

WORKING CAPITAL MANAGEMENT AND FINANCIAL PERFORMANCE: EVIDENCE FROM LISTED FOOD AND BEVERAGE COMPANIES IN SOUTH AFRICA

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ABSTRACT

This study aimed to investigate the nexus between working capital management and the financial performance of firms. We used a sample of 12 listed food and beverage companies in South Africa during the period 2007 to 2016. This study collected secondary data from the Iress McGregor databases for the Johannesburg Stock Exchange (JSE) listed companies. Using various econometric techniques, we found a positive relationship between the inventory conversion period (ICP) and profitability of firms. In addition, the study found a negative relationship between the average collection period (ACP) and profitability. Furthermore, the study found a positive relationship between the average payment period (APP) and profitability. The findings of this article suggest that financial managers of firms need to adopt aggressive working capital management policies in order to create shareholder wealth through enhancing the financial performance of the firm.

Keywords: Working Capital Management, Profitability, Return on Assets, Financial Performance.

INTRODUCTION

The management of short-term assets and short-term liabilities available to a company for financing the daily operations of the business is gaining incremental interest (Karankye & Adarquah, 2013). It is vital to managing working capital well, as it has a generous influence on the financial performance of a company (Deloof, 2003). Failing to manage working capital efficiently may lead to the failure of the business.

The most commonly used measure of short-term assets and liabilities is the cash conversion cycle (CCC). It refers to the time span between the expenditure on the acquisition of the raw materials and the collection from the sales of accomplished goods (Charituo et al., 2012; Omesa et al., 2013). We used CCC elements such as inventory conversion period (ICP), average collection period (ACP) and average payment period (APP) as proxies of working capital management, consistent with the above-mentioned studies. Deloof (2003) claimed that the longer the time lag, the more the investment in short-term assets and short-term liabilities, and an extensive CCC might increase profitability as it leads to more sales. Yet, Deloof (2003) found that profitability might weaken with the CCC if the cost of greater investment in working capital improved quicker than the benefits of holding more inventories or giving customers more trade credits.

Financial performance measurement on the other hand mostly focuses on the types of financial ratios attained from the financial statements of companies. These measures comprise of profitability ratios, liquidity ratios, activity ratios and debt ratios (Ismaila, 2011). We used profitability as a proxy for financial performance, specifically, return on assets (ROA). Padachi

(2006) defined ROA as the ratio of earnings before taxes gauged to total assets, and narrates a company's profitability to its assets base.

It is essential to manage short-term assets and liabilities adequately as it has a direct impact on both profitability and liquidity of the company (Deloof, 2003). Mathuva (2010) asserted that if a company has substantial sales due to a lenient credit policy, this eventually improves the cash cycle. Hence, an extensive CCC, in this case, may result in a growth in the company's profitability. Yet, the traditional view of the association between the CCC and profitability is that a longer cycle can damage the profitability of the company (Deloof, 2003). There are many studies that have been conducted internationally on the relationship between working capital management and financial performance (Gill et al., 2010; Afrifa et al., 2014; Atlaf & Shan, 2017; Shivastava et al., 2017 & Singhanian & Mehta, 2017).

While a significant number of studies have been conducted on working capital management and financial performance internationally, and in East and West African countries, there is a dearth of studies that considered this relationship in Southern Africa, and particularly in South Africa. The purpose of this study is therefore to investigate the relationship between working capital management and the financial performance of listed food and beverage companies in South Africa, as they trade in fast moving consumer goods (FMCG) and perishable goods. It is important to management working capital efficiently as this has a direct effect on both liquidity and profitability of the company (Deloof, 2003). Mavutha (2010) argues that if a company has significant sales owing to a soft credit policy, this ultimately increases the cash cycle. Thus, a long CCC in this regard may lead to an increase in the company's profitability. However, the traditional view of the relationship between the CCC and profitability is that a longer cycle can harm the profitability of the company (Deloof, 2003). On this basis, it is important for financial managers of these companies to manage short-term assets and liabilities properly with the aim of enhancing their company's financial performance, to avoid suffering financial losses emanating from spoiled goods, a problem generic to the sector. At the same time, financial managers are constantly battling between pursuing the wealth maximisation objective of the firm vis-à-vis the profit maximisation objective.

