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## **Working Capital Management and Financial Performance of Agricultural Firms Listed On Nairobi Securities Exchange, Kenya**

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# Working Capital Management and Financial Performance of Agricultural Firms Listed on Nairobi Securities Exchange, Kenya

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## Abstract

The listed firms in Kenya have been experiencing declining and inconsistent performance in the recent years. The study sought to establish effect of working capital management on financial performance of agricultural firms listed on Nairobi Securities Exchange. Specifically, study established the influence of accounts receivable collection period on financial performance; determined the effect of creditors payment period on financial performance; established effect of operating cash flow on financial performance; and determined effect of inventory turnover on financial performance and establish the controlling effect of firm size on the relationship between working capital and financial performance of agricultural firms listed on Nairobi Securities Exchange. The study would be important for policy, practice and theory. The study was based on agency theory, transaction cost theory, Miller-Orr Model and Baumol's Model which formed the theoretical basis for this research. This research adopted a descriptive research and correlational research designs. This study's target population comprised seven agricultural firms listed on the NSE sampling seven agricultural firms' listed on the NSE between 2016 and 2022 using a census survey. Data was obtained from secondary sources for a period between 2016 and 2022. Panel regression, descriptive and correlation statistics were used for analysis. The study established a negative correlation between accounts receivable collection period and financial performance. The study also revealed that creditor's payment period had a positive but insignificant relationship with financial performance of the sampled firms. Moreover, there was a positive significant relationship between cash flows and financial performance. This study, therefore, concluded that there exists a positive significant relationship between cash flows and financial performance of agricultural firms listed on Nairobi Securities Exchange. This study, therefore, concluded that accounts receivable collection period has a significant negative relationship with financial performance of agricultural firms listed on Nairobi Securities Exchange. The study recommends that agricultural firms listed on Nairobi Securities Exchange

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reduce their accounts receivable collection period; increase their operating cash flows; and reduce their inventory turnover period for increased financial performance.

**Keywords:** *Capital management, accounts receivable collection period, creditors' payment period, operating cash flows, inventory turnover period, firm size Financial Performance*

## 1.0 Background of the Problem

The aim of working capital management is to provide satisfactory liquidity, profits, and wealth maximization, which is addressed by the concept of working capital management. Working capital management is the capacity to quickly and successfully handle current assets and current liabilities in such a way that the enterprise maximises asset returns while minimising liability payments. Working capital management is considered critical for firms especially for agricultural firms, where a major part of assets is composed of current assets (Bhattacharya, 2021). Working capital management influences financial performance as well as the liquidity of firms (Hussain, Nguyen, Nguyen, Nguyen & Nguyen, 2021). The financial performance liquidity trade-off is critical because if working capital management is not prioritised, businesses will fail and face bankruptcy (Alhassan & Islam, 2021).

In Africa, financial performance has also been an area of focus by authors. Olaoye and Okunade (2020) assumed financial performance as the return on assets for the firms. This shows that the higher the returns a firm gets from the assets, the better their financial performance. Kasozi (2017) in their study in South Africa defined performance as return on equity. On the other hand, defined financial performance as return on capital; Yakubu, Alhassan and Fuseini (2017) in their Ghanaian study defined financial performance as Tobin Q, net profit margin and return on capital; Godswill Ailemen, Osabohien, Chisom and Pascal (2018) in their Nigerian study adopted the definition of earning per share (EPS), return on capital, ROE, and ROA as financial performance. In Kenya, some of the indicators of financial performance are return on invested capital, return on capital, return on equity, liquidity ratios, asset management ratios, profitability ratios, leverage ratios and market value ratios (Aluoch, 2021; Muhindi & Ngaba, 2018). The researchers have also adopted different definitions of financial performance in Kenya.

Numerous studies have been conducted in developed economies to estimate the true relationship involving investment in working capital and financial performances, Yet, given the differing social, political, and economic circumstances of developing states, it's probable that such findings cannot be generalized to them (Seth, Chadha, Sharma & Ruparel, 2021). Financial performance has been a key concept in which researchers globally have focused on. Nguyen, Pham and Nguyen (2020) in their study in Vietnam indicated that financial performance is the measure of the company returns from investment in its assets. In their study, they measured financial performance as return on assets (ROA). They noted that financial performance identifies how well a company generates revenues and manages assets, liabilities, and financial interests of its stakeholders and stockholders.

The performance issues in the firms have attracted researchers to look into the working capital management and financial performance. Pham, Nguyen and Nguyen (2020) studied the effect of working capital management on profits of steel companies on Vietnam Stock Exchange and found that WCM had a strong impact on the profits. Fernández-López, Rodeiro-Pazos and Rey-Ares

(2020) looked at the effects of working capital management on companies' profits of cheese-producing companies.

In Africa, Kasozi (2017) studied the effects of working capital management on profits of listed manufacturers in South Africa and found mixed effects of working capital management on profitability where some elements showed a positive with others showing inverse effect. However, Yakubu, Alhassan and Fuseini (2017) studied impact of working capital management on performance of listed firms in Ghana found that working capital management directly relates to corporate performance. Godswill *et al.* (2018) studied working capital management and bank performance of deposit money banks in Nigeria. They found that working capital management had a significant influence on bank performance.

In Kenya, researchers did studies on working capital management and financial performance. Kimutai and Muigai (2018) looked at the effect of working capital management on financial performances of small and medium enterprises in Nairobi County. The investigation found that working capital management and financial performances related positively. Ochieng, Jagongo and Ndede (2020) studied working capital management and financial performances of listed manufacturers. The experiment's outcomes reflected a beneficial linkage around working capital management and financial performances of manufacturers. This demonstrates how important working capital management is to a company's financial performances.

Agriculture contributes significantly to the economy of Africa. Numerous African nations engage in agribusiness, and the industry as a whole has and remains to provide significant contributions to the region's fundamental elements, including FDI inflows, the generation of jobs, economic diversification, and expanded marketplace capacity. For instance, Kenya, Tanzania, and Uganda all have farming as their primary industry. Producers' contributions have long remained underestimated, but it is believed that in all three countries, they account for more than 75% of agriculture production and 75% of jobs (African Development Bank, 2010).

