

**WORKING CAPITAL MANAGEMENT AND PROFITABILITY OF SELECTED
SUPERMARKETS IN NAIROBI CITY COUNTY, KENYA**

DENNIS GITOGO RATEMO

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DECLARATION

DECLARATION BY STUDENT

This research project is my original work and has not been submitted for a degree course or any other award in any other University.

Signature _____

Date _____

Dennis Gitogo Ratemo

D53/OL/CTY/26297/2015

DECLARATION BY SUPERVISOR

This research project has been submitted for examination with my approval as the university supervisor.

Signature _____

Date _____

Dr. Lucy Wamugo

Lecturer, Accounting and Finance

School of Business

Kenyatta University

DEDICATION

I dedicate this project to my family, who inspired me to attain my academic potential.

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OPERATIONAL DEFINITION OF TERMS

| | |
|--|---|
| Working capital management | Refers to the process of managing the firm's inventory, receivables and payables for the purpose of reducing risks and increasing returns that will benefit the firm. |
| Working capital management turnover | Refers to the velocity of utilization of net working capital of the supermarket. Shows the efficiency of the supermarket in using its working capital. |
| Accounts payable turnover | Refers to how often the supermarket pays off its suppliers. |
| Inventory Turnover | Refers to how many times inventory is sold during the year. |
| Profitability | Refers to the extent to which the supermarket generates additional revenue from its sales |
| Cash Conversion Cycle | Refers to how fast a company can convert its accounts receivable and Inventory into cash through sales. |

Return on Investment

Refers to the gain or the loss generated by the supermarkets as a result of the money invested by the shareholders

Fixed Financial Ratio

Refers to the measure of the utilization of amount invested to generate profit that measure operating performance

Stakeholders

Refers to employees, shareholders, government, customers, suppliers that have interest in the supermarkets

Shareholders

Refers the contributors of capital to the supermarkets in terms of shares holdings.

ABBREVIATIONS AND ACRONYMS

| | |
|----------------|--|
| ACP | Average Collection Period |
| CCC | Cash Conversion Cycle |
| CL | Current Liabilities |
| FATA | Fixed Financial Ratio |
| NACOSTI | National Council of Science and technology |
| NSCA | Net Working Capital Turnover Ratio |
| NSE | Nairobi Stock Exchange |
| OLS | Ordinary Least Square |
| ROA | Return on Assets |
| ROE | Return on Equity |
| RONA | Return on net assets |
| ROTA | Returns on Total Assets |
| WCM | Working capital management |
| ROI | Return on Investment |
| IT | Inventory Turnover |

ABSTRACT

Evidence from Nairobi Business Directory 2016 shows that supermarkets are experiencing low levels of profitability from the year since 2010. The previous studies show that most supermarkets are unable to efficiently convert some of their working capital to remain profitable in the long run. The continuous decreasing levels of supermarket profitability motivates the study which seeks to determine the effects of working capital components on the profitability of supermarkets in Nairobi County, Kenya. The study sought to investigate the effect of working capital management on the profitability of supermarkets in Nairobi City County, Kenya. The specific objectives were to determine the effect of working capital turn over on the profitability of supermarkets in Nairobi City County, Kenya to determine the effect of Inventory turnover on the profitability of supermarkets in Nairobi City County, Kenya and to evaluate the effect of accounts payable turnover on the profitability of supermarkets in Nairobi City County, Kenya. The study adopted descriptive research design. The target population of the study was 102 supermarkets in Nairobi City County. The target sample for the study was 31 supermarkets in Nairobi City County. Data was collected from financial statements of the individual supermarkets and Ministry of Industry, Trade and Cooperatives Report on Kenya Retail Sector. Model summary results revealed that working capital turnover, inventory turnover and accounts payable turnover explain 43.75% of profitability of supermarkets in Nairobi City County. Regression of coefficients results showed that working capital turnover and profitability of supermarkets are positively and significantly related. The results also revealed that inventory turnover and profitability of supermarkets are positively and significantly related. The results revealed that accounts payable turnover and profitability of supermarkets are positively and significantly related. Based on the findings above, the study concluded that working capital turnover has a significant effect on profitability of supermarkets in Nairobi City County. The study also found out that inventory turnover has a significant effect on profitability of supermarkets in Nairobi City County. The study found out that accounts payable turnover has a significant effect on profitability of supermarkets in Nairobi City County. The study results revealed that there is high levels of unpaid suppliers which affects the restocking process which in return affects the sales which ultimately have a significance influence on the profitability of the supermarkets. The study found out that inventory has a great significance on the profitability of the supermarkets. This study recommends supermarkets to manage their inventory efficiently in order to increase the liquidity of a firm thus meeting its short term obligations quickly and invest in profitable opportunities keeping in mind that cost on inventory is a carrying cost that ultimately reduces profits of a firm. The study recommends that the management of the supermarkets should enter into long term contracts with different suppliers that provide longer credit periods as this will assist them in managing their cash flows thus improving performance in terms of profitability.

CHAPTER ONE

INTRODUCTION

1.1 Background of the study

The evidence from Nairobi business directory (2016), indicates that performance of supermarkets in terms of profit making have been decreasing from the year 2006-2016. In the year 2016, Uchumi and Nakumatt faced challenges of managing working capital which resulted in closure of some operational branches and sale of offices to raise capital to repay some of their debts. Issues of profitability reductions arises due to mismanagement of working capital components such as the accounts payables, Inventory. In the Uchumi case, supplier discrimination in terms of repayment period affected the continuous supply of items. Massive violation of supplier contracts resulted to court cases (Mbutia & Rotich, 2014). Beginning of 2016, Nakumatt faced issues of cash flow as they were unable to sustain numerous braches they had opened countrywide (Ogwang, 2016).

The management of working capital is essential to the sound financial position of all firms (Osundina, 2014). It is vital for firms to employ measures that ensure there is efficiency in the use of working capital components as they form large proportion of invested capital compared to the company total assets (Hareh, 2012). WCM entails critical balance of current assets and current liabilities in order to avoid instances of inability of the firm to meet short terms liabilities and avoid excessively investing in these assets (Mathai, 2012).

Profit maximization is the key goal of any firm, failure to manage working capital management may result in an inability to ensure a smooth running of daily operations (Aminu, 2012). However, decisions that enhance profitability have shown to have an adverse impact on WCM;

hence, most supermarkets face a tough balancing act between profitability and WCM (Haresh, 2012). Retail supermarkets in the country have crucial role to play in the growth of Kenyan economy. As the economy continues to grow, there is need to create more business opportunities by creating new retail stores and expanding the existing ones (Kamau, 2008). Although their role in the economy is substantial, many supermarkets in Nairobi County face many obstacles affecting their business performance.

Uchumi supermarkets, one of the oldest retail stores in Kenya is still under statutory management due to poor performance. Nakumatt supermarket has been experiencing difficulties in paying suppliers on time and keeping some of its outlets well stocked (Ogwang, 2016). This has been attributed to cash flow challenges and high operating costs (Ogwang, 2016). Managers of these supermarkets need to be informed on the effects of working capital management on the profitability of their firms and the need to strike a balance between how much cash to keep, what level of inventory to maintain or how much payables to have (Masio, 2012) accounts.

Working Capital Management is a simple concept but yet difficult in implementation due to the complexities surrounding supermarkets in Kenya (Mathai, 2012). The constant changes on how business is conducted today have influenced how the firms hold excessive working capital in the form that is easily liquidated. The shareholders' value is affected by the free cash flow thus most firms try to unlock cashes invested in business with an aim of putting them in business areas where there is much value additions (Chakraborty, 2008). There is no entity in Kenya that does not require working capital.

Investing excessively in working capital may result to low profitability and thus resulting to low investment levels that will affect the liquidity of the firm (Ogwang, 2016). Therefore, it's

imperative for managers to find a balance between profitability and liquidity of a firm in order to maximize the wealth of shareholders (Masio, 2012). It is important for retail supermarkets to have adequate working capital as it ensures solvency of the business by providing continuous procurement and uninterrupted supply of their products. Besides, adequate working capital leads to high credit ratings especially where firms want to finance investments using debt. To understand the impacts of various components of working capital on the profitability of the firm then one must understand the relationship between the two variables (Satyanarayana, 2011).

1.1.1 Working capital management

Refers to the process of managing the firm's inventory, receivables and payables for the purpose of reducing risks and increasing returns that will benefit the firm. Evidence from Padachi (2016) indicates a significant reduction in current assets that is attributed to various reasons such as the expansion of branches without matching the capital base of the supermarket (Kassim, 2011). According to Kassim (2011), supermarket such as Nakumatt overstocked and opened branches in most of the counties that significantly affected their daily operations negatively. The number of times a firm takes actually in realizing sales through working capital components is necessary for the supermarkets in understanding the rationale of maximizing their sales that will lead to profits in the long run (Padachi, 2006). Supermarket such as Uchumi did not have effective tactics of converting their sales efficiently by using the available working capital components such as the Inventories. In most case, the suppliers were delayed in payment through a discriminatory mechanism that favored other suppliers. If the firm applies effective working capital components, then it will realize more sales that will boost their profits (Padachi, 2006). The table 1.1 shows the trends in the working capital turnover ratio of the various supermarkets.

Table 1.1: Working capital turnover ratio for year 2008-2011

| Year | Tuskys | Uchumi | Nakumatt | Naivas | Ukwala |
|-------------|---------------|---------------|-----------------|---------------|---------------|
| 2008 | 6.92 | 10.72 | 7.82 | 4.9 | 6.00 |
| 2009 | 6.90 | 10.68 | 7.69 | 4.7 | 5.8 |
| 2010 | 5.99 | 10.53 | 7.0 | 4.3 | 5.6 |
| 2011 | 5.96 | 10.50 | 6.82 | 4.2 | 5.5 |

Source: James Mbugua, 2011

The table 1.1 indicates conversion rate of the sales by using the available net working capital for the five supermarkets for the period 2008-2012. Nakumatt and Uchumi show the slowest conversion rate of sales using the working capital as compared to the other supermarkets. Thus, there is a high concern of how the supermarkets are using their working capital effectively to convert available inventories into sales.

1.1.2 Inventory Turnover

These refers to the list of items that are stocked and sold by the supermarkets on their shelves. The rate at which firms convert their inventories into sales is known as the inventory turnover. The inventory turnover is calculated by dividing the COGs by firm average inventories (Manasseh, 2007). The importance of inventory turnover is to indicate how often the inventory is being turned to sales. Having high levels of closing inventory is not a good sign for the company as the levels of sales are decreasing thus profits are reducing too. The following table 1.2 represents Inventory turnover of supermarkets from the year 2010-2013:

Table 1.2: Inventory turnover for period 2009-2012

| Year | Tuskeys | Nakumatt | Uchumi |
|-------------|----------------|-----------------|---------------|
| 2009 | 9 | 8 | 10 |
| 2010 | 8 | 8.1 | 9 |
| 2011 | 8 | 7.5 | 6 |
| 2012 | 7 | 6 | 4 |

Source: Mburu, 2013

From the table 1.2 shows the Inventory turnover has generally decreased from the year 2009-2012. This is an indication that the rate of conversion of the inventories to sales is slowing down thus ultimately affecting the profits of the supermarkets. This forms a concern for this study to address.

1.1.3 Accounts Payable Turnover

Past data on accounts payable shows delays in repayment periods by the supermarkets due to mismanagement of working capital components (Ogwang, 2016). In the recent past, Suppliers have taken supermarkets such as Nakumatt and Uchumi to court for not paying what they are owed (Mbuthia & Rotich, 2014). The delays have halted the supply of crucial items on the shelves leading to closure of branches. The rate at which the suppliers are paid in the company will determine the rate at which suppliers supply. Paying the suppliers on time according to the agreed terms and condition of payment will motivate the providers in replenishing process of the inventory. The rate of payment is an indication of firm's growth of sales and effective collection methods that avail cash that is used in paying the suppliers (Mbuthia & Rotich, 2014). The following table 1.3 indicates the accounts payable from the year 2011-2014 for the various supermarkets.

Table 1.3: Accounts payable for period 2011-2014

| Year | Karrymatt '000' | Kassmart '000' | Mathai '000' |
|-------------|------------------------|-----------------------|---------------------|
| 2011 | 186,272 | 56,429 | 40,875 |
| 2012 | 202,307 | 60,934 | 52,048 |
| 2013 | 234,625 | 60,094 | 50,291 |
| 2014 | 244,624 | 65,943 | 63,523 |

Source: Kinuthia Nyoike, 2015

From the table 1.3 shows a trend of increasing accounts payable from the year 2011-2014. Karrymatt indicates a high amount of accounts payable as compared to the other two supermarkets that is Kassmart and Mathai. The high levels of accounts payable indicates the supermarkets in ability to pay suppliers on time thus affecting their levels of inventory in terms of restocking on time. Ultimately, this affects the sales and profitability thus a concern for the study to address.

1.1.4 Profitability of Supermarkets

Profitability refers to the company abilities to generate revenues within a certain period of time. Industry profitability refers to the aggregate profitability of all firms in the industry (Pash and Fatima, 2008). Corporate profitability is a measure of corporate performance measure divided into two major types: traditional measures that is based on accounting basis to show the performance of the firm in the past; and the measures of market basis which include stock market prices. The operational activities of a firm and its finances are integrally connected for sustainability purposes.