This study contributes to the existing empirical literature on the relationship between working capital management and the financial performance of firms, specifically those engaged in the trade of fast moving consumer goods, using data drawn from listed food and beverages in South Africa specifically, as the working capital management policies of these FMCGs differs vastly from those of other economic sectors such as retail or mining. These South African companies are deemed important given their significant role in the economy of the country as food and beverage manufacturers and processors, at a time when the country is undergoing radical economic transformation which could threaten the sector and food security. The FMCGs' ability to provide basic necessities such as food at reasonable costs to both them and the end consumer, requires the financial managers to do so effectively and efficiently while also ensuring financial sustainability of the companies. Our study hence validates some of the findings of earlier empirical work. The rest of this article is structured as follows: the next section presents a review of the existing literature on the relationship between working capital management and financial performance of firms. This is followed by the methodology in which we detail our econometric model. The results are presented and subsequently discussed, and the paper winds up with a conclusion and recommendations.

LITERATURE REVIEW

The assertion that the management of short-term assets and short-term liabilities has an influence on the company's profitability and risk is gaining considerable attention (Banos-Caballero et al., 2012). In pioneering research, Smith (1980), suggested that managing short-term assets and liabilities is essential since it has an impact on companies' profitability and risk, and eventually the value. In the process of managing a firm, an asset-liability mismatch may arise leading to an increase in profitability in the short run, but endangering liquidity. Theories on working capital management were intensely discussed by Gitman & Zutter (2014) when they highlighted the risk and return trade-offs inherent in different working capital strategies. Excessive working capital results in cash being tied up in accumulated inventory potentially leading to waste and theft, complacency of management efficiency and consequent loss of profits. On the other hand, inadequate working capital leads to stagnated growth, increased operating inefficiencies, and thus reduced profitability. (Pandey, 2005). Precisely, a greater aggressive working capital strategy that has low investment in working capital is related with a higher return and risk; whereas a conservative strategy which deals with high investment in working capital has lower return and risk (Gitman & Zutter, 2014). Overall, shortening the cash conversion cycle could improve profitability.

Gill et al. (2010) examined the relationship between working capital management and profitability using a sample of 88 American companies listed on the New York Stock Exchange over the period 2005 to 2007. They used CCC to measure working capital management and gross operating profit (GOP) to measure profitability. Their study found a positive and significant relationship between CCC elements and profitability: the greater the CCC, the greater the profitability of the company (Gill et al., 2010). They concluded that if companies manage their working capital properly, profitability could increase.

On the other hand, Afrifa et al. (2014) investigated the working capital management and company performance relationship using a sample of 1128 listed small medium enterprises (SMEs) in the United Kingdom over the period 2007 to 2014. They used a panel data regression analysis to analyse data. CCC components such as inventory holding period (IHP), accounts receivable period (ARP) and accounts payable period (APP) were used to measure working capital, while Tobin's q ratio (QRATIO) was used to measure performance. They found a concave relationship between the QRATIO and IHP, ARP and APP, respectively.

Altaf & Shah (2017) examined the relationship between working capital management, company performance and financial constraints using a sample of 437 non-financial Indian companies. They used the two-step generalised method of moments (GMM) technique to analyse data. Their paper found an inverted U-shape relationship between working capital management and company performance. Furthermore, they also asserted that the firms that are likely to be extra financially constrained have inferior optimal working capital levels.

Shrivastava et al. (2017) conducted a study on the impact of working capital on profitability in Indian corporate entities during the period 2003 to 2012. The classical panel data and Bayesian techniques were used to analyse data. The findings of their study indicate that a longer CCC has a negative influence on profitability. They argue that financial accuracy indicators play a significant role in determining profitability. Furthermore, Shrivastava et al. (2017) revealed that larger companies seem to be more profitable and significant as per the Bayesian approach.

