LIQUIDITY MANAGEMENT OF CEMENT MANUFACTURING COMPANIES LISTED ON THE NAIROBI SECURITIES EXCHANGE

BY

ARTHEMON NIZIGIYIMANA

UNITED STATES INTERNATIONAL UNIVERSITY

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A Project Report Submitted to the Chandaria School of Business in Partial Fulfillment for the Degree of Masters in Business Administration (MBA)

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STUDENT'S DECLARATION

I, the undersigned, declare that this is my original work and has not been submitted to any other college, institution, or university other than the United States International University in Nairobi for academic credit.

Signed: _____ **Date:** _____

      Arthemon Nizigiyimana (ID:638165)

This project has been presented for examination with my approval as the appointed supervisor.

Signed:_____ **Date:** _____

      Dr. Amos Njuguna

Signed:_____ **Date:**_____

      Dean, Chandaria School of Business

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ABSTRACT

The purpose of this study was to establish liquidity management measures of cement producing firms listed on the Nairobi Securities Exchange (NSE).The study sought to establish the measures of corporate liquidity management, the factors that affect liquidity requirements and establish the relationship between liquidity and profitability in manufacturing cement firms.

Purposive sample design was applied in this study which suited to the selected samples of top cement companies of Kenyan Cement Industry namely Athi River Mining, Bamburi Cement and East African Portland Cement. Secondary data extracted from the income statements, balance sheets of sampled firms from the company annual report accessible from the Nairobi Securities Exchange database and the website were used covering a period of five years starting from 2008 to 2012. Data was analyzed by use of descriptive statistics and relationship drawn using multiple regression analysis.

This study showed that liquidity is measured by Current Ratio, Quick Ratio and Cash Ratio. The research findings revealed that the mean values of current ratio was 1.71 which is below the standard conventional rule of 2:1.This indicated that on average the listed cement companies might find difficult to meet their short term maturing obligations. However, with the maximum of 2.22 for the current ratio showed that some of the companies were doing very well liquid wise, as they were not likely to encounter any difficulty in meeting their short term obligations. On an average the quick ratio was 1.09 which was satisfactory compared to the standard conventional rule of 1:1.

The findings of this study further showed that liquidity measured by current ratio is influenced by cash conversion cycle measured by inventory turnover, receivables collection period and payables payment period. Regression analysis was carried out to examine the relationship between liquidity and cash conversion cycle. The results revealed that variation in current ratio was explained by the number of days of cash conversion cycle. The findings showed that a satisfactory cash conversion cycle had a positive impact on current ratio while unsatisfactory cash conversion cycle had a negative impact on liquidity measured by current ratio.

There exists a relationship between liquidity and profitability indicators. The investigation using both correlation and regression analysis revealed that liquidity ratios measured by Current Ratio, Quick ratio and cash conversion cycle have a relationship with profitability measured by return on capital employed. The findings revealed that Current Ratio and Quick Ratio were positively associated with return on capital employed while cash conversion cycle was negatively associated with Return on Capital Employed.

The study concluded that liquidity position based on quick ratio was more satisfactory in case of BMBC and EAPC and unsatisfactory in case of ARML. Cash conversion cycle was on decreasing trend. Cash conversion cycle was satisfactory in case of BMBC and EAPC and had a positive impact on liquidity. Cash conversion cycle was unsatisfactory in case of ARML and had a negative impact on liquidity. The analysis showed that BMBC and EAP were able to meet their short term obligations over the study period but ARML was unable to meet its short compulsions.

This study recommends that to ensure better liquidity management, that is shorter cash conversion cycle, which would invariably lead to better profitability in the cement industry, the duration of time that goods are held in inventory should be reduced. This can be accomplished by improving the inventory control process .Also accounts receivables should be collected more quickly by improving the efficiency of the collection process as debt should be collected in line with the agreed credit terms. Managers should try to delay payables because it will provide them opportunities to invest in different profitable areas thus increasing the firm's profitability.

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LIST OF ABBREVIATIONS

ANOVA   : Analysis of Variance

ARML   : Athi River Mining Cement Limited

BMBC   : Bamburi Cement Limited

CA   : Current Assets

CCC   : Cash Conversion Cycle

CL   : Current Liabilities

CR   : Current Ratio

EAPC   : East African Portland Cement Company Limited

KNBS   : Kenya National Bureau of Statistics

MS   : Mean Square

NSSF   : National Social Security Fund

PAT   : Profit after Tax

PPP   : Payables Payment Period

QR   : Quick Ratio

RCP   : Receivables Collection Period

ROCE   : Return on Capital Employed

SS   : Sum of Squares

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background to the Study

The construction industry in Kenya is growing quickly averaging a growth rate of 14.2% from 2006 to 2011.During the same period, the economic growth of the country as measured by Gross Domestic Product rate (GDP) was 4.3% decreasing to 4.38% in 2011 from 6.33% in 2006 (Dyer and Blair, 2012).The rise of oil price, the financial crisis of 2007, the 2008 post -election instability in the country and a high inflation weakened the economic performance from 2006 to 2011.

In Kenya, demand for cement is correlated to the economic performance of the country. The consumption of cement products grew more than twice the rate of GDP growth from 2006 to 2011. Growing with the building industry, the consumption of cement increased with a rate of 14.1% during the period, with consumption attaining 3.43 million tons in 20011,up from 1.57 million tons in 2006 (Kenya National Bureau of Statistics, [KNBS] ,2012).

The main drivers of the increase in consumption were increase demand for housing, the boom for business construction fuelled by risen foreign investment, government and donor – funded spending on the country's huge infrastructure projects. Consequently, cement consumption per capita consumption, increased at an average rate of 10.7% for the period to 83.9 kilograms in 2011 from 50 kilograms in 2006 despite stagnation in annual increase of the population (KNBS, 2012).

According to Dyer and Blair (2012) the production of cement grew at a rate of 11.6% from 2006 to 2011 to 4.9 millions of tons in 2011 from 2.41 million of tons in 2006.The production increase was caused by new entrants in the industry and expansion of capacity by existing cement companies to counter attack rival firms. During the period the cement products was oversupplied due to increase in cement production. Based on the rate of industry capacity utilization which was given at around 72%, the excessive supply could be higher were established capacity fully used. The cement firms of Kenya comprise six firms situated in three different locations in the country. These companies are Bamburi Cement

Limited (BMBC), Athi River Mining Limited (ARML), East African Portland Cement Company Limited (EAPC), National Cement Company Limited (NCC), Mombasa Cement Limited (MCL) and Savannah Cement Company (SCC).

As at end 2011, cement exports averaged 21.1% of total cement production over the period 2006-20011.Key export markets included Uganda, Tanzania, the Democratic Republic of Congo (DRC) and other East and Central African countries. Imported cement accounted for a marginal 2% of total cement consumed during the period indicating the country's overall reliance on locally produced cement. In 2011, cement import duty under the East African Community Common External Tariff was lowered by 10% to 25% despite stiff opposition from industry players. Should the suspension of the 10% import duty remain, the quantum of cheap cement imports particularly from low cost producers such as Egypt, India, China and Pakistan could increase considerably, further widening the demand-supply mismatch (KNBS,2012).