Economy and consumer behavior affects retails (Musiega, 2015). When the economy is at low progress, then the retail industry struggles too. As the targeted specific groups by the retailer's changes, such as customer tastes, then there profits will either reduce or increase (Khalid, 2012).

An example is when this targeted customers like the middle class women lose jobs then it means there purchasing power reduces which affect negatively the retailers sales realized at the end of the period. According to Biswajit, (2013), having to maintain inventory, requires some costs such as storage costs or insurance costs which eventually affects the profits that the business makes. The faster the moving of inventory the better position of maintaining the profits of the firm. Businesses that have high profits must be in making high profits that will compensate for the costs of operations. Any slight changes to cost of the goods either directly or indirectly will eventually affect the profits of the firm (Foss and Stone, 2001).

Lack of proper management of the working capital is the main contribution to the collapsing of Uchumi and closure of some of the country wide branches (Mbutia & Rotich, 2014). Mismanagement of the working capital components affected their profitability negatively thus leading to collapsing and ultimate bail out by the government. Nakumatt mismanaged their working capital that forced them to sell some of their branches to repay their debts (Ogwang, 2016). These bad practices of mismanaging working capital have negative effects on profitability on the supermarkets. The following table 1.4 shows the trends of supermarket performance in terms of monthly and yearly revenues in millions:

Table 1.4 Average Monthly and Average Annual Gross revenues for period 2007-2010

| Year | Nakumatt (millions) | | Tuskys (millions) | | Ukwala (millions) | |
|------|---------------------|-----|-------------------|-----|-------------------|-----|
| | M | A | M | A | M | A |
| 2007 | 310 | 850 | 220 | 720 | 120 | 380 |
| 2008 | 280 | 800 | 210 | 700 | 105 | 370 |
| 2009 | 220 | 760 | 160 | 660 | 95 | 365 |
| 2010 | 200 | 700 | 160 | 650 | 95 | 350 |

Source: Munyoki and Benjamin, (2013)

The table 1.4 gives the monthly and annual trends in the gross revenues of the three supermarkets. The trends shows from the year 2007- 2010 the revenues have been decreasing for the three supermarkets. Taking Nakumatt annual revenues decreased from 850M to 700M for the period. Tuskys the annual revenues decreased from 720M-650M. Ukwala the revenues decreased from 380M-350M for the period 2007-2010. The decreasing revenues level forms a concern for the study.

1.2 Statement of the Problem

According to Kenya Business Directory (2016), there has been rising cases of supermarkets reduction in profitability levels. The period 2010-2016 was marked with less profits being realized in the various supermarket chains (Kenya Business Directory 2016). The Kenya Directory listing of (2016) has raised an outcry in the public domain as to why the continuous dwindling of profits in the different supermarkets.

The continuous reduction in the profitability levels is affecting the operations of the supermarkets. Most employees in these supermarkets are affected negatively through retrenchment. The customers are affected as their choice of variety of items in the shelves is curtailed due to un- availability of commodities demanded. The questioning of survival future for the supermarkets in Kenya by the various stakeholders like Kenya Directory Listings, workers union and government has prompted the current study in determining how the working capital affects the profitability of supermarkets in Nairobi County for the unexploited time frame of 2010-2016.

The unexploited time frame of 2010-2016 that marked the beginning of supermarkets struggling to remain profitable motivates the study to seek a link of the working capital components

affecting the profitability of the supermarkets for the period 2010-2016. The knowledge from the study may assist supermarkets in effectively managing their working capital components for concrete realization of profits.

Globally, WCM and profitability of firms have been researched. However, many of them concentrated on firms rather than in the retail sector. Though there are many studies on working capital management on supermarkets, most of them have been done in developed economies. For instance, Charitou et al. (2010) investigated how WCM affected the performance of various firms in the Ireland Country. Amit, Sur and Rakshit (2005) studied how working capital related to profitability of the various pharmaceutical industries in India. However, the current study linked working capital management and profitability of supermarkets in Nairobi City County, Kenya.

Further, in Kenya studies have been done on WCM and profitability of various organisations. However, most of them focused on other sectors of industry such as hospitality and microfinance. For instance, Bett (2009) did a study on working capital management and profitability in Kenyan referral hospitals, he identified that there are policies that are not adhered to leading to poor performance of the institutions. Additionally, Mogere (2003) did a survey of working capital management among microfinance institutions in Nairobi, his objective was to determine the effect of amount of long-term financing of current assets on profitability of companies. However, the current study established the effect of working capital management on profitability of supermarkets in Nairobi County.

Moreover, most of the existing studies done on working capital management on supermarkets yielded mixed results for example the study by Nganga (2009) on the accounts receivable period

negatively affecting profitability while at the same time, increase in accounts receivable period increases sales that increase profitability. Although components of working capital affects the profitability of a firm, the link between the specific components of working capital such as receivables, turnover and payables on the profitability of supermarkets is not well elaborated in the Kenyan context. Hence this study seeks to determine how this components of working capital affects the profitability of the supermarkets for the period 2010-2016 in Nairobi County, Kenya.

1.3 General Objective

The general objective of the study was to investigate the effect of working capital management on the profitability of supermarkets in Nairobi City County, Kenya.

1.3.1 Specific Objectives

The research study was guided by the following:

- i. To determine the effect of working capital turn over on the profitability of supermarkets in Nairobi City County, Kenya.
- ii. To determine the effect of Inventory turnover on the profitability of supermarkets in Nairobi City County, Kenya
- iii. To evaluate the effect of accounts payable turnover on the profitability of supermarkets in Nairobi City County, Kenya

1.3.2 Research Hypothesis

The research study was guided by the following hypothesis:

H₀₁: Working capital turnover does not have a significant effect on profitability of supermarkets in Nairobi City County, Kenya

Ho₂: There is no significant relationship between Inventory turnover and profitability of supermarkets in Nairobi City County, Kenya

Ho₃: Accounts payable turnover does not have a significance effect on profitability of supermarkets in Nairobi City County, Kenya

1.4 Significance of the study

The study will contribute to the literature reviews in various forms. The study aims in linking the WCM and profitability of supermarkets in Nairobi City County, Kenya thus may contribute to the existing literatures reviews in the unexplored time frame of 2010-2016. Further, the findings of this study may be used by scholars and academicians to identify other areas in working capital management that needs further research with the sole aim of improving the profitability of supermarkets.

Findings from this study may sensitize the management of supermarkets on the importance of identifying and setting the appropriate WCM policy for their firms to assist in boosting financial performance. Additionally, the study finding may assist the Shareholders and management in setting up effective and efficient policies of managing their profitability. Financial institutions may use the study findings mostly when advancing credit to supermarkets in Kenya. This is because efficient working capital management ensures that the firms is efficient managing their current asset and liabilities and can be able to meet it short and long term obligations.

1.5 Scope of the study

This study focused on supermarkets in Nairobi County for a period of 7 years from 2010-2016. The total number of supermarkets to be used consists of 102 supermarkets in Nairobi County as per the Kenya business directory 2016 of which 31 supermarkets were sampled from the

population using stratified sampling. According to Nairobi Business Directory (2016), there are 102 supermarkets in Nairobi County.

1.6 Limitations of the Study

The main limitation of the study was getting the financial statements of the supermarkets. The limitation of financial disclosure was mitigated through official emailing to various supermarkets and attaching an introductory letter from the university and permit from (NACOSTI) which gives a clear indication that data provided is used only in helping the researcher complete his study research project. In addition, the researcher made a follow up through telephone and walk in to the different supermarkets required for the sample size

1.7 Organization of the study

Chapter one provided the background of the research, the objectives the research intends to answer, the importance of research, the scope of the study and the limitations researcher is expected to encounter while conducting the research. Chapter two presents literature reviews on the various past WCM studies done including theoretical review and a conceptual framework. Chapter three presents the methodology that the study employs.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

In this chapter, there is the inclusion of the empirical literature and relevant scholarly. The theoretical framework, which talks more about the theories involved, which are four in number, has also been integrated. The gaps provided in the study were addressed after being exposed, considering the reviewed empirical literature, and its summary.

2.2 Theoretical Literature

2.2.1 Trade off Theory

The theory advocates for a trade-off between profitability and liquidity, whereby if one gains something, then the other stands to lose another thing, that is somehow related to the one lost. Some has to be lost for more to be gained. If the working capital in an organization is managed in the right way, then the market improves regarding liquidity, and the shareholders' value tends to grow (Jeng-Ren, et al, 2006). A tradeoff between profitability and risk is associated with the investment in the total working capital. If the working capital is well managed, then efficiency improves, which helps in increasing the cash flows related to the firm. This in turn creates opportunities for the firm to grow, as well as increasing the returns associated with the shareholders (Jeng-Ren, et al, 2006). This theory therefore helps in understanding how supermarkets can take care of their working capitals effectively to reduce bad debts, therefore increasing the relevant cash flows.

2.2.2 Baumol's Model

Baumol (1952) developed this model. The model helps in determining the cash balance. However, there are some assumptions related to the model. The first one is that forecasting is possible, and the firm can predict its requirements in terms of cash. The other one is that the payments made in terms of cash occur in a uniform manner over a specified period of time. Another assumption is that the opportunity cost of holding cash is known and does not change easily. There is also the assumption that transaction costs which are the same will be incurred by the firm when securities are converted into cash. There is a variable and a fixed cost associated with transactions.

The theory is applicable in the study through aiding in the determination of the cash maintenance practices by the supermarkets in the cash till by having favorable policies of credit collection and payment that will affect the cash flow that will be held by the firm which forms the integral part of managing working capital that in turn affects the ability of the supermarkets to make profit.

2.3 Empirical Literature Review

2.3.1 Accounts payable turnover and profitability

Malingu, Achode & Rotich (2016) did a research on how accounts payable as a financing source affecting the performance of listed manufacturing firms in NSE. Results obtained from the research show that in most of the organizations (Manufacturing) mentioned at the NSE, there was a direct positive relationship between Performance and Accounts payable, proxied by GP percentage, NPM, ROE, current ratio and quick ratio. According to the study, business must maintain good long term relationship with suppliers in order to get credit faster and easier, considering that that increases the performance of organizations through the maximization of profits. The company management should ensure that their credit terms are managed well so as

to continue making profits and being competitive. The study integrated accounts payables and financial performance in manufacturing firms but the current study focused on accounts payables as a variable on profitability of supermarkets.

Lawrence (2013) carried out a study on how Nigerian banks and their performance are affected by the management of Account payable. The financial report provided the necessary data. The data was collected from a survey of banks selected, which are situated in Nigeria. Regression was used to analyze the data. Some performance indicators such as profit after tax and dividend were used to measure how the Nigerian banks performed. The analyses reveal that obtaining loans is a predominate source of funds, and effective management of loan portfolio and credit function is essential to the safety and soundness of banks. Analysis of past problems associated with credit, such as those associated with the banking sector, has made it clear that portfolio managers should do more. The study researched on accounts receivables and financial management in banks and its role on credit. However, the current study focused on three working capital components in supermarkets.

Kithii (2008) conducted a study to establish the relationship between accounts payable management and profitability of companies mentioned in Nairobi's securities exchange. Her objectives were to establish how efficient the firms are managing their working capital. The results concluded that there exists a statistical significant negative relationship between variables of working capital management and the profitability of firm except for the accounts payable which revealed a positive relationship. The study concentrated on firms' efficiency on working capital management. However, the current study established the effects of working capital management on profitability of 31 supermarkets in Nairobi County. Cannon (2008) introduced contrary finding in his study on inventory improvement and financial performance. The study on

inventory management and financial performance found that inventory performance was negatively related to overall performance.

Deloof (2003) studied the relationship between payable management and the profitability of firms associated with the supermarkets found in Belgium. He used correlation and regression whereby he found a negative relationship between gross operating income and the number of days accounts receivables, inventories and accounts payable of Belgian supermarkets. Considering these results, he suggested that managers could easily find value for their shareholders through reduction of the number of day's accounts receivable and inventories to an effective minimum. The negative relationship between accounts payable and profitability is consistent with the view that less profitable supermarkets should wait longer to have their bills paid. The study involved gross operating income and inventories while the current study only consider the working capital ratios such as accounts payable turnover.

2.3.2 Inventory turnover and profitability

Mbula, Memba & Njeru (2016) researched about Inventory management and its effect on Financial Performance of Firms which are provided funds by the Government Venture Capital in the country. Most of the firms which are provided funds by government venture capital have proper practices that enhance working capital management. However, a lot has to be done in Kenya on the management of working capital especially in the management of accounts which are overdue as well as review and adherence to sound credit management policies. The research suggests that more studies should be done on firms which have a firm size that is extended. This can also be integrated in other components of working capital management such as accounts payable and working capital levels that the current study emphasizes.

Globally, the study by Salawati et al. (2012) wanted to investigate how inventory management, firm performance, and capital intensity are related. Another similar study was Eroglu et al. (2011) which used Empirical Leanness Indicator (ELI) to measure inventory. Their study on 80 US firms (Manufacturing) found that there is a positive relationship between leanness and financial performance. The current study uses 31 supermarkets.

