THE RELATIONSHIP BETWEEN WORKING CAPITAL MANAGEMENT AND FINANCIAL PERFORMANCE OF SUPERMARKETS IN NAIROBI COUNTY

BY

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DECLARATION

This research project report is my original work and has not been presented for examination in any University.

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This research project report has been submitted for examination with my approval as University supervisor.

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DEDICATION

To my parents, Mr. and Mrs. Kassim M. Shee, and siblings, Abdulhakim, Abubakar,

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LIST OF ABBREVIATIONS AND ACRONYMS

ACP   Average Collection Period

APP   Account Payment Period

CCC   Cash Conversion Cycle

CCP   Cash Conversion Period

CS   Natural Logarithm of the total turnover (Sales)

ECM: Efficiency of Cash Management

EIM: Efficiency of Inventory Management

ERM: Efficiency of Receivable Management

ICP: Inventory Collection Period

ICT: Information Communication and Technology

NPV: Net Present Value

OLS: Ordinary Least Square

ROA: Return on Assets

ROI: Return on Investment

ROTA: Return on Total Assets

SMEs: Small Medium Enterprises

WCM: Working Capital Management

ABSTRACT

Working capital management is an important issue in any organization. This is because without proper management of working capital components, it's difficult for the firm to run its operations smoothly. This issue has not received the attention from scholars in Kenya and especially for the supermarkets. The study therefore sought to establish the relationship between working capital management and financial performance of supermarkets in Nairobi County.

The study employed a descriptive survey design. The population of this study was the seven major supermarkets operating in Nairobi County but only six agreed to take part in the study. Secondary data was extracted from the audited annual reports and financial statements of the six major supermarkets in Nairobi County for a five year period from 2009 to 2013. The collected data was organised into SPSS and analysed using descriptive analysis, correlation analysis, and regression analysis.

The study found that the model accounted for 75.3% of the variance in performance as shown by the R^2. The F-statistic of 14.637 was significant at 5% level of significance which shows that the model was fit to explain the relationship between working capital management and performance of supermarkets. The study found that inventory collection period and fixed asset turnover had negative effects while average collection period, accounts payable days, and leverage had positive effects on financial performance of supermarkets. However, the effects of average collection period and accounts payable days were weak at 5% level while that of the rest of the variables were strong. The study concludes that financial performance of supermarkets in Nairobi County is influenced by

the inventory collection period, leverage and fixed turnover ratio. The study therefore recommends that supermarkets should manage their inventory collection periods better in order to improve their performance. They should also improve their fixed asset turnover as the current levels are not successful at improving their financial performance.

CHAPTER ONE

INTRODUCTION

1.1   Background to the Study

Organizations invest funds in assets that have a long life span, fixed assets, which they can use for a long period of time. Fixed assets are the core tools for the functioning of an organization, to generate revenues by producing goods and services to meet customers' needs and demands. Acquisitions of these assets are not an end in itself. Inputs, in terms of materials, are needed for running these fixed assets to produce products and services that will meet the needs of customers. Ready financing is also required to ensure that these inputs are available when needed. These inputs ensure that fixed assets are operational and thus used to realize value for the firms. Investment in inputs is necessary for the efficient operation of fixed assets and the firm. In financial theory, working capital is the composite of current assets and current liabilities. Current assets are comprised of inventories, cash and accounts receivables; and liabilities are accounts payables. Current assets and liabilities (working capital) are a necessity in realizing benefits from the fixed assets. Firms are often faced with the challenge of investing in fixed assets and in the working capital to achieve maximum results.

1.1.1 Working Capital Management

In the words of Farounbi (2005), working capital refers to the amount of capital, which is readily available to an organization, that is, the difference between resources in cash or readily convertible into cash (current assets) and the organizational commitments for

which cash will soon be required (current liabilities). It provides a measure of business's liquidity, or its ability to meet its short term obligations as they come due (Emery, Finnerty & Stowe, 2004). According to Brigham and Daves (2002), Working Capital Management (WCM) involves both setting working capital policy and carrying out that policy in the day-to-day operations. It also involves making appropriate investments in cash, marketable securities, receivables, and inventories as well as the level and mix of short-term financing (Emery et al., 2004).

The management of working capital involves managing inventories, accounts receivable and payable, and cash. Inventory management identifies the level of inventory which allows for uninterrupted production but reduces the investment in raw materials and minimizes reordering costs - and hence increases cash flow. Receivables management identifies the appropriate credit policy, for example credit terms which will attract customers, such that any impact on cash flows and the cash conversion cycle will be offset by increased revenue and hence return on capital. Cash management identifies the cash balance which allows for the business to meet day to day expenses, but reduces cash holding costs. Short term financing identifies the appropriate source of financing, given the cash conversion cycle, the inventory is ideally financed by credit granted by the supplier however, it may be necessary to utilize a bank loan or overdraft or to convert debtors to cash through factoring (Falope & Ajilore, 2009).

In essence, working capital management seeks to maintain an optimum balance of each working capital component thereby ensuring that firms operate with sufficient fund (cash flows) that will service their long term debt and satisfy both maturing short term

obligation and upcoming operational expenses. This, therefore, makes it more glaring that working capital management has a pivotal role to play in a company's drive to achieve high profitability (Emery *et al*., 2004).

1.1.2 Financial Performance

Financial performance refers to a measure of the results of a firm's policies and operations in monetary terms. These results are reflected in the firm's return on investment (ROI), return on assets (ROA), shareholder value, accounting profitability and its components. Return on Assets is a measure of efficiency, it measures how effectively and efficiently a firm utilizes the resources (assets) at its disposal, in revenue generation. Profitability is a measure that indicate whether the company is performing satisfactorily, used among other things, to measure the performance of management, to identify whether a company may be a worthwhile investment opportunity, and to determine a company's performance relative to its competitors (Sushma and Bhupesh, 2007).

Financial performance of an entity refers to the subjective measure of how well a firm can use assets from its primary mode of business and generate revenues. This term is also used as a general measure of a firm's overall financial health over a given period of time, and can be used to compare similar firms across the same industry or to compare industries or sectors in aggregation. There are many different ways to measure financial performance, but all measures should be taken in aggregation. One way of managers controlling the financial affairs of an organization is the use of ratios. Ratios are simply relationships between two financial balances or financial calculations which establish our references so that we can understand how well an entity is performing financially. Ratios

also extend the traditional way of measuring financial performance; by relying on financial statements (Saliha, 2011).