Liquidity management is a concept that is receiving serious attention all over the world especially with the current financial crisis (Owolabi, 2011).The objective of business owners and managers is to conceive a strategy of managing their day to day operations in order to meet their obligations as they fall due and increases profitability and shareholders value.

Liquidity management affects corporate performance. Liquidity management requires maintaining liquidity in day to day operations to ensure its smooth running and meet its obligations when they fall due (Eljelly, 2004). Efficient management of liquidity plays a key role in the successful operating of a company. A company should ensure that it possess sufficient liquidity to meet its short term obligations. Studying liquidity is important to both the internal and the external analysts because of its close relationship with day to day operations of a firm (Bhunia, 2010). The Challenge in liquidity management is to achieve desired balance between profitability and liquidity (Raheman and Nasr,2007). The requirement for liquidity of a business depends on its nature and there is no specific rule on determining the optimal level of funds that a firm can maintain to ensure positive impact on its net income (Panigrahi , 2013) .

The management of liquidity is among the four cardinal decision areas of financial management, for which every business oriented organization has to determine (Pandey, 2005). The liquidity components of a firm's financial management deal with the liquidity aspect of a firm and therefore fundamental for the effective and efficient operations as well as the sustainability of its business continuance (Enyi, 2006).

Poor management of liquidity in terms solvency, operating efficiency and profitability is imputable to inadequate financial performances (Bhunia, 2006).Management of liquidity is a very sensitive area in the field of managing finances.

The management of liquidity determines to a large extent the quantity of profit that results as well as the wealth of stakeholders (Ben, 2008). A company in order to survive must remain liquid as failure to meet its compulsions in due time results in bad credit rating by the short term creditors, reduction in the value of reputation in the market and may ultimately lead to bankruptcy (Bhavet,2011). Thus a good and firm financial management policy seeks to maintain adequate liquidity in order to meet its short-term maturing obligations without diminishing profitability. However the principal focus of most organizations is profitability maximization while the concern for efficient management of liquid assets is neglected. This perspective is justified by the belief that profitability and liquidity are conflicting objectives. Therefore a company can only pursue one at the expense of the other, in consonance with the tradeoff theory of liquidity and profitability.

According to Padachi (2006) a firm is required to maintain a balance between liquidity and profitability while conducting its daily activities. Profitability is directly affected by both inadequate and surplus liquidity (Ogundipe, Idowu and Ogundipe, 2012). For instance, when the "necessary" level of liquid assets is exceeded, their surpluses when the market risks remain stable, become a source of ineffective utilization of resources which has an adverse effect on profitability.

1.2 Statement of the Problem

Over the years, the manufacturing sector has been a victim of high production costs which invariably reduces profitability. As argued by Akinbuli (2006), poor management is the main reason for business failure as many corporate organizations went into liquidation because of poor management. Peavler (2009) observed that most failed businesses were due to cash flow problems. The importance of cash flow is particularly pertinent when access to cash is difficult and expensive.

According to Basno and Dardac (2004 the required liquidity for each company depends on the balance sheet situation of the company. To assess the liquidity state, special importance is held by the way in which there are classified organizational liabilities and assets (Basno and Dardac, 2004).

Studies were made in order to observe the interaction between these two variables, such as Lazaridis and Tryfonidis (2005) who found a relationship between liquidity management efficiency and profitability. Companies enjoy better pricing when they hold enough cash to purchase from suppliers and thus they may enhance their profit. So having enough liquidity also affects the profitability of the firm. Siddiquee and Khan (2008) observed that firms which are better at managing liquidity are found to be able to make cyclical moves to build competitive advantage. They are also better at generating fund internally and also face lesser trouble while seeking external sources of financing.

The problem to be addressed by this study is to evaluate liquidity measures and the relationship between liquidity and profitability of cement manufacturing companies listed on the Nairobi Securities Exchange (NSE).

1.3 Purpose of the Study

The purpose of the study was to establish liquidity management measures of cement producing companies listed on the Nairobi Securities Exchange (NSE).

1.4 Research Questions

The study was guided by three key research questions namely:

1.4.1 What are the measures of corporate liquidity management relevant for cement manufacturing firms?

1.4.2 What are the factors that affect liquidity requirement of cement manufacturing firms?

1.4.3 Is there any relationship between liquidity and profitability in cement manufacturing firms?

1.5 Importance of the Study

The findings of the study will benefit the following constituents:

1.5.1 Managers

Having an understanding of a company's liquidity position will help the managers to link liquidity management efficiency and profitability of their firms. Managers will be sensitized on the need to learn corporate finance for decision making on liquidity matters and for the effective run of the cement manufacturing firms.

1.5.2 Investors

The findings of this study clearly show the investors how liquid and profitable the cement industry in Kenya is.

1.5.3 Creditors

The findings of this study will inform creditors the performance of cement industry in Kenya before lending the finance.

1.5.4 Government

The findings of this study will help the government of Kenya know how much the cement industry contributes to the national treasury and whether the cement companies pay taxes on time.

1.5.6 Researchers and Scholars

The findings of this study will add knowledge in the area of liquidity management and will be useful to researchers and scholars.

1.6 Scope of the Study

The study focused on cement manufacturing companies located in Kenya .The cement industry comprises six cement companies of which only three are quoted on Nairobi Securities Exchange .These three listed cement companies were selected for a period of 2008 to 2012 on the basis of availability of data. This is in consideration of time and cost constraints as the research was intended to take place within four months after the approval of the proposal. The research was focused on management of liquidity and liquidity-profitability tradeoff. The study used secondary data which was obtained through annual reports of the three listed cement companies. The use of secondary data enabled the researcher to collect reliable information from the target population .The annual reports enabled the researcher to save time in data collection, they were cost effective and contained the required information.

1.7 Definition of the terms

1.7.1 Liquidity

Liquidity is the ability to meet expected and unexpected demands for cash through ongoing cash flow or the sale of an asset at fair market value (Barad , 2010).

1.7.2 Liquidity Management

Liquidity management has been defined as to involve managing the money of the firm in order to attain maximum interest income on idle funds (Johnson and Aggarwal, 2008).

1.7.3 Manufacturing Firms

Manufacturing industry refers to any business that transforms raw materials into finished or semi-finished goods using machines, tools and labor. Manufacturing sectors include production of food, chemicals, textiles, machines and equipment (Laura, 2009).

1.7.4 Stock Exchange

Organized and regulated financial market where securities (bonds, notes, shares) are bought and sold at prices governed by the forces of demand and supply (Hans and Alissa ,2008).

1.7.5 Profitability

Profitability is the capacity to make benefit from all the business operations of an organization, company, firm, or an enterprise. It shows how efficiently the management can make profit by using all the resources available in the market (Sandhar, 2013).

1.7.6 Cash Conversion Cycle

Cash conversion cycle measures the time lag between cash outflow for purchase of inventories and collection of receivables from debtors (Padachi, 2006).

1.8 Chapter Summary

This chapter is an introduction to the research project. It mentioned that the purpose of the study is liquidity management and investigation of the relationship between liquidity and profitability. The background of the study as well as the research objectives has been stated. The scope of the study was determined and a definition of key terms provided.