Another study by Koliass et al. (2011) found that there is a negative relationship between inventory turnover ratio and gross margin. Econometric analysis was conducted on a sample of financial data for Greek firms for the period of 2000-2005. The current study focuses on various components of working capital and profitability of supermarkets as opposed to Cannon study on one working capital factor.

In Nigeria, Olanrewaju et al. (2011) small businesses in Kwara state, Nigeria had their inventory management assessed. Regression was used, whereby it explained the effect of inventory value on performance proxy by profit within ten years. A strong positive relationship was established between inventory and financial performance of small businesses in Nigeria. The current study is based on 31 supermarkets based in Nairobi County.

2.3.3 Working capital turnover and profitability

A study by Almazari (2013) examined how working capital turnover and the ability of Saudi cement manufacturing companies to make profits are related. The study used regression analysis and bivariate correlation. The results found that the current ratio of the firms affected profitability. The study emphasized on one ratio of working capital turnover that was associated with limiting the scope of the study. The current study focuses on several ratios such as the

accounts payable turnover and working capital turnover ratio on the profitability of supermarkets.

Additionally, Omesa et al. (2013) also examined how WCM and corporate performance of firms listed at the NSE are related. The study applied the Principal component analysis technique. The relationship was at 95% confidence with performance. The study only focused on the listed firms in the NSE. The current study examines WCM and profitability of 31 supermarkets and they are not listed in the NSE.

Further, Maina (2013) examined how WCM and financial performance for firms listed in NSE are related. In analyzing the data, the study used inferential & descriptive statistics. The results suggested that inventory turnover in days is associated with negative relationship with ROE which means that financial performance of organizations can be increased by reducing the number of days of inventory. The study did not focus on specific measure of performance such as profitability. The current study focuses on profitability of the supermarkets in Nairobi City County which are not listed.

Mohammad and Noriza (2011) did a study on relationship between WCM and performance of companies found in Malaysia. They used profitability and market valuation. Multiple regression and correlations were used in the analysis of the data. They found that working capital variables and the financial performance of the firms are negatively related. The study only analyzed the firm's financial performance but the current study looked at the profitability. The study also used variables of inventory turnover while the current study does not focus on inventories.

Talat Afza et al. (2010) carried out a study regarding WCM and corporate performance of the Pakistanian manufacturing sector. The results showed that profitability was positively affected

by the gross WCT and current assets. The study focused on working capital turnover and current asset ratio only which limited the scope of the study. The current study broadens the research through focusing on more ratios and the profitability of the supermarkets.

Mathai (2010) did a study on how various variables of working capital affected profitability of supermarket in Kenya. The research concluded that both positive and negative effects existed. The study focused on current ratio and inventory turnover as opposed to the current study which focuses on more ratios such as the working capital turn over and average payment periods.

Uyar (2009), ANOVA and correlation were used to examine the relationship between WCT and profitability. The results showed that a higher working capital turnover compared to manufacturing industries was experienced in retail and wholesale. A negative correlation was examined that exists between profitability and cash conversion cycle. However, the study failed to establish other components of working capital apart from cash that affect profitability of supermarkets which this study focused on.

Zariyawati, et al (2009) in their study, conducted in Malaysia aimed at determining whether there existed a relationship between WCM and firm profitability of six firms listed in Bursa Malaysia. The Ordinary Least Squares method was used. Results helped in concluding that when the cash conversion period is reduced then what resulted was an increase in profitability. For the shareholders' value to be created, firm managers should be concerned with ensuring that the cash conversion cycle is shortened until optimal level is achieved. The study researched the firms within five years and focused on the conversion cycle of firms' cash. However, the current study researches the supermarkets within seven years.

2.4 Summary of Literature and Research Gaps

There exist various empirical studies on effects of profitability of markets and working capital management. However, some studies, both local and global, suggest that there is a positive effects while others suggest that there exists a negative effects of management of working capital on the ability of supermarkets to make profits.

Moreover, there were studies that focused on effects of WCM in microfinances. For instance, Ayiro (2014) the investigation into relationship between components of working capital and profitability of SMEs in Kisumu city – Kenya. Other studies on WCM were done on manufacturing firms and not supermarkets. For instance, Gakure et al. (2012) analyzed the relationship between WCM and performance of 12 manufacturing firms listed at the NSE. The current study contributed to the knowledge gap by majoring on the supermarkets for the unexplored period of 2010-2016. In addition, the current study filled the gap by focusing on several components of working capital such as payables, receivables, working capital turnover on profitability as opposed to the previous studies such as Mathai (2010) that focused on single and two variables like cash, inventory on financial performance.

Additionally, existing studies focused on financial performance as dependent variable but the current study focused on specific variable measurement of financial performance that is profitability thus contributing to new knowledge. For instance, Mutungi (2010) conducted a study to determine the relationship between financial performance of supermarkets in Nairobi and the WCM. The study concluded that there is an aggressive policies applied by retailers. Melita, Maria and Petros (2010) also investigated the effect of WCM on firm's financial performance in an emerging market.

In addition, some suggest significant effects while others suggest insignificant effects. For instance, Mareh (2007) showed the impact of working capital management on profitability of supermarkets. Different variables were used such as average collection period, inventory turnover in days and average payment period. The study concluded that there is negative relationship between net operating profitability and Average collection period.

Different studies conducted on WCM elements and profitability have not shown clear-cut direction of the relationship between the two variables especially in the context of supermarkets in Nairobi, Kenya. Looking further of these studies do provide less of empirical evidence on the ailing problems on part of profitability in Kenya. Therefore, the current research filled this gap by establishing the relationship between WCM variables of WCT, Inventory turnover and APT and profitability of supermarkets in Nairobi City County, Kenya for unexplored period of 2010-2016.

2.5 Conceptual Framework

The diagram below shows how the independent variables are impacting the dependent variables as moderated by the environmental and contextual organizational forces. The arrows indicate the direction of influence.

Independent Variable

Dependent Variable

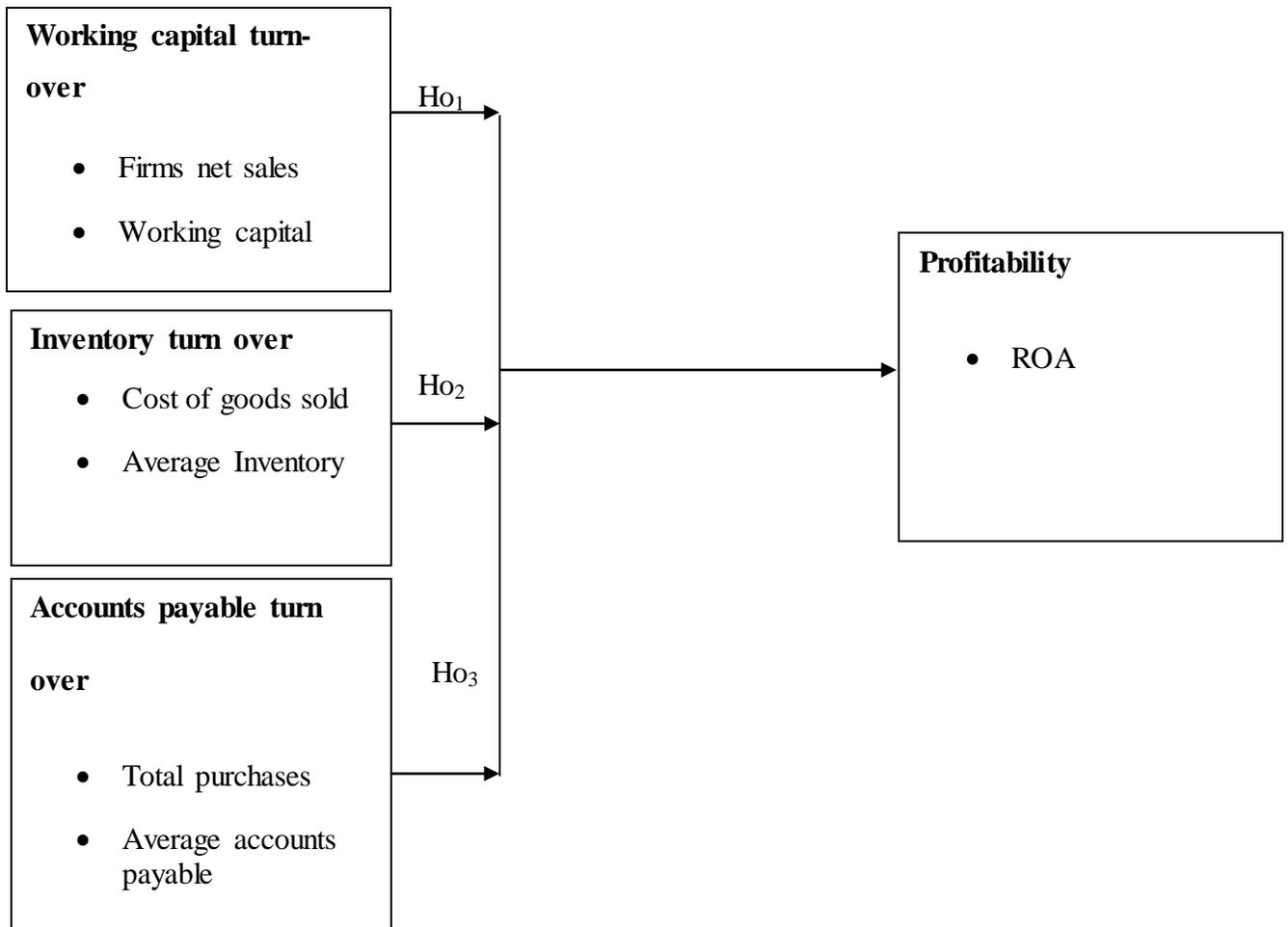


Figure 2.1: Conceptual Framework

Source: Author (2018)

The independent variables in the study include WCT, Inventory turnover and APT. The indicators of WCT include nets sales and net working capital. Indicators of Inventory turnover include cost of goods and average inventory. Total purchases and average accounts payables constitutes the indicators of accounts payable turnover. Depending on past researches done, the current study hypothesizes that the independent variables have an impact on the profitability of

the supermarkets. The dependent variable for the study is profitability measured by ROA. The hypothesized relationship for the study is shown in the Figure 2.1.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter outlines the methodologies that were used in ensuring the study is complete. The subsections include; research design, target population, sampling techniques, data collection and presentation, data analysis, validity and reliability and ethical considerations.

3.2 Research Design

The study used descriptive design. Mugenda and Mugenda (2003) describe descriptive design as a survey method used in collecting data for the purpose of testing the study hypothesis or the questions of the study. Descriptive research design assists the researcher to a larger extent to generalize the findings of the study. The descriptive research design is credited due to its allowance of analysis and relation of variables.

3.3 Empirical Model

This study used multiple linear regression analysis of cross-sectional and time series data. Consistent with previous studies Nazir & Afza, (2009) and Zariyawati, et al., (2008) the firm's profitability is modeled as a function of WCM components in addition with the other features of the company. The effects of WCM on the firm's profitability are modeled using the below regression equations to obtain the estimates:

The general formula of the regression:

$$ROA_{i,t} = b_0 + b_1 X_{1i,t} + b_2 X_{2i,t} + b_3 X_{3i,t} + e_i$$

Where b_0, b_1, b_2, b_3 , represent the parameters of profitability to be estimated.

X_1 represents the ratio working capital turnover

X_2 represents the ratio Inventory turnover

X_3 represents the ratio accounts payable turnover

i denotes the observations (supermarkets), $i = 1, \dots, 10$

t represents the time dimension from year 2010-2016, $t = 1, 2, \dots, 7$

e_i = Composite error term

The specific regression model was:

$$ROA_{i,t} = b_0 + b_1 (WCT)_{i,t} + b_2 (IT)_{i,t} + b_3 (APT)_{i,t} + e_i$$

Where:

b_0 = constant

$WCT_{i,t}$ = working capital turnover of supermarket i in period t

$IT_{i,t}$ = Inventory turnover of supermarket i in period t

$APT_{i,t}$ = accounts payable turnover of supermarket i in period t

i = supermarkets 1.....10

e_i = error term

t = time dimension 1, 2....7

$ROA_{i,t}$ = return on assets of firm i in period t

3.4 Operationalization and Measurement of Variables

This research revolves around concept of working capital management and profitability of supermarkets. Profitability of supermarkets is the dependent variable while working capital management is the independent variable.

Table 3.1 Operationalization and Measurement of variables

| Variable | Type | Operationalization | Measurement |
|-------------------------------|-------------|---|---|
| Working capital turnover | Independent | Depending on the current liabilities, current assets and sales amounts may have either positive or negative effects on the profitability of the supermarkets. | Net working capital/Total firm turnover Net working capital=Current assets-Current Liabilities |
| Inventory turnover | Independent | The rate at which the supermarkets inventory is sold and replaced will determine profit either to increase or decrease. | Cost of goods sold /Average Inventory |
| Accounts payable turnover | Independent | The rate of supplier payment will indicate whether the supermarkets are realizing more profits or less. | Total purchases/Average payables |
| Profitability of supermarkets | Dependent | Depending on the Net income, sales and assets amounts will affect the profitability either positively or negatively. | Net income/Average total assets |

Source: Author (2017)

3.5 Target Population

A population is a group of individual persons, objects or items from which samples are taken for measurements Mugenda and Mugenda (2008). The population of the study consisted of 102 supermarkets in Nairobi County as per the Kenya business directory listings, 2016 (Appendix I).

