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Effect of Working Capital Management on the Performance of Listed Manufacturing Firms in Kenya

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Abstract:

Working capital management remains an integral role of the financial manager that ought to be prioritized as it entails the daily working operations of an organization which eventually influence corporate performance. Manufacturing remains the cornerstone of the industrial sector in Kenya accounting for 14% of the country's GDP slightly below that of the Global sector contribution to Global GDP at 16%. However the performance growth of the sector has been erratic given the working capital challenges that continue to embroil the sector. The aim of this study was to ascertain the effect of working capital management on the financial performance of listed manufacturing firms in Kenya. Specifically, the study examined the effect of Inventory, accounts receivables, accounts payables and cash management on the financial performance of listed manufacturing firms in Kenya. The population for the study was the listed manufacturing firms in the Nairobi securities exchange. All the ten listed manufacturing firms were selected for study. Quantitative research design was adopted and secondary data collected from the financial reports of the firms for a period of ten years (2007-2016). Data was analyzed using a panel model. ROE and Tobin's Q were used as proxies of financial performance. STATA version 13 was used in the analysis. ICP, ACP, APP and CCC were used as proxies of Inventory, accounts receivables, accounts payables and cash management. The findings indicated an insignificant negative relationship between ICP (Inventory management), ACP (Accounts receivables management) and financial performance (ROE & Tobin's Q) while an insignificant positive relationship was established between Cash management (CCC) and accounts payables management APP) and financial performance. The analysis of variance (ANOVA) indicated that all the components of working capital management combined have an insignificant effect on the financial performance of the listed manufacturing firms in Kenya. The listed manufacturing firms should work towards maintaining optimum inventory levels to reduce ordering and stockholding costs. Striking a balance between a lenient and strict credit policy is also valuable to reduce incidences of bad debts. The payments to suppliers shouldn't be delayed more to utilize the cash to finance other operational expenses as this could compromise firm's relations with suppliers.

Keywords: Working capital management, financial performance, manufacturing firms

1. Introduction

1.1. Background

Working capital management remains an integral role of the financial manager that ought to be prioritized as it entails the daily working operations of an organization which eventually influence corporate performance. Kumar Panigrahi (2015) explicates working capital as the lifeblood of any going concern as it facilitates daily investment activities of the organization. Sharaf and Haddad (2015) elucidates that working capital management entails the short term financial decisions in an organization which has been largely neglected in the previous studies despite its importance in financial management. Singhania et al., (2014) extends on this argument and opine that failure to honor short term obligations could move an organization a step higher towards bankruptcy. Organizations under bankruptcy are perceived as relatively risky by investors which mean that investors will shun such organizations in fear of losing their investment.

It's paramount to first understand the meaning of the term working capital before delving further on a discussion on working capital management. Nimalathasan (2010) defined Working capital as the business capital that is used in the daily operations of a business and is computed net of current assets and current liabilities. Positive working capital is requisite to facilitate daily working operations. Maswadeh (2015) extended on the definition indicating that working capital is a measure of a firm's short term financial health and performance. It's a financial metric that measures the ability of a firm to discharge its short term obligations using its current assets. Current assets are defined as the assets that can be easily be converted in cash usually within a year while current liabilities are those obligations that are due within a year.

Going further working capital management is delineated as a firm's managerial accounting strategy devised to monitor and use the two working capital components, current assets and current liabilities to enhance efficiency in the firm's financial operation. Mwangi et al., (2014) quips that effective working capital management ensures that a business is able to sustain its daily operations and it has sufficient capacity to meet its short term obligations and upcoming operational costs. According to Singhania et al., (2014), working capital management has three components; inventory management, accounts receivables and payables management. To offer a single metric of working capital management, cash conversion cycle which is the duration it takes to convert its investments in inventory and accounts receivables having paid its suppliers for goods supplier on credit.

Working capital management plays a vital role in tradeoff between corporate performance and risk. Sharaf & Haddad (2015) opine that enhancing working capital management eventually translates to a better profitability. When an organization has enough working capital to run its daily operations, the end result is improved productivity and hence financial performance. According to Panigrahi (2013) lack of sufficient working capital may even strain the relations between a firm and suppliers as the firm is not able to pay the suppliers in time. Stock replenishment may be delayed which could halt the production process and thus decline in productivity (Moridipour & Mousavi, 2014). The end result is decline in end products not able to meet the prevailing demand in the market and hence decline in the firm's performance from their venture. Profitability which has been largely used as a proxy of financial performance is basically the degree to which a business organization yields financial gain from a venture, i.e. the difference between the garnered revenues and the amount spent in the production and operations (Pandey, 2015).

According to Lazaridis & Tryfonidis (2006) the main reason why a business organization exists is to make profits. On this trail of thought, an organization will devise all strategies to maximize their financial performance. One of these strategies is deployed in management of working capital by devising an effective working capital policy. Björkman & Hillergren (2014) assert that poor working capital management has been cited as a major cause of default in UK firms. A high cash conversion cycle indicates that much of the firm's cash is tied up in inventories and accounts receivables (Raheem, 2013). As such it's not able to fully support all its operating costs. The result is a standstill in some of the operations and eventually low sales and financial performance. Previous studies have focused on other factors affecting profitability such as capital structure, corporate social responsibility, corporate governance and firm size. No doubts that these factors can only be effectively managed when a firm has sufficient working capital pointing to the significance of working capital management. Uyar (2009) explicates that working capital forms about 30-40% of the total firms investments and this is more in manufacturing firms given that their daily working operations are so intense.