The research will be useful to managers, investors, Creditors, Government, policy regulators, future researchers and will also contribute to the general body of knowledge. Chapter two provides literature review of the subject under study. Chapter three covers the research methodology, chapter four analyzes the research findings and presents the results while chapter five provides discussions on the research findings, the conclusions drawn from the study findings, the recommendations for improvement and recommendations for further research.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Introduction

This chapter reviews literature on liquidity management and profitability. Section 2.2 addresses measures of corporate liquidity management, section 2.3 discusses factors that affect liquidity requirement, section 2.4 deals with relationship between liquidity and profitability in cement manufacturing firms and section 2.5 summarizes the chapter.

2.2 Measures of Corporate Liquidity Management

2.2.1 Current Ratio

The liquidity ratio establishes a relationship between cash and other current assets to current obligations and provides a quick measure of liquidity (Pandy, 2005). The current ratio compares the proportion of current assets available to cover current compulsions (Amalendu, 2011).The current ratio is used to ascertain whether a firm's short-term assets are readily available to pay off its short-term obligations .The higher the current ratio, the better for a company.

The current ratio is used in financial reporting and is easy to understand. But it can be misleading in a positive or negative sense. A high current ratio is neither necessarily good, nor a low current ratio is necessarily bad (Owolabi,2012). As opposed to popular perception, the widespread current ratio, as an indicator of liquidity, is flawed because it is conceptually based on the liquidation of all of a firm's current assets to meet its current compulsions. In practice, this is not likely to happen. Investors must look at a firm as a going concern. It is the time it takes to convert a firm's working capital assets into cash to pay its current compulsions that is important to its liquidity. In summary, the current ratio can be "misleading." When looking at the current ratio, it is essential that a firm's current assets can cover its current compulsions; however, investors should know that this is not the whole story on firm liquidity. They should try to understand the types of current assets the firm has and how quickly these can be transformed into cash to meet current obligations (Loth, 2012).

2.2.2 Quick Ratio

The quick ratio is a more conservative indicator of liquidity than the current ratio as it removes inventory from the current assets used in the ratio's computation. By removing inventory, the quick ratio focuses on the more-liquid assets of a business. Quick ratio will help know whether to disburse their current debt, exclude to sell any inventory. It is important for an organization to concern on this because, if it needs to sell inventory, it also needs a buyer of that inventory (Chinmoy , 2009).

The use of this ratio is similar to the current ratio in that it gives users an idea of the ability of a firm to meet its short-term obligations with its short-term assets. Another useful advantage is to compare the quick ratio with the current ratio. If the current ratio is higher, it is a clear indication that the firm's current assets depend on inventory. While considered more tight than the current ratio, the quick ratio, because of its accounts receivable elements, suffers from the same deficiencies as the current ratio – even though somewhat less. While theoretically possible, as a going concern a firm must focus on the time it takes to convert its working capital assets to cash - that is the true measure of liquidity (Ogundipe,2012).

2.2.3 Cash Ratio

The cash ratio is most conservative of current ratio and quick ratio. As the name implies, this ratio is simply the proportion of cash and equivalents compared to current liabilities and looks only at the assets that can be most easily used to pay off short-term debt, and it disregards receivables and short-term investments (Thomson, 2011). The argument for using the cash ratio is that receivables and short-term investment often cannot be liquidated in a timely manner. Receivables can be sold, or monetized, but the firm will not be able to get the full value of the receivables sold. Due to their high liquidity, short–term treasuries are considered cash equivalents, not short-term investments.

2.2.4 Operating Cash Flow Ratio

The operating cash flow ratio is one of the most important cash flow ratios. Cash flow is an indication of how much money moves into and out of the business. Operating cash flow relates to cash flows that a firm accrues from operating activities to its current debts. It

measures how liquid a company is in the short run since it relates to current debt and cash flows from operations (Peavler, 2009). If the operating cash flow is below 1, the firm has generated less cash in the period than it needs to pay off its short-term obligations. This may require more capital. Therefore investors and analysts typically prefer higher operating cash flow ratios.

Financial ratios focus on balance sheet and income statements. However the statement of cash flows can provide useful information from ratio analysis. Balance sheet ratios provide a date-in-time perspective, whereas the statement of cash flows represents activity for a continuous period. The statement of profit and loss accounts report the results of operations for a period of time, but do not disclose changes in resources from activities in financing and investing. The statement of cash flow complements the balance sheet and income statement by providing additional information concerning an organization's capacity to operate efficiently, to finance growth, and to pay its compulsions (Wells, 2005).

The aim of liquidity management is to maintain adequate control over cash position to keep the firm sufficiently liquid and to use excess cash in some profitable ways (Ben, 2009).In this sense cash management is the back bone of liquidity management as it affects corporate profitability. The surplus cash needs to be invested in short term securities pending when it is needed. The big problem faced by most companies is the ability to determine the minimum cash level required by the company. Minimum cash level helps management to maintain enough cash to meet its day-to-day operating activities. To avoid breaks or gaps in the trading cycle due to lack of funds, administrators must compute the cash amount best suited to their level of activity, plan the timing of the relevant payments and collections and draw up a policy of investment in assets with high liquidity that can be transformed into cash at a low transactional cost to serve as support for the treasury funds maintained by the firm.

Holding inadequate amount in cash or cash equivalent may disturb the normal flow of business operations (Obida, 2011). Furthermore, the wrong safety margin may result in financial problems, with companies unable to meet needs that may arise at any given time or unable to take advantage of unexpected investment opportunities. Maintaining a cash surplus therefore has a number of advantages. It allows companies to carry on the normal

transactions that arise in the course of their operations and avoid any treasury gaps. It also assists them cover any unexpected needs for cash by acting as a preventive balance.

Akinsulire (2006) opines that liquidity management involves the efficient collection, disbursement and temporary investment in cash. Having liquid assets available constitutes an opportunity cost for a company, as the return on those assets is lower than the return on productive investments, but there may still be transaction costs arising from the sale or purchase of financial assets, and disadvantages in terms of taxation.

Optimal cash balance means a position when the cash balance amount is on the most ideal position so that the firm has the ability to invest the surplus for a return profit and at the same time have enough liquidity for future needs. The purpose is to minimize the sum fixed costs of transactions and the opportunity cost of holding cash balances (Owolabi, 2011).

Acharya, Almeida, Campello (2013) use this insight to derive additional predictions about the choice between cash and credit lines. They show that the most efficient allocation of liquidity is one in which firms with idiosyncratic liquidity risk use credit lines, while firms with correlated liquidity risks use cash in addition to credit lines. Provided that firms' exposure to aggregate risk is observable, their model predicts that firms with greater aggregate risk exposure should hold more cash for their liquidity management, and that aggregate cash holdings should increase with economy-wide aggregate risk.

There is some evidence that excess cash leads to value destruction. Firms that hold excess cash are more likely to attempt acquisitions of other firms. These acquisitions are more likely to be diversifying, and tend to lead to declines in operational performance and destruction of shareholder value. Harford, Mansi, and Maxwell (2008) find that wasteful investments occurring because of excess cash are more likely to happen when firms have poor corporate governance.