3.6 Sampling technique

Ogula (2005) defines sampling design as a process or technique of choosing a sub-group from a target population to participate in the study. The population sampling employed the stratified and simple random sampling methods to choose the study sample size. The study grouped the population into three strata, that is, large, medium and small supermarkets. From each stratum the study took 30% sample. The 30% is obtained through the simple random formula:

$$P=1-((N-n)/N)$$

$$P=1-((102-31)/102)=30.39\%$$

The researcher randomly select each unit to have a fair chance of being selected. The selection is back up by Mugenda and Mugenda (2003), who affirms that for a sizeable sample size must be 10% to 30% of the selected entire population. Therefore the sample size for this population was 31 supermarkets operating in Nairobi County as shown in the table 3.1 below.

Table 3.1: Sample Size

| Category | Number | Sampling | Sample Size |
|----------|--------|----------|-------------|
| Large | 12 | 30% | 4 |
| Medium | 38 | 30% | 11 |
| Small | 52 | 30% | 16 |
| Total | 102 | | 31 |

Source: Author (2018)

3.7 Data Collection Instruments

Secondary data collection sheets were used as the main tool of data collection (Appendix 3). Secondary data was sourced from the business records and financial statements after which an analysis was done. The data were collected for a period of 7 years from 2010-2016. The reason for using the data is because is the latest data and were readily available in the supermarket records.

3.7.1 Data collection procedures

The researcher sought authorization letter from the university to allow him conduct the study (Appendix 2). Similarly the researcher sought permission from the relevant authority before conducting the study. The secondary data collection sheets were used in the study to collect data. The panel data balancing consisted of the time series and cross sections. The cross sectional data entailed the supermarkets while the time series were the years 2010-2016. The data was obtained from the financial statements such as the income statement, cash flows, notes to the accounts and balance sheet of the supermarkets.

3.8 Data analysis and presentation

The descriptive statistics and panel multiple regression analysis was used in the analysis of the data. The descriptive statistics was used in the summarization and profiling of the status of sales, accounts payable, Inventory. Data was cleaned by grouping the information for each year separately in excel for preparation of analysis and calculation of the ratios which later was used in the STATA analysis. The data collected from the financial statements was analyzed in excel to obtain the ratios of WCT, IT and APT for the period of seven years from 2010-2016. The various ratios for the seven years were analyzed in the STATA. The STATA software is mostly preferred in the analysis of the statistical data as it has a wide range of analyzing lots of data collected in a

systematic manner and presented it in graphical format (Padachi, 2006). In establishing how working capital affected the profitability of the supermarkets, a panel multiple regression was constructed from the STATA analysis. The panel multiple regression analysis assisted in the prediction of the dependent variable profitability. The various coefficients of the regression were computed to determine the extent of the variation on the growth of revenue that explained by the ratios WCT, IT and APT. The findings were presented using percentages, tables and graphs.

3.8.1 Diagnostic tests

The tests ensure there is no violation of postulates of multi linear regression model in the estimation of the multiple panel linear regression analysis. In the case of violation, the study runs the risks of having biased, inconsistency and inefficient parameter estimates. The study used the pre estimation and post estimation diagnostic tests such as panel root tests, auto correlation tests and multicollinearity.

3.8.1.1 Panel Root Test

According to Guraji 2003, estimating of data without taking into consideration of the non-stationary nature of data might result to biased results. The panel data for the study had both cross sectional and time series data thus there was the need to test for the stationarity of the time series to avoid biasness of the assumption of time series data variables being stationary. The variables that were tested using the test include WCT (net sales/net working capital), IT (COGs/average inventory), APT (total purchases/average accounts payable) and profitability. Conducting this test assisted the researcher in avoiding spurious regression results that could affect the rejection or acceptance of the null hypothesis.

3.8.1.2 Multicollinearity

According to Cooper and Schindler 2008, indicates the need to test for the multicollinearity to avoid indeterminate regression coefficients and infinite standard errors that affect the rejection or acceptance of the null hypothesis. The study tested for the multicollinearity by using the correlation matrix. The explanatory variables to be used in the test include WCT (net sales/net working capital), IT (COGs/average inventory), and APT (total purchases/average accounts payable). If the study finds out that correlation coefficient is greater than 0.8, then it indicates severe multicollinearity thus further testing should be done like autocorrelation so that there should be no effects on the acceptance or rejection of the null hypothesis.

3.8.1.3 Autocorrelation

According to Woolridge 2002, failure in the identification of the serial correlation in the panel data of the error term may result in standard error terms and inefficient parameter estimates. The study accounted for the serial correlation problem in the panel data in order to achieve the correct model specifications.

3.8.1.4 Hausman test

The Hausman test was used in the study to test for null hypothesis biasness or inconsistency. The three independent variables that is WCT, IT and APT was tested for specification to avoid biasness or inconsistencies.

3.9 Ethical Considerations

Ethics refers to the prescribed rules that the researcher is expected to follow while conducting the research (Mugenda & Mugenda, 2003). Ethical considerations refer to the morals that researchers must consider during application of the various research designs stages (Beck, 2003). In addition, it reflects the procedures that were used for analyzing the gaps and objectives of the study. An approval was obtained from Kenyatta University and a letter granted by (NACOSTI)

to allow conducting of the research. There was no doctoring of the results from the study to deviate from the purpose of the study. Other researchers works used in the study were acknowledged through citations and data that was collected was used solely for the intended aim of the study.

CHAPTER FOUR

RESEARCH RESULTS AND DISCUSSION

4.1 Introduction

This chapter provides the study results and discussions. Additionally the presentation of graphs and tables.

4.2 Descriptive Statistics

This section provides descriptive results for the variables. Descriptive statistics employed were mean, minimum, maximum and standard deviation. The results are presented in Table 4.1.

Table 4.1: Descriptive Statistics

| Variable | Obs | Mean | Std. Dev. | Min | Max |
|---------------------------|-----|----------|-----------|--------|--------|
| Return on assets (ROA) | 217 | 0.33209 | 0.266946 | 0.0153 | 0.9978 |
| Working capital turnover | 217 | 5.853594 | 4.189446 | 3.240 | 28.58 |
| Inventory turnover | 217 | 7.389263 | 3.23717 | 4.010 | 26.64 |
| Accounts payable turnover | 217 | 8.590783 | 1.592474 | 5.170 | 18.60 |

Source: Study Data (2018)

From table 4.1, the results show that the average mean of profitability measured as return on assets was 0.33209 which indicate the average of profitability of supermarkets in Nairobi City County from the year 2010 to 2016. The minimum and the maximum of profitability between the year 2010 and 2016 were 0.0153 and 0.9978 respectively. Its standard deviation was 0.266946 which indicated that profitability varied throughout the measurement period. The results are in agreement with Masio (2012) that supermarkets need to be informed on the effects of working

capital management on the profitability of their firms and the need to strike a balance between how much cash to keep, what level of inventory to maintain or how much payables to transact.

The overall mean of working capital turnover ($\text{Net working capital}/\text{Total firm turnover}$) was 5.853594. The minimum and the maximum of working capital turnover between the year 2010 and 2016 were 3.240 and 28.58 respectively. Its standard deviation was 4.189446 which indicated that working capital turnover varied throughout the measurement period. The results are in agreement with Louw (2015) that working capital management influences the profitability of South African retail firms.

The descriptive results also showed that the average mean of inventory turnover ($\text{Cost of goods sold}/\text{Average Inventory}$) was 7.389263 which indicate the average of profitability of supermarkets in Nairobi City County from the year 2010 to 2016. The minimum and the maximum of inventory turnover between the year 2010 and 2016 were 4.010 and 26.64 respectively. Its standard deviation was 3.23717 which indicated that average inventory turnover varied throughout the measurement period. The results are in agreement with Samuel and Ondiek (2014) that automation of supermarket inventories affected how supermarkets performed in terms of profit making and there was a linear positive direct relationship between the automation of inventory and supermarket performance. The results are also in agreement with Sire and Muturi (2017) that the performance of retail outlets was hampered by unnecessary and extended lead time of getting goods and services.

The descriptive results also showed that the average mean of accounts payable turnover ($\text{Total purchases}/\text{Average payables}$) was 8.590783 which indicate the average of accounts payable turnover of supermarkets in Nairobi City County from the year 2010 to 2016. The minimum and

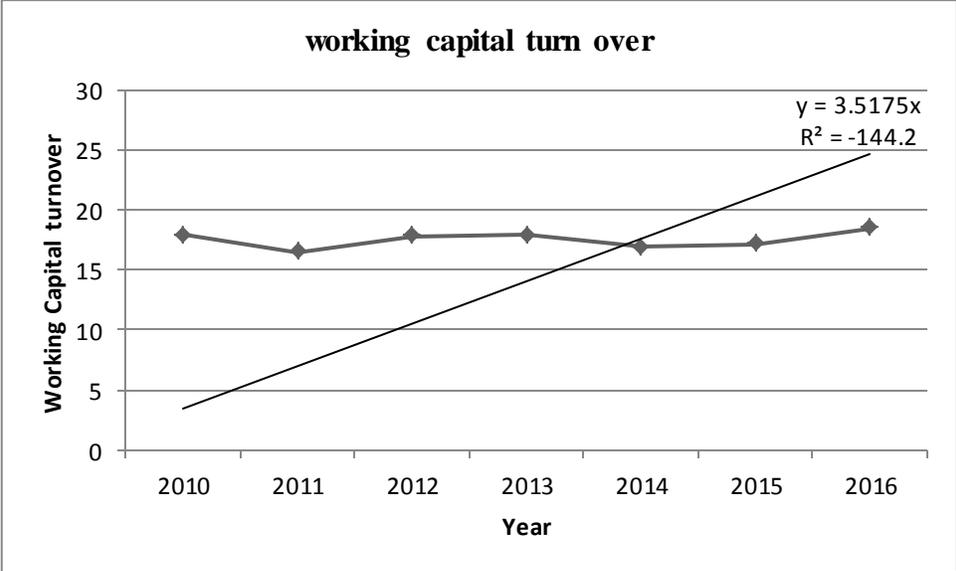
the maximum of accounts payable turnover between the year 2010 and 2016 were 5.170 and 18.60 respectively. Its standard deviation was 1.592474 which indicated that average accounts payable turnover varied throughout the measurement period. The results are also in agreement with Achode and Rotich (2016) that the accounts payables of a firm and its profitability are directly and positively related.

4.3 Trend Analysis

Trend analysis was conducted for profitability, WCT, inventory turnover and APT. The trend lines are presented in the subsequent sections.

4.3.1 Working Capital Turnover

The study sought to determine the effect of working capital turn over on the profitability of supermarkets in Nairobi City County, Kenya. The findings were as shown in the Figure 4.1.



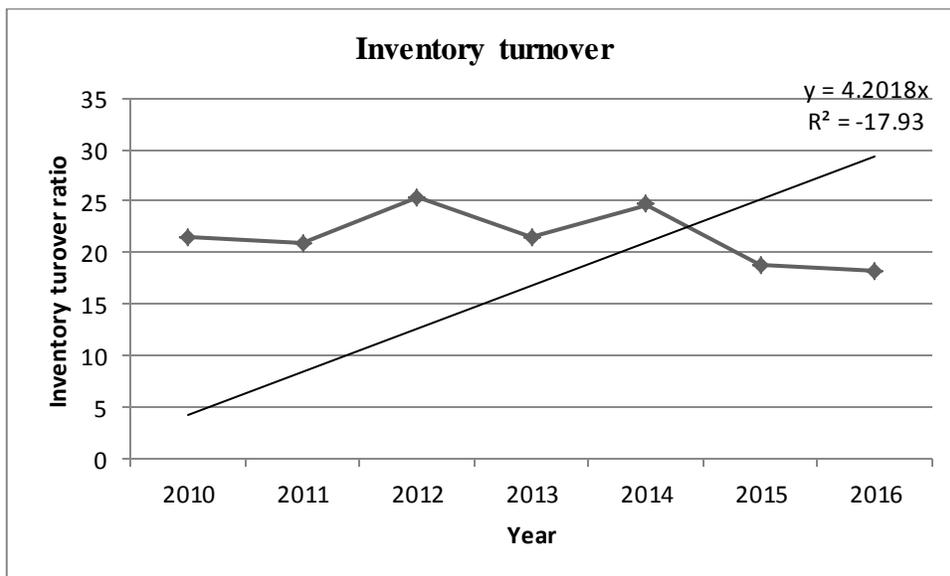
Source: Study Data (2018)

Figure 4.1: Working Capital Turnover from 2010 to 2016

The figure 4.1 results indicate that working capital turnover has remained constantly the same through the years from 2010 to 2016. The trend line shows that the r^2 is -144.2 an indication that working capital turnover has been increasing at decreasing rate across the years. The results are in agreement with Mathai, (2010) who did a study on the relationship between working capital management and retail supermarkets in Kenya and established that reducing the credit standards set will make demand to rise which finally contributes to realization of more sales and profits.