Similary et al. (2017) investigated the working capital management link using a sample of different listed non-financial companies in emerging Asian countries. ROA was used to

measure profitability while the CCC was used to measure working capital management. They used the panel data model to control for the endogeneity problem. Singhinia & Mehta (2017) found that lower levels of working capital are positively associated with high profitability for companies in countries like India, Sri Lanka, Indonesia, Malaysia and Singapore. On the other hand, for companies in China, Pakistan, Bangladesh, Hong Kong and South Korea, a higher level of working capital is positively associated with profitability. Furthermore, Singhinia & Mehta (2017) found that companies in countries like Thailand, Taiwan and Vietnam do not embrace a U shape or an inverted U shaped link between working capital and profitability. For instance, the results of their study revealed that profitability is positively linked to working capital for Taiwan and Vietnam, but is negative for Thailand.

In Africa, most research on working capital management and profitability has been conducted in West and East African countries, with relatively few studies done in Southern Africa. Uremadu et al. (2012) conducted a study on the effect of working capital and liquidity on listed corporates' profitability in Nigeria over the period 2005 to 2006. They found a positive relationship between the inventory conversion period, debtor's collection period and return on assets. In addition, the study also found a negative relationship between the cash conversion period and the ROA (profitability).

Korankye & Adarquah (2013) conducted a study on working capital management and its impact on profitability in Ghana between 2004 and 2011. They employed the working capital cycle (WCC) to measure profitability and gross operating profit (GOP) to measure profitability. Their study concluded a negative but significant influence between working capital and profitability. In addition, their study also found a negative relationship between individual elements of the cash conversion cycle; inventory turnover period, APP and profitability. Furthermore, their study revealed a significant negative relationship between leverage and profitability, while liquidity measures of interest cover and the current ratio yielded significantly positive relationships with profitability.

Kasozi (2017) studied the effect of working capital management on profitability using a sample of 69 listed manufacturing firms in South Africa during the period 2007 to 2016. His study found that ACP and APP have negative but significant effects on profitability as proxied by the return on assets. In addition, Kasozi (2017) also found that a number of days in inventory, as proxy of working capital management, has a positive significant effect on profitability.

Emerging trends from the review of earlier scholarly work reveals that although numerous studies on the relationship between working capital management and profitability have been done, there is still ambiguity and no consensus on the appropriate variables to use as proxies for working management capital. This has to some extent resulted in differences in country studies on this topic. The next section presents the methodological aspect of our paper.

METHODOLOGY

Data and Variables

In this, paper, we examine the relationship between working capital management and financial performance of firms using a sample of 12 listed food and beverage companies in South Africa from 2007 to 2016. We used audited financial statement data from the iress McGregor database to calculate financial ratios. The sample was drawn from a population of 18 food and beverage companies listed on the Johannesburg Stock Exchange (JSE) in South Africa, based on the availability of complete data for the period under review.

In line with the literature and earlier empirical studies, in Table 1 below we show the expected sign from regressing the independent variables against our dependent variable. The return on assets (ROA) was employed as a measure of financial performance and the dependent variable. ROA is defined as the ratio of earnings before interest and tax over the total assets (Agha & Mphil, 2014). Our independent variables include inventory conversion period (ICP), average collection period (ACP), average payment period (APP) and control variables such as the size of the company (proxied by total assets), the current ratio (CAR), and the GDP. The selection of our variables is based on earlier scholarly work in the field (Deloof, 2003; Garcia-Teruel & Martinez-Solano, 2007; Makori & Jagongo, 2013).

Variable	DEFINITION	PREDICTED SIGN
ICP	Inventory conversion period	+/-
ACP	Accounts collection period	+/-
APP	Accounts payment period	+/-
CCC	Cash conversion cycle	+/-

Hypotheses

Since the objective of this study is to examine the relationship between working capital management and financial performance of listed food and beverage companies in South Africa, we hypothesise the following, based on the three aspects that make up the cash conversion cycle which is a measure of efficient working capital management.