2.3 Factors that Affect Liquidity Requirement of Cement Manufacturing Firms

2.3.1 Nature and Size of Business

The liquidity needs of a firm are basically influenced by the nature of its business (Pandy, 2005). Companies involved in trading and financial services generally have a low investment in fixed assets, but require a large investment in current assets. Firms involved in retail stores must carry large stocks of a variety of goods to satisfy the varied demand of buyers. Manufacturing companies and construction firms also have to invest significantly in working capital but only a nominal amount in fixed assets. However public utilities have a limited need for working capital and have to invest substantially in fixed assets. Their requirements for working capital are nominal because they have cash sales only and they supply services only. Therefore the amount of cash tied up with debtors or in inventories is very small. The needs for working capital of most of the manufacturing concerns fall between the two extreme requirements of public utilities and trading companies.

2.3.2 Inventory Turnover

Inventory turnover establishes relationship between the costs of goods sold and average inventory. Inventory turnover measures the speed of converting stock into sales. A high inventory turnover demonstrates efficient management of inventory because more frequently the inventory is sold, the lesser amount of cash is required to finance stock. A low ratio of inventory turnover shows inefficient management of inventory, over investment in stock, slow business, and bad quality of goods that lead to decrease profit as compared to total amount of investment (Raheman, 2007).

Age of inventory shows duration of inventory in a company. It explains moving position of inventory over the year. If age of inventory is minimum it means firms activity position are satisfactory, they are able to sell their goods within shorter period of time which illustrates sound liquidity position of the firm. If age of inventory is too high, it shows slow moving of stock due to lower demand of product or excessive production by firm, due to stocking policy, which affected directly liquidity position of the firm. Inventory is one of the major items in current assets, which indicates investment of working capital in stock (Amalendu, 2006).

2.3.3 Receivables Collection Period (RCP)

RCP ratio is computed by dividing trade receivables by turnover and multiply the result by 365.This ratio indicates number of days it takes a company to recover its credit sales .The shorter the period the better for the company. Account receivables with longer recoverable period pose the risk of bad debt for the company and also affect liquidity in the short run (Pandy, 2005).

Age of receivables ratio indicates the efficiency of the credit and collection policy of the company and it will directly affect its liquidity position. It is a test of pace in which receivables are converted into cash. Lower the receivables to sales ratio, better is the liquidity of debtors and it means prompt payment by the customers (Bhunia, 2006).

2.3.4 Payables Payment Period (PPP)

PPP ratio is computed by dividing average trade payables by cost of goods sold and multiply the result by 365. This ratio indicates the number of days the organization is required to settle its short term liabilities. The longer the period the better for the organization as it gives the organization leverage to recover its receivables. Where the period is shorter than the receivable collection period it puts pressure on the liquidity of the organization (Okwu,2011).

Age of payables indicates efficiency of the credit and payment policy of the organization and liquidity position directly depends on this period. Higher the payables payment period the longer is the age of payables as well as better is the management of liquidity whereas shorter the age of payables indicates inefficient and poor payment policy that is accountable to decrease current obligations burden and suffering condition of liquidity position (Amalendu,2006).

2.3.5 Credit Terms

The credit policy of a firm affects the size of liquidity by influencing the level of trade receivables. Even if the credit terms granted to customers to a great extent depend upon the practices of the industry or trade to which the firm operates, yet it may endeavor to shape its credit policy within such restrictions. A long collection period means tying funds in

receivables amount. Slow collection procedures increase the chances of bad debts. The shorter the receivables collection period, the better is the liquidity of receivables. Liquidity requirements of a company are also affected by credit terms granted by its suppliers. Higher the credit payment period better is the liquidity management. A short creditor period shows a poor payment policy that will affect negatively liquidity position. A company enjoying liberal credit terms will need less liquidity (Solomon, 2012).

2.3.6 Operating Efficiency

Operating efficiency means optimum use of resources. An organization can minimize its needs for liquidity by controlling efficiently its operating costs. By increasing operating efficiency the use of liquidity will improve and pace of cash cycle will be accelerated. Better use of resources improves profitability and relieves the pressure on liquidity. Operating efficiency is measured by using the Total asset to Sale ratios. This measures the proportion of investment in assets that is required to generate the annual sales level. If the percentage is very high, it probably shows that an organization is not being aggressive in its sales efforts (Owolabi, 2011).

2.3.7 Price Levels Changes

Generally, rising price levels requires a higher investment in current assets. With increasing prices the same levels of current assets requires increased investment. However, companies which can immediately revise prices of their merchandise upwards may not face severe working capital difficulties in periods of rising price. The impact of increasing price level may, however, be felt differently by different companies due to fluctuation in individual prices. It is possible that some firms may not be affected by increasing the rising price levels, whereas others may be seriously affected by it (Padachi, 2006).

A company needs liquidity to operate profitably. The working capital of a company reflects the short-term uses of cash. Apart from the investment in fixed assets such as buildings, plant and equipment, funds are also required to meet day to day operating expenses and for amounts invested in current assets. Over a period of one year there is a continuing cycle of these assets. Cash is utilized to acquire stock, which on being sold results in cash receipt,

either immediately or later in case the sales are on credit. The rate of turnover of current assets in relation to total sales of a given time period is critical to the total funds used in those assets (Sebastian,2010).

The amount to be invested in current assets is affected by many factors and may vary over a period of time. Production cycle, production policies, credit terms, growth and expansion needs, and inventory turnover are some of the critical factors influencing the determination of working capital. The management should ensure the adequacy and efficiency in the use of working capital in order to maintain a required level of liquidity needed to meet the company's compulsions as at when due. For this objective different ratios can be periodically calculated and compared against the norms established in this respect (Amalendu, 2011).

For management efficiency of working capital, cash management is as important as the management of other items of current assets like inventories and receivables. Too little cash may place the company in an illiquid position, which may force the suppliers and other claimants to stop transacting with the company. Too much cash results in funds lying idle, thereby decreasing the overall return on capital employed below the acceptable level. An adequate amount of funds is always needed to meet any unforeseen contingencies and also liabilities as well as day-to-day operating expenditure of the company (Vijayakumar,2011).

2.3.8 Cash Conversion Cycle (CCC)

Liquidity management is necessary for all businesses, small, medium or large. Because, it means collecting cash from customers in time to ensure no difficulty in paying short term debts. Therefore, when a business does not manage its liquidity well, it will have cash shortages and will result in difficulty in paying obligations. In this regard Ali Uyar (2009) opines that, in addition to profitability, liquidity management is vital for ongoing concern.

Cash conversion cycle can either be positive or negative. A positive result shows the number of days a firm must borrow or tie up capital while waiting for customer payment. A negative result portrays the number of days a firm has received cash from sales before it must pay its creditors (Hutchison, 2007).The ultimate objective of every manufacturing firm is having

low cash conversion cycle, if possible negative. Because the shorter the cash conversion cycle, the more efficient the firm in its cash flow management.

2.4 Relationship between Liquidity and Profitability in Cement Manufacturing Firms

2.4.1 Concept of Liquidity

Liquidity is the ability of a firm to meet its expected and unexpected demands for funds through ongoing cash flow or the sale of an asset at fair market value. Liquidity risk is the risk which at some time a firm will not have sufficient cash or liquid assets to meet its cash compulsions (Panigrahi,2013).

The objective of business owners and managers is to devise a strategy of managing their day to day operations in order to meet their obligations as they fall due and increase owner's wealth. The management of liquidity, in most cases, is considered from the perspective of working capital management because the indices used for evaluating corporate liquidity are components of working capital (Azam, 2011).