4.3.2 Inventory Turnover

The study sought to determine the effect of Inventory turnover on the profitability of supermarkets in Nairobi City County, Kenya. The findings were as shown in the Figure 4.2.



Source: Study Data (2018)

Figure 4.2: Inventory Turnover from 2010 to 2016

The figure 4.2 results indicate that inventory turnover rose and fell across the years 2010 to 2016. It reached highest in the year 2012 and lowest in 2016. The trend line shows that the r^2 is -17.93 an indication that inventory turnover has been increasing at decreasing rate across the years. The

results are in agreement with Mwaura (2017) that inventory turnover had a strong positive and statistically significant relationship with financial performance of medium and large retail supermarkets in Kenya. The results are also in agreement with Mburu (2013) that there is strong positive relationship between inventory turnover and financial performance of supermarkets in Kenya.

4.3.3 Accounts Payable Turnover

The study sought to evaluate the effect of accounts payable turnover on the profitability of supermarkets in Nairobi City County, Kenya. The findings were as shown in the Figure 4.3.

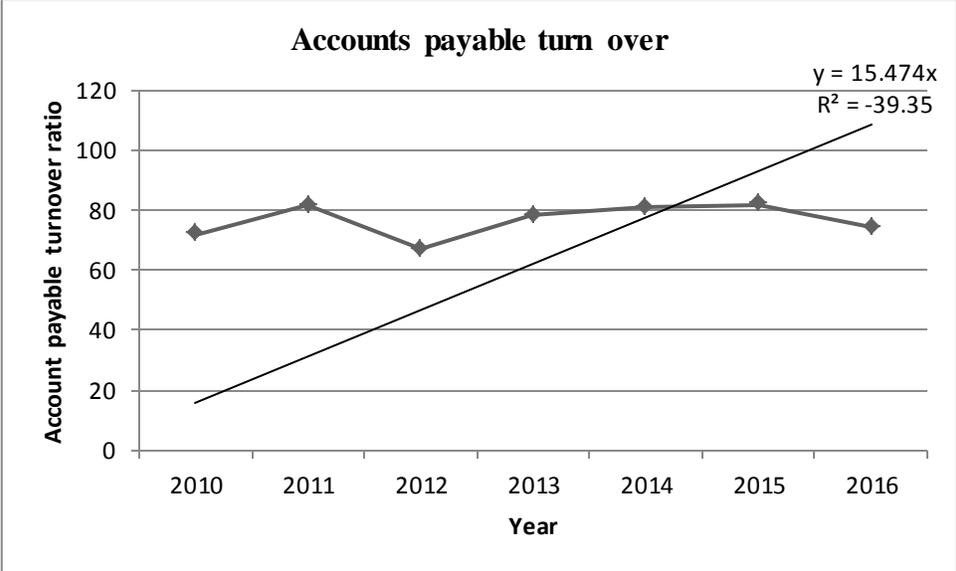
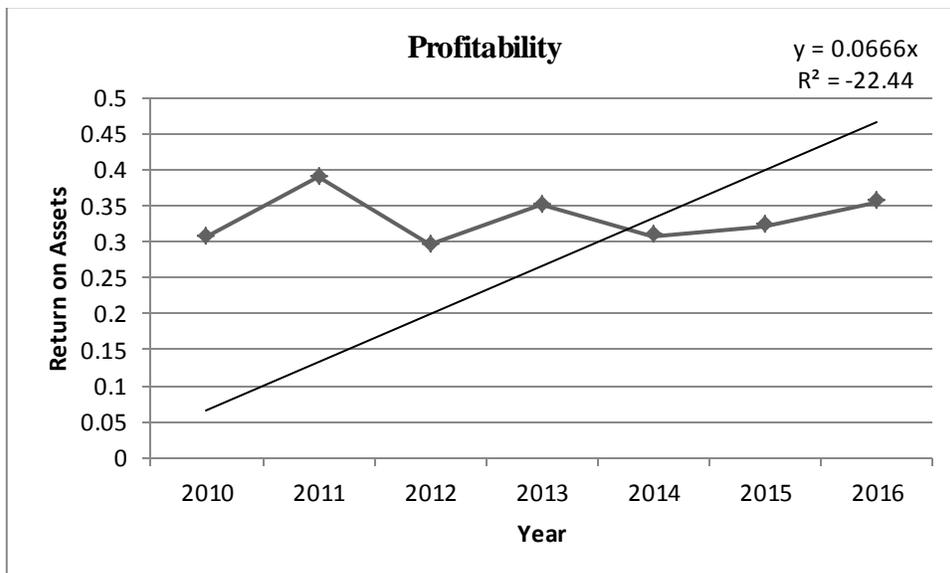


Figure 4.3: Accounts Payable Turnover from 2010 to 2016

The figure 4.3 results indicate that accounts payable turnover rose from 2010 to 2011 and later fell in 2012. It reached highest in the year 2011 and lowest in 2012. The trend line shows that the r^2 is -39.35 an indication that accounts payable turnover has been increasing at decreasing rate across the years. The results are in agreement with Shardeo (2015) that there is some relationship between the inventory turnover ratio and financial performance of the firm.

4.3.4 Profitability (ROA)

The study sought to illustrate the profitability growth of supermarkets in Nairobi City County, Kenya. The findings were as shown in the Figure 4.4.



Source: Study Data (2018)

Figure 4.4: Profitability from 2010 to 2016

The figure 4.4 results indicate that profitability of supermarket decreased gradually from 20110 to 2016. The profitability was highest in the year 2011 and lowest in 2012. The trend line shows that the r^2 is -22.44, an indication that profitability has been decreasing rate across the years. The results are in agreement with Masio (2012) that supermarkets need to be informed on the effects of working capital management on the profitability of their firms and the need to strike a balance

between how much cash to keep, what level of inventory to maintain or how much payables to transact.

4.4 Correlation Analysis

Correlation analysis is a tool used to establish how variables are associated with one another (Levin & Rubin, 1998). Correlation matrix was constructed to show association between independent and dependent variables. Table 4.2 presents the results of the correlation analysis.

Table 4.2: Correlation Matrix

| Variables | Profitability | working capital turnover ratio | Inventory turnover ratio | Accounts payable turnover ratio |
|---------------------------|----------------------|---------------------------------------|---------------------------------|--|
| Profitability | 1.000 | | | |
| Working capital turnover | 0.3715 0.000 | 1.000 | | |
| Inventory turnover | 0.3606 0.000 | 0.3743 0.002 | 1.000 | |
| Accounts payable turnover | 0.3795 0.000 | 0.3213 0.508 | 0.4181 0.838 | 1.000 |

Source: Study Data (2018)

From table 4.2, the correlation results revealed that working capital turnover ratio and profitability of supermarkets are positively and significantly associated ($r=0.3715$, $p=000$) level of significance. The results agree with Nyamao, Lumumba, Odondo and Otieno (2012 that working capital management practices influences directly financial performance of firms. However, the results do not agree with Oladipupo and Okafor (2013) who have established that

working capital management has a statistically insignificant effect on corporate profitability. The results revealed that inventory turnover and profitability of supermarkets are positively and significantly associated ($r=0.3606$, $p=0.000$) level of significance. The results are in agreement with Michalski (2007) in his study, found that when there is high levels of accounts receivables, will result to working capital to increase and also holding and management costs of inventory increase resulting to decline of value and profits of the firm. However, the results contrast that of Wanguu (2015) who established that there is an insignificant negative relationship between inventory conversion period and profitability. The results also revealed that accounts payable turnover ratio and profitability of supermarkets are positively and significantly associated ($r=0.3795$, $p=0.000$). The results are in agreement with Cote and Latham (1999) who argued that effective management of accounts payable positively impacted on cash flow and thus profitability. Desai, (2011) observed that in the process of delaying disbursements to suppliers can act as a source of finance since the inventory bought is sourced for cash inflows before the cash is released to suppliers.

4.5 Diagnostic Tests

Prior to running a regression model diagnostic tests were conducted. The tests conducted in this case were the panel unit root tests (Stationarity test), multicollinearity test, autocorrelation and Hausman test.

4.5.1 Stationarity using ADF Test

Results in Table 4.3 indicated that some variables were stationary (i.e. absence/presence of unit roots) at 1%, 5% and 10% levels of significance. Therefore, there was no need of differencing some of the variables.

Table 4.3: Unit Root Tests at Level

| Variable name | ADF test | 1% Level | 5% Level | 10% Level | Prob | Comment |
|---------------------------|-----------|-----------|-----------|-----------|--------|------------|
| Profitability (ROA) | -3.753547 | -4.234972 | -3.540328 | -3.202445 | 0.0312 | Stationary |
| Working capital turnover | -4.262276 | -4.234972 | -3.540328 | -3.202445 | 0.0093 | Stationary |
| Inventory turnover | -4.522157 | -4.234972 | -3.540328 | -3.202445 | 0.052 | Stationary |
| Accounts Payable turnover | -3.98997 | -3.55267 | -2.91452 | -2.59503 | 0.0043 | Stationary |

Source: Study Data (2018)

4.5.2 Multicollinearity Test

Multicollinearity is a statistical phenomenon in which two or more predictor variable in a multiple regression model are highly correlated. This is undesirable situation where the correlations among the independent variables are strong. A set of variables is perfectly multicollinear if there exists one or more exact linear relationship among some of the variables.

Table 4.4: Multicollinearity test using VIF

| Variable | VIF | 1/VIF |
|--------------------------|------|----------|
| Working capital turnover | 1.31 | 0.760976 |
| Inventory turnover | 1.26 | 0.793591 |
| Inventory turnover | 1.21 | 0.82696 |
| Mean VIF | 1.26 | 0.793842 |

Source: Study Data (2018)

From the findings, all the variables VIF values are <10 as shown in table 4.4 indicating that there is no statistically significant multicollinearity among the independent variables.

4.5.3 Autocorrelation Test

Serial correlation tests were run in order to check for correlation of error terms across time periods. Serial/auto correlation is tested using the Breusch-Godfrey serial correlation LM test.

These results are presented in Table 4.5.

Table 4.5: Breusch-pagan Serial Correlation Test

Wooldridge test for autocorrelation in panel data

H0: no first-order autocorrelation

$$F(1, 216) = 163.010$$

$$\text{Prob} > F = 0.0700$$

Source: Study Data (2018)

The null hypothesis is that no first order serial /auto correlation exists. The p value of 0.0700 from the table 4.5 indicates that the study does not reject the null hypothesis of no serial correlation. We then conclude that serial correlation does not exist.

4.5.4: Hausman Random Test for random and fixed effects

Table 4.6 illustrates the results of the Hausmans test.

Table 4.6: Hausman Random Test for random and fixed effects

| Column1 | (b) | (B) | (b-B) | sqrt(diag(V_b-V_B)) |
|---------------------------|------------|------------|--------------|----------------------------|
| | Fixed | Random | Difference | S.E. |
| Working capital turnover | 0.0027802 | 0.0026686 | 0.0001116 | 0.0000325 |
| Inventory turnover | 0.0176081 | 0.0188436 | -0.0012355 | 0.0006745 |
| Accounts payable turnover | 0.0000279 | 0.0000298 | 1.86E-06 | 8.19E-07 |
| Return on Assets | 0.0011363 | 0.0012237 | -0.0000874 | 0.0000533 |

b = consistent under Ho and Ha; obtained from xtreg

B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

$$\chi^2(4) = (b-B)'[(V_b-V_B)^{-1}](b-B) = 2.69$$

$$\text{Prob} > \chi^2 = 0.6111$$

(V_b-V_B is not positive definite)

Source: Stata 14 computations

4.6 Regression Analysis

The various diagnostic tests performed during the study revealed that return on assets, working capital turnover, inventory turnover and accounts payable turnover did not have unit root thus the study conducted regression to test hypothesis. Regression analysis illustrates the relationship between variables. Results are presented in Table 4.7.

Table 4.7: Model Results

| Variables | Coef. | Std. Err. | T | P>t | [95% Conf. | Interval] |
|---------------------------|--------------|------------------|----------|---------------|-------------------|------------------|
| Working capital turnover | 0.014707 | 0.004192 | 3.51 | 0.001 | 0.006443 | 0.022971 |
| Inventory turnover | 0.014648 | 0.005656 | 2.59 | 0.020 | 0.003499 | 0.025797 |
| Accounts payable turnover | 0.038725 | 0.011259 | 3.44 | 0.001 | 0.016532 | 0.060918 |
| Constant | 0.253682 | 0.087963 | 2.88 | 0.004 | 0.42707 | 0.08029 |

F(3, 213)= 22.11
Prob > F=0.000
R-squared=0.4375
Adj R-squared=0.4267
Root MSE=0.23474

Source: Stata 14 computations

The regression results in Table 4.7 revealed that WCT, inventory turnover and APT were found to be satisfactory variables in explaining profitability of supermarkets in Nairobi City County. This is supported R square of 0.4375. This means that WCT, inventory turnover and APT explain 43.75% of the variation in the profitability of supermarkets.