Manufacturing remains the cornerstone of the industrial sector in Kenya accounting for 14% of the country's GDP slightly below that of the Global sector contribution to Global GDP (KPMG, 2016). The sector employs an average of 20% of the total workforce in the economy. Comparatively this is higher than what other national economies employ denoting the importance of the manufacturing sector to the Kenyan economy. A more development of this sector could generate more foreign exchange, employment opportunities and enhance the country's GDP (Kung'u, 2015). A robust management of working capital will greatly foster the growth of the sector.

1.2. Research Objectives

1.2.1. General Objective

The general objective of this research was to examine the effect of working capital management on the performance of listed manufacturing firms listed in Kenya

1.2.2. Specific Objectives

Considering the various components of working capital management (inventory, receivables, payables and cash management) the general objective was facilitated by the following specific objectives;

- To examine the effect of inventory management on the financial performance of listed manufacturing firms in Kenya
- To examine the effect of accounts receivables management on the Financial Performance of Listed Manufacturing Firms in Kenya
- To examine the effect of accounts payables management on the financial performance of listed manufacturing firms in Kenya
- To examine the effect of cash management on the financial performance of listed manufacturing firms in Kenya

1.3. Scope

The study is limited to the effects of working capital management on the performance of listed manufacturing firms in Kenya. This study covers a period of ten years from 2007 to 2016. The study is based on the dimensions of working capital management that affect the performance of manufacturing firms thus using components of working capital such as Payables management, inventory management, debtors and cash management.

2. Literature Review

2.1. Theoretical Review

2.1.1. Operating Cycle Theory

To begin with Aminu & Zainudin (2015) explicates an operating cycle as the average time frame required for a firm to make an initial cash outlay to produce goods, sell them and receive cash from the clients in exchange for the goods. As such the operating cycle incorporates two components of working capital, inventories and accounts receivables. Before delving into more details its pertinent to point out that the operating cycle theory emanated from the 'natural business year' idea of Park (1963) who explicated that an operating cycle may take place in more or less than an year based on the nature of industry. This may be 2 or 3 months for some companies notably the food processing companies and 1 to 3 years for other firms such as ship processing companies. It was hence opined that the standard one year is capricious and thus the term natural business year.

The operating cycle begins with the purchase of inputs (inventories) to the receipts of cash from the firm's debtors (accounts receivables) for finished goods sold on credit. According to Maswadeh (2015) the operating cycle approach is more reliable in liquidity management as compared to the traditional liquidity management approach that deployed liquidity ratios, notably acid test and current ratios to indicate a company's liquidity position. A longer operating cash cycle simply denotes that a firm is taking longer to receive cash for goods sold on credit. This again means that a lot of cash is tied up in debts and this may be an impediment to the firm's growth in performance as it's unable to procure more inputs to enhance continuous production (Nimalathasan & Rathika, 2012).

2.1.2. Risk-Return Trade Off

The relationship between risk and return as espoused in the risk return trade off was first formalized by Harry Markowitz in 1952. This is one the vital theories in portfolio management and in any decisions pertaining investments founded on risk and return relationship. According to this theory, low levels of uncertainty (low risk) are linked to low level of returns while high levels of risk is linked to high potential returns (Shapiro, 2010). However this is not always the case as highly risky ventures could eventually turn sore. Relating this theory to working capital management, there is risk return tradeoff between liquidity and investments (Sharan, 2015). A number of investments call for a huge cash outlay. If a firm exhausts its cash and directs it to investment, its daily working operations would be affected especially for manufacturing firms that require substantial liquidity to run its working operations. This would adversely affect the firm's profitability and could actually be rendered bankrupt due to its inability to discharge its short term obligations as they fall due.

Committing firm's liquid cash to investments also means that the firm will not be able to acquire more inventories to foster continuous production. Panigrahi (2013) indicates that Inventory shortage interrupts manufacturing schedules leading to lower sales and eventually lower profits. Conversely, if a firm opts to have high liquidity levels and not invest in any viable ventures available, it means that it will have to forego profits inherent in those ventures. As such the financial manager of every concern must consider the risk return tradeoff before committing the firm's liquidity to either short term or long term investments (Samiloglo, 2008).

2.1.3. Agency Theory

This theory was championed by Stephen Ross and Barry Mitnick in 1970. The theory was further developed by Jensen & Mecklin in 1976 on their seminar paper on the theory of the firm. Agency denotes a fiduciary relationship between two parties in which of the parties (agent) acts on behalf of the other (principal) (Bamberg et al., 2012). In the context of an organization, the manager is the agent acting in the best interest of the shareholders (principal). However, a shareholder is just but one of the stakeholders in an organization. A stakeholder is a party with an interest in an organization. The various stakeholders in an organization include shareholders, creditors, suppliers, customers, government and the general public (Chandra, 2010). The manager who is tasked with the day to day operations of the organization must make decisions that serve the interests of all these stakeholders. It's the manager who makes the decisions regarding the working capital management (receivables, payables and inventories).

