

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