The F statistic results in Table 4.7 indicated that the overall model was statistically significant. The results imply that the independent variables (WCT, inventory turnover and APT) are good predictors of profitability of supermarkets. This was supported by F statistic of 22.11 and the reported p value (0.000) which is less than 0.05 level of significance. As per the results above, the estimated model was as shown below:

$$Y = 0.253682 + 0.014707X_1 + 0.014648X_2 + 0.038725X_3$$

Where;

Y = Profitability of supermarkets (Return on Assets)

X₁ = Working capital turnover

X₂ = Inventory turnover

X₃ = Accounts payable turnover

On the estimated regression model above, the constant = 0.253682 shows that if the selected independent variables (working capital turnover, inventory turnover and accounts payable turnover) are rated zero, the profitability of supermarkets measured in return on assets would be 0.253682.

Hypothesis I:

H₀₁: Working capital turnover does not have a significant effect on profitability of supermarkets in Nairobi City County, Kenya.

Results in Table 4.7 shows that working capital turnover and profitability of supermarkets are positively and significantly related ($\beta=0.014707$, $p=0.001$). This means that a unit increase in working capital would lead to a subsequent increase in the profitability of supermarkets by 0.014707 units. If a supermarket applies effective working capital components, then it will realize more sales that will boost their profits. It is of high concern on how the supermarkets use their working capital effectively to convert available inventories into sales. The results are in agreement with Mathai, (2010)

The null hypothesis is that working capital turnover does not have a significant effect on profitability of supermarkets in Nairobi City County, Kenya. The hypothesis was tested using t-value. The acceptance/rejection criteria was that, if the p value is greater than 0.05, we fail to reject the H_{01} but if it's less than 0.05, the H_{01} is rejected. Results in Table 4.7 show that the p-value is 0.001. This was supported by a calculated t-statistic of 3.51 which is greater than the critical t-statistic of 1.96. The null hypothesis was therefore rejected. The study therefore adopted the alternative hypothesis that working capital turnover has a significant effect on profitability of supermarkets in Nairobi City County, Kenya. The management of working capital is essential to the sound financial position of retail supermarkets. It is vital for firms to employ measures that ensure there is efficiency in the use of working capital components as they form large proportion of invested capital compared to the company total assets. The findings agree with Odhiambo (2014) who established that there is indeed significant relationship between working capital management and profitability of retail stores.

Hypothesis II:

H₀₂: There is no significant relationship between inventory turnover and profitability of supermarkets in Nairobi City County, Kenya.

The regression results in table 4.7 results also revealed that inventory turnover and profitability of supermarkets are positively and significantly related ($\beta = 0.014648$, $p = 0.020$). This means that a unit increase in inventory turnover would lead to a subsequent increase in the profitability of supermarkets by 0.014648 units. Inventory turnover indicates how often the inventory is being turned to sales. Having high levels of closing inventory is not a good sign for the company as the levels of sales are decreasing thus profits are reducing too. The results are in agreement with Shardeo (2015) that there is some relationship between the inventory turnover ratio and financial

performance of the firm. However, the results are not in agreement with Kassim (2011) that inventory collection period has a negative relationship with financial performance of supermarkets in Nairobi County.

The null hypothesis is that there is no significant relationship between inventory turnover and profitability of supermarkets in Nairobi City County, Kenya. The hypothesis was tested using t-statistic. The acceptance/rejection criteria was that, if the p value is greater than 0.05, we fail to reject the H_0 but if it's less than 0.05, the H_0 is rejected. Results in Table 4.7 show that the p-value is 0.020. This was supported by a calculated t-statistic of 2.59 which is greater than the critical t-statistic of 1.96. The null hypothesis was therefore rejected. The study therefore adopted the alternative hypothesis that inventory turnover has a significant effect on profitability of supermarkets in Nairobi City County, Kenya. The efficient inventory management system is prerequisite to growth and existence of supermarkets. Inventory turnover dictates the sales which in turn affects the firm's overall profitability. The findings agree with Kiptoo, Kariuki and Kimani (2017) that inventory management has a negative significant relationship with the financial performance. The results are also in agreement with Musau, Namusonge, Makokha and Ngeno (2017) that inventory management is important in the supply chain management. According to Kipturgo and Okello (2016) inventory systems significantly affected the management of inventory price variations in supermarkets in Nakuru Town.

Hypothesis III:

H₀₃: Accounts payable turnover does not have a significance effect on profitability of supermarkets in Nairobi City County, Kenya.

In addition, the regression results in Table 4.7 also revealed that accounts payable turnover and profitability of supermarkets are positively and significantly related ($\beta = 0.038725$, $p = 0.001$).

This means that a unit increase in accounts payable turnover would lead to a subsequent increase in the profitability of supermarkets by 0.038725 units. The mismanagement of working capital components cause delays in the payment of accounts payable in the supermarket. The delays interfere with the supply of goods on the shelves leading to closure of branches. The rate at which the suppliers are paid in the company will determine the rate at which suppliers supply. Paying the suppliers on time according to the agreed terms and condition of payment will motivate the providers in replenishing process of the inventory. The results are in agreement with Onsongo (2018) that financial performance of edible oil producing companies in Kenya depends on accounts payable turnover. The results are also in agreement with Achode and Rotich (2016) that there was a direct positive relationship between Accounts Payable and Profitability of a firm.

The null hypothesis is that accounts payable turnover does not have a significance effect on the profitability of supermarkets in Nairobi City County, Kenya. The hypothesis was tested using t-value. The acceptance/rejection criteria was that, if the p value is greater than 0.05, we fail to reject the H_0 but if it's less than 0.05, the H_0 is rejected. Results in Table 4.7 show that the p-value was 0.001. This was supported by a calculated t-statistic of 3.44 which is greater than the critical t-statistic of 1.96. The null hypothesis was therefore rejected. The study therefore adopted the alternative hypothesis that accounts payable turnover has a significant effect on profitability of supermarkets in Nairobi City County, Kenya. The high levels of accounts payable indicates the supermarkets in ability to pay suppliers on time thus affecting their levels of inventory in terms of restocking on time. Ultimately, this affects the sales and profitability thus a concern for the study to address. The findings agree Nyoike (2015) that accounts payable turnover influences the financial performance of retail supermarkets in Nairobi County. However, the results do not agree with Masio (2012) who conducted a study to determine the relationship between working

capital elements and profitability of Uchumi Supermarket and established that accounts receivable and accounts payable had a negative relationship with performance of Uchumi Supermarket measured as return on assets.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATION

5.1 Introduction

This chapter gives summaries of the preceding chapters.

5.2 Summary of Findings

The study sought to investigate the effect of working capital management on the profitability of supermarkets in Nairobi City County, Kenya. The specific objectives were to determine the effect of working capital turn over on the profitability of supermarkets in Nairobi City County, Kenya to determine the effect of Inventory turnover on the profitability of supermarkets in Nairobi City County, Kenya and to evaluate the effect of accounts payable turnover on the profitability of supermarkets in Nairobi City County, Kenya. The study adopted descriptive research design. Data was collected from financial statements of the individual supermarkets and Ministry of Industry, Trade and Cooperatives Report on Kenya Retail Sector.

The first objective of the study was to determine the effect of working capital turn over on the profitability of supermarkets in Nairobi City County, Kenya. The correlation results revealed that

working capital turnover and profitability of supermarkets are positively and significantly associated.

Regression of coefficients results shows that working capital turnover and profitability of supermarkets are positively and significantly related. This means that a unit increase in working capital turnover would lead to a subsequent increase in the profitability of supermarkets. The study adopted the alternative that working capital turnover has a significant effect on profitability of supermarkets in Nairobi City County, Kenya.

The second objective of the study was to determine the effect of inventory turnover on the profitability of supermarkets in Nairobi City County, Kenya. The correlation results revealed that inventory turnover and profitability of supermarkets are positively and significantly associated.

Regression of coefficients results shows that inventory turnover and profitability of supermarkets are positively and significantly related. This means that a unit increase in inventory turnover would lead to a subsequent increase in the profitability of supermarkets. The study adopted the alternative that inventory turnover has a significant effect on profitability of supermarkets in Nairobi City County, Kenya.

The third objective of the study was to evaluate the effect of accounts payable turnover on the profitability of supermarkets in Nairobi City County, Kenya. The correlation results revealed that accounts payable turnover and profitability of supermarkets are positively and significantly associated.

Regression of coefficients results shows that accounts payable turnover and profitability of supermarkets are positively and significantly related. This means that a unit increase in accounts payable turnover would lead to a subsequent increase in the profitability of supermarkets. The

study adopted the alternative that accounts payable turnover has a significant effect on profitability of supermarkets in Nairobi City County, Kenya.

5.3 Conclusion

Based on the findings above, the study concluded that working capital turnover has a significant effect on profitability of supermarkets in Nairobi City County. The management of working capital is essential to the sound financial position of retail supermarkets. It is vital for firms to employ measures that ensure there is efficiency in the use of working capital components as they form large proportion of invested capital compared to the company total assets. Profit maximization is the key goal of any firm, failure to manage working capital management may result in an inability to ensure a smooth running of daily operations. The issues of profitability reductions arise due to mismanagement of working capital components. However, investing excessively in working capital may result to low profitability and thus resulting to low investment levels that may affect the liquidity of the firm.

The study also concludes that inventory turnover has a significant effect on profitability of supermarkets in Nairobi City County. The efficient inventory management system is prerequisite to growth and existence of supermarkets. Inventory turnover dictates the sales which in turn affects the firm's overall profitability. Conclusively, inventory turnover is a significant determinant of financial performance of supermarkets in Kenya.

The study concludes that that accounts payable turnover has a significant effect on profitability of supermarkets in Nairobi City County. The high levels of accounts payable indicates the supermarkets in ability to pay suppliers on time thus affecting their levels of inventory in terms of restocking on time. Ultimately, this affects the sales and profitability thus a concern for the study to address.

5.4 Recommendations

The working capital management has a direct influence on the profitability of supermarkets in Kenya. It is evident that the management of supermarkets in Nairobi City County should set credit Policy to run their business smoothly. This help to run the supermarkets without financial or operational constraints. Based on the results of the study, it's recommended that a supermarket should apply effective working capital components in order to realize more sales that will boost their profits.

The study established that inventory turnover has a positive and statistically significant relationship with the financial performance of supermarkets in Nairobi City County. This study recommends management of inventory efficiently so as to increase the liquidity of a firm thus meeting its short term obligations quickly and invest in profitable opportunities taking into account that any cost on inventory reduces the supermarket profits.

Further, from the results it is recommended that the management of the supermarkets should have different suppliers. The high levels of accounts payable indicates the supermarkets in ability to pay suppliers on time thus affecting their levels of inventory in terms of restocking on time. Ultimately, this affects the sales and profitability thus a concern for the study to address.

5.5 Limitations of the study

The study focused only on supermarkets only in Nairobi City County. Therefore the results may be applicable only in retail chains since inventory management needs vary among the different sectors. The results may not hold in other sectors of the economy including financial institutions.

There are other firm characteristics/ factors influencing the profitability of retail supermarkets in Kenya. The study was thus limited to only working capital, inventory turnover and accounts

payable turnover as factors affecting the profitability of retail supermarkets in Nairobi City County.

5.6 Areas for Further Studies

The study has provided avenues for further studies such as using other factors of working capital and other measures of profitability in establishing the relationship between the variables. Further, other studies can focus on supermarkets in other counties other than Nairobi City County.

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Appendix I: List of Supermarkets in Nairobi County, Kenya

1. Eastmatt Supermarket, Nairobi
2. Tumaini Supermarket, Nairobi
3. Quickmart Supermarket, Nairobi, Nairobi
4. Kamindi Self Ridges, Nairobi
5. Tuskys Supermarket OTC Branch, Nairobi

6. Jowinka Supermarket
7. Elipa Supermarket, Nairobi
8. Nakumatt Highridge, Nairobi
9. Naivas Ltd, Nairobi
10. Horyal Supermarket, Nairobi
11. Cosby Supermarket, Nairobi
12. Marketways supermarket, Nairobi
13. DnD Supermarket-Innercore Branch, Umoja., Nairobi
14. Bluemart supermarket, Nairobi
15. North view supermarket, Nairobi
16. Ukwala supermarket, Nairobi
17. Happy view supermarket
18. Woolmatt Ltd, Ronald Ngala Street, Nairobi
19. Muhindi Mweusi Supermarket
20. Naks Supermarket
21. Vantage Supermarket Ltd, Nairobi
22. Uncle Jim's Supermarket, Nairobi
23. Ukwala Supermarket, Nairobi
24. Uchumi Supermarkets Ltd, Adams Arcade, Nairobi 63
25. Tusker Mattresses Ltd, Mfangano Street, Nairobi
26. Trolleys and Baskets, Nairobi
27. Tesco Corporation Ltd, Nairobi
28. Superbargains Cash and Carry Ltd, Nairobi
29. Sunshine Supermarket, Nairobi
30. Stagen Enterprises Ltd, Nairobi
31. Spring Valley Supermarket (1979), Nairobi
32. Shoppers Paradise, Nairobi