1.1.3 Working Capital Management and Financial Performance

Theoretically the level of investment in current assets has a bearing on the performance of the firm. Excess investment in working capital casts a negative impact on the profitability of a firm and positive impact on the liquidity. Studies on the association of level of investment in current assets and the performance have always claimed inverse relationship on the degree of association both at micro and macro levels. Working capital management involves managing the relationship between a firm's short-term assets and its short-term liabilities. The goal of working capital management is to ensure that the firm is able to continue its operations and that it has sufficient cash flow to satisfy both maturing short-term debt and upcoming operational expenses. A company can be endowed with assets and profitability but short of liquidity if its assets cannot readily be converted into cash. Positive working capital is required to ensure that a firm is able to continue its operations and that it has sufficient funds to satisfy both maturing short-term debt and upcoming operational expenses (Afza & Nazir, 2009).

Working capital management is considered a very important element in analyzing an organizations' performance. Working capital management, a managerial accounting strategy, focuses on maintaining efficient levels of components of working capital, current assets and current liabilities, in respect to each other. Efficient management of working capital ensures a company has sufficient cash flow to meet its short-term debt obligations and operating expenses. While a company's prime objective is to maximize

profitability and increase shareholders wealth, there is need to obtain a balance between liquidity and profitability in conducting the day to day operations to ensure its smooth running and meeting obligations of a company (Eljelly, 2004). Implementing an effective working capital management system is an excellent way for retail chains to improve their earnings.

To observe how working capital management can affect profitability, one needs to take a look at a company's cash flows. As Shin and Soenen (1998) state in their study, a longer cash conversion cycle might indicate that a company's sales are rising and that the company can compete by having lax credit policies or high inventories. But on the contrary, a higher cash conversion cycle can actually hurt a company's profitability by increasing the time that cash is tied to non-interest bearing accounts such as accounts receivable. By shortening the cash conversion cycle, the company's cash flows will have a higher net present value (NPV) because cash is received quicker.

Arnold (2005) asserts that if there is too little working capital, it results in inventories, finished goods and customers credit not being available in sufficient quantity. On the other hand, if there are excessive levels of working capital, the firm has unnecessary additional cost: the cost of tying up funds plus the storage, ordering and handling costs of being overburdened with stock. This creates a sort of imbalance in the working capital components, making their management difficult which in practice is a situation that firms (both small and fast growing ones, even multinationals) are confronted with. As a result therefore, the ultimate goal of working capital management is to ensure that firms are able to continue their operations with sufficient cash flow that will service their long term

debts and satisfy both maturing short term obligations (debt) and upcoming operational expenses. Hence, organizations should try as much as possible to meet up with this goal so as to avoid being caught up in the trap of ineffective management of working capital components.

The importance of working capital management as a lever for freeing up cash from inventory, accounts receivable, and accounts payable cannot be under estimated. By effectively managing these components, companies can sharply reduce their dependence on outside funding and can use the released cash for further investments or acquisitions. This will not only lead to more financial flexibility, but also create value and have a strong impact on a company's enterprise value by reducing capital employed and thus increasing asset productivity. High working capital ratios often mean that too much money is tied up in receivables and inventories. Typically, the knee-jerk reaction to this problem is to aggressively collect receivables, ruthlessly delaying payments to suppliers and cutting inventories across the board. This only attacks the symptoms of working capital issues, not the root causes. A more effective approach is to fundamentally rethink and streamline key processes across the value chain. This will not only free up cash but lead to significant cost reductions at the same time (Dong & Su, 2011).

1.1.4 Supermarkets in Kenya

There has been a rapid growth and development of supermarkets in Kenya especially during the last two decades. Kenya is the second most advanced country after South Africa, with over 206 supermarkets and 18 hypermarkets (Economic Survey 2009). Uchumi supermarket was the first supermarket to be developed in Kenya around 1975.

There are currently over 220 supermarkets in Kenya's cities and largest towns of Nairobi, Mombasa, Nakuru, Eldoret and Kisumu, (http://www.businesslist.co.ke). According to a research conducted by Neven and Readorn (2005), it was found that between 1990 and 2003, supermarkets in Kenya grew by a rate of 18% per year.

Nairobi being the capital city of Kenya since independence, has attracted local and foreign investors in business. Supermarkets is one of the businesses that have attracted quite a number of investors (Maiywa 2013). There are at least six big Kenya owned supermarkets including Nakumatt, (which is the largest), Chandarana, Uchumi, Tuskys, Naivas and Ukwala which is the smallest of the giants (Njenga, 2006). Mburu (2013) the six big supermarkets accounts for more than 70% of the market share, with most of their branches being concentrated in Nairobi County.

Recently, we have had cases of some of the supermarkets collapsing and some acquiring the smaller ones. Supermarkets are also known to involve high volume of working capital hence the need to analyse the relationship between working capital management and financial performance of the retail supermarkets.

According to Michalski (2007), supermarkets need money to pay for expenses like buying materials, rent, stock, promotions and wages, amongst others. The working capital meets the short-term financial requirements of a business enterprise. Financial investment of a business will depend on working capital management which is of particular importance to the small and medium business. With limited access to the long-term capital markets, these firms tend to rely more heavily on owner financing/ personal

savings, trade credit, and short-term bank loans or loans from friends or family members to finance their needed investment in cash, accounts receivable and inventory (Brigham & Daves, 2002).

A study done by Charitou et al. (2010) investigates the effect of working capital management on firm's financial performance in an emerging market. It was hypothesized that working capital management leads to improved profitability. The results indicated that the cash conversion cycle and all its major components; namely, days in inventory, day's sales outstanding and creditors' payment period were associated with the firm's profitability.

Mathai (2010) examined the relationship between working capital variables and profitability of retail supermarket chains in Kenya. The study found that there exist a relationship between working capital management and profitability of retail supermarket chains in Kenya. The relationship between working capital variables and profitability disclosed both negative and positive associations.

A study done by Masio (2012) to determine the relationship between working capital elements and profitability of Uchumi Supermarket, indicated that total current assets, total current liabilities, total inventory, current ratio and cash at bank had a positive correlation with Return on Total Assets (ROTA) while accounts receivable and accounts payable had a negative correlation with ROTA. However, only the cash ratio had a significant relationship at one level of significance. The retail market has been the subject of some profound changes over the recent past. The mix of social and economic conditions which prevailed in the 1980s triggered the arrival of a much more discerning

consumer, driven not just by value for money but also increased selectivity and a demand for higher quality shopping environments. Therefore, working capital management is a simple concept but yet difficult in implementation due to the complexities surrounding retailing supermarkets.