Aminu & Zainudin (2015) assert that the management should not engage in risky ventures that could see the shareholders incur losses and delays in repaying suppliers. Equally customers should not be charged exorbitant prices to realize better value for shareholders. Pandey (2015) points out that a lenient credit policy for customers who buy from the organization on credit could not be in the best interests of the suppliers as longer days sales outstanding definitely infer long days' payables outstanding. As such in devising the working capital management and other investment strategies, the manager (agent) should have in mind the interests of all stakeholders.

2.2. Conceptual Framework

The following figure outlines the conceptual framework so that for empirical application in a more comprehensive manner. In this study, the conceptual framework constitute of three independent variables and one dependent variable. The incentive behind a conceptual framework is to categorize and present concepts that are valuable to the analysis and define connections among them.

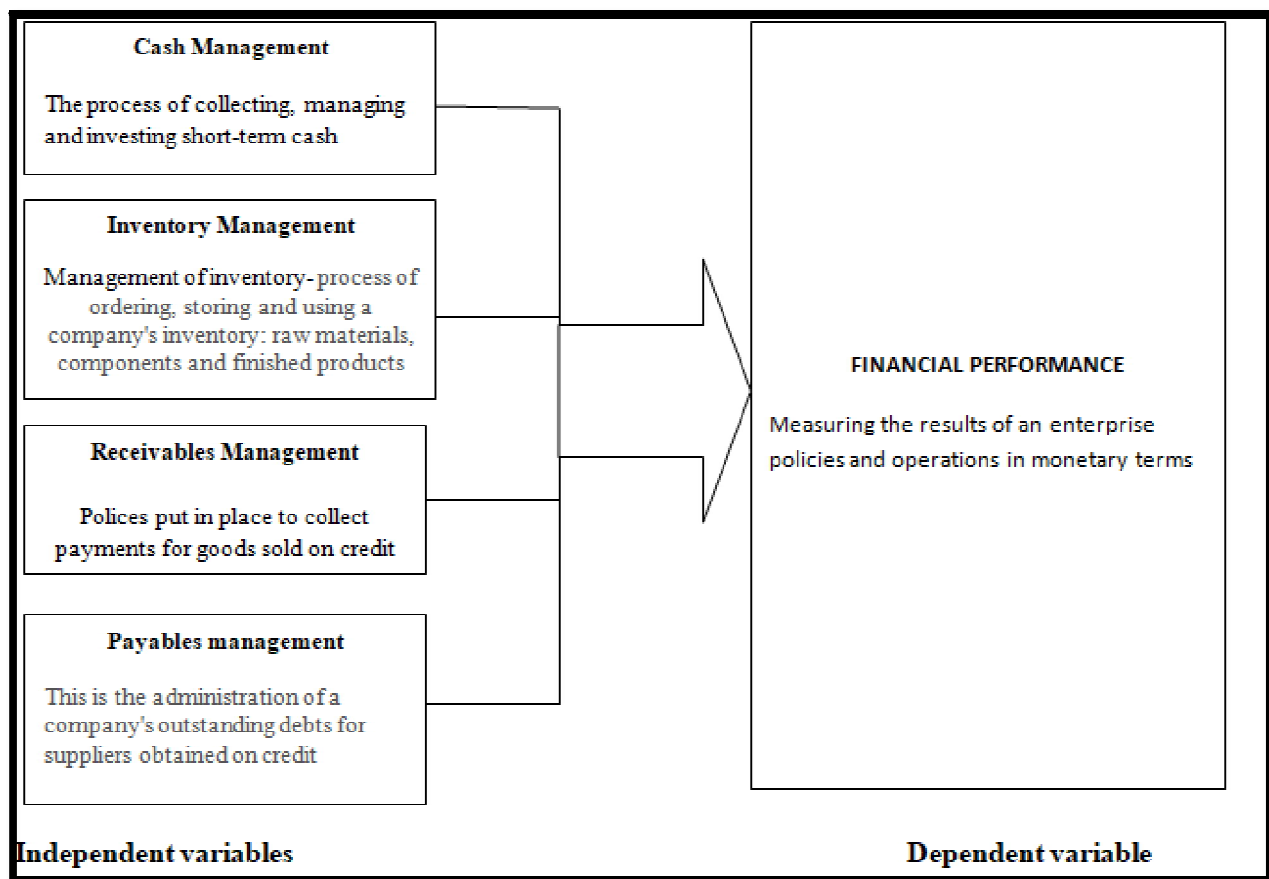


Figure 1: Conceptual Framework

2.3. Empirical Review

2.3.1 Inventory Management and Financial Performance

Inventory management denotes the supervision and strategies set to ensure that there is an optimum stock item to enhance continuous production and to reduce/eliminate stock out costs and obsolescence costs. Iqbal and Zhuquan (2014) hold that inventory management is pertinent to ensuring right stock levels in the firm's storehouses. Stock outs could lead to reduced revenues margins as production is impeded while excess stocks could trigger losses given the obsolescence and stockholding costs. Nimalathan (2012) holds that proper inventory management helps track inventory levels and enables firms to fulfill orders on right time and accurately. Inventory conversion period has been widely used as a measure of inventory management. Moridipour and Mousavi (2014) explicates inventory conversion period as the average period it takes to convert inventory into sales.