33. Savannah Selfridge Supermarket, Nairobi
34. Satellite Supermarket Ltd, Nairobi
35. Safeway Hypermarkets Ltd, Nairobi
36. Rosjam Supermarket, Nairobi
37. Rikana Supermarkets, Nairobi
38. Raken Supermarket Ltd, Nairobi
39. Portway Stores Ltd, Nairobi
40. Parklands Pricerite Ltd, Nairobi
41. New Westland Stores Ltd, Nairobi
42. Nakumatt Holdings Ltd, Enterprise Road, Nairobi
43. Naivasha Supermarkets Ltd, Nairobi
44. Naivasha Self Service Stores, Nairobi
45. Muthaiga Mini Market, Nairobi
46. Mustard Supermarket, Nairobi
47. Mulika Mini Market, Nairobi
48. Midas Touch Supermarket Ltd, Nairobi
49. Metro Cash and Carry (K) Ltd, Nairobi
50. Mesora Supermarket Ltd, Nairobi
51. Marketway Ltd, Nairobi 64
52. Kenton Supermarket, Nairobi
53. Kaymambunguba Supermarket, Nairobi
54. Karen Supermarket, Nairobi
55. Kalumos Trading Company Ltd, Nairobi
56. Kaka Self Services Ltd, Nairobi
57. Kaaga Mini Market Ltd, Nairobi
58. K and A Self Selection Store Ltd, Nairobi
59. Juja Road Fancy Store Ltd, Nairobi

60. Joster Mini Market, Nairobi
61. Jopampa Provision Store, Nairobi
62. Jey Supermarket , Nairobi
63. Jeska Supermarket Ltd, Nairobi
64. Jawa's Supermarket Ltd, Nairobi
65. Janamu Supermarket, Nairobi
66. Jack and Jill Supermarket Ltd, Nairobi
67. Jack and Jill Extravaganza Ltd, Nairobi
68. Homechoice Supermarket, Nairobi
69. Happy Valley Supermarket Ltd, Nairobi
70. Guestcare Ideal Homes Ltd, Nairobi
71. Fairdeal Shop and Save Ltd, Nairobi
72. Esajo Supermarket, Nairobi
73. Ebrahim and Company Ltd, Nairobi
74. Eastleigh Mattresses Ltd, Nairobi
75. Eagles Supermarket, Nairobi
76. Deepak Cash and Carry Ltd, Nairobi
77. Country Mattresses Ltd, Nairobi
78. Continental Supermarket Ltd, Nairobi
- 65
79. Clean Way Ltd, Nairobi
80. City Mattresses Ltd, Nairobi
81. Chandarana Supermarkets Ltd, Nairobi
82. Centaling Supermarket, Nairobi
83. Centaline Supermarket, Nairobi
84. Cash and Carry Ltd, Nairobi
85. Buru Buru Mini Market, Nairobi
86. Builders Supermarket Ltd, Nairobi
87. Broadway Supermarket, Nairobi

88. Betccam Savers Supermarket, Nairobi
89. Armed Forces Canteen Organization, Nairobi
90. Amal Supermarket Ltd, Nairobi
91. African Grocers Ltd, Nairobi
92. Aflose Supermarket Ltd, Nairobi
93. Karrymatt Supermarket
94. Gmart Supermarket
95. Maathai Supermarket
96. Cleanshelf Supermarket
97. Mesora Supermarket
98. Kassmart Supermarket
99. Jaharis Supermarket
100. Mesora Supermarket
101. Easymart Supermarket
102. Eastmatt Supermarket

Source: Kenya Business Directory, 2016

Appendix II: Introductory Letter

RE: OFFICIALS OF SUPERMARKETS

I am an **MBA (Finance Option)** student at Kenyatta University conducting a research on: **Working capital management and profitability of supermarkets in Nairobi County, Kenya.** I hereby request you for the below stated information required for me to achieve my research objectives as part of requirement for MBA degree.

Information offered will be treated confidentially and used for the purpose of this research only. The findings of the research will ultimately help improve the profitability of this supermarket and especially the effectiveness of managing working capital.

Appreciation is offered as you aid in the creation of new knowledge to aid both the academy and the industry.

Regards,

.....

Dennis Gitogo Ratemo

The Researcher/ Student

Appendix III: Data Collection Sheets

| Supermarket | Year | working capital turn over | Inventory turnover | accounts payable turn over | Profitability (ROA) |
|-------------|------|---------------------------|--------------------|----------------------------|---------------------|
| Tuskys | 2010 | 5.19 | 6.30 | 8.37 | 0.046 |
| Tuskys | 2011 | 7.41 | 5.62 | 8.51 | 0.096 |
| Tuskys | 2012 | 4.93 | 7.86 | 8.67 | 0.048 |
| Tuskys | 2013 | 3.72 | 8.33 | 8.66 | 0.083 |
| Tuskys | 2014 | 4.41 | 11.39 | 8.69 | 0.227 |

| | | | | | |
|----------------------|------|-------|-------|------|--------|
| Tuskys | 2015 | 6.14 | 10.43 | 7.58 | 0.123 |
| Tuskys | 2016 | 8.22 | 7.90 | 8.64 | 0.17 |
| Naivas | 2010 | 7.54 | 4.86 | 8.21 | 0.054 |
| Naivas | 2011 | 6.40 | 10.61 | 8.03 | 0.058 |
| Naivas | 2012 | 10.52 | 9.22 | 8.44 | 0.063 |
| Naivas | 2013 | 8.20 | 5.52 | 8.31 | 0.251 |
| Naivas | 2014 | 13.28 | 4.27 | 8.43 | 0.223 |
| Naivas | 2015 | 13.03 | 9.19 | 7.97 | 0.282 |
| Naivas | 2016 | 7.75 | 11.87 | 8.08 | 0.053 |
| Nakumatt | 2010 | 7.90 | 5.95 | 7.06 | 0.137 |
| Nakumatt | 2011 | 10.69 | 7.87 | 8.46 | 0.164 |
| Nakumatt | 2012 | 8.31 | 7.70 | 8.69 | 0.025 |
| Nakumatt | 2013 | 9.35 | 11.78 | 8.63 | 0.185 |
| Nakumatt | 2014 | 7.62 | 8.74 | 8.21 | 0.212 |
| Nakumatt | 2015 | 5.60 | 7.99 | 8.13 | 0.072 |
| Nakumatt | 2016 | 6.67 | 6.87 | 8.27 | 0.092 |
| Eastmatt | 2010 | 5.66 | 11.44 | 8.56 | 0.153 |
| Eastmatt | 2011 | 9.23 | 4.78 | 8.30 | 0.016 |
| Eastmatt | 2012 | 4.46 | 8.53 | 8.24 | 0.023 |
| Eastmatt | 2013 | 4.34 | 7.30 | 8.49 | 0.083 |
| Eastmatt | 2014 | 3.55 | 6.10 | 8.41 | 0.051 |
| Eastmatt | 2015 | 14.44 | 9.62 | 8.37 | 0.062 |
| Eastmatt | 2016 | 12.36 | 10.48 | 8.56 | 0.12 |
| Ukwala supermarket | 2010 | 7.35 | 5.77 | 7.76 | 0.048 |
| Ukwala supermarket | 2011 | 10.28 | 4.78 | 8.27 | 0.035 |
| Ukwala supermarket | 2012 | 6.23 | 9.13 | 7.75 | 0.18 |
| Ukwala supermarket | 2013 | 5.47 | 5.79 | 8.56 | 0.1936 |
| Ukwala supermarket | 2014 | 7.53 | 6.46 | 8.51 | 0.1736 |
| Ukwala supermarket | 2015 | 5.31 | 6.37 | 8.45 | 0.1584 |
| Ukwala supermarket | 2016 | 4.71 | 11.20 | 8.62 | 0.163 |
| Ebrahim | 2010 | 7.36 | 8.04 | 8.45 | 0.0502 |
| Ebrahim | 2011 | 8.96 | 8.98 | 8.15 | 0.0548 |
| Ebrahim | 2012 | 5.06 | 6.56 | 8.66 | 0.043 |
| Ebrahim | 2013 | 12.48 | 7.02 | 8.38 | 0.0452 |
| Ebrahim | 2014 | 8.51 | 9.79 | 8.32 | 0.0506 |
| Ebrahim | 2015 | 4.93 | 11.74 | 8.28 | 0.0936 |
| Ebrahim | 2016 | 10.46 | 10.95 | 8.22 | 0.1952 |
| Eastleigh Mattresses | 2010 | 6.38 | 4.89 | 7.98 | 0.2138 |
| Eastleigh Mattresses | 2011 | 14.38 | 7.68 | 8.11 | 0.19 |

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|-------------------------|------|-------|-------|------|----------|
| Eastleigh Mattresses | 2012 | 3.84 | 9.27 | 8.45 | 0.176 |
| Eastleigh Mattresses | 2013 | 3.84 | 6.48 | 8.33 | 0.37 |
| Eastleigh Mattresses | 2014 | 7.58 | 5.46 | 7.81 | 0.137103 |
| Eastleigh Mattresses | 2015 | 12.42 | 10.17 | 8.13 | 0.126995 |
| Eastleigh Mattresses | 2016 | 4.33 | 10.88 | 8.68 | 0.10404 |
| Chandarana Supermarkets | 2010 | 3.93 | 6.35 | 8.58 | 0.183041 |
| Chandarana Supermarkets | 2011 | 3.83 | 10.07 | 7.38 | 0.195794 |
| Chandarana Supermarkets | 2012 | 14.61 | 5.73 | 8.01 | 0.170288 |
| Chandarana Supermarkets | 2013 | 8.32 | 5.04 | 8.45 | 0.192898 |
| Chandarana Supermarkets | 2014 | 6.02 | 5.91 | 7.70 | 0.136486 |
| Chandarana Supermarkets | 2015 | 3.46 | 9.03 | 8.42 | 0.235104 |
| Chandarana Supermarkets | 2016 | 4.87 | 8.92 | 8.62 | 0.221352 |
| Buru Buru Mini Market | 2010 | 13.16 | 8.33 | 7.86 | 0.205998 |
| Buru Buru Mini Market | 2011 | 10.91 | 4.88 | 7.91 | 0.175061 |
| Buru Buru Mini Market | 2012 | 13.38 | 4.24 | 8.19 | 0.092834 |
| Buru Buru Mini Market | 2013 | 13.59 | 6.69 | 8.53 | 0.083676 |
| Buru Buru Mini Market | 2014 | 13.72 | 4.24 | 8.38 | 0.101992 |
| Buru Buru Mini Market | 2015 | 12.80 | 11.51 | 8.05 | 0.079979 |
| Buru Buru Mini Market | 2016 | 9.34 | 7.42 | 8.27 | 0.107317 |
| Karrymatt Supermarket | 2010 | 6.46 | 10.68 | 8.51 | 0.086968 |
| Karrymatt Supermarket | 2011 | 6.73 | 9.00 | 8.45 | 0.06523 |
| Karrymatt Supermarket | 2012 | 7.88 | 6.26 | 8.43 | 0.090264 |
| Karrymatt Supermarket | 2013 | 13.99 | 10.26 | 8.45 | 0.102007 |
| Karrymatt Supermarket | 2014 | 13.30 | 7.86 | 8.57 | 0.09711 |
| Karrymatt Supermarket | 2015 | 10.08 | 5.00 | 8.34 | 0.106541 |
| Karrymatt Supermarket | 2016 | 3.40 | 7.76 | 8.46 | 0.087679 |
| Maathai Supermarket | 2010 | 11.36 | 8.84 | 7.48 | 0.084629 |
| Maathai Supermarket | 2011 | 5.78 | 10.76 | 8.23 | 0.041952 |
| Maathai Supermarket | 2012 | 11.22 | 11.65 | 7.45 | 0.05235 |
| Maathai Supermarket | 2013 | 8.48 | 5.94 | 8.61 | 0.045807 |
| Maathai Supermarket | 2014 | 4.09 | 8.00 | 8.57 | 0.053761 |
| Maathai Supermarket | 2015 | 14.31 | 8.38 | 8.63 | 0.046901 |
| Maathai Supermarket | 2016 | 11.26 | 11.02 | 8.33 | 0.097491 |
| Quickmart Supermarket | 2010 | 5.88 | 8.87 | 8.61 | 0.144392 |
| Quickmart Supermarket | 2011 | 9.71 | 9.21 | 8.45 | 0.137164 |
| Quickmart Supermarket | 2012 | 13.92 | 8.92 | 8.29 | 0.097491 |
| Quickmart Supermarket | 2013 | 11.28 | 8.23 | 8.57 | 0.046901 |
| Quickmart Supermarket | 2014 | 5.44 | 5.63 | 8.59 | 0.064055 |
| Quickmart Supermarket | 2015 | 5.99 | 9.33 | 8.64 | 0.055816 |