1.2   Research Problem

Working capital management is an important issue in any organization. This is because without proper management of working capital components, it's difficult for the firm to run its operations smoothly (Mukhopadhyay, 2004). Working capital is the most crucial factor for maintaining liquidity, survival, solvency and profitability of business. Hence the crucial part of managing working capital is maintaining the required liquidity in day-to-day operation to ensure firms' smooth running and to meet its obligation (Eljelly, 2004).

A number of studies on the relationship between working capital management and financial performance have been done globally and locally in Kenya. Mukhopadhyay (2004), conducted a case study on working capital management in heavy engineering firms and indicated that loans and advances, and other current assets hardly had any role to contribute in sales / business generation of the firm during the period of 1993-94 to 2002-03. Bardia (2004), in his study on steel giant company for the period from 1991-92 to 2001-02 concluded that there is a positive relationship between liquidity and profitability. Ghosh and Maji (2004), conducted a study on working capital management efficiency from the view point of Indian cement industries and indicated that there is a

relationship between effective utilization of current assets and profitability of the companies under study, although there seemed to be a wide range in the degrees of such relationship between company to company. Amit, Sur and Rakshit (2005) studied the relationship between working capital and profitability in the context of Indian pharmaceutical industries and concluded that no definite relationship can be established between liquidity and profitability.

A number of studies on the relationship between working capital management and financial performance have been done in Kenya though very little research has been conducted on the merchant retail sector in Kenya. For instance, Mathuva (2010) conducted a study on working capital management components on corporate profitability of Kenyan Listed Firms in the NSE. A similar study was conducted by Apuoyo (2010). Nyabwanga et al (2011) conducted a study on the effect of working capital management practices on financial performance of small scale enterprises in Kisii South District, Kenya. Kiilu (2010) conducted a study on working capital management practices among large construction firms in Kenya. Wainaina (2010) studied the relationship between profitability and working capital of small and medium enterprises in Kenya. Other studies done in Kenya include; Mutungi (2010) conducted a study on the relationship between working capital management policies and financial performance of oil marketing firms in Kenya.

Mathai (2010) sought to establish the relationship between working capital management and profitability of retail supermarket chains in Kenya. Her study consisted of six retail supermarket chains in Kenya. The objective of the study was to determine whether there

exists a relationship between WCM and profitability. The study showed that in the retail sector, WCM has a significant impact on profitability of firms and plays a big role in value creation for shareholders as longer Cash Conversion Cycle (CCC) and average collection period have a negative impact on net operating profitability of a firm. The CCC offers an easy and useful way to check the WCM efficiency of a company. The study also revealed that there exists a positive non-significant relationship between the financial debt ratio and profitability. Consequently, an increase in debt utilization, leads to a decrease in profitability. Thus, concluding that leverage negatively influences profitability. Given that minimal study has been done on the relationship between working capital management and firms' performance in the merchant retail sector in Kenya, this study sought to bridge the gap by undertaking a study on major supermarkets in Nairobi County. The question that this study sought to answer is whether there was a relationship between working capital management practices employed by the retail supermarkets chains in Nairobi County and their financial performance?

1.3   Research Objective

To establish the relationship between working capital management and financial performance of supermarkets in Nairobi County.

1.4   Value of the Study

The findings of this study will be of significance to the following groups: The management in the retailing sector in Kenya shall obtain guidance on the optimal level of working capital that will boost profitability and thus reflect positively on their

performance. Findings from this study will sensitize the management on the importance of identifying the right mix of working capital that in turn assists in boosting financial performance;

The shareholders are concerned about returns on their investment and equity. The findings from this study will enable shareholders in retail industry understand the best approach to working capital management and thus support management in enforcing any adopted approaches to working capital management;

The Government can use the findings of the study to understand the extent of working capital management in retail chains. It will assist the Government and other policy makers to formulate monetary policies and other regulatory measures to put in place that will assist in businesses to better manage cash for the wellbeing of the economy as a whole; and

The study findings will be of utmost importance to researchers and other academicians. The researchers and academicians will find this study useful for further discussion and research so that they can explore and further develop their studies on working capital management and performance of businesses.

CHAPTER TWO

LITERATURE REVIEW

2.1   Introduction

This chapter presents a review of literature on the relationship between working capital management and financial performance. First a theoretical review on working capital and financial performance is presented followed by empirical reviews which include studies undertaken by various scholars that reflect the relationship between working capital management practices and financial performance. Lastly, a summary chapter is presented where the research gap is identified.

2.2   Theoretical Review

The concept of working capital was first evolved by Marx (1867). Marx used the term 'variable capital' meaning expenditure for payrolls advanced to workers before they completed the goods they worked on. He differentiated this with 'constant capital', which he regarded as nothing but 'dead labor', that is, expenditure for raw materials and other instruments of production produced by labor. This 'variable capital' was the wage fund which remains blocked in terms of financial management, in work-in-process along with other operating expenses until it is released through sale of finished goods.

Working capital if managed has a significant impact on profitability and cash holdings of firms, (Deloof, 2003). It ensures a sound liquidity for assurance of long-term economic growth and attainment of profit generating process and it ensures acceptable relationship

between the components of firms' working capital for efficient mix which guarantee capital adequacy.

Pandey (2007) noted that excessive working capital results in unnecessary accumulation of inventories leading to inventory mishandling, wastage and theft; higher incidence of bad debts; complacency of management inefficiency; increasing speculative profit from accumulated inventories and consequent loss of profits.

The manner in which the permanent and temporary current assets are financed is called the firm's current asset financing policy. There are three approaches (Brigham & Houston, 2007): conservative, matching/hedging and aggressive approach.

2.2.1   Conservative Plan Theory

This approach suggests that in addition to fixed assets and permanent current assets, even a part of variable current assets should be financed from long-term sources. The short-term sources are used only to meet the peak seasonal requirements. During the off season, the surplus fund is kept invested in marketable securities. Surplus current asset enable the firm to absorb sudden variation in sales, production plans, and procurement time without destructing production plans.

Additionally the higher liquidity level reduces the risk of insolvency. But lower risk translates into lower returns. Large investment in current asset lead to higher interest and carrying cost and encouragement for efficiency, fixed and part of current assets are financed by long term funds as permanent and long term sources are more expensive

leading to lower risk return (Horne & Wachowitz, 1998). Efficiency in working capital is vital especially for production of firms whose assets are current as it directly affects liquidity and profitability of any firm. This theory very much uses the 'plays it safe' philosophy. It attempts to provide sufficient long term financing to cover all anticipated eventualities. The conservative theory implies relatively high investment in current assets in relation to sales, the current assets to sales ratio will be comparatively high and assets and turnover ratio will be low.