Working capital is the amount of equity investments, currencies, receivables, and stocks that any company has, minus payables needed to fund its liquid assets (Haralayya, 2021). Investments in payables and cash equivalents that are dissipated in a year or shorter is known as working capital management and is essential to a company's daily operations. Effective cash management is necessary, as are wise choices about receivables and inventory management (Karada, 2018). Cash Flow is another element of working capital management. According to Gitiri (2010), cash flow is the discrepancy in cash coming in and going out. Among the most popular annual disclosures used among business managements to determine the next stages in judgment call is cash flow. It's a term utilized to refer to inflows and outflows of cash, wherein inflows refer to cash revenues and outflows to cash expenses (Soboleva *et. al.*, 2018).

Inventory turnover period is a key element in working capital management. Inventory is defined by Pacter (2016) as unfinished products, WIP, and possess goods which are or will be available for purchase. It belongs to a company's assets. Regulating the procuring, storing, and governing of completed goods that are available for market is known as inventory management. IAS 2 of the Worldwide Accounting Standards gives instructions for calculating the cost of inventory. IAS 2 states that inventory should be valued at the lower of cost or net realisable value, wherein net realisable value is the anticipated retail price inside the normal course of trade less the expenses of completing and cost estimates required to close a deal.



This research adopted firm size as the control variable. In business research, firm size is defined in terms of number of customers, level of assets, and market share. Firm size is a critical factor in the financial performance of a firm. Theoretically, firm size enables the firm to enjoy high returns which improves the financial performance. Sales turnover, profitability (EBIT), customer base; number of stores; number of workers and sales per worker are also used to determine firm size. Other measures include total sales, market value of equity, and natural logarithm of total assets. This investigation, firm size will be measured in terms of change in total average assets.

A key indicator of an organisation's financial health is solvency. It makes an assessment of company's capacity to pay bills when they become due. Structured and pragmatic analyses of liquidity are both possible (Kiyotaki & Moore, 2019). Liquidity, that compares volume of loaned investment a company uses to the proportion of shareholder stock put in the company, also gives a sign of how well-prepared a corporation is to deal with risks (Cont, Kotlicki & Valderrama, 2020). Profits assessment, particularly concentrating on the link across sales and costs, quantifies how much a company profits from its input costs. Return on capital (RoC), return on invested capital (ROIC), return on assets (ROA), return on equity (ROE), operational net profits, and net earnings are some helpful profits indicators (Kiyotaki & Moore, 2019). For this paper, return on capital was adopted for firm's financial performance.

### 1.1 Statement of the Problem

The methods used for managing liquid assets possessed significant impacts on ideal degree of working capital. Actually, a key contributing factor to insolvency in both industrialised and emerging economies has traditionally been attributed to a lack of working capital (Rafuse, 2016). A way of managing working capital can have a significant impact on financial performance of a company (Shin & Soenen, 2018). The listed agricultural firms have been experiencing challenges in their working capital management. This has been reflected in high stock levels, delays in payment of creditors and high level of accounts receivable within the firms. The firms have also showed poor cash flow ratios with majority experiencing reducing cash flows in the last five years (NSE, 2020). For example, Sasini tea experienced a decrease in cash flows by approximately 6% in 2019 to 141,919,000 shillings (CMA, 2020).

Despite the contribution of agricultural sector to Kenyan economy, listed agricultural firms have been experiencing working capital and financial performance challenges in recent years. The sector has seen only seven firms listed on the NSE. Further, the listed firms have been showing poor and inconsistent financial performance metrics. Despite some like Sasini making profits in 2020, Sasini Tea made a loss of KSh.337.7 million in 2019 compared to KSh. 293.5 million profits in 2018. Eaagads Ltd, on the other hand, made a loss of KSh.77 million in 2020 compared to a profit before tax of KSh.1.7 million in 2019. The profit-making firms have been showing reduction in the profits. For example, Kakuzi experienced a reduction in the profits by 19 percent to KSh.848 million in 2020 to KSh. 1,014 million in 2019.

Globally, the issues in the agricultural firms have attracted researchers to look into working capital management and financial performances. Pham, Nguyen and Nguyen (2020) studied impacts of working capital management on profitability of steel companies on Vietnam Stock Exchanges; while Fernández-López, Rodeiro-Pazos and Rey-Ares (2020) looked at the effects of working capital management on profitability of cheese-producing enterprises while Aytac, Hoang, Lahiani and Michel (2020) did an empirical analysis on working capital management and profits of wineries in France. In Africa, Kasozi (2017) studied effect of working capital management on

profits of listed manufacturers in South Africa; Yakubu, Alhassan and Fuseini (2017) studied the impact of working capital management on corporate performance of listed non-financial firms in Ghana; while Godswill, Ailemen, Osabohien, Chisom and Pascal (2018) studied working capital management and bank performances in Nigeria. The studies showed mixed results where some showed positive with others indicating a negative or insignificant connexion around working capital management and financial performances.

In Kenya, Aluoch (2021) looked at corporate governance, financial characteristics, macroeconomic factors and financial performances of listed agricultural enterprises; Gerio, Ondiek and Tibbs (2020) studied the influence of financing on financial performances of listed agricultural enterprises. Wambia and Jagongo (2020) studied effects of working capital management practices on the financial performances of insurers. They found that working capital management positively connected to financial performances. Kimutai and Muigai (2018) looked at effects of working capital management on financial performances of SMEs in Nairobi County.

From the empirical research done in the area of working capital management and performances, various research gaps that need addressing are in existence. First, contextual gaps exist in that the researchers have done their studies in other sectors other than agricultural sector. For example, the local studies have been done on SMEs (Kimutai & Muigai, 2018) or insurance firms (Wambia & Jagongo, 2020) other than agricultural firms. Secondly, the research showed methodological gaps. The researchers adopted different methodologies compared to the current study. For example, this study adopted the use of secondary panel data between 2016 and 2022. Other studies have either adopted primary data (Munene & Tibbs, 2018; Siele & Tibbs, 2019) or adopted different periods. This study also used panelised data with other studies basing their analysis on cross sectional data. This indicated the need for a study on the relationship around working capital management and financial performance of agricultural firms listed on Nairobi Securities Exchange to fill such gaps.