Panigrahi (2013) conducted a research on 5 Indian cement firms to find out the association between inventory management and profitability. Regression analysis was adopted to test the hypothesis with the findings indicating a significant negative relationship (inverse relationship) between inventory management and profitability (gross operating profit). Similar findings were established in a study by Napompech (2012) on a study involving 255 companies listed on Thai stock exchange. Just like the case of Panigrahi (2013), regression analysis was adopted to examine the relationship between these two variables. The results of Panigrahi (2013) and Napompech (2012) were also in conformity with those of Nimalathan (2012) whose study focused on listed manufacturing firms in Sri-Lanka. Nimalathan (2012) adopted correlation and regression analysis. The findings indicated a negative relationship between inventory management (measured in terms of inventory conversion period) and profitability at -0.065 levels (measured in terms of return on assets). This means that a rise in the inventory conversion period by one day would see a decline in the return on assets by 6.5%.

The findings of the above highlighted studies were also in tandem with those of Sial and Chaudhry (2012) that focused on the Pakistan manufacturing sector. The study studied the period between 1998-2008 establishing a negative relationship between inventory management and financial performance of the listed manufacturing firms in the country. Return on assets was used as a measure of corporate performance. Although in a different sector, a study in the Kenyan tea sector by Yegon et al., (2014) had similar findings to those of Sial and Chaudhry (2012). The study established that inventory management has a negative influence on the corporate performance of quoted tea firms in Kenya. However, Iqbal and Zhuquan (2014) had distinct results establishing an insignificant positive relationship between inventory conversion period (inventory management) and net operating profit (profitability) at a confidence level of 5%. The study studied 253 non financial firms listed on Karachi stock exchange.

2.3.2 Accounts Receivables Management and Financial Performance

Accounts receivables denote the outstanding invoices owed to a firm by its customers for goods sold on credit. Aminu and Zainudin (2015) indicates that firms with high level of accounts receivables have high provision for bad debts especially if the credit policy is more lenient even to new customers. Most of the studies that have examined the effect of accounts receivables on financial performance have adopted days' sales outstanding or accounts receivables collection period which is the average period that it takes to recover money from debtors for goods sold on credit.

Adembo (2015) examined the effect of accounts receivables management on the profitability of Kenyan listed manufacturing firms. The study adopted regression analysis where accounts receivables turnover was used as a measure of accounts receivables management. The results of the study indicated that the receivables turnover of the manufacturing firms had such an insignificant impact on the profitability of the Kenyan listed manufacturing firms. These results concurred with those of Mathenge (2016) who also focused on the listed manufacturing firms in Kenya for the period 2011-2015. Mathenge (2016) established an insignificant negative influence of accounts receivables collection period (accounts receivables management) on the profitability of listed manufacturing firms in Kenya. According to the study's findings, an increase in accounts collection period by one day could lead to a 24.7% decline in the firms' profitability. Correlation and regression analysis were deployed in the study for the analysis of quantitative data collected from the financial reports of the manufacturing firms.

Duru et al., (2014) examined the impact of receivables management on the profitability of food and beverages manufacturing firms in Nigeria. The study collected secondary data from the financial reports of the sampled firms for the period 2000-2011. The results of the study indicated an insignificant negative effect of accounts receivables on the profitability of food and beverages firms in Nigeria which was in tandem with the findings of Mathenge (2016) and Adembo (2015).

Kasozi (2017) examined the effect of working capital management on profitability of listed manufacturing firms in South Africa. The study adopted panel data methodology with regression analysis used to analyze the panel data of 68 manufacturing firms listed for the period from 2007 to 2016. The findings indicated a statistically significant negative relationship between average collection period and the profitability of the manufacturing firms. This slightly contradicted the findings of Duru et al., (2014) and Adembo (2015) on the significance of accounts receivables management as they established an insignificant influence of debtors' management on profitability.

2.3.3 Accounts Payables Management and Financial Performance

According to Enow and Kamala (2016) accounts payables is a vital constituent of a firm's cash flows. Managing a firm's accounts payables ensures that there is an optimal cash at hand to sustain the organization and to maintain strong relationships with suppliers that are critical to the wellbeing of the firm. Delays in paying suppliers can strain the relationship with suppliers which could affect the flow of raw materials to the firm which could impede production and eventually has an adverse effect on the overall performance of an organization.

Ikechukwu and Nwakaego (2013) examined the effect of accounts payables management on the financial performance of Food and Beverages Manufacturing Companies in Nigeria. Data was collected from the annual report of the firms where multiple regression analysis was deployed to analyze the data. The results of the study indicated that accounts payables management have a significant negative relationship on the profitability of the manufacturing firms at 1% significance level. Accounts payments period was used as a proxy of accounts payables management while return on assets was used as a proxy of financial performance. A rise in accounts payments period was thus established to have an adverse effect on the return on assets. Madishetti and Kibona (2013) disagreed with the findings of Ikechukwu and Nwakaego (2013). They focused on examining the effect of accounts payables and receivables management on the profitability of 38 SMEs in Tanzania. Average collection period and average payment period were deployed as proxies of accounts receivables management and accounts payables management while gross operating profit was used as a measure of firms' profitability. Deploying regression analysis, the findings of the study established a positive relationship between accounts payments period and gross operating profit. The results however indicated a significant negative correlation between accounts collection period and profitability.