This approach does not use short term borrowing and may in the long run be more expensive as the available funds may turn out not to be fully utilized in certain periods but interest on those funds not needed still accrue and are paid. Raheman & Bluementhal (1994) firms are required to use accurate measures on working capital even though their profitability may be positive.

2.2.2   Hedging Plan Theory

The hedging approach is also known as the matching approach. Under this approach, the funds for acquiring fixed assets and permanent current should be acquired with long term funds and for temporary working capital, short term funds should be used.

Hedging theory poses a risk as it requires almost full utilization of the firm's capacity to use short term funds and in emergency situations it may be difficult to satisfy short term needs. Firms use long term sources to finance fixed assets and permanent current assets and short term funds to finance temporary current assets.

Limited access to short term working capital sources which include bank financing and suppliers' financing provides a hindrance to the hedging approach. Ross et al., (2003) advises that most of the time it is reasonable to study the working capital management approach in relation to application of funds. Richards and Laughlin (1989), Gentry Et al. (1990) and Schilling (1996) have insisted on using ongoing liquidity management. Ongoing liquidity management refers to the inflow and outflow of cash through the firm as the payment and collection takes place over time.

2.2.3   Aggressive Plan Theory

In this approach, more short-term funds are used particularly for variable current assets and a part of even permanent current assets; the funds are raised from short term sources. This approach is characterized by low interest rates. However, it's important to note that the risk associated with short term debt is higher than long term debt. This applies mostly to firms operating in a stable economy and is quite certain about future cash flows. A frim with an aggressive working capital approach offers short credit periods to customers, holds minimal inventory and has a small amount of cash in hand.

2.3   Determinants of Performance in Supermarkets

The retailing industry business has been around for centuries in the world. Research has shown that the advent of globalization, mechanization, modernization and technology advancements have had and are still having a great impact on the retailing industry. Nowadays, supermarkets and hypermarkets play an important role in serving the local community. They are the places where majority of people would shop for food items and

grocery (Foss and Stone, 2001). In this competitive and turbulent business environment, it becomes primordial for supermarket operators to sustain business developments and foster customers' trust by upholding good practices in their operations. The relationship between a retail store's strategy and its operations is a key determinant of its ability to achieve long-term success or even survival. The success of supermarkets is only likely to result if short- term operational activities are consistent with long-term strategic intentions (Indrian, 2007).

2.3.1 Quality

Quality is consistent conformance to customers' expectations, in other words, "doing things right", but the things which the operation needs to do right will vary according to the kind of operation (Slack et al., 2007). All operations regard quality as a particularly important objective. In some ways quality is the most visible part of what an operation does. Furthermore, it is something that a customer finds relatively easy to judge about the operation. Thus, it is clear that quality has "a major influence on customer satisfaction or dissatisfaction" Slack et al., 2007.

2.3.2 Customer Satisfaction and Customer Loyalty

Customer Satisfaction is one of the most important outcomes in the marketing literature. It serves to link processes culminating purchase and consumption with post purchase phenomena such as attitude change, repeat purchase, and brand loyalty (Surprenant & Churchill, 1982).

According to Foss and Stone (2001), customer loyalty relates to what customers think and do (or try to do). Most customer loyalty experts would agree that loyalty is best defined as a state of mind, a set of attitudes, beliefs, desires etc. In principle, previous research suggests that supermarket customers are relatively loyal. Rhee and Bell (2002) found that nearly three quarters of the shoppers show progressive attachment to their current main store. Loyalty is developed by approaches which reinforce and develop a positive state of mind and the associated behaviors. The exchange of information is one of the keys of loyalty, and provides a critical bridge between state of mind and behaviour (Levy & Weitz, 2001). Also, retailers highly value loyal customers who intentionally choose their stores over others, irrespective of the offerings at other stores, (Cronin et al., 2000).

2.3.3 Speed

Waiting in line to pay for purchases in retail outlets is a necessary but undesirable activity that customers must undertake to complete their purchases (Tom & Lucey, 1995). Speed means the elapsed time between customers requesting products or services and their receipt of them (Slack, 2007). However, Robert Lowson (2002) argues that "response" which is closely related to flexibility, speed and time based competition dominates many sectors. Also, speed is a shorthand way of saying "speed of response". It means the time between an external or internal customer requesting a product or service, and them getting it (wps.pearsoned.com).

Slack *et al* (2007) sorted that the main benefit of speedy delivery of goods and services to the operation's (external) customers lies in the way it enhances the operation's offering to the customer. Thus, the faster customers can have the product or service, the more likely they are to buy it, or the more they will pay for it, or the greater the benefits they receive (Slack, 2007). Externally, speed is important because it helps to respond quickly to customers. Again, this is usually viewed positively by customers who will be more likely to return with more business. Sometimes also it is possible to charge higher prices when service is fast.

2.3.4 Dependability

Dependability means doing things in time for customers to receive their goods or services exactly when they are needed, or at least when they were promised, (Indran, 2007). Customers might judge the dependability of an operation only after the product or service has been delivered. Initially this may not alert the emergency of services as the supermarket authority might get think that the supply products are all enough for customers and they give least importance to operations of the retail services. Dependability means "being on time". In other words, customers receive their products or services on time. In practice, although this definition sounds simple, it can be difficult to measure. It vividly enforces upon the customers to be dependable on the retail service.

2.3.5 Flexibility

A clear result of responding to a dynamic environment is that organizations change their products and services and changes the way they do business. This performance objective

is known as "flexibility". Flexibility is the ability to adapt, in a reversible manner, to an existing situation, as opposed to evolution, which is irreversible (Bucki and Pesqueux, 2000). Flexibility means being able to change the operation in some way. This may mean changing what the operation does how it is doing it or when it is doing it. Specifically, customers will need the operation to change so that it can provide four types of requirement namely, product/service flexibility, mix flexibility, volume flexibility and delivery flexibility. Flexibility measures how good the supplier is at shortening the agreed lead time when asked, (Roy, 2009).

2.3.6   Working capital management approach adopted by the supermarkets

The working capital management approach adopted by a firm affects the financial performance of the firm, to a large extent. Mathai (2010) notes that working capital management techniques in supermarkets should focus more on strategic issues for profitability and the ability to achieve strategic objectives. She also recommends that for supermarkets to remain profitable they should have working capital management which will help in making decisions about investment mix and policy, matching investments to objectives, asset allocation for institutions, and balancing risk against profitability.