## 1.2 Research Objectives

- i. To establish the influence of accounts receivable collection period on financial performance of agricultural firms listed on Nairobi Securities Exchange.
- ii. To determine connection of creditors payment period on financial performance of agricultural firms listed on Nairobi Securities Exchange.
- iii. To establish the relation of operating cash flows and financial performances related to agricultural firms listed on Nairobi Securities Exchange.
- iv. To determine connection of inventory turnover period and financial performances of agricultural firms listed on Nairobi Securities Exchange.
- v. To establish the controlling effect of firm size on the relationship between working capital and financial performance of agricultural firms listed on Nairobi Securities Exchange.

## 1.3 Research Hypotheses

H<sub>01</sub>: Receivable collection period has no significant effect on financial performance of agricultural firms listed on Nairobi Securities Exchange

H<sub>02</sub>: Creditor payment period has no significant effect on financial performance of agricultural firms listed on Nairobi Securities Exchange

H<sub>03</sub>: Operating cash flow has no significant effect on financial performance of agricultural firms listed on Nairobi Securities Exchange

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H<sub>04</sub>: Inventory turnover has no significant effect on financial performance of agricultural firms listed on Nairobi Securities Exchange

H<sub>05</sub>: Firm size has no significant controlling effect on the relationship between working capital and financial performance of agricultural firms listed on Nairobi Securities Exchange

## 2.1 Theoretical Framework

Theories and models discussed in this section included; agency theory, transaction cost theory, Miller-Orr Model and stakeholder theory.

### 2.1.1 Transactions Cost Theory

Ferris's (1981) transaction cost hypothesis demonstrates that trade credit lowers transaction fees by enabling the participants to divide the payments phases whenever the timing of the supply is unpredictable. If payments and supply could be handled separately, the consumer can reduce the requirement for cash in their operations. According to Brick and Fung (1984), purchasers having lower efficient taxation rate might favour credit facilities and are thus more inclined to possess larger amounts of payables in comparison to comparable purchasers with a greater efficient taxation rate. The far more frequent critique is that, since transaction fees within actual world are seldom small enough to permit effective negotiation, the hypothesis is virtually invariably utterly irrelevant to real economics (Ghoshal & Moran, 1996). The theory is criticised that Transaction expenses represent a hurdle in any setting where there are high number of transactions, albeit when there are merely a few (El Bernoussi & Rockinger, 2019).

This theory explained accounts receivable collections period variable. According to this idea, the company must evaluate all associated expenses before comparing the cost of goods and transaction in its own company to the cost of goods and transaction related to outsourcing. The organisation, administration, and marketplace tracking of transactions are all included in the expenses of transactions, as are the expenses of outsourcing, managing logistic, and keeping track of receivables. One justification for encouraging credit sales is the cost of transactions. The concept of purchasing describes how paying once for multiple supplies reduces transaction fees for both parties and ensures constancy in payment (Feris, 1981).

Its cost of transporting, on the other hand, considers the expense of maintaining inventory as well as other opportunity costs. There are many causes for both high and low levels of inventories, and the cause is greatly influenced by the type of business the company is in. The cost that is based on Transaction Cost Economics (TCE) concept is among the most basic justifications for managing inventories (Emery & Marques, 2011). Businesses need to lower overall costs in order to get a comparative advantage points, and they can do this by keeping costs of inventories at a reasonable low level.

### 2.1.2 Agency Theory

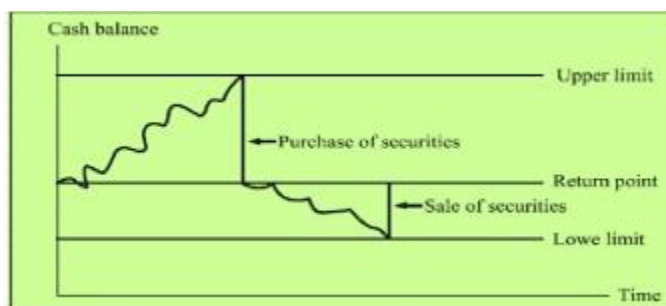
Mitnick (1975) introduced the agency theory. The theory postulates that managers acting as agents operates business on behalf of owners or the shareholders. Moral hazard and adverse selection can limit the credit availability; this means that working capital will be impacted. The agency theory has been criticized based on various grounds. Perrow (1986) argued that moral hazard might even arise from principal side and critiqued hypothesis for focusing solely upon this agent element of the issue. According to Gore (2012), the principal-agent conflicts, agency costs, and realigning

both sides' interests to reduce overall agency conflicts are the main three things that agency theories highlights.

The theory supported the variable of creditors' payment period where adverse selection may limit availability of credit facilities by the creditors. This means that where the agricultural firms experience the agency problem the level of working capital will be affected through the accounts payable. This means that the agency theory support creditor's payment period variable. The agency problem is also expected to affect the cash flows where the management is biased in terms of cash flow management. The theory also supported the variable of inventory turnover where the management of inventory may be affected by the moral hazard and adverse selection issues within the institution.

### 2.1.3 Miller-Orr Model

Merton Miller and Daniel Orr (1966) developed a cash balance model to deal with uncertainty. In Miller-Orr both inflows and outflows are incorporated. Miller-Orr Model is a very conventional technique that more realistically assumes that cash flows are unpredictable. The dispersion of daily net cash flows was presumed to be normally distributed by Merton Miller and Daniel Orr. The predicted value of a high or low values taken from a normally distributed per day might be represented by the net cash flows. As a result, the daily net cash proceeds at randomly. The Miller-Orr Model offers two threshold values upper and lower as much as a returning endpoint, as indicated by figure 2.1. If the company's cash flows shift erratically and reach the top threshold, it purchases enough stocks and bonds to restore its cash pile to normalcy (the return point).