A study of liquidity is important to both the internal and the external analysts because of its relationship with daily business operations. Requirement of liquidity of a firm depends on the peculiar nature of the firm and there is no specific rule to determine the optimal level of liquidity that a firm can maintain for its operations (Sandhar, 2013).

The management of liquidity determines to a great extent the growth of a firm. Inadequate liquidity or excess liquidity may be injurious to the operations of a firm. There is controversy in the subject of management of liquidity period. Larger companies focus on higher sales with fewer on cash basis which leads to greater cash flow problems and seasonality while smaller firms concern is stock management and credit management policies (Janglani, 2013).

2.4.2 Concept of Profitability

Profitability measures efficiency of management in the use of organizational resources in adding value to the business. It may be considered as a relative term measurable in terms of profit and its relation with other components that can directly influence the profit. It is the relationship of income to some balance sheet measure which demonstrates the relative

capacity to earn income on assets. Regardless of the fact that profitability is an essential aspect of business, it may be faced with weakness such as window dressing of the financial transactions and the utilization of different accounting principles (Obida, 2012).

Companies are concerned with their performance in terms of profitability (Jamali, 2007). Profitability indicates how efficiently the management can make profit by utilizing the resources available in the business environment. Ratios of profitability are useful tools in financial ratio analysis (Asad, 2012). These ratios help determine the firm's bottom line. They indicate a firm's overall performance and efficiency. The efficiency of management and profitability are taken to be positively associated: Poor current profitability may threaten current management efficiency and vice versa; poor management efficiency may threaten profitability (Silky, 2013). Profitability is related to the objective of shareholders" wealth maximization, and investment in current assets is made only if an acceptable expected return is obtained. Profitability can also be termed as the rate of return on investment. If there will be an unjustifiable overinvestment in current assets then this would affect negatively the rate of return on investment (vishnani and Shah, 2007. The concept of profitability may be considered in two senses: public profitability and commercial/private profitability. Even though the use of public profitability is based on economists notion of cost and benefits, i.e., the true opportunity cost and the benefits for the society as a whole, appears to be a more appropriate indicator of performance of public and commercial companies.

2.4.3 Liquidity-Profitability Tradeoff

Dong (2010) pointed out that company' profitability and liquidity are affected by working capital management in his study. Pooled data were selected for carrying out the research for the period of 2006-2008 to assess firms listed in stock market of Vietnam. He used the variables that included profitability, cash conversion cycle and its components and the relationship that exists between these variables. The findings were that the relationships among these variables were strongly negative. This indicated that reduction in the profitability occur due to increase in cash conversion cycle. It was also found that if the number of days of account receivable and inventories were shrunk then the profitability will increase numbers of days of accounts receivable and inventories.

Saswata Chatterjee (2010) was concerned on the importance of current assets in the successful running of any business. It poses direct impacts on the profitability liquidity. It was observed in business that most of the organizations increase the margin for the profits and losses because this act decreases the size of working capital relative to sales. However if the organization wants to increase or improve its liquidity, then it has to increase its working capital. In the response of this policy the company has to decrease its sales and therefore the profitability will be affected due to this action. For this objective, 30 United Kingdom based firms were selected which were listed in the London Stock exchange. The data covered a period of three years from 2006 to 2008. The research analyzed the impact of the liquidity on the profitability. The dimensions of liquidity management included in this research were quick ratios, current ratios, cash conversion cycle, average days of payment, inventory turnover, and average collection period. The research found that a shorter conversion cycle was linked to better performance of the companies. Garcia-Teruel and Martinez-Salano (2004) examined the effect of liquidity on profitability using a sample of 8872 small and medium size Spanish companies and found that a shorter cash conversion cycle can improve the company's profitability.

Mahmood and Qayyum, (2010) reported that to increase profitability of a firm and ensuring enough liquidity to meet short term liabilities as they fall due are two main goals of liquidity management.

Eljelly (2004) studied the relationship between liquidity and profitability by using regression correlation analysis. He found that the cash conversion cycle was of more importance as a measure of liquidity than the current ratio that impacts profitability. Raheman (2007) examined the effect of different variables of liquidity management including current ratio, quick ratio, cash ratio, the receivables collection period, inventory turnover in days, payables payment period, cash conversion cycle on the net operating profitability of Pakistani companies. By using Pearson's correlation and regression analysis he found a strong negative relationship between cash conversion cycle and profitability. He also noted that as the cash conversion cycle increases, it leads to reduction in profitability of the company and managers can create a positive value for the shareholders by minimizing the cash conversion cycle.

Gill, Biger, and Mathur (2010) examined 88 companies of Network. The study covered three years from 2005 to 2007.To establish the relationship of profitability with liquidity management, they considered independent variables as accounts receivables, accounts payables, cash conversion cycle and inventory while dependent variable was gross operating profit. The regression analysis was utilized to carry out the study. They concluded that if the collection period of accounts receivable is greater, then profitability will decrease.

Izadinia and Taki (2010) examined the impact of liquidity management on profitability potential of firms listed in Tehran Stock Exchange during the period of 2001-2008. In their research, the dependent variable included, return on total assets considered as measure of profitability potential. The findings denoted that there is a significant negative relationship between return on assets with cash conversion cycle which is a factor that influence the level of liquidity in an organization. They also stated that high investment in inventory and accounts receivable will lead to a decreased profitability of the firms.

An organization in order to remain in business and sustain its operations as a going concern must remain liquid and meet its compulsions as and when they become due. Even though organizations traditionally are focused on long term capital budgeting and capital structure, the recent trend is that many of them across different industries focus on liquidity management efficiency (Barad, 2010). When there is a poor liquidity management, cash may be unnecessarily tied up in idle assets. This will decrease liquidity of the organization and it will not be in a position to invest in productive assets like plant and machinery. The profitability of the organization will also be affected (Panigrahi, 2013).

Singh and Pandey (2008) proposed that, for the successful activities of any business organization, fixed and current assets play a key role, and that the management of liquidity is important as it has a direct influence on liquidity and profitability. They examined the liquidity management elements and found a significant impact of liquidity management on profitability. Kevin and Young (2009) took a hard look at the way organization manages its funds. They reported that a lot of capital tied up in receivables and inventory could be turned into cash by challenging the liquidity management practices and policies of the organization.

2.5 Chapter Summary

Chapter Two looked at the literature review on liquidity management and profitability of manufacturing companies. Literature was examined on measures of liquidity, factors that influence liquidity requirement and relationship between liquidity and profitability. The following chapter that is chapter three deals with research methodology that was used in this study particularly the research design, the population, research procedures, data collection and analysis.

CHAPTER THREE

3.0 RESEARCH METHODOLGY

3.1 Introduction

This chapter presents the research methodology that was used in this study**.** Section 3.2 discusses the research design, section 3.3 the population to be studied, sample and sampling techniques are identified. Section 3.4 is data collection methods, section 3.5 is research procedures and section 3.6 is the data analysis. Section 3.7 summarizes the chapter.

3.2 Research Design

Research design is concerned with producing a plan that guides the research process (Wilson, 2010). Blumberg (2005) also highlighted the fact that an essential part of research design is that of a time-based plan which constitute longitudinal and cross sectional research design.