2.4   Empirical Review

Various studies have analyzed the relationship of WCM and firm profitability in various markets but the results are quite mixed. The studies reviewed have used different variables and methodology such as linear regression and panel data regression to review

the relationships between variables. This section presents the chronology of major studies related to this study in order to assess and identify the research gap.

A study by Juan and Martinez (2002) emphasized that firms can create value by reducing their number of days of accounts receivable, thus confirmed the finding of Deloof (2003) who established that the length of receivables collection period has a negative effect on a firm's performance.

Eljelly (2004) empirically examined the relationship between profitability and liquidity, as measured by current ratio and cash gap (cash conversion cycle) on a sample of 929 joint stock companies in Saudi Arabia. Using correlation and regression analysis, Eljelly (2004), found significant negative relationship between the firm's profitability and its liquidity level, as measured by current ratio. This relationship is more pronounced for firms with high current ratios and long cash conversion cycles. At the industry level, however, he found that the cash conversion cycle or the cash gap is of more importance as a measure of liquidity than current ratio that affects profitability. The firm size variable was also found to have significant effect on profitability at the industry level.

Lazaridis & Tryfonidis (2006) conducted a study on the relationship between the cash conversion cycle and level of profitability of the 131 listed companies of the Athens stock exchange for four years from 2001 to 2004. The aim of the study was to determine statistically significant relation between CCC and profitability which is measured by gross operating profit. Accounts receivable turnover, accounts payable turnover and inventory management were the three components of CCC used in the study. The study

revealed that firms who pursue increase in their accounts receivables to an optimal level increase their profitability resulting from increased sales and market share. Pearson correlation and regression results were used in analyzing of the findings which concluded that there exists a negative relationship between accounts receivable turnover, accounts payable turnover & inventory management and profitability which is in line with the study of Deloof (2003) which focused on sample of Belgian firms, emphasized that the way the working capital is managed has a significant impact on the profitability of firms and increase in profitability by reducing number of day's accounts receivable and reducing inventories. A shorter CCC and net trade cycle is related to better performance of the firms. Furthermore, efficient working capital management is very important to create value for the shareholders.

Michalski (2007) in his study, observed that an increase in the level of accounts receivables in a firm increases both the net working capital and the costs of holding and managing accounts receivables and both lead to a decrease in the value of the firm. While a study by Sushma and Bhupesh (2007) also affirmed that, putting in place a sound credit policy ensures proper debt collection procedures and is pivotal in improving efficiency in receivables management hence the performance of firms. Garcia and Martinez (2007) studied the effects of working capital management on the profitability of a sample of small and medium-sized firms. They found that managers can create value by reducing their inventories and the number of days for which their accounts are outstanding. Moreover, shortening the cash conversion cycle also improves the firm's profitability.

Singh (2008) found that the size of inventory directly affects working capital and its management. He suggested that inventory was the major component of working capital, and needed to be carefully controlled. Singh and Pandey (2008) suggested that, for the successful working of any business organization, fixed and current assets play a vital role, and that the management of working capital is essential as it has a direct impact on profitability and liquidity.

Zariyawati, *et al* (2009) in their study carried out in Malaysia examined the relationship between working capital management and firm profitability of 1628 firms listed in Bursa Malaysia. Data for period of 1996 -2006 consisting of six different economic sectors were used. Ordinary Least Square (OLS) regression analysis method was used. Results revealed that reducing cash conversion period resulted to increase in profitability. To create shareholders value, firm managers should be concerned with shortening cash conversion cycle until optimal level is achieved.

Mathai (2010) examined the relationship between working capital variables and profitability of retail supermarket chains in Kenya. The study found that there exist a relationship between working capital management and profitability of retail supermarket chains in Kenya. The relationship between working capital variables and profitability disclosed both negative and positive associations.

Mathuva (2010) study on the influence of working capital management on corporate profitability found that there exists a highly significant negative relationship between the time it takes for firms to collect cash from their customers and profitability. He explained that the more profitable firms take the shortest time to collect cash from the customers.

Mutungi (2010) sought to find out the relationship between working capital management and financial performance of oil marketing firms in Kenya registered with the petroleum institute of East Africa within Nairobi and its environs. Her sample consisted of 59 registered oil marketers in Kenya. She noted that working capital management decisions have a huge effect on the company's risk, return and share price. The study concluded that for a company to operate efficiently, receivables and inventory must be tightly monitored and controlled. More fundamental is the effect of having an adequate level of working capital which is very important for the growth and sustainability of a company.

Wainaina (2010) sought to establish the relationship between profitability and working capital of small and medium enterprises in Kenya. The study focused on a sample of 40 companies whose sales turnover was in the range of 10 Million and 500 Million. Her study focused on companies in the Information, Communication and Technology (ICT), General Trade and Construction industries sectors. The study revealed that there was no relationship between cash conversion cycle and profitability for companies in the construction, ICT and transport sectors. However, there was a positive relationship between profitability and cash conversion for industries in the General Trade and Agricultural Sectors. The study further revealed that there was a positive relationship between profitability and inventory days in all the sectors of the study. The study concluded that higher inventory is needed to meet higher demand and thus inventory should be maintained at reasonable levels.

Mohammad and Noriza (2011) worked on creating the relationship between WCM and performance of firms. For their analysis they chose the Malaysian listed companies. They

administered the perspective of market valuation and profitability. They used total of 172 listed companies from the databases of Bloomberg. They randomly selected five year data (2003-2007). This research studied the impact of the dimensions of working capital component i.e. C.C.C., Current Ratio, Current Asset to Total Asset Ratio, Current Liabilities to Total Asset Ratio, and Debt to Asset Ratio in effect to the firm's performance whereby firm's value dimension was taken as Tobin Q and profitability that is, Return on Asset (R.O.A.) and Return on Invested Capital. They applied two different techniques for analyzing the data that are multiple regression and correlations. They found that there is a negative relationship between working capital variables and the firm's performance.

The study on effect of working capital management practices on the financial performance of SSEs in Kisii South District by Nyabwanga *et al* (2011), showed that SSE financial performance was positively related to efficiency of cash management (ECM), efficiency of receivables management (ERM) and efficiency of inventory management (EIM). Gakure *et al* (2012), studied the relationship between working capital management and performance of 15 manufacturing firms listed at the Nairobi NSE, and the study revealed that there was a strong negative relationship between firm's performance and liquidity of the firm.