**Figure 1: Miller-Orr Model**

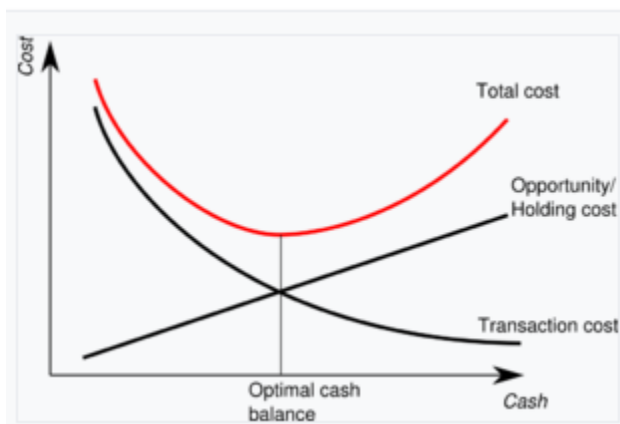
Source: Miller and Orr (1966)

The critics of the model are based on the assumption that the cash inflows and cash outflows are stochastic where every day a business might possess both different cash payments and receipts. This may not be the case as some businesses may have similar payments and receipts at certain times (Dechow, Kothari & Watts, 1998). The theory also assumes that there is a possibility for a firm to invest idle cash in marketable securities. This may not be the case especially where a firm is not listed. This theory fits the study in that it brings in the issue of working capital management where the idle cash ought to be invested in securities like those of agricultural firms at the NSE. This is expected to influence financial performance of firms through cashflows. This theory address the operating cashflow ratio variable. The theory assumes that the cash should only be maintained at ideal level. This enabled a firm to adopt this model to determine the optimal levels to replenish cash hence establishing optimal cash flows.



### 2.1.4 Baumol's Model

This prototype was established by Baumol in 1952. The cash balance can be calculated using the approach. There are, nevertheless, certain model-related considerations. The primary is that projection is feasible and the company can anticipate its financial needs. The second is that reimbursements paid in cash happen consistently over a predetermined length of times. Other presumption is that storing currency has a defined opportunity cost which is difficult to reduce. There is still a presumption that company would pay identical transaction fees when converting stocks into money. Transactions come with both dynamic and fixed costs.



**Figure 2: Baumol's Model**

Source: Baumol (1952)

The hypothesis was appropriate to this survey by assisting in determining the cash and other asset management practices by agricultural firms by possessing favorable borrowing clearing and settlement guidelines which might impact the cash flow that its company could well hold, which is a crucial component of handling working capital, that in turn influences corporate's performance. This indicates that assets, which define the firm size, are critical to financial performance of firms. This theory supported the firm size variable.

## 2.2 Empirical Literature Review

### 2.2.1 Effect of Accounts Receivable Collection Period on Financial Performance

For a duration of ten (10) years, Abdulazeez *et al.* (2018) investigated effect of working capital management upon overall financial performance of public conglomerates firms in Nigeria (2005-2014). The financial reports of businesses under examination served as the source of quantifiable information for the research. The investigation used descriptions stats to characterise the parameter, and correlations was used to determine the links between the parameters. OLS Modelling was employed to examine the dataset, and Variable Inflation Factor (VIF) were utilised to establish whether linearity existed or not. It was shown that length of time it took for borrowers to pay back investments was adversely correlated. The study examined Nigerian firms while the current research examined Kenyan agricultural firms. The study based the research on period between 2005 and 2014. However, the current research was based on data collected for the period between 2016 and 2022.

In 2019, Siele and Tibbs conducted research on how Kericho Water and Sanitation Co. Ltd., in Kericho, Kenya, managed its trade receivables and its financial performance. In order to determine

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the typical collection period and accounts receivable turnover, the investigation obtained relevant literature from Kenya National Audit Office and KEWASCO public accounting information between 2010 and 2014. The targeted group includes KEWASCO workers in the financial sector. In order to determine whether there is association involving parameters, data were gathered via surveys in which a census was used, and data were then analysed via Pearson correlation test. With an inverse relationship, the accounts receivable volatility had a considerable influence on financial performance. This paper was done as a case study with the current assessment done as a survey. The context of the article is different in that it was done in water sector with present one done in in the agricultural sector. The study was based on period between 2010 and 2014 with the current study based on period between 2016 and 2022.

### **2.2.2 Effect of Creditors Payment Period on Financial Performance**

Ogunlade, Oseni and Adeyemi (2021) did a panel study of working capital management and financial performance of Nigeria's manufacturers. The secondary data sources was adopted from the financial reports of Lafage Africa Plc Cement across years of 2011 through to 2020. The method of analysis used as ordinary least square method of estimation. The study established that working capital management parameters jointly changes financial performance. It was further revealed that creditors' conversion period (CCP) had no relationship with financial performance. This paper involved Nigerian manufacturers with the current study involving agricultural firms listed on Kenya. The paper was focused on info from one firm with the current study based on data from a survey where many firms were involved. The study adopted a 10-year period with the current study adopting a five-year period. The study used OLS for analysis with the current study using panel regression for analysis.

Le, Vu, Du, and Tran (2018) used information gathered via traded companies on Ho Chi Minh Stock Exchange to research the effect of working capital management upon financial performance. 69 listed companies from three years between 2014 and 2016 make up the cohort. Working capital management was symbolized by Days of Payables Outstanding (DPO). DPO had a detrimental effect on profits, though. The study related working capital management and performances of listed firms on Ho Chi Minh Stock Exchange. However, current survey related the two among listed agricultural firms on NSE. This showed contextual gaps. The study was also done on a 3-year period with the current study done on a 5-year period.

### **2.2.3 Effect of Operating Cash Flows on Financial Performance**

Das (2019) did research on connection of operating cash flow ratios and financial performances: a comparative study. Currently, cash flow ratios are randomly used instead of traditional ratios due to its wideness and acceptability on selected three firms from FMCG and Pharmaceuticals sectors. It employed data for a period of 10 years from 2004 to 2013 financial years. From outcomes, it is clear that liquidity and solvency position are moderate whereas companies maintained low profitability. Study found that operating cash flow ratio and financial performance related negatively. It was comparative study with current one based on one sector. The study was based on FMCG and pharmaceutical firms which is a different context from the agricultural firms that was involved in the current study. The study used the period from 2004 and 2013 whose data may be outdated. This is the reason the present survey utilized most current data from period between 2016 and 2022.