According to Cooper and Schindler (2008), research design is ''the blueprint for the collection, measurement and analysis of data,'' but warn that it is a wide-ranging concept. The research design is the strategy or plan which is used to acquire participants or subjects, and how to collect what type of data from them, in order to arrive at conclusions about the initial research question. Research design sets the scope of the study specifying whether it needs to be descriptive, explanatory (or causal) or predictive.

This study applied a descriptive research design. According to Cooper and Schindler (2008), a descriptive study tries to discover answers to the questions who, what, when, where and sometimes, how. Descriptive research is used when the researcher attempts to describe or define a subject often by creating a profile of a group of problems, people or events. The study used secondary data that was obtained from financial statements of cement manufacturing companies listed on Nairobi Securities Exchange.

This approach helped the researcher to gain knowledge about the relationship between liquidity and profitability of a cement manufacturing firm in Kenya. As the study needed historical financial data, which are from corporate reports, accessing publicly available data was assumed as suitable method for the accuracy of the data. In this research the dependent

variable is defined as the profitability of the cement manufacturing companies. The independent variable is liquidity which was measured in terms of financial ratios.

3.3 Population and Sampling Design

3.3.1 Population

Defining a population is not always straightforward; it largely depends on the research questions and the context of the study. Wilson (2010) contends that definition of population should establish the types of cases that compose the population of interest such as individuals, firms, households and the like. In this view, the population is a clearly defined group of research subjects that is being sampled, which implies the entire set of cases from which the sample is drawn. Consistently, Cooper and Schindler (2011) give a more comprehensive definition of the population and define population as "the total collection of elements, about which we wish to make some statistical inferences". The population of interest in this study consisted of three cement manufacturing companies and was obtained from Nairobi Security Exchange.

3.3.2 Sampling Design

3.3.2.1 Sampling Frame

The literature shows that sampling frame is a reflection of population. It is a complete list of the population of interest in the study area. This is not necessarily the complete population of the country or area being studied, but is restricted to the eligible population. Cooper and Schindler (2011) noted that the sample frame is the list of cases from which the sample is actually drawn. In this case the sampling frame must be representative of the population in terms of the characteristics under investigation. The sample frame for this study included cement manufacturing firms listed on Nairobi Stock Exchange.

3.3.2.2 Sampling Techniques

Sampling is the part of statistical practice concerned with taking up a subset of cases from a chosen sample frame or entire population of individuals intended to yield some knowledge about the population of interest. Samples can be used to make inference about a population or to make generalizations in relation to existing theory (Tabachnick and Fidell, 2007). Different studies rarely survey the entire population for at least three reasons: the cost is too

high, it is a time consuming exercise, and the dynamic nature of the population of which the individuals make up, may change over time (Wilson, 2010). Some of the clearly feasible advantages of sampling are lower cost, faster data collection, and since the data set is smaller, it is possible to ensure homogeneity and improve the accuracy of the data (Cooper and Schindler, 2011).

There are several alternative procedures of taking a sample from a population or sample frame. Basically, the two broad types of sampling are the probability (random) and non-probability (non-random) sampling (Wilson, 2010). The probability sampling allows the employment of tests of statistical significances that permit inferences to be made about the population from which the sample was selected (Bryman and Bell, 2007; Tabachnick and Fidell, 2007). Moreover, the probability sampling means that every case in the population or in the sampling frame has an equal chance of being included in the sample and it has the greatest freedom from bias although it may represent the most costly sample in terms of time and energy for a given level of sampling error (Zikmund, 2003). There are several different types of probability sampling techniques such as simple randomly sampling, systematic sampling, stratified random sampling, cluster sampling and multi-stage sampling (Wilson, 2010). However this study adopts a quantitative methodology in view of the nature of the variables used for analyses. There are only three cement companies listed on Nairobi Securities Exchange. Hence a census research method was carried out purposively using these three listed cement manufacturing companies.

3.3.2.3 Sample Size
Different scholars indicate different procedures to determine sample size. Blumberg, Cooper and Schindler (2008) indicate that the sample size can be dictated by considering the cost implied to collect data, greater accuracy and the speed required for data collection. However, Sekaran (2006) argues that the sample size is governed by the extent of precision and confidence desired, but concludes that the eventual choice is usually a trade-off between confidence and precision. This view-point is supported by Cooper and Schindler (2011) who recommend that since researchers can never be 100 percent certain that a sample reflects its population; they must decide how much precision they need and in making this decision, they must consider at least four factors: the confidence needed in data, the margin of error

that can be tolerated, the types of analysis to be performed, the level of variability in the population on the characteristic of interest.

In this study, a sample size is determined after considering accessibility, convenience, cost and availability of the information. For the objective of this study, a list of three cement companies listed on Nairobi Securities Exchange was purposefully selected.

3.4 Data Collection Methods

Malhotra and Birks (2006) distinguish between primary and secondary data collection and consider primary data as information collected by the researcher in an effort to address or resolve the specific problem they identified for the research project. They define secondary data as information that has been collected for other purposes.

This study adopted a quantitative methodology in view of the nature of the variables used for analyses. The study used secondary data to achieve the objective of the research. The secondary data was extracted from the annual financial statements of the sampled companies using the websites.

3.5 Research Procedures

The study used three listed cement companies of Kenyan Cement Industry namely Athi River Mining Limited (ARML), Bamburi Cement Limited (BMBC), East African Portland Cement Company Limited (EAPC).The data required for this study has been collected from the published annual reports of the selected listed companies and website. Data was collected using data collection sheet. Data was analyzed through descriptive statistics, regression and correlation analysis to find out relationship between liquidity and profitability. Listed companies were appropriate for the study since they are public entities operating under strict governance regulations, making their financial and accounting disclosures largely reliable. The research covered a period of five years from 2008 to 2012.The techniques used in this research were ratio analysis, percentage method, mean, standard deviation, coefficient of variation, correlation coefficient and regression coefficient .

3.6 Data Analysis Method

Importantly, the data should be accurate, complete and suitable for further analysis (Sekaran and Bougie, 2010).Researcher has to record and arrange the data and then apply various descriptive and inferential statistics or econometrics concepts to explain the data and draw inferences (Saunders, 2009).

According to Lind (2008), researchers can use number of descriptive statistics concepts to explain data such as frequency distributions or cumulative frequency distributions, frequency polygons, histograms, various types of charts like bar charts and pie charts, scatter diagrams, box plots etc.

Pearson Coefficient of Correlation is the most commonly used measure of finding correlation between two or more variables. A correlation exists between two variables when one of them is related to the other in some way. The value of coefficient of correlation r always lies between -1 and +1 inclusive. If it lies near to -1, it shows a strong negative correlation but if it lies near to +1, it shows a strong positive correlation (Rubin, 2007).

Regression models can be used in an explanatory study where researcher is interested in predicting the value of dependent variable based on the value of independent variable. Researcher can use simple linear regression, if the number of independent variables in the study is only one while in case of more than one independent variables in the study, researcher has to make use of multiple regression models (Wagner, 2007).