Hypothesis 1:

H₀: there is a positive relationship between ICP and profitability of firms.

H_a: there is a negative relationship between ICP and profitability of firms.

Hypothesis 2:

H₀: there is a positive relationship between ACP and profitability of firms.

H_a: there is a negative relationship between ACP and profitability of firms.

Hypothesis 3:

H₀: there is a positive relationship between APP and profitability of firms.

H_a: there is a negative relationship between APP and profitability of firms.

Econometric Model

We adopted a panel data methodology similar to that of Deloof (2003), Abuzayed (2012), and Afrifa & Padachi (2016), to test the relationship between working capital management and profitability of listed food and beverage companies in South Africa.

$$ROA_{it} = \beta_0 + \beta_1 ICP_{it} + \beta_2 ACP_{it} + \beta_3 APP_{it} + \beta_4 SIZE_{it} + \beta_5 CAR_{it} + \beta_6 GDP_{it} + \varepsilon_{it} \quad (1)$$

Where i denotes the cross-section and t denotes time-series dimension, while β_0 is the beta coefficient, and ε_{it} indicates the error term. The ROA represents return on assets measured

by $EBIT \div \text{Total Assets}$, ICP is the inventory conversion period, while ACP indicates the average collection period. APP denotes the average payment period. The control variables include the current assets ratio (CAR) measured by $\text{current assets} \div \text{current liabilities}$, size of the firm calculated as the natural logarithm of total assets (TA), and the size of the economy proxied by GDP. The next section presents the results of the regression analysis.

RESULTS AND DATA ANALYSIS

A summary of the descriptive statistics of measures employed in the estimations for the sample of 12 listed food and beverage firms in this paper is presented in Table 2 below.

Variable	Observations	Mean	Standard deviation	Minimum	Maximum
ROA	120	0.1483754	0.912689	- 0.0697364	0.5009896
ICP	120	76.62488	75.57057	8.264296	377.6299
ACP	120	82.24973	62.71593	32.38038	348.2824
APP	120	66.76958	53.89306	-318.259	293.8481
CAR	120	1.890464	1.014991	0.2752075	7.012863
GDP	120	2807246	617954.3	1857779	3795141
TA	120	7234298	6278701	355510	3.02E+07

Source: Author's own computations

For the measure of profitability, the mean value of ROA under review was 0.15, with a standard deviation of 0.09. The minimum of ROA was 7%, while the maximum was 50%. The mean for (ICP) was 76.62 days. This means that firms in the sample on average required 76.62 days to sell their inventory. The standard deviation of ICP was 75.57 days, while the ICP had a minimum of 8.62 days and a maximum of 377.63 days.

The mean for ACP was 82.22 days for the sampled firms. This implied that during the account receivables period, firms in the sample waited 82.25 days on average to collect cash from credit sales. The standard deviation of ACP was 62.72 days while the minimum of ICP was 32.38 and a maximum of 348.28 days. The mean of APP as a proxy for working capital management was 66.77 days, with a standard deviation of 53.89 days. The CAR as the control variable had a mean value of 1.89, with a minimum value of 0.28% and the maximum value of 7.01%. These percentages are observed as good performance indicators since the firms surveyed are in the fast moving consumer goods sector of the economy. The average size of these firms under review listed on the JSE as approximated by the natural logarithm of total assets was R7.2 million, with a standard deviation of R6.2 million. The maximum size of these firms under review was R3.02 billion.

A correlation of matrix was used to scrutinise our variables for any multicollinearity and between them (Tables 3).