A study on impact of cash flow management practises on the financial performances of quoted Kenyan firms was conducted by Oyieko Osebe (2018). The cash flow statement's net values for

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each activity were used to calculate independent variables. The research design adopted was descriptive. The survey focused on 735 Nairobi-based manufacturers in 14 different categories. The population sample was chosen using a stratification random selection technique, with the sample group being determined by the Naasiuma (2000) Model. On the basis of the financial statements and information from KAM webpage, secondary information was gathered. According to the report, Unga Limited took operating cash flows into account when applying profit from operations. Additionally, BOC Limited used Purchase of PPE to take into account investment cash flows to a significant degree. The study discovered a direct association across operating cash flows and financial performance as measured by return on equity.

#### **2.2.4 Effect of Inventory Turnover Period on Financial Performance**

Park and Kim (2020) examined how vulnerability to price volatility moderated the impact of inventory turnover on financial performance in US restaurants. Data representing publicly listed US restaurants were gathered from the Mergent Electronic databases between 1999 and 2015. According to the findings, inventory turnover and business financial success are positively correlated. This research, despite looking at inventory turnover as a variable adopted in the current research, was done in the US restaurant industry. The current study in an attempt to compare results will be done in the Kenyan agricultural industry. The study was done on the period between 1999 and 2015 with the current study adopting the most current period between 2016 and 2022. The study also adopted regression analysis with the current research adopting correlation analysis in addition to regression analysis.

The connexion around working capital management and financial performance of listed enterprises in Kenya was investigated by Kinuthia, Maimba and Mwangi in 2020. The study adopted statistical research methods. Utilizing data collecting sheets, secondary panel data was gathered from yearly accounting reports of publicly traded businesses in Nairobi Stock Exchange. The researchers collected data from a census of the 20 manufacturers registered on the NSE between 2010 and 2017. Inventory turnover days and financial performance had a substantial direct association; however, EVA and performance had a large negative correlation. The correlation of working capital and financial performance was shown moderated by GDP. This study despite looking at working capital management and financial performance, study was done in the manufacturers other than agricultural sector. It also adopted different measures of performance other than RoC. The study adopted data collected between 2010 and 2017. Current investigation made utilization of data from period between 2016 and 2022. This allowed the use of current research data.

#### **2.2.5 Effect of Firm Size on Financial Performance**

This investigation adopted firm size as the controlling variable in relationship between working capital management and financial performances. Hossain and Saif (2019) examined how firm size affected the financial performance of Bangladeshi banking organisations. Analysis was done on fifty (50) annual reports from ten banking institutions that participated in the DSE through 2011 and 2015. Return on assets and return on capital were used as indications of business profits level, while total assets, number of staff, and number of branches were used as measures of company size. To pinpoint the variables influencing a firm's profitability, multiple regression analysis (also known as ordinary least squares) was created. Empirical analysis' findings indicate that company size possess favourable impact on firms' profitability. This study, despite focusing on firm size and financial performance, was done on banks in Bangladesh. The current research was

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done on Kenyan listed agricultural firms. The study also based the analysis on the period between 2011 and 2015 which may not give current picture if adopted for the current research. The current study utilized data from the period between 2016 and 2022. Ordinal Least Square other than Panel regression and correlation analysis was adopted.

Ozcan, Unal and Yener (2017) investigated how firm size affected the manufacturer's profit levels in Turkey. This investigation looked into if the size of 112 publicly traded manufacturer companies in Turkey from 2005 to 2013 affected their profits. In order to evaluate the impact of several firm size markers on corporate profit growth, a panel data methodology was adopted. According to estimations, the markers of company size assessed by the company's assets, revenues, and staff count generally had direct influence upon profits. There was sufficient empirical proof for a direct relationship involving company size indicators and profits across the time period under study. Empirical findings, however, contradict the parabolic or exponential relationship involving size measurements with profits of Turkish other than Kenyan enterprises. Investigation was done in the manufacturers with the current study done on agricultural sector for comparison of results. The study also used profitability as the dependent variable while the current research used financial performance.