In this study, a total number of three successful cement manufacturing companies were identified during the year of determination (2008-2012).The name of successful firms are Athi River Mining Limited (ARML), Bamburi Cement Limited (BMBC), East African Portland Cement Company Limited (EAPC).Profitability of selected companies was considered as dependent variable. The independent variables are current ratio, quick ratio and cash conversion cycle, which were taken as the main independent variables to test their impact on return on capital employed. The dependent variable in the study is corporate profitability which is measured here by the Return on Capital Employed (ROCE) and is

defined as ROCE=Profit before Interest and Tax (PBIT)/Capital Employed. Multiple regression analysis used the following model:

ROCE = £ + ß1CR + ß2 QR + ß3 CCC

Where £, ß1, ß2, and ß3 are the parameters of the ROCE

Current Ratio (CR)=Current Assets/Current Liabilities

Quick Ratio= (Cash&Equivalents+Short term Investments+Accounts receivables)/Current Liabilities

Cash Conversion Cycle = Receivables Collection Period + Inventory Turnover Period – Payables deferral Period

The cash conversion cycle is calculated thus:

Cash Conversion Cycle = Receivables Collection Period + Inventory Turnover Period – Payables payment period

The variables of cash conversion cycle were defined as the following:

Receivables Collection Period = (Accounts receivables/Sales)*365

Inventory Turnover Period = (Inventories/Cost of sales) *365

Payables payment period =(Accounts Payables/Cost of Goods Sold)*365.

Cash conversion cycle may be either negative or positive. A positive cash conversion cycle shows the number of days a firm must borrow or tie up capital while waiting for payment from customers. A negative cash conversion cycle shows the number of days a firm has received cash from sales before it must pay its creditors (Hutchison, 2007).The objective of every manufacturing firm is having low cash conversion cycle, preferably negative. Because the shorter the cash conversion cycle, the more efficient the firm in managing the cash flow.

A regression analysis of the factors that affect liquidity management in cement companies was used to investigate the impact of cash conversion cycle on current ratio which is a measure of liquidity. Cash conversion cycle was seen as one of the factors that influence

liquidity requirement of a firm. Current ratio is taken as dependent variable influenced by cash conversion cycle which is taken as independent variable and represents operating decisions related to the level of current assets and liabilities.

Descriptive techniques are used. Quantitative data analysis is performed by descriptive statistics where SPSS and Microsoft excel were used to obtain percentages, tabulations and measures of central tendency. Tables are drawn to represent the data collected for ease understanding and analysis. The data is analyzed through the regression analysis to find out the impact of liquidity on profitability and the impact of cash conversion cycle on current ratio. Multiple correlation analysis was used to find out the relationship between profitability and liquidity.

3.7 Chapter Summary

This chapter provided a summary of the research methodology that was used in this study. The chapter described the research design, population and sampling design. Data collection method and data analysis have been mentioned in this chapter. Results and findings will be discussed in the next chapter, which is chapter four.

CHAPTER FOUR

4.0 RESULTS AND FINDINGS

4.1 Introduction

This chapter presents the research findings and analysis of the results. The findings are presented based on the research questions as mentioned in chapter one. The data used in this study was extracted from the financial statements of selected firms from the Company Annual Report accessible from the Nairobi Securities Exchange database. Descriptive statistics was presented in section 4.2, Section 4.3 examined measures of liquidity management. Section 4.4 addressed factors influencing liquidity management and relationship between liquidity and profitability analysis was addressed in section 4.5. Multiple regressions and multiple correlations were used to analyze and interpret the results.

4.2 Description of the Companies

Bamburi Cement Limited (BMBC) was established in 1951 with first plant located in Mombasa starting cement manufacture in 1954. The company was listed on the Nairobi Securities Exchange in September 1970.BMBC is the largest cement producer (KNBS, 2012).BMBC shareholders are Old Mutual Life Insurance Company, key local institutions such as the National Social Security Fund (NSSF), Kenya Reinsurance Corporation, Fincem Holding Limited and Kencem Holding Limited through Lafarge Group (the world largest cement manufacturer) owns 58.6% of BMBC.

Athi River Mining Limited (ARML) started its activities in 1974 and was listed on the Nairobi Stock Securities in 1997. The company is currently the third leading cement manufacturer in Kenya in terms of market share .The top ten shareholders of ARML largely include institutions which have a combined shareholding of 64 %.

East Africa Portland Cement Company Limited (EAPC) is the oldest cement producer in Kenya and was established in 1933.EAPC commenced its activities as a trading company, importing cement for early construction work in East Africa in 1956 built its first factory in Athi River. The structure of EAPC's shareholding is largely institutionally, with the

company's top ten shareholders owning a combined 96.1 percent shares in the company. The treasury and NSSF are the company's shareholders holding 27 percent and 25.3 percent respectively.

4.2.1 Turnover

Table 4.1: Turnover in Kshs '000'

Company Name	2008	2009	2010	2011	2012	Growth rate
ARML	4,619,473	5,144,822	5,964,670	8,180,992	11,400,569	147%
BMBC	27,467,000	29,994,000	28,075,000	35,884,000	37,491,000	36%
EAPC	7,204,479	8,101,377	9,408,711	10,172,140	8,614,806	20%

Table 4.1 shows that from 2008 to 2012, the turnover of the companies in study has shown a growth rate of around 147 percent, 36 percent and 20 percent for Athi River Mining Limited, Bamburi Cement Limited and EAPC respectively .The turnover of ARML Company showed a steady fast growth than other companies. From the above table, it is clear that ARML controls the market in term of turnover.

4.2.2 Profit after Tax

Table 4.2: Profit after Tax in Kshs '000'

Company Name	2008	2009	2010	2011	2012	Growth rate
ARML	503,454	645,774	1,075,268	1,150,498	1,245,638	147%
BMBC	3412,000	6,970,000	5,299,000	5,859,000	4,882,000	43%
EAPC	536,652	1,834,054	(284,051)	1,717	(821,486)	-253%

Table 4.2 shows a growth rate of 147 percent for ARML and 43 percent for BMBC from 2008 to 2012. The EAPC has shown a negative growth of 253 percent from 2008 to 2012.From the above table, it is clear that ARML is leading in term of profitability during the period under study.

4.2.4 Total Assets

Table 4.3: Total Assets in Kshs'000'

Company Name	2008	2009	2010	2011	2012	Growth rate
ARML	6,352,478	12,141,091	16,564,900	20,515,940	26,953,100	324%
BMBC	28,215,000	32,112,000	33,306,000	33,502,000	43,038,000	53%
EAPC	9,073,345	12,035,963	12,037,565	13,530,871	14,091,006	55%

Table 4.3 shows that the growth rate of total assets was 324 percent in case of ARML company which is more than three times of the growth rate of assets in last five years. The growth rate of total assets was 53 percent for BMBC and 55 percent for EAPC. This also showed a steady growth of these companies for the period of the study. From the above table, it is clear that ARML is leading in terms of total assets during the period under study.

4.2.5 Total Liabilities

Table 4.4: Total Liabilities in Kshs'000'

Company Name	2008	2009	2010	2011	2012	Growth rate
ARML	4,224,935	8,012,161	11,638,041	14,413,414	19,832,580	369%
BMBC	11,613,000	11,171,000	11,680,000	9,328,000	12,177,000	5%
EAPC	5,046,596	5,933,711	6,336,364	7,827,953	9,251,616	83%

Table 4.4 shows that the growth rate of total liabilities of Athi River Mining Limited was 369 percent which is more than three times of the growth of liabilities from 2008 to 2012. Bamburi Cement showed a growth rate of 5 percent. The growth rate of EAPC was 83 percent from 2008 to 2012.