2.3.4 Cash management and financial performance

A number of studies have ventured in assessing the effect of cash management on financial performance of different sectors. The varuban (2016) sought to establish the impact of cash management on the financial performance of manufacturing firms in Sri Lanka. The study sampled out 20 manufacturing and collected data for the period from 2011 to 2015 (5 years). The findings of the research indicate that cash ratio had a negative impact on ROE and ROA. However cash turnover ratio influence on ROE and ROA was found to be insignificant meaning that cash turnover ratio did not have an influence on ROE and ROA of manufacturing firms in Sri Lanka. This study just deployed cash ratio and cash turnover ratio as proxies.

Ikechukwu (2016) examined the effect of effect of cash conversion cycle on the financial performance of Building materials/chemical and paint manufacturing companies in Nigeria. Cash conversion cycle was used a proxy of Cash management and Return on assets as a proxy of profitability where data was collected from the annual reports of the firms. The results of the study which deployed multiple regression analysis indicated a positive and non significant effect on firms' profitability. Dong and Su (2010) disagreed with the findings of Ikechukwu (2016). Dong and Su (2010) examined the used Cash conversion cycle as a proxy of working capital management (WCM) and gross operating profit to assess the relationship between working capital management and profitability. Descriptive statistics, regression and

correlation analysis were used to analyze data. The study established that a significant negative relationship between cash conversion cycle and gross operating profit. Monica and Piyush (2017) established an inverse relationship between working capital cycle and the profitability of listed companies in countries of South East Asia, South Asia and East Asia. In support of the findings the study held that long working cycle means that it takes long to convert current assets and liabilities to liquid cash and as such a lot of firm's capital is tied up in working capital components. The firm lack sufficient liquidity to drive its daily operations and this eventually adversely affect firm's profitability. Analytical modeling was deployed to estimate the impact of working capital management on profitability in the study.

3. Research Methodology

3.1. Introduction

This chapter highlights the research design, population and sample size, independent and dependent variables, data collection and analysis tools that were used to examine the effect of working capital management on the performance of listed manufacturing firms in Kenya.

3.2. Research Design

The research design denotes the overall strategy that a researcher chooses to integrate the distinct parts of the study in a consistent and logical way, thus, ensuring that the researcher will efficiently address the research problem (Collins, 2011). This study adopted a quantitative research design as its suitable where the study seeks to explain phenomenon by gathering numerical data and statistically analyzed using statistical tools/methods.

3.3. Target Population

Irwin (2013) elucidates a target population as the entire set of units for which the survey data are to be used to make inferences rather to which the researcher is interested in generalizing the conclusions. The target population for this study was all the listed manufacturing firms in Kenya. As at 2017, 10 manufacturing firms were listed on Nairobi securities exchange. However one of them was deregistered which reduced the number of listed manufacturing firms to 9. All the listed manufacturing firms were studied.

3.4. Sample and Sampling Technique

The study focused on all the listed manufacturing firms in the Nairobi securities exchange and thus a census sampling which denotes using all units in the target population.

3.5. Data Collection Procedure

This study collected secondary data (Panel data) from the published and audited annual financial reports of all the listed manufacturing firms in Kenya for a period of ten years (2007-2016). However, some were listed within the ten years period and as such data was collected for lesser number of years compared to others which were listed before 2007.

3.6. Data Processing and Analysis

Data analysis entails transforming the data collected into meaningful information to draw conclusions in a research study (Irwin, 2013). Panel data estimation technique was deployed as it deals with the heterogeneity associated with different manufacturing firms by taking into account individual specific factors.

4. Research Findings and Discussions

4.1. Descriptive Statistics

Overall the study established an aggregate change of inventory conversion period of -30.9%. This means that the inventory conversion period declined over the ten years period from 113 days in 2007 to 78.1 days in 2016. This denotes that it took a shorter period in 2016 to convert the inventory of the manufacturing firms into sales as opposed to 2007. The ICP in 2016 was the lowest of the ten year period denoting an improvement in inventory management by the Kenyan manufacturing sector.

The average collection period increased over the last ten years (2007-2016) from 69.9 days to 89.9 days, an aggregate change of 28.6%. This means that the listed manufacturing firms deteriorated in managing their accounts receivables as they took long to collect debts for goods sold on credit in 2016 as compared to 2007. The accounts receivables were better managed in 2008 which recorded the lowest ACP at 63.2 days. Overall the listed manufacturing firms deteriorated in the management of accounts receivables which could mean that a lot of cash is tied up in accounts receivables which impedes corporate growth.

The average payments period declined over the ten year period from 195.8 days in 2007 to 190.8 days in 2016, an aggregate change of -2.6%. Average payments period indicates the period that it takes to pay suppliers for inputs supplied on credit. The management of accounts payables could thus be said to have slightly improved as it took lesser days in 2016 to pay suppliers as compared to the duration it took in 2007. However the APP is still way high which is actually higher than half the number of business days in a year (365 days). This adversely affect the cash conversion cycle. Failure to pay suppliers in good time could strain the relationship between suppliers and the manufacturing firms and could impede manufacturing process as the suppliers may be reluctant to supply more inputs to the firms. The cash conversion cycle

declined from -12.9 days in 2007 to -22.7 days in 2016 which is very desirable for firms. However this is due to high average payments period. The average payments period is higher than the operating cycle. Even after receipts from inventory and accounts receivables, the suppliers are not paid in time.