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|-----------------------|------|-------|-------|------|----------|
| Quickmart Supermarket | 2016 | 8.56 | 10.88 | 8.40 | 0.445364 |
| Woolmatt Ltd | 2010 | 10.40 | 8.04 | 8.69 | 0.385832 |
| Woolmatt Ltd | 2011 | 12.26 | 10.88 | 7.37 | 0.384743 |
| Woolmatt Ltd | 2012 | 3.78 | 7.15 | 8.50 | 0.417337 |
| Woolmatt Ltd | 2013 | 5.08 | 9.03 | 8.68 | 0.534012 |
| Woolmatt Ltd | 2014 | 5.98 | 11.21 | 7.92 | 0.325844 |
| Woolmatt Ltd | 2015 | 13.50 | 10.73 | 7.56 | 0.335437 |
| Woolmatt Ltd | 2016 | 3.69 | 11.51 | 8.32 | 0.264878 |
| Naks Supermarket | 2010 | 13.49 | 6.24 | 8.48 | 0.218546 |
| Naks Supermarket | 2011 | 12.88 | 7.80 | 8.38 | 0.25818 |
| Naks Supermarket | 2012 | 6.16 | 5.39 | 7.10 | 0.183811 |
| Naks Supermarket | 2013 | 14.56 | 10.01 | 8.24 | 0.285895 |
| Naks Supermarket | 2014 | 9.52 | 6.17 | 8.67 | 0.280906 |
| Naks Supermarket | 2015 | 9.14 | 9.80 | 8.68 | 0.282108 |
| Naks Supermarket | 2016 | 10.01 | 11.66 | 8.65 | 0.306798 |
| Uchumi Supermarkets | 2010 | 14.99 | 6.79 | 8.65 | 0.414366 |
| Uchumi Supermarkets | 2011 | 3.24 | 9.49 | 8.36 | 0.442924 |
| Uchumi Supermarkets | 2012 | 12.08 | 8.85 | 8.22 | 0.358883 |
| Uchumi Supermarkets | 2013 | 9.68 | 4.73 | 7.45 | 0.290493 |
| Uchumi Supermarkets | 2014 | 4.28 | 7.51 | 8.66 | 0.1584 |
| Uchumi Supermarkets | 2015 | 4.30 | 4.01 | 8.63 | 0.6393 |
| Uchumi Supermarkets | 2016 | 7.29 | 4.18 | 8.62 | 0.3492 |
| Spring Valley | 2010 | 13.05 | 9.02 | 7.76 | 0.3918 |
| Spring Valley | 2011 | 10.38 | 10.32 | 7.70 | 0.9183 |
| Spring Valley | 2012 | 3.54 | 5.66 | 8.35 | 0.5967 |
| Spring Valley | 2013 | 6.61 | 4.85 | 8.13 | 0.9168 |
| Spring Valley t | 2014 | 10.34 | 4.78 | 7.76 | 0.3563 |
| Spring Valley | 2015 | 4.67 | 7.27 | 8.09 | 0.258 |
| Spring Valley | 2016 | 7.55 | 4.86 | 8.66 | 0.9225 |
| Shoppers Paradise | 2010 | 11.28 | 7.33 | 8.25 | 0.5992 |
| Shoppers Paradise | 2011 | 3.62 | 5.09 | 8.63 | 0.3721 |
| Shoppers Paradise | 2012 | 13.44 | 7.44 | 8.23 | 0.2117 |
| Shoppers Paradise | 2013 | 4.79 | 6.73 | 8.37 | 0.6939 |
| Shoppers Paradise | 2014 | 12.81 | 4.91 | 7.60 | 0.1058 |
| Shoppers Paradise | 2015 | 9.77 | 9.98 | 8.32 | 0.1724 |
| Shoppers Paradise | 2016 | 8.25 | 6.52 | 8.03 | 0.551 |
| Savannah | 2010 | 10.71 | 5.18 | 8.39 | 0.326 |
| Savannah | 2011 | 4.01 | 7.69 | 8.43 | 0.753 |
| Savannah | 2012 | 6.64 | 4.06 | 8.55 | 0.4966 |

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|----------------------|------|-------|-------|-------|--------|
| Savannah | 2013 | 10.67 | 5.54 | 7.46 | 0.6766 |
| Savannah | 2014 | 4.43 | 9.54 | 7.28 | 0.6964 |
| Savannah | 2015 | 5.98 | 7.55 | 8.55 | 0.968 |
| Savannah | 2016 | 7.27 | 8.09 | 8.53 | 0.4032 |
| Safeway Hypermarkets | 2010 | 7.78 | 5.79 | 8.07 | 0.4286 |
| Safeway Hypermarkets | 2011 | 3.43 | 6.27 | 8.63 | 0.514 |
| Safeway Hypermarkets | 2012 | 14.44 | 15.97 | 18.60 | 0.7408 |
| Safeway Hypermarkets | 2013 | 3.29 | 4.22 | 8.22 | 0.2806 |
| Safeway Hypermarkets | 2014 | 9.58 | 10.91 | 8.23 | 0.0153 |
| Safeway Hypermarkets | 2015 | 11.23 | 10.06 | 8.63 | 0.0278 |
| Safeway Hypermarkets | 2016 | 6.48 | 7.74 | 8.65 | 0.3266 |
| Rosjam Supermarket | 2010 | 13.51 | 6.37 | 8.09 | 0.9978 |
| Rosjam Supermarket | 2011 | 11.15 | 10.08 | 7.76 | 0.9535 |
| Rosjam Supermarket | 2012 | 5.82 | 6.79 | 8.43 | 0.7287 |
| Rosjam Supermarket | 2013 | 13.25 | 10.21 | 8.44 | 0.5437 |
| Rosjam Supermarket | 2014 | 8.49 | 11.13 | 8.68 | 0.7297 |
| Rosjam Supermarket | 2015 | 19.59 | 7.27 | 8.14 | 0.9359 |
| Rosjam Supermarket | 2016 | 15.60 | 13.48 | 18.45 | 0.9112 |
| Rikana Supermarkets | 2010 | 4.32 | 10.33 | 7.86 | 0.1906 |
| Rikana Supermarkets | 2011 | 6.44 | 5.26 | 8.46 | 0.4119 |
| Rikana Supermarkets | 2012 | 8.19 | 8.34 | 8.37 | 0.4877 |
| Rikana Supermarkets | 2013 | 9.80 | 7.70 | 8.51 | 0.3962 |
| Rikana Supermarkets | 2014 | 5.69 | 7.91 | 7.18 | 0.1374 |
| Rikana Supermarkets | 2015 | 10.50 | 6.47 | 8.64 | 0.3668 |
| Rikana Supermarkets | 2016 | 17.93 | 9.02 | 8.60 | 0.8576 |
| Raken Supermarket | 2010 | 13.44 | 6.95 | 8.56 | 0.7917 |
| Raken Supermarket | 2011 | 6.56 | 5.09 | 8.10 | 0.3225 |
| Raken Supermarket | 2012 | 6.35 | 4.40 | 8.09 | 0.3099 |
| Raken Supermarket | 2013 | 10.29 | 5.18 | 7.76 | 0.3865 |
| Raken Supermarket | 2014 | 8.71 | 11.49 | 8.56 | 0.1382 |
| Raken Supermarket | 2015 | 7.60 | 7.64 | 8.56 | 0.3625 |
| Raken Supermarket | 2016 | 10.59 | 4.58 | 8.53 | 0.1367 |
| Parklands Pricerite | 2010 | 11.98 | 11.86 | 7.91 | 0.4131 |
| Parklands Pricerite | 2011 | 14.43 | 26.64 | 10.68 | 0.9555 |
| Parklands Pricerite | 2012 | 10.91 | 5.62 | 8.66 | 0.0756 |
| Parklands Pricerite | 2013 | 10.93 | 4.11 | 7.46 | 0.0922 |
| Parklands Pricerite | 2014 | 14.24 | 11.64 | 8.67 | 0.9813 |
| Parklands Pricerite | 2015 | 11.50 | 7.29 | 8.23 | 0.3535 |
| Parklands Pricerite | 2016 | 16.18 | 7.76 | 7.54 | 0.7606 |

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|------------------------------|------|-------|-------|-------|--------|
| Naivasha Supermarkets | 2010 | 7.39 | 11.21 | 8.37 | 0.336 |
| Naivasha Supermarkets | 2011 | 10.50 | 8.29 | 8.42 | 0.6197 |
| Naivasha Supermarkets | 2012 | 5.85 | 9.62 | 8.17 | 0.207 |
| Naivasha Supermarkets | 2013 | 5.37 | 7.67 | 8.42 | 0.2287 |
| Naivasha Supermarkets | 2014 | 3.64 | 8.95 | 8.50 | 0.4777 |
| Naivasha Supermarkets | 2015 | 7.31 | 10.41 | 8.61 | 0.2476 |
| Naivasha Supermarkets | 2016 | 13.19 | 10.81 | 8.67 | 0.6236 |
| Muthaiga Mini Market | 2010 | 6.36 | 5.99 | 7.91 | 0.3461 |
| Muthaiga Mini Market | 2011 | 7.92 | 6.28 | 8.42 | 0.372 |
| Muthaiga Mini Market | 2012 | 4.08 | 8.24 | 7.04 | 0.2313 |
| Muthaiga Mini Market | 2013 | 5.20 | 11.66 | 8.39 | 0.2754 |
| Muthaiga Mini Market | 2014 | 14.39 | 8.02 | 8.38 | 0.727 |
| Muthaiga Mini Market | 2015 | 14.64 | 16.16 | 18.29 | 0.8488 |
| Muthaiga Mini Market | 2016 | 4.17 | 7.74 | 8.62 | 0.3561 |
| Mustard Supermarket | 2010 | 4.04 | 4.70 | 8.66 | 0.1835 |
| Mustard Supermarket | 2011 | 14.21 | 4.95 | 8.31 | 0.7711 |
| Mustard Supermarket | 2012 | 17.64 | 13.49 | 15.24 | 0.8659 |
| Mustard Supermarket | 2013 | 5.31 | 4.28 | 8.51 | 0.1768 |
| Mustard Supermarket | 2014 | 7.24 | 14.76 | 8.28 | 0.5954 |
| Mustard Supermarket | 2015 | 4.11 | 7.86 | 7.92 | 0.3464 |
| Mustard Supermarket | 2016 | 5.75 | 10.37 | 8.51 | 0.1348 |
| Karen Supermarket | 2010 | 11.12 | 5.57 | 8.58 | 0.5641 |
| Karen Supermarket | 2011 | 9.62 | 5.83 | 8.44 | 0.3706 |
| Karen Supermarket | 2012 | 5.85 | 11.08 | 8.46 | 0.3056 |
| Karen Supermarket | 2013 | 21.09 | 19.37 | 8.36 | 0.9573 |
| Karen Supermarket | 2014 | 6.53 | 6.95 | 8.70 | 0.4846 |
| Karen Supermarket | 2015 | 7.04 | 6.47 | 8.68 | 0.3693 |
| Karen Supermarket | 2016 | 5.50 | 5.20 | 8.42 | 0.1772 |
| K and A Self Selection Store | 2010 | 19.91 | 13.47 | 9.70 | 0.8639 |
| K and A Self Selection Store | 2011 | 8.82 | 6.71 | 5.17 | 0.162 |
| K and A Self Selection Store | 2012 | 15.59 | 15.76 | 13.49 | 0.7563 |
| K and A Self Selection Store | 2013 | 10.43 | 9.25 | 8.65 | 0.5867 |
| K and A Self Selection Store | 2014 | 12.07 | 11.23 | 10.66 | 0.7722 |
| K and A Self Selection Store | 2015 | 3.29 | 4.30 | 8.58 | 0.0987 |
| K and A Self Selection | 2016 | 5.68 | 8.39 | 8.54 | 0.3623 |

| Store | | | | | |
|-----------------------|------|-------|-------|-------|--------|
| Juja Road Fancy Store | 2010 | 4.76 | 5.26 | 6.53 | 0.2671 |
| Juja Road Fancy Store | 2011 | 7.48 | 10.02 | 15.21 | 0.6075 |
| Juja Road Fancy Store | 2012 | 6.85 | 7.28 | 8.66 | 0.2136 |
| Juja Road Fancy Store | 2013 | 6.89 | 4.77 | 8.34 | 0.2355 |
| Juja Road Fancy Store | 2014 | 4.03 | 5.97 | 8.61 | 0.1387 |
| Juja Road Fancy Store | 2015 | 7.72 | 5.19 | 8.62 | 0.5872 |
| Juja Road Fancy Store | 2016 | 12.89 | 7.51 | 8.33 | 0.4149 |
| Jeska Supermarket | 2010 | 4.78 | 5.37 | 8.69 | 0.1504 |
| Jeska Supermarket | 2011 | 13.75 | 16.98 | 8.58 | 0.7483 |
| Jeska Supermarket | 2012 | 10.09 | 14.47 | 7.84 | 0.6159 |
| Jeska Supermarket | 2013 | 28.58 | 17.40 | 15.51 | 0.9874 |
| Jeska Supermarket | 2014 | 3.88 | 5.15 | 8.14 | 0.3251 |
| Jeska Supermarket | 2015 | 4.08 | 8.10 | 8.61 | 0.4293 |
| Jeska Supermarket | 2016 | 23.00 | 17.47 | 8.57 | 0.6687 |
| Jack and Jill | 2010 | 3.86 | 5.33 | 8.16 | 0.2195 |
| Jack and Jill | 2011 | 4.29 | 17.48 | 7.99 | 0.8879 |
| Jack and Jill | 2012 | 5.83 | 6.54 | 8.41 | 0.2921 |
| Jack and Jill | 2013 | 10.32 | 11.19 | 8.50 | 0.6274 |
| Jack and Jill | 2014 | 6.74 | 6.71 | 8.39 | 0.5739 |
| Jack and Jill | 2015 | 14.32 | 15.39 | 13.65 | 0.8983 |
| Jack and Jill | 2016 | 14.51 | 13.92 | 8.69 | 0.6008 |

Source: Author (2018)