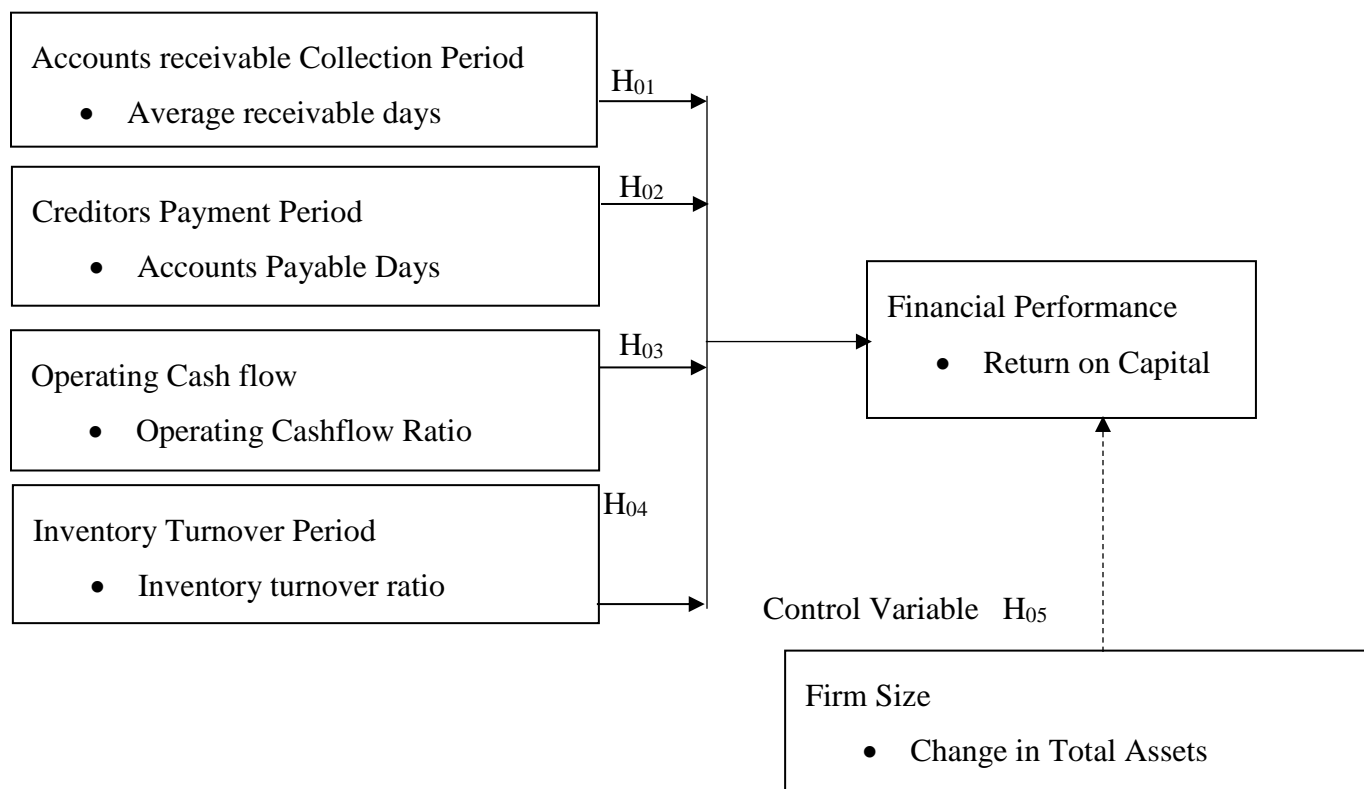
### **2.3 Conceptual Framework**

Conceptual framework represents conceptualisation of interaction around variables in research. In this research, it integrated working capital management variables, firm size and financial performance into a single model in Figure 3.



**Independent Variables**

**Dependent Variable**



**Figure 3: Conceptual Framework**

Source: Author (2023)

**3.0 Research Methodology**

For this examination, descriptive and correlational research designs were used. To provide details regarding the features of the demographic or the phenomenon, a descriptive study design was employed. Since the investigation aimed to investigate the links around variables and generate projections, it also used a correlational research methodology. The WCM-related variables and financial performance was identified, examined, described, and illustrated using the design. The link between various research variables was established via correlational research design. In this research study, multiple regression model had one dependent variable (Y) [a proxy for financial performance measure (RoC)] and four independent variables. The model will take the form of panel regression model developed by Chamberlain (1982) (3.2). The first model took form of;

$$Y_{it} = \alpha + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \beta_4 X_{4it}$$

Where;

$Y_{it}$  = Return on Capital of firm  $i$  at time  $t$

$X_{1it}$  = Accounts receivable collection period of firm  $i$  at time  $t$

$X_{2it}$  = Creditors Payment period of firm  $i$  at time  $t$

$X_{3it}$  = Cash Flow Ratio of firm  $i$  at time  $t$

$X_{4it}$  = Inventory Turnover Period of firm  $i$  at time  $t$

$\beta_1 - \beta_4$  = Regression Coefficients of variables

$\varepsilon$  = Error term

Subscript  $i$  denotes firms, subscript  $t$  denote time in years.

In regression analysis, the controlling variable is treated like an independent variable in determining its effect. In this survey, firm size was adopted as the controlling variable. Firm size was included in the first equation as  $X_5$ . This is shown in model 3.2.

$$Y_{it} = \alpha + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \beta_4 X_{4it} + \beta_5 X_{5it} + \varepsilon_{it}$$

Where:

$X_{5it}$  = Firm size of firm  $i$  at time  $t$

$\beta_5$  = Regression Coefficients of variables

The population was all listed agricultural firms in Kenya around 2016 and 2022. The NSE had seven listed agricultural firms between 2016 and 2022. The study used census survey whereby all the agricultural firms listed on Kenya was considered. The study did not involve firms delisted or recently listed agricultural firms in Kenya due to lack of complete historical data. Hence, the study sampled a total of 7 agricultural firms listed on the NSE between 2016 and 2022. Data was obtained from secondary sources for a period between 2016 and 2022. The period was only restricted to the period as latest data was readily available. It relied on audited financial accounts statements to ensure validity of research instrument. The study used data collection sheet where secondary data was recorded. The variables data was captured on data collection sheet. Data was obtained from statements of individual agricultural firms listed on NSE. The study was based on secondary data mined from accounting reports. Observations with anomalies like negative assets were eliminated in this research. Important figures from annual reports were recorded for analysis.

#### 4.0 Findings and Discussion

The study was based on a sample of seven agricultural firms for the period between 2016 and 2022. The researcher was able to collect data from six firms with the researcher lacking data from Rea Vipingo Plantations Ltd. This gives a response rate of 85.7%.

##### 4.1 Descriptive Statistics

Table 1 shows the mean, minimum, and maximum values with standard deviation of various variables involved in the model for six listed Kenyan agricultural firms for the period 2016-2022.

**Table 1: Descriptive Statistics**

	N	Minimum	Maximum	Mean	Std. Deviation
Financial Performance	42	-8.69	14.14	2.69	6.14
Accounts receivable collection period	42	12.35	657.25	138.85	171.99
Creditors Payment period	42	5.92	923.01	119.27	157.59
Cash Flow Ratio	42	-114.13	333.35	77.58	87.95
Inventory Turnover Period	42	0.00	877.04	99.78	173.80
Firm Size	42	5.34	9.70	7.85	1.39

Source: Study Data (2023)

With a standard deviation of 6.14% and an average score of 2.69%, return on capital indicates high variation over time. Although some businesses are functioning poorly, as evidenced by the negative minimum observed scores of ROC, on aggregate agricultural firms listed in Kenya have positive performance with a substantial number performing poorly. The data indicates that, in aggregate, it takes 138.85 days (or around five months) to service accounts receivables, with a std. deviance of 171.99 days. The quickest amount of time to collect money from debtors was 12.35 days, and the longest amount of time was 657.25 days (roughly 1 year and 10 months).

From the outcomes, the agricultural firms, between 2016 and 2022, showed an average creditors payment period of 119.27 days (roughly four months) with a std. deviation of 157.59 days. The creditors were paid within the shortest time of approximately 6 days with the longest period being 923.01 days (approximately 2 years and 6 months). The cash flow ratio averaged at 77.58. The highest ratio was 333.35, with the lowest being -114.13. The negative ratio stipulates that some listed Kenyan agricultural firms ran with negative cash holdings.

Grounded on the table, listed agricultural firms converted their inventories into sales in as little as 99.78 days (or roughly 3 months and 10 days). The firms displayed a std. deviation of 173.80 days stipulating that the inventory conversion period highly varied across the sample firms. The maximum amount of time that the firms needed to offload their inventories was 877.04 days (roughly 2 years), whereas the least amount of time is less than a day. From the outcomes, the mean log was 7.85, with a standard deviation of 1.39 indicating that the size of the listed agricultural firms did not differ much in terms of assets.