Year	N	ICP		ACP		APP		CCC	
		Mean (Days)	% Change	Mean (Days)	% Change	Mean (Days)	% Change	Mean (Days)	% Change
2007	10	113.0	-	69.9	-	195.8	-	-12.9	-
2008	10	97.1	-14.1%	63.2	-9.7%	131.8	-32.7%	24.9	293.0%
2009	10	119.4	23.0%	82.3	30.4%	148.2	12.5%	53.5	115.2%
2010	10	117.9	-1.3%	68.6	-16.7%	140.8	-5.0%	45.6	-14.8%
2011	10	101.1	-14.2%	72.2	5.2%	127.4	-9.5%	45.8	0.5%
2012	10	101.3	0.2%	69.7	-3.5%	133.0	4.4%	37.9	-17.3%
2013	10	89.3	-11.8%	78.4	12.5%	134.8	1.4%	32.8	-13.3%
2014	10	90.1	0.9%	77.6	-1.0%	125.6	-6.8%	42.0	28.0%
2015	10	84.2	-6.5%	86.7	11.7%	177.6	41.4%	-6.7	-116.0%
2016	10	78.1	-7.2%	89.9	3.7%	190.8	7.4%	-22.7	238.9%
Aggregate change			-30.9%		28.6%		-2.6%		-76.3%

Table 1: Descriptive Statistics of the Independent Variables

Table 2 features the financial performance of the listed manufacturing firms on the Nairobi securities exchange. This was both in terms of accounting (return on equity) and market based performance measure (Tobin's Q). Overall the manufacturing firms' return on equity declined over the ten year period from 20.30% in 2007 to 14.22% in 2016. This is contrary to the market based measure (Tobin's Q) which rose from 1.3 in 2007 to 4.3% in 2016 with the highest performance being recorded in 2014 at 8.7. Tobin's Q premise is that firms should be worth what their assets are worth. As such anything above 1.0 for Tobin's Q denotes that a firm is overvalued. Ideally this means that they are performing better in the market. The rise in Tobin's Q for the last ten years for the manufacturing firms can thus be used to indicate that the market based performance of the firms has risen.

Year	N	ROE		Tobin's Q	
		Mean	Std. Dev	Mean	Std. Dev
2007	10	20.30%	0.10	2.30	1.3
2008	10	19.61%	0.12	2.19	1.5
2009	10	18.43%	0.11	1.92	1.1
2010	10	17.70%	0.13	2.14	1.2
2011	10	13.90%	0.27	1.77	1.0
2012	10	36.18%	0.39	2.02	1.4
2013	10	38.77%	0.37	2.10	1.6
2014	10	23.63%	0.53	5.42	8.7
2015	10	10.87%	0.44	3.66	4.9
2016	10	14.22%	0.44	3.33	4.3

Table 2: Descriptive Statistics of the Dependent Variables

4.2. Correlation Analysis

Correlation analysis was conducted using Pearson correlation with the results presented in table 3. Inventory management (ICP) was found to have a negative correlation with accounts receivables management, accounts payables management and financial performance whereby ROE and Tobin's Q were used as proxies of performance. Accounts receivables management was found to have a negative correlation with inventory management, cash management and return on equity. However, the findings indicated a positive correlation between accounts receivables management and accounts payables management and Tobin's Q as a measure of performance. Overall the results on the correlation between variables in the study are summarized in table 3

	ICP	ACP	CCC	APP	ROE	Tobin's Q
ICP	1					
ACP	-.329	1				
CCC	.496	-.401	1			
APP	-.150	.474	-.225	1		
ROE	-.006	-.270	.332	-.428	1	
Tobin's Q	-.551	.429	-.231	.091	-.172	1

Table 3: Correlation Matrix

4.3. Model Specification Tests

The tests were carried out to indicate the best model to be adopted in the study.

4.3.1 Testing for Random Effects

This study deployed Breusch-Pagan Lagrange multiplier (LM) to ascertain whether a simple PLS regression or panel method could be used in the analysis. The LM test is vital as it indicates whether the researcher should use a pooled OLS regression or random effects regression. The P value in the test was less than 0.05 and hence the conclusion that random effects model is appropriate for the study.

4.3.2 Test for Heteroscedasticity

The existence of Heteroscedasticity is a key concern in the application of regression analysis, i.e. including the analysis of variance (ANOVA) as this can annul statistical tests of significance that postulate that the modeling errors are uniform and not correlated. Rather homoscedasticity is a requirement to run panel data in regression. Modified Wald Test was deployed to test for heteroscedasticity. Results indicated a p value of less than 0.05 ($p=0.0000$) and thus absence of heteroscedasticity.

4.3.3 Test for Random or Fixed Effects

To make a decision on whether the researcher could deploy either random or fixed effects, the study deployed Hausman test where the null hypothesis denotes random effects is the preferred model while the alternative hypothesis points to appropriateness of the fixed effects model. The tests ideally indicate whether the regressors are correlated with the unique errors. The results of the test established a p value higher than 0.05 for all the study variables indicating that random effect is the preferred model for data analysis.