	ROA	ICP	ACP	APP	TA
ROA	1.0000				
ICP	-0.2877*	1.0000			
ACP	-0.2852*	0.2972*	1.0000		
APP	0.0637	0.2339	0.0453	1.0000	

	TA	CAR	GDP		
TA	-0.1449	-0.0796	0.0065	-0.0272	1.0000
CAR	0.0134	-0.0564	0.05551*	-0.1393	0.0870
GDP	-0.2740*	0.0312	0.0063	0.0122	0.3967*
	CAR	GDP			
CAR	1.000				
GDP	-0.0476	1.000			

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Source: Authors own computations

According to Table 3 above, none of the variables was correlated at the 5% level of significance. Table 4 below presents the estimation results. The one-period lag of return on assets (L.ROA) was included in the regression to control for dynamic effects.

	Pooled Effects	Fixed Effects	Random Effects	Differenced GMM	GLS	LSDVC
L. ROA	0.581***	0.148	0.581***	-0.400**	0.575***	0.301**
	-0.12	-0.135	-0.14	-0.0954	-0.0703	-0.109
ICP	-0.0000761	0.000379	-0.0000761	-0.00072	-0.00002	0.000141
	-0.0000829	-0.000471	-0.000104	-0.000711	-0.0000664	-0.000502
ACP	-0.000321*	-0.000215	-0.000321*	0.000356	-0.000513***	-0.00014
	-0.000132	-0.00041	-0.000147	-0.000298	-0.000112	-0.000342
APP	0.0000699	0.0000512*	0.0000699	7.41E-06	0.0000672	0.0000496
	-0.0000789	-0.0000172	-0.0000537	-0.0000671	-0.000047	-0.000126
TA	-0.0310*	-0.104	-0.031	0.0613	-0.0459***	-0.0897***
	-0.015	-0.0879	-0.0186	-0.132	-0.0125	-0.0131
CAR	0.0185**	0.0112	0.0185***	0.00212	0.0164**	0.0124
	-0.00681	-0.00574	-0.00532	-0.0116	-0.00553	-0.00789
GDP	-0.00243	-0.0399	-0.00243	-0.262	0.0433	-0.00988
	-0.0815	-0.15	-0.0833	-0.297	-0.0378	-0.0353
_cons	0.271	1.035	0.271		0.0877	
	-0.463	-0.704	-0.489		-0.237	
N	108	108	108	96	108	108
R ²	0.602	0.252				

Standard errors in parentheses; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Source: Authors' own computations

	Pooled	Fixed effects	Random effects	Diff GMM	GLS	LSDVC
Observations	108	108	108	96	108	108
Groups	12	12	12	12	12	12
F-stats/Wald chi2	25.61	6.63	621.79	31.01	337.43	
Prob>F/Prob>Wald chi2	0.0000	0.0031	0.0000	0.0000	0.0000	
Hausman (Chi2)		24.49	24.49			
Prob>chi2		0.0004	0.0004			
R-SQUARED						

Within		0.2521	0.1594		
Between		0.0517	0.9257		
Overall	0.6017	0.0834	0.6017		
rho		0.7554	0.000		
Arellano-Bond AR(1)				0.21	
Prob>z				0.836	
Arellano-Bond AR(2)				-1.72	
Prob>z				0.085	
Sargan test of overid				7.80	
Prob>chi2				0.168	
Hansen test of overid				3.16	
Prob>chi2				0.675	
Instruments				12	

Source: Authors' own computations

The R^2 shows that 60% of the variation in ROA was driven by the regressors. The F-stat on the fixed effects model was 6.63, and significant, meaning that the model was properly specified and unbiased (Table 5).

A number of estimation techniques were used. These include the pooled OLS, Least squares dummy variable (LSDV) corrected for Kiviet bias (Kiviet, 1995), Fixed effects (FE) model, Random effects (RE) model, Generalized Method of Moments (GMM) model, and the generalized least squares (GLS) primarily as a means for rigorous testing (robustness).