## 4.2 Correlation Analysis

Table 2 shows correlation analysis results

**Table 2: Correlations**

		Financial Performance	Accounts receivable collection period	Creditors Payment period	Cash Flow Ratio	Inventory Turnover Period	Firm Size
Financial Performance	Pearson Correlation	1					
	N	42					
Accounts receivable collection period	Pearson Correlation	-.333*	1				
	Sig. (2-tailed)	.031					
	N	42	42				
Creditors Payment period	Pearson Correlation	.106	.155	1			
	Sig. (2-tailed)	.504	.326				
	N	42	42	42			
Operating cash flows	Pearson Correlation	.314*	-.231	-.190	1		
	Sig. (2-tailed)	.043	.141	.229			
	N	42	42	42	42		
Inventory Turnover Period	Pearson Correlation	-.383*	-.219	.204	.029	1	
	Sig. (2-tailed)	.012	.164	.194	.858		
	N	42	42	42	42	42	
Firm Size	Pearson Correlation	.110	-.099	-.134	.240	.172	1
	Sig. (2-tailed)	.489	.534	.398	.127	.276	
	N	42	42	42	42	42	42

Source: Study Data (2023)

From the correlation analysis, accounts receivable collection period showed a correlation coefficient of -0.333 significant at the 0.05 significance level. This indicates that accounts receivable collection period had a negative relationship with financial performance of the sampled firms. These findings are aligned to those of Abdulazeez et al (2018) who found that the length of time it took for borrowers to pay back adversely correlated with performance. The outcomes, nevertheless, differed with those of Dan (2020) who found that trade receivables period and financial performance were positively correlated.

On the other hand, creditors payment period showed a correlation coefficient of 0.106 and a significance of 0.504. This shows that creditors payment period had positive but insignificant effect on financial performance of the sampled firms. The findings are similar to those of



Ogunlade, Oseni and Adeyemi (2021) who found that creditors' conversion period (CCP) had no relationship with financial performance. The findings, nevertheless, differed with those of Linh and Mohanlingam (2018) whose study exhibited a favourable correlation between the two. They also differed with those of Le, Vu, Du, and Tran (2018) who found that creditors payment period had a negative relationship with financial performance.

Operating cash flows showed a correlation coefficient of 0.314 with significance level of 0.043. This stipulates that operating cash flows have positive relationship with the financial performance of the sampled firms. The findings are aligned with those of Liman and Mohammed (2018) who found that operating cash flows had a positive effect on financial performance. Nevertheless, they differed with Das (2019) who found that operating cash flow ratio and financial performance related negatively.

In addition, inventory turnover period showed a correlation coefficient of 0.383 with a significance value of 0.012. This shows that inventory turnover period had a negative relationship with financial performance of the sampled firms. The findings concur with those of Ahmed and Mwangi (2022) who found that inventory management had a negative relationship with financial performance. However, they are different from those of Park and Kim (2020) who found that inventory turnover positively related with business financial performance. They were also different from those of Amanda (2019) who showed that inventory turnover period had no significant relationship with financial performance.

Firm size showed a correlation coefficient of 0.110 with a significance value of 0.489. This shows that firm size has no controlling effect on the relationship between working capital and financial performance of the sampled firms. The findings are same as Muhindi and Ngaba (2018) who found that firm size had no significant effect on financial performance. However, they differed with those of Shibusse, Kalunda, and Achoki (2019) also found that business size had positive relationship with financial performance.

### 4.3 Regression Analysis

**Table 3: Model Summary**

Random-effects GLS Regression	Number of obs	=	42
Group Variable: CD	Number of groups	=	6
R sq.	obs per group:		
within = 0.0020	min		7
between = 0.6056	avg		7.0
overall = 0.2027	max		7
	Wald Chi2(5)	=	4.10
corr (u_i, X) =0 (assumed)	Prob>Chi2	=	0.0048

Source: Study Data (2023)

From the model summary, the model showed a Wald value of 4.1 with a significance of 0.0048. This indicates that the model fits the data and that working capital and firm size significantly affect the financial performance of agricultural firms listed in Kenya as measured by return on capital. The model summary shows a between R sq. of 0.6056. We adopt the between R as the random panel regression is a between model. This shows that working capital and firm size contribute

60.56% of the change in the return on capital of listed Kenyan agricultural firms. Other factors contribute 39.44% in the changes in the return on capital within the firms.

**Table 4: Regression Statistics**

	Coef.	Std. Err.	z	P>z
Accounts receivable collection period	-0.043	0.010	-4.382	0.000
Creditors Payment period	0.148	0.107	1.391	0.164
Operating Cash flows	0.019	0.006	3.284	0.001
Inventory Turnover Period	-0.236	0.081	-2.903	0.004
Firm Size	1.069	0.976	1.095	0.274
_cons	-6.426	2.485	-4.382	0.010

Source: Study Data (2023)

From the coefficient table, the model had a constant of -6.426. This stipulates that where working capital (accounts receivable collection period, creditors payment period, operating cash flows, inventory turnover period) and firm size are held constant, the return on capital for the agricultural firms listed in Kenya would stand at -6.4%.

#### 4.3.1 Effect of Accounts Receivable Collection Period on Financial Performance

From the coefficient table, accounts receivable collection period displayed a regression coefficient of -0.043 with a p-value of 0.000. This indicates that a unitary increment in accounts receivable collection period would significantly reduce the return on capital as a measure of financial performance. This stipulates that accounts receivable collection period had a negative effect on financial performance. These findings are aligned to those of Abdulazeez *et al.* (2018) who found that the length of time it took for borrowers to pay back adversely correlated with performance. The outcomes, nevertheless, differed with those of Dan (2020) who found that trade receivables period and financial performance were positively correlated.