A study done by Masio (2012) to determine the relationship between working capital elements and profitability of Uchumi Supermarket, indicated that total current assets, total current liabilities, total inventory, current ratio and cash at bank had a positive correlation with ROTA while accounts receivable and accounts payable had a negative

correlation with ROTA. However, only the cash ratio had a significant relationship at one level of significance. The retail market has been the subject of some profound changes over the recent past. The mix of social and economic conditions which prevailed in the 1980s triggered the arrival of a much more discerning consumer, driven not just by value for money but also increased selectivity and a demand for higher quality shopping environments.

2.5   Summary of Literature Review

According to both theoretical and empirical studies there exists a relationship between working capital management and financial performance. However, some studies, both local and global, suggest that there is a positive relationship while others suggest that there is a negative relationship. In addition, some suggest significant relationships while others suggest insignificant relationships.

Additionally although studies on working capital management and financial have been carried out by various scholars, it is instructive to note there is limited research that has been carried out on relationship between working capital and financial performance of retail stores. Therefore, this study is an attempt to fill this gap and seeks to estimate the relationship between working capital management and financial performance of supermarkets in Nairobi County.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1   Introduction

This chapter outlines the research methodology that was followed in completing the study. Specifically the following subsections are included; research design, data collection and data analysis.

3.2   Research Design

The study employed a descriptive survey design. Mugenda and Mugenda (2003) describe descriptive survey as collecting data in order to test hypothesis or to answer questions concerning the current status of the subject of study. Descriptive research design enables the researcher to generalize the findings to a larger population. The descriptive research design approach was credited due to the fact that it allowed analysis and relations of variables.

3.3   Population

A population is a group of individual persons, objects or items from which samples are taken for measurements. The population of this study was the major supermarkets operating in Nairobi County, the target population was composed of seven supermarkets in the County.

3.4   Data Collection Method

Secondary data was extracted from the audited annual reports and financial statements of the seven major supermarkets in Nairobi County. In order to determine the relationship between working capital management and financial performance of major supermarkets in Nairobi County, a period of five years (2009 – 2013) was considered. County consolidated annual reports and financial statements was considered since they portray overall performance of supermarkets unlike the individual supermarket's financial statements which show part performance of a supermarket in a given location. The annual financial statements included the statements of comprehensive income, financial position, cash flows and changes in equity.

3.5   Data Analysis

Once data had been collected, Statistical Package for Social Sciences (SPSS) was used to aid in analysis. SPSS was used as it allows for a wide range cover of most statistical and graphical data analysis and is systematic. Since this study sought to determine the relationship between working capital management and financial performance of supermarkets, a correlation design was selected for the purpose of the study. A correlation analysis attempts to determine the degree and direction of relationship between two variables under study. Regression analysis was used to understand which among the independent variables are related to the dependent variable, and to explore the forms of these relationships. Significance of beta values at 5% was interpreted using the

t-test of significance. In addition, the model was tested for significance using the F statistic. R^2 will be interpreted for the variance it explains in the model.

The study used the following conceptual model:

ROA=f (ADP, ICP, APP, CCC, CS, LEV, FFAR)

The model was modified from Teruel and Solano (2007) study on the relationship between working capital management and financial performance with specific reference to Spanish SME's to include more variables present in the retail supermarkets chain sector in Nairobi County. The empirical model was:

ROAit= β0 + β1 (ICPit) + β2 (ACPit) + β3 (APPit) + β4 (LEVit) +e

ROA   Return on Assets was extracted from the financial statements for the years 2009 to 2013 and was derived by dividing the net income by the total assets for each of the supermarkets.

ICP   Inventory Collection Period i.e. the days of inventory was used as a proxy for the inventory policy and was calculated by dividing average inventory by sales and multiplying the result by 360.

ACP   Average Collection Period is the total number of days accounts receivable are converted into cash. This was calculated by dividing account receivables noted in the financial statements by total sales and multiplying the result by 360.

APP   is the time it takes to settle accounts payables in a given period. This was calculated by dividing Average Accounts Payables by Net Purchases and multiplying by 360.

LEV   Debt Ratio which was used as a proxy for Leverage was calculated by dividing Total Debt by Total Assets.

FAT   Fixed Asset Turnover was calculated as sales divided by fixed assets which was included as a control variables

$\beta0$ Beta of the firm at time t; i=1,2......., 7 Supermarkets

$\beta1..\beta4$ Coefficients of different independent variables for working capital management of firm i at time t

t   Time = 1,2........, 5 Years

e   is an error term

CHAPTER FOUR

DATA ANALYSIS, RESULTS AND DISCUSSION

4.1　Introduction

This chapter presents the data analysis results and the discussion of findings. The results are shown in terms of the descriptive analysis, correlation analysis and regression analysis.

4.2　Descriptive Statistics

Table 4.1 shows the summary descriptive results for all the variables used in the study. The table shows the number of observations (N), the mean, and the standard deviation.

Table 4.1:　　Summary Descriptive Statistics

	N	Mean	Std. Deviation
Return on Assets	30	.1070	.09678
Inventory Collection Period	30	38.2710	30.02578
Average Collection Period	30	10.3617	3.63270
Accounts payable days	30	66.9610	28.02813
Leverage	30	.7853	.34176
Fixed Asset Turnover	30	15.7250	17.42124

Source: Research Data (2014)

As shown in Table 4.1, the results show that in total there were 30 observations which were from 6 supermarkets over a 5 year period (panel data). The mean ROA was 0.107 with a standard deviation of 0.097. The mean inventory collection period was 38.27 days with a standard deviation of 30.03 days. The mean average collection period was 10.36 days with a standard deviation of 3.63 days. The mean accounts payable days was 66.96 days with a standard deviation of 28.03 days. The mean leverage was 0.785 with a

standard deviation of 0.34. The mean fixed assets turnover was 15.73 with a standard deviation of 17.42.

4.3   Correlation Analysis

Table 4.2 presents the results of the correlation analysis which was done to examine any serial correlations among the independent variables which, when entered into the model for regression analysis, would lead to spurious results.

Table 4.2:   Correlation Matrix

	ICP	ACP	APP	LEV	FAT
Inventory Collection Period	1				
Average Collection Period	.447[*]	1			
Accounts payable days	.757[**]	.470[**]	1		
Leverage	.289	.207	.347	1	
Fixed Asset Turnover	.242	-.095	.464[**]	.164	1

Source: Research Data (2014)

The results in Table 4.2 show that APP and ICP were highly correlated but the correlation was less than 0.9. The rest of the correlations were low. A decision is therefore made to leave all the variables in the model as ICP and APP are both very fundamental to the study.