4.3.4 Autocorrelation Test

This was tested using Wooldridge Drukker test and the results indicated absence of autocorrelation. The P value was greater than 0.05 depicting no autocorrelation between the predictor variables.

4.3.5 Test for Multicollinearity

Variance inflation factor was deployed to test for multicollinearity. A VIF of 1 denotes no correlation between the predictor variables. When the VIF is between 1 and 5, this denotes moderate correlation while a value higher than 5 means that the variables are highly correlated. The results indicted absence of multicollinearity and the VIF indicates moderate correlation between the predictor variables. For instance, the inventory conversion period (ICP) and cash conversion cycle VIF were established to be 1.32 and 1.07 respectively slightly above 1.0.

4.4. Regression Analysis

To start with based on the results of the specification tests, this study adopted the random effects model. This study used two measures of performance; ROE as an accounting based measure and Tobin's Q as a market based measure of performance.

The first hypothesis was that there is no significant relationship between inventory management and financial performance of listed manufacturing firms in Kenya. Adopting ROE as a measure of financial performance, the findings as presented table 4 shows that that there is an insignificant negative relationship between Inventory management and financial performance. Adopting Tobin's Q as a measure of financial performance, the findings as presented in table 5 shows that that there is an insignificant negative relationship between Inventory management and financial performance (Tobin's Q) ($\beta=-0.166$ and P value = 0.761). These findings corroborate with those of Sial and Chaudhry (2012) and Napompech (2012) whose results indicated a negative relationship between inventory management and financial performance. This means that organization that takes long to convert its inventory into sales record lower performance as opposed to those whose inventory conversion period is lower. Additionally holding high stock levels come with stockholding costs and possible obsolescence costs which negatively affect corporate performance.

The second hypothesis was that there is no significant relationship between accounts receivables management and financial performance of listed manufacturing firms in Kenya. Adopting ROE as a measure of financial performance, the findings as presented in table 4 shows that that there is an insignificant negative relationship between accounts receivables management and financial performance (ROE) ($\beta=-4.302$ and P value = 0.390). Adopting Tobin's Q as a measure of financial performance, the findings as presented in table 5 shows that that there is an insignificant negative relationship between accounts receivables management and financial performance ($\beta=-0.107$ and P value = 0.854). These findings concur with those of Adembo (2015) and Duru et al., (2014) who also established an insignificant negative effect of accounts collection period and financial performance. This means that delays in collecting debts for goods sold on credit has an adverse effect on performance. Ineffectiveness in debt management leads to bad debts which when written off reduce the net performance of corporations.

The third hypothesis was that there is no significant relationship between accounts payables management and financial performance of listed manufacturing firms in Kenya. Adopting ROE as a measure of financial performance, the findings as presented in table 4 shows that that there is an insignificant positive relationship between accounts payables management and ROE (financial performance) ($\beta=3.595$ and P value = 0.422). Adopting Tobin's Q as a measure of financial performance, the findings as presented in table 4.9 shows that that there is an insignificant positive relationship between

accounts payables management and financial performance ($\beta=0.122$ and P value = 0.816). These findings agreed with those of Madishetti and Kibona (2013) who also established a positive relationship between accounts payments period on performance. This is considering that firms use creditors as a source of financing. Even when the debtors pay in good time, the management would delay to pay suppliers and instead finance other short term finance needs of the organization. However, the findings disagreed with those of Ikechukwu and Nwakaego (2013) whose results indicated that accounts payables management have a significant negative relationship on the profitability of the manufacturing firms at 1% significance level. This is in understanding that delays in paying suppliers can strain the relationship with suppliers which could affect the flow of raw materials to the firm which could impede production and eventually has an adverse effect on the overall performance of an organization.

The fourth hypothesis was that there is no significant relationship between cash management and financial performance of listed manufacturing firms in Kenya. Adopting ROE as a measure of financial performance the findings in table 4 indicated that there is an insignificant positive relationship between cash management and financial performance ($\beta=3.595$ and P value = 0.422). Adopting Tobin's q as a proxy of performance table 4.9 shows that there is an insignificant positive relationship between cash management and Tobin's Q (financial performance) ($\beta=0.126$ and P value = 0.810). The findings agreed with those of Dong and Su (2010) who indicated an insignificant positive relationship between the two variables but disagreed with the findings of Ikechukwu (2016) who indicated an insignificant negative relationship between the two variables. Overall, long working cycle means that it takes long to convert current assets and liabilities to liquid cash and as such a lot of firm's capital is tied up in working capital components. The firm lack sufficient liquidity to drive its daily operations and this eventually adversely affect firm's profitability. Analytical modeling was deployed to estimate the impact of working capital management on profitability

The following table summarizes the findings of the regression analysis adopting ROE as a measure of performance;