#### 4.3.2 Effect of Creditors Payment Period on Financial Performance

From the coefficient table, creditors payment period showed a regression coefficient of 0.148 with a significance value of 0.164 against financial performance. Hence, a unit increment in creditors payment period would not significantly increase the return on capital as a measure of financial performance since the p-value was greater than 0.05. This is an indication that creditors payment period had a positive but insignificant effect on financial performance. The findings are similar to those of Ogunlade, Oseni and Adeyemi (2021) who found that creditors' conversion period (CCP) had no relationship with financial performance. The findings, nevertheless, differed with those of Linh and Mohanlingam (2018) whose study exhibited a favourable correlation between the two. They also differed with those of Le, Vu, Du, and Tran (2018) who found that creditors payment period had a negative effect on financial performance.

#### 4.3.3 Effect of Operating Cash Flows on Financial Performance

For operating cash flows, the coefficient table showed a regression coefficient of 0.019 with a significance value of 0.001. This stipulated that a unit increase in operating cash flows in terms of cash flow ratio would increase the return on capital of listed agricultural firms by 0.019. This means that operating cash flows had a positive effect on financial performance of listed agricultural firms. The findings are aligned with those of Liman and Mohammed (2018) who found that

operating cash flows had a positive effect on financial performance. Nevertheless, they differed with Das (2019) who found that operating cash flow ratio and financial performance related negatively.

#### **4.3.4 Effect of Inventory Turnover Period on Financial Performance**

Inventory turnover period showed a positive regression coefficient of -0.236 against return on capital. The period showed a significance value of 0.004 which was below the threshold of 5%. This shows that a unit increase in inventory turnover period would reduce the financial performance of agricultural firms. Hence, inventory turnover period has a negative effect on financial performance. The findings concur with those of Ahmed and Mwangi (2022) who found that inventory management had a negative consequence on the financial performance of SMEs. However, they are different from those of Park and Kim (2020) who found that inventory turnover had a positive effect on business financial performance. They were also different from those of Amanda (2019) who showed that inventory turnover period had no significant effect on financial performance.

#### **4.3.5 Effect of Firm Size on Financial Performance**

For firm size, the regression coefficient was 1.069 with a significance value of 0.274 which was above 0.05. This stipulates that increased firm size would not significantly increase financial performance via the return on capital. Hence, firm size had no effect on financial performance indicating no controlling effect. The findings are same as Muhindi and Ngaba (2018) who found that firm size had no significant effect on financial performance. However, they differed with those of Hossain and Saif (2019) who found that company size possess favourable impact on firms' performance. Shibusse, Kalunda, and Achoki (2019) also found that business size had positive effect on financial performance.

### **5.0 Conclusion**

On the first objective, accounts receivable collection period showed a negative correlation coefficient against financial performance. The study concludes that accounts receivable collection period has a negative relationship with financial performance of agricultural firms listed on Nairobi Securities Exchange. This stipulates that agricultural firms with a long accounts receivable collection period display low levels of financial performance through low returns on capital. On the other hand, listed agricultural firms with a short accounts receivable collection period display high levels of financial performance through high returns on their capital.

In the second objective, the researcher found that creditors payment period had a positive but insignificant relationship with financial performance of the sampled firms. This study makes a conclusion that creditors payment period possesses a positive but insignificant relationship with financial performance of agricultural firms listed on Nairobi Securities Exchange. This shows that listed agricultural firms with a long or short creditors payment period show no significant differences in their financial performance represented by returns on capital.

In the third objective, the results displayed a positive relationship around cash flows and financial performance. This study, therefore, concludes that there exists a positive relationship around cash flows and financial performance of agricultural firms listed on Nairobi Securities Exchange. This an indication that listed agricultural firms with a high level of operating cash flows display a high level of financial performance with the firms with low operating cash flow ratio having low levels of financial performance.

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The study, in the fourth objective, established that inventory turnover period had a negative relationship with financial performance. This leads to the conclusion that inventory turnover period possess a negative relationship with financial performance of agricultural firms listed on Nairobi Securities Exchange. This shows that firms with a long inventory turnover period experience low levels of financial performance in terms of return on capital. However, firms with short inventory turnover period display high levels of financial performance.

In the last objective, the study established that firm size had no significant controlling effect on the relationship between working capital and financial performance. This study, therefore, concludes that firm size has no significant controlling effect on the relationship between working capital and financial performance of agricultural firms listed on Nairobi Securities Exchange. This signifies that the size of listed agricultural firms in Kenya does not affect the way working capital and financial performance relate across the firms.

## **6.0 Recommendations**

The study concludes that accounts receivable collection period has a negative relationship with financial performance of agricultural firms listed on Nairobi Securities Exchange. This stipulates that extending the accounts receivable collection period among the listed agricultural firms would reduce the financial performance of the firms. This study recommends that agricultural firms listed on Nairobi Securities Exchange reduce their accounts receivable collection period in order to enhance their financial performance. This can be done by giving discounts for early payments, and building strong customer relationships.

On creditors payment period, the study makes a conclusion that creditors payment period possesses a positive but insignificant relationship with financial performance of agricultural firms listed on Nairobi Securities Exchange. This shows that creditors payment period causes no significant change in financial performance despite it having a positive effect. There is need for the agricultural firms listed on Nairobi Securities Exchange to adopt an optimal creditors payment period which would ensure that the positive relationship turns significant for increased returns on capital (financial performance).

Further, this study concludes that there exists a positive relationship around cash flows and financial performance of agricultural firms listed on Nairobi Securities Exchange. Hence, listed agricultural firms that increase their operating cash flows experience increased financial performance. Therefore, the study recommends that agricultural firms listed on Nairobi Securities Exchange increase their operating cash flows for increased financial performance. They also need for the firms to reduce their current liabilities for increased operating cash flow ratio which would in turn increased the returns on capital among the firms.

The study also makes a conclusion that inventory turnover period possess a negative relationship with financial performance of agricultural firms listed on Nairobi Securities Exchange. This shows that a lengthening of inventory turnover period would lead to reduced financial performance in terms of return on capital. Thus, there is need for agricultural firms listed on Nairobi Securities Exchange to reduce their inventory turnover period for increased financial performance. This can be done through speeded up delivery time, improved and easy payment as well as simplified invoices.

Lastly, the study concluded that firm size has no significant controlling effect on the relationship between working capital and financial performance of agricultural firms listed on Nairobi



Securities Exchange. This is despite the effect being positive. There is need for agricultural firms listed on Nairobi Securities Exchange to increase their size optimally for improved working capital and financial performance relationship.

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