4.4   Regression Analysis

Table 4.3 shows the regression model summary results. The results show the values of R, R^2, adjusted R^2, and the standard error of estimate.

Table 4.3:   Model Summary

R	R^2	Adjusted R^2	Std. Error of the Estimate
.868[a]	.753	.702	.05287

Source: Research Data (2014)

The results in Table 4.3 show that the independent variables had a high correlation with the performance (R = 0.868). The model accounted for 75.3% of the variance in performance as shown by the R^2.

The results in Table 4.4 present the ANOVA from the regression analysis showing the significance of F-statistic.

Table 4.4:   ANOVA

	Sum of Squares	df	Mean Square	F	Sig.
Regression	.205	5	.041	14.637	.000
Residual	.067	24	.003		
Total	**.272**	**29**			

Source: Research Data (2014)

Table 4.4 shows that the *F*-statistic of 14.637 was significant at 5% level of significance, *p* = .000. This shows that the model was fit to explain the relationship between working capital management and performance of supermarkets.

Table 4.5 shows the results of the regression coefficients. The significance is shown in terms of t-values and the p-values.

Table 4.5:   Regression Coefficients

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	.015	.037		.418	.680
Inventory Collection Period	-.002	.001	-.619	-3.895	.001
Average Collection Period	.004	.003	.159	1.262	.219
Accounts payable days	4.20E-5	.001	.012	.064	.949
Leverage	.195	.031	.687	6.336	.000
Fixed Asset Turnover	-.002	.001	-.362	-2.870	.008

Source: Research Data (2014)

The results in Table 4.5 show that inventory collection period had a negative effect on financial performance and this effect was significant at 5% level (B = -0.002, p = 0.001). The results also show that average collection period had a positive effect on financial performance of supermarkets but the effect was insignificant (B = 0.004, p = 0.219). Accounts payable days had a positive effect on financial performance but the effect was insignificant at 5% level (B = 0.00004197, p = 0.949). The study also found that leverage had a positive effect on financial performance of supermarkets and this effect was significant at 5% level (B = 0.195, p = 0.000). Finally, the study showed that fixed asset turnover had a negative effect on the financial performance of supermarkets and this effect was significant at 5% level (B = -0.002, p = 0.008).

4.5   Summary and Interpretation of Findings

The study sought to establish the relationship between working capital management and financial performance of supermarkets in Nairobi County. Working capital management was measured using three variables namely inventory collection period, average

collection period, and accounts payable days. Two control variables were used namely leverage and fixed assets turnover.

The study examined the effect of inventory collection period on the financial performance of supermarkets. Inventory collection period was measured as the ratio of average inventory to sales and multiplying the ratio by 360 days. The study found that inventory collection period had a negative effect on financial performance and this effect was significant at 5% level ($B = -0.002$, $p = 0.001$). This means that financial performance of supermarkets is influenced by the inventory collection period. A unit increase in ACP leads to a 0.002 units decline in financial performance.

The study assessed the effect of average collection period on the financial performance of supermarkets. Average collection period was measured as the ratio of accounts receivables to sales and multiplying the result by 360 days. The results also show that average collection period had a positive effect on financial performance of supermarkets but the effect was insignificant ($B = 0.004$, $p = 0.219$). This suggests that the average collection period does not influence financial performance of supermarkets.

The study examined the effect of accounts payable days on financial performance of supermarkets. Accounts payable days was measured as the ratio of accounts payables to purchases and multiplying the ratio by 360 days. Accounts payable days had a positive effect on financial performance but the effect was insignificant at 5% level ($B = 0.00004197$, $p = 0.949$). This show that financial performance of supermarkets is not influenced by the accounts payable days.

The study examined the effect of leverage on the financial performance of supermarkets. Leverage was measured as the ratio of debt to total assets. The study found that leverage had a positive effect on financial performance of supermarkets and this effect was significant at 5% level ($B = 0.195$, $p = 0.000$). This means that financial performance of supermarkets is influenced by the leverage ratios. A unit increase in leverage leads to a 0.195 increase in financial performance.

Finally, the study examined the effect of fixed asset turnover on the financial performance of supermarkets. The fixed assets turnover was measured as the ratio of sales to fixed assets. The results showed that fixed asset turnover had a negative effect on the financial performance of supermarkets and this effect was significant at 5% level ($B = -0.002$, $p = 0.008$). This means that financial performance of supermarkets is influenced by the fixed asset turnover. A unit increase in fixed asset turnover leads to a 0.008 increase in financial performance.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the summary of findings, conclusion of the study, recommendations for policy and practice, limitations of the study, and suggestions for further research.

5.2 Summary and Discussion of Findings

The study sought to establish the relationship between working capital management and financial performance of supermarkets in Nairobi County. Working capital management was measured using three variables namely inventory collection period, average collection period, and accounts payable days. Two control variables were used namely leverage and fixed assets turnover. Secondary data from the financial statements of the supermarkets was collected in this regard. Descriptive analysis, correlation analysis and regression analysis were conducted to achieve the objective of the study.

The descriptive results showed that the mean ROA was 0.107 with a standard deviation of 0.097, the mean inventory collection period was 38.27 days with a standard deviation of 30.03 days, the mean average collection period was 10.36 days with a standard deviation of 3.63 days, the mean accounts payable days was 66.96 days with a standard deviation of 28.03 days, the mean leverage was 0.785 with a standard deviation of 0.34, and the mean fixed assets turnover was 15.73 with a standard deviation of 17.42.

The regression results showed that the model accounted for 75.3% of the variance in performance as shown by the R^2. The *F*-statistic of 14.637 was significant at 5% level of significance. This means that the model used was fit to explain the relationship between working capital management and performance of supermarkets. The study found that inventory collection period and fixed asset turnover had negative effects while average collection period, accounts payable days, and leverage had positive effects on financial performance of supermarkets. However, the effects of average collection period and accounts payable days were insignificant at 5% level. These results show that an increase in the levels of inventory collection period and fixed asset turnover will lead to lower financial performance while an increase in leverage ratios would lead to higher financial performance.

5.3   Conclusion

The study sought to establish the relationship between working capital management and financial performance of supermarkets in Nairobi County. The study found that inventory collection period had a negative significant effect on financial performance of supermarkets. This leads to the conclusion that financial performance of supermarkets in Nairobi County is influenced by the inventory collection period. This is consistent with literature.