Random-Effects GLS Regression			Number of OBS			83
Group variable: firm num			Number of groups			9
R-sq: within = 0.0398			Obs per group: min			4
between = 0.0025			avg			9.2
overall = 0.0099			max			10
Random effects $u_i \sim$ Gaussian			Wald chi2(3)			1.38
corr(u_i, X) = 0 (assumed)			Prob > chi2			0.7102
ROE	Coef.	Std. Err.	z	P>z	[95% Conf.	Interval]
ICP	-3.954	4.267	-0.15	0.202	-60.59233	52.17046
APP	3.595	4.114	0.15	0.397	52.17069	60.59223
ACP	-4.302	4.572	-0.15	0.390	-60.59075	52.17438
CCC	3.718	4.109	0.15	0.407	52.17129	60.59157
_cons	109.007	74.171	0.00	0.422	-.7647031	0.766989

Table 4; Random Effect Regression Results Using ROE as a Proxy of Performance

The following table summarizes the findings of the regression analysis adopting Tobin's Q as a measure of performance;

Random-Effects GLS Regression			Number of OBS			83
Group variable: firmnum			Number of groups			9
R-sq: within = 0.1432			Obs per group: min			4
between = 0.1401			avg			9.2
overall = 0.1300			max			10
Random effects $u_i \sim$ Gaussian			Wald chi2(4)			11.1
corr(u_i, X) = 0 (assumed)			Prob > chi2			0.0254
tobinsq	Coef.	Std. Err.	z	P>z	[95% Conf.	Interval]
ICP	-0.166	0.516	-0.321	0.761	-62.43804	209.9692
APP	0.122	0.498	1.06	0.816	209.9745	62.43205
ACP	-0.107	0.553	-0.194	0.854	-62.39886	210.0125
CCC	0.126	0.497	0.253	0.810	209.9689	62.43811
_cons	5.823	8.974	0.27	0.545	-2.578351	3.401648

Table 5; Random Effect Regression Results Using Tobin's Q as a Proxy of Performance

5. Conclusions and Recommendations

5.1. Conclusions

The performance of the listed manufacturing firms declined over the last ten years as inferred from the return on equity which declined over the ten years period. The findings of the study indicated insignificant negative relationship between ICP, ACP and financial performance. The results also indicated an insignificant positive relationship between APP and CCC on performance. Given the decline in average payments period and the decline in ROE in the last ten years, this study concludes that the management of accounts payables directly influenced the performance of listed manufacturing firms in Kenya over the last ten years. A rise in accounts payables period means delay in paying suppliers and the firm can utilize the cash to pay for other daily expenses and hence realize positive influence on overall corporate performance. However, a rise in average payments period could strain the relationship between suppliers and manufacturing firms. This could delay supply of inputs in the future adversely affecting production and hence general financial performance.

The results of the study indicated that cash conversion cycle has an insignificant positive influence on performance. The decline in cash conversion cycle over the last ten years thus explains the decline in the performance of the sector deduced from the decline in the return on equity. The study thus concludes that cash management has a positive implication on performance of listed manufacturing firms in Kenya.

The results of the study indicated an insignificant negative influence of accounts receivables on performance. The accounts receivables period increased over the last ten years while the performance of the ten listed firms declined. The study thus concludes that accounts receivables management has a negative influence/effect on the performance of the listed manufacturing firms in Kenya. Both inventory conversion period and performance declined over the last ten years. The results however indicated a negative relationship between these two variables. Overall the decline in inventory conversion period means that the firm is quickly converting its inventories into sales and hence better performance. However this did not reflect on the performance of the listed manufacturing firms in the last ten years. The decline in ICP could have been due to reduced stock levels as opposed to heightened conversion of inventory into sales. The decline in performance could also have been due to other factors other than the decline in inventory conversion period.

Overall the study concludes that the working capital management has an insignificant influence on the performance of listed manufacturing firms in Kenya.

5.4. Recommendations

From the conclusion, it's imperative that the four working capital management components should be effectively managed to enhance the performance of the listed manufacturing firms. The manufacturing sector should consider balancing should consider a more aggressive credit policy to reduce the accounts receivables period to record improved performance. However the focus is to strike a balance between an aggressive and liberal credit policy as a complete aggressive credit policy could lead to a decline in revenues and hence performance. High debts levels could lead to doubtful debts being written and this will diminish net returns to the shareholders. The inventory conversion period should be lowered with a focus to attain optimum stock levels. High stock levels comes with high stock holding costs while low stock levels bring about stock out costs which could adversely affect production.

The firm should overall work on reducing the cash conversion cycle and one of way of attaining this is effective management of debtors. The duration from the receipt of inputs to the sale of finished goods to the cash receipts for goods sold on credit should be minimized to enhance the working capital position of the listed manufacturing firms for effective daily working operations. Albeit that delays in paying suppliers could enable the firm use such cash meant for creditors to pay off other expenses and short term debts, it could strain the relations with suppliers. This could lead to delays in supply of raw materials in future and hence impede productivity in the organization and eventually the decline in net returns to shareholders. As such the focus should be on timely payment for goods supplied on credit.

5.5. Areas for Further Research

Although the aim of the study was objectively attained, future studies could focus on studying a high population which could include more non financial firms; Industrial firms which largely share same features in that they need sufficient working capital to drive their daily working operations. This should also include the SMEs in the sectors which greatly grapple with securing adequate working capital to run their daily operations.

Overall all firms should work towards having adequate working capital for smooth day to day operations which will definitely influence their financial performance.

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