Econometric modelling of panel data is based on two principal estimation techniques, i.e. fixed effects and random effects models. To determine the most appropriate estimation technique between the two approaches, we employed the Hausman (1978) specification test. The p-value of 0.0004 for the Hausman test indicates that there is evidence that the random effects estimates are invalid, thereby making the fixed effects model more efficient than the fixed effects model for this study. The Hausman test results with a chi-square of 24.49 and a probability of 0.0004 suggest that we should reject the null hypothesis, that the unobservable, country-specific effects and the regressors are statistically independent (orthogonal). As such, the fixed effects estimation approach results are discussed in the next section.

DISCUSSION OF FINDINGS

The results indicate that there was a positive association between ROA and ICP, meaning that there is a high sales turnover between assets and goods of the sampled firms. A variation in the inventory turnover can significantly impact profitability, hence due attention should be paid to the firm's inventory policy. This finding is reaffirmation of those of Uremadu et al. (2012), Mathuva (2010), Makori & Jagongo (2013) and Kasozi (2017). In addition, we found a significant but positive association between APP and ROA, implying that the more time the firms in our study take to pay their bills, the more they become profitable. Kaddumi & Ramadan (2012) argued that a positive association between ROA and APP could be that profitable firms have, on average fairly, extensive payment periods than firms that are not performing as a result of their credit reputation. Lastly, we also found a negative relationship between ACP and ROA meaning that these FMCG firms have a shorter time to collect money from their customers. This was expected in line with the nature of business and perishable goods that they trade in. Further, this is consistent with the aggressive working capital management theory, which suggests that

high levels of non-current assets and low investment in working capital are related with a higher return and risk (Smith, 1980; Deloof, 2003).

With regard to the control variables, we found a positive but insignificant association between the current ratio (CAR) and ROA. This is consistent with the study by Pais & Gama (2015), who also found a positive association between CAR and ROA. Also it emerged that there is a negative but insignificant association between the size of the firm (TA) and ROA, implying that larger firms are at a greater advantage as they are able to employ the full use of their assets to generate income.

CONCLUSIONS AND POLICY RECOMMENDATIONS

The primary objective of this study was to investigate the relationship between working capital management and financial performance of the listed food and beverage firms in South Africa from 2007 to 2016. In addressing the objectives of this study, we used return on assets (ROA) as a measure for profitability, gauged against different elements of working capital and control variables. With regard to our hypotheses, we conclude that we fail to reject hypothesis 1 as it emerged that there is indeed a positive relationship between the inventory conversion period (ICP) and financial performance, confirming that due to the nature of business trade, there is a high sales turnover potential between assets and goods of firms in the listed food and beverage sector of South Africa. With respect to hypothesis 2, we reject the null hypothesis as we found a negative association between the average collection period (ACP) and ROA. Lastly, we fail to reject hypothesis 3 as it emerged that there is indeed a positive relationship between the average payment period (APP) and financial performance, confirming that the longer our firms take to pay their bills, the more they become profitable.

Our empirical findings support the aggressive working capital management theory. Smith (1980) argued that working capital management is essential since it has an impact on firms' profitability and risk, and eventually the value. A greater aggressive working capital strategy that has low investment in working capital is related with a higher return and risk, whereas conservative strategy which deals with high investment in working capital with lower return and risk.

Based on the above results, the following recommendations are anticipated to financial managers of food and beverage firms in South Africa. While these firms could improve ICP by increasing the cost of sales, this may result in a decline in sales, leading to a reduction in a firm's profitability. In this instance, we recommend that financial managers condense their ICP by cutting selling prices in order to enhance sales revenue, thus strengthening firm profitability. Furthermore, we suggest that financial managers should increase investment in working capital by extending the days in the time for APP so that they can also improve the profitability of the firms. Financial managers should strive to achieve an optimal working capital which balances costs and benefits, while maximizing profitability, and by default, shareholder wealth. Limitations of this study are that it relied on only one measure of financial performance, the return on assets; giving the findings limited generalisability and comparability to other studies that have applied other measures such as gross operating profit or return on equity for example. However, future research could consider a comparison of other industrial sectors to assess the effect of working capital management on profitability by extending the dependent variables to include different measures of financial performance.

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