The study found that accounts payable days had a positive but insignificant effect on financial performance of supermarkets in Nairobi County. Consistent with some studies, the study concludes that the financial performance of supermarkets in Nairobi County is

not influenced by the accounts payable days. The study also revealed that average collection period had a negative but insignificant effect on financial performance of supermarkets in Nairobi County. This leads to the conclusion that average collection period does not affect the financial performance of supermarkets in Nairobi County. This is consistent with some of the past studies on working capital management.

The study revealed that leverage had positive and significant effect on financial performance of supermarkets in Nairobi County. Consistent with prior studies, the study concludes that leverage affects the financial performance of supermarkets in Nairobi County. The study also found that fixed asset turnover had a negative and significant effect on the financial performance of supermarkets in Nairobi County. The study therefore concludes that the financial performance of supermarkets in Nairobi County is influenced by the fixed assets turnover ratio and is consistent with prior studies.

5.4   Limitations of the Study

The study used secondary data from six supermarkets in Nairobi County out of the seven available. The focus of the supermarkets may be representative of all other supermarkets in Kenya given that these supermarkets have branches all over the county. But it may not be applicable to all supermarkets as the ones targeted here were the large ones. To improve this limitation it may be important to include more supermarkets.

The results may also not be applicable to other retail firms as the focus in this study was on supermarkets. While it can offer important insights to other retailers, such conclusions should be approached with care given the variations in the way supermarkets operate and

the way other retailers operate. To improve this, it may be important to replicate this study to other retail firms or to include them in the study.

The study also relied on secondary data from the financial statements of the firms. While this is a reliable source of data, it is quantitative in nature and therefore it was not possible to fully interrogate the working capital management policies of the supermarkets as may have been the case if interviews were conducted. To improve this, it will be important to used mixed methods in data collection.

The time span for the data collected in this study was five years. This is not a very long period that can help provide robust results for applicability by the supermarkets. A longer period, of say 10 years, would have been preferred but most of the supermarkets do not keep data long enough to be able to conduct a long time series analysis or panel analysis. A longer period would help reduce this limitation.

The model used in the study did not control for most of the firm-specific variables such as age of the firm, size in terms of branch network or number of employees, among other control factors. In the absence of such control factors, the model may not be suitable enough to explain financial performance of organisations and therefore any deductions from the model must be approached with care. To improve the model, it may be important to include more control variables.

5.5   Recommendations

5.5.1 Policy Recommendations

The study makes a number of recommendations. First, the study recommends that supermarkets should manage their inventory collection periods better in order to improve their performance. They should strive to have lower ICPs in order to increase their performance. Failure to do this will dampen their financial performance.

Secondly, the study recommends that supermarkets should improve their fixed asset turnover as the current levels are not successful at improving their financial performance. This ratio needs to be kept low in order to improve the financial performance of supermarkets. This can be done by increasing the sales volumes.

Thirdly, the study recommends that for supermarkets to improve their financial performance, there is need to increase the leverage ratios currently present. Higher leverages will lead to higher financial performance. This can be improved by increasing the debt levels. This debt can be used to make more purchases and therefore more sales volumes which will translate to higher financial performance through more incomes.

5.5.2 Suggestions for Further Research

The study suggests that more studies be done in this area and focus on other retail firms as well as other major towns in Kenya, as the focus on Nairobi is narrow and may not offer the most reliable results that can be inferred to other areas.

Studies should also be conducted on the topic using fairly longer time periods (more than 5 years) as such studies may be useful in showing the trends as well as the long terms relationship between working capital management and financial performance.

The study also recommends that further studies explore the relationship between working capital management and financial performance using a mixed methodology where both primary and secondary sources of data are used. This way, some of the issues that cannot be addressed through secondary data can be accurately captured.

There is also need for more studies to examine the determinants of working capital management in retail organisations. This will be important in providing insights into how the working capital decisions of a firm can be improved.

Future studies can use an improved model with more firm-specific control variables in the model as such may improve the accuracy of the financial performance model and therefore lead to better and robust results.

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APPENDICES

Appendix 1: List of Supermarkets

1. Nakumatt Supermarket

2. Tuskys Supermarket

3. Uchumi Supermarket

4. Naivas Supermarket

5. Ukwala Supermarket

6. Chandarana Supermarket

Appendix 2: Panel Data for Supermarkets

Supermarket	Year	ROA	ICP	ACP	APP	LEV	FAT
S1	2009	0.01	93.53	18.05	110.69	0.85	19.40
S1	2010	0.02	105.30	13.48	114.55	0.82	18.85
S1	2011	0.02	106.00	12.27	124.74	1.48	17.66
S1	2012	0.02	99.99	13.58	112.73	0.82	18.58
S1	2013	0.02	102.17	10.56	76.54	0.82	17.80
S2	2009	0.07	31.86	3.63	69.01	0.89	36.23
S2	2010	0.05	29.47	9.08	75.39	0.88	42.11
S2	2011	0.05	30.15	8.68	81.47	0.87	60.57
S2	2012	0.05	40.58	9.88	93.57	0.88	57.95
S2	2013	0.04	54.59	12.27	100.94	0.89	59.48
S3	2009	0.18	27.24	8.39	48.25	1.18	7.41
S3	2010	0.27	24.77	9.04	49.72	0.56	5.50
S3	2011	0.07	25.61	10.12	52.44	0.47	5.31
S3	2012	0.06	23.70	9.21	31.00	0.43	5.69
S3	2013	0.06	25.80	8.20	43.13	0.45	5.64
S4	2009	0.22	16.85	8.22	48.23	1.12	7.65
S4	2010	0.26	27.14	12.60	56.36	0.91	2.81
S4	2011	0.07	31.36	12.40	76.75	0.59	4.58
S4	2012	0.06	19.20	9.35	16.83	0.46	7.02
S4	2013	0.08	8.82	5.32	53.99	0.53	11.31
S5	2009	0.09	25.63	10.14	42.65	0.36	5.32
S5	2010	0.04	23.00	8.92	20.47	0.44	5.88
S5	2011	0.07	14.94	4.71	43.80	0.44	9.80
S5	2012	0.19	18.49	11.51	44.74	1.25	7.05
S5	2013	0.33	25.34	8.55	75.37	1.44	3.31
S6	2009	0.10	35.09	10.76	81.84	0.49	4.01
S6	2010	0.11	15.11	9.52	77.35	0.50	7.32
S6	2011	0.06	12.60	6.78	54.14	0.48	9.99
S6	2012	0.37	29.03	13.89	48.42	1.58	5.18
S6	2013	0.17	24.77	21.74	83.72	0.68	2.34