4.2.6 Shareholders Funds

Table 4.5: Shareholders Funds in Kshs '000'

Company Name	2008	2009	2010	2011	2012	Growth rate
ARML	2,127,531	4,128,930	4,945,425	5,998,657	7,013,771	230%
BMBC	16,602,000	20,941,000	21,626,000	24,174,000	30,861,000	86%
EAPC	4,026,749	6,102,252	5,701,201	5,702,918	4,839,390	20%

Table 4.5 shows that from 2008 to 2012, the shareholders' funds have shown a growth rate of 230 percent for Athi River Mining Limited Company, which is more than twice the growth rate of equity during the study period. The equity growth of Bamburi Cement was 86 percent. The equity growth of EAPC was 20 percent during the study period.

4.3 Descriptive Statistics.

Trends in the liquidity and profitability ratios from 2008 to 2012 are presented in table 4.6.

Table 4.6: Trends in the Liquidity and Profitability Ratios (2008-2012)

Year	Current Ratio	Return on Capital Employed	Quick Ratio	Cash Conversion Cycle(in days)
2008	1.71	25%	1.02	52
2009	1.89	20%	1.32	42
2010	1.69	14%	1.2	26
2011	1.66	16%	1.02	33
2012	1.58	12%	0.89	46

The average current ratio of selected companies is explained in table 4.6.The ratio ranged between 1.71 and 1.58 with a decreasing trend during the study period except in year 2009. On average, the ratio is below the standard conventional rule of 2:1 which means that the selected companies did not maintain the standard of 2:1

The average quick ratio of selected companies is also manifested in the table 4.6**.** The ratio showed progressive and fluctuating trend during the study period. The ratio showed that during the study period selected companies maintained the quick ratio according to the norms except in 2012, where the average ratio of 0.89 was below the standard conventional rule of 1:1.

The Cash Conversion Cycle (CCC) of selected firms was shown in table 4.6. The CCC was on decreasing trend during the whole period under study. This showed that selected firms were better managing the length of time between when they made payment and when they received cash inflow. The Return on Capital Employed (ROCE) of selected firms was depicted in table 4.6.The results showed a decreasing trend in profitability during the study period.

4.4 Measures of Liquidity Management

4.4.1 Liquidity Position based on Current Ratio

Descriptive statistics are depicted in Table 4.7.

Table 4.7: Descriptive Statistics based on Current Ratio

	ARML	**BMBC**	**EAPC**	**Computed industry average/Standard**
Mean	1.17	2.22	1.7	2:1
Standard Deviation	0.35	0.42	0.4	0.39
Coefficient of Variation (%)	0.3	0.18	0.25	0.24

Table 4.7 shows that current ratio of BMBC during the period of study is satisfactory as its mean value is 2.22 which is slightly higher than the standard conventional rule of 2:1 which is taken as yardstick. This indicates the company is able to meet its matured current obligations in every year under the study period. This ratio in case of ARML and EAPC is 1.17 and 1.7 respectively. This ratio is poor because it is below the standard conventional rule of 2:1 throughout the study period. This shows that they have not been able to meet their short term obligations over the study period.

From the analysis, coefficient of variation of current ratio of industry average is 24 percent. Coefficient of variation of current ratio is 18 percent in case of BMBC, which is below the industry average. In the matter of liquidity management, it shows consistency during the study period of this firm. Coefficient of variation of current ratio is higher than industry average and as follows 30 percent for ARML and 25 percent for EAP, which shows less consistency over the study period of these firms. Higher variability in the current ratio shows poor or less efficient management of liquidity as much as the excess funds could have otherwise been invested thereby enabling the company to grow.

4.4.2 Liquidity Position based on Quick Ratio

Descriptive statistics are portrayed in table 4.8.

Table 4.8:Descriptive Statistics based on Quick Ratio.

	ARML	BMBC	EAPC	Standard /Computed industry average
Mean	0.79	1.47	1	1:1
Standard Deviation	0.35	0.3	0.5	0.38
Coefficient of Variation (%)	0.44	0.2	0.45	0.36

Table 4.8 shows unsatisfactory liquidity position in ARML with an average of 0.79 and it is below the standard conventional rule of 1:1 throughout the study period except only in 2010 where it was 1.4.

Quick ratio of BMBC is very satisfactory with an average of 1.47 over the study period; because it is higher than the conventional standard rule of 1:1, which is taken as benchmark. Liquid ratio in case of EAPC is satisfactory, an average of 1 compared with the standard conventional rule throughout the study period. This shows that they met their current obligations in every year during the study period.

Coefficients of variation of quick ratio of ARML and EAPC are 44 % and 45% respectively and are higher than the average of 36%. It shows less consistency over the study period in

these firms. In case of BMBC, coefficient of variation of quick ratio is twenty percent and is lower than computed industry average. In the matter of liquidity management, it shows consistency in this firm over the study period because it is below the average coefficient of variation of 36%.

4.5 Factors that Affect Liquidity Requirement of a Cement Manufacturing Firm

4.5.1 Liquidity Position based on Age of Inventory

Descriptive statistics is tabulated in Table 4.9

Table 4.9: Descriptive Statistics based on Age of Inventory

	ARML	BMBC	EAPC	Computed industry average
Mean	109	77.64	68.9	85.18
Standard Deviation	22.78	15.42	13.1	17.1
Coefficient of Variation (%)	0.21	0.20	0.19	0.20
Maximum	148	101	83	111
Minimum	93	61	52	69

As per Table 4.9, age of inventory shows very satisfactory trend in case of BMBC and EAPC under the study as compared to grand average of 85.18. Age of inventory in case of ARML is higher than the computed average throughout the study period due to inefficient inventory control policy.

Coefficient of variation of the age of inventory of BMBC is 20% and EAPC 19% which shows consistency in the case of liquidity management because the computed coefficient of variation is 20%. Coefficient of variation in case of ARML is 21 percent .This indicates less consistency in liquidity management.

4.5.2 Liquidity Position based on Age of Receivables

Descriptive statistics is shown in table 4.10.

Table 4.10: Descriptive Statistics based on Age of Receivables days

	ARML	BMBC	EAPC	Computed industry average
Mean	74	21.2	28.4	41.2
Standard Deviation	8.38	5.46	4.4	6.08
Coefficient of Variation (%)	0.11	0.257	0.155	0.174
Maximum	83	28	79	63
Minimum	62	15	35	37

Table 4.10 shows that the age of receivables fluctuates between 62 days to 83 days with an average of 74 days for ARML. This shows that the receivable collection period was unsatisfactory. This ratio is satisfactory in case of BMBC and EAPC because its average during period of study comes to 21.2 days and 28.4 days respectively.

Table 4.10 shows perfect consistency in case of these companies because in the industry, as a whole, coefficient of variation is 17.4%.While coefficient of variation of the age of receivables of ARML and EAPC is 11% and 15.5% respectively. There is consistency in case of these firms. In case of BMBC, the coefficient of variation is 25.7% which is greater than the coefficient of variation of the whole industry. There is less consistency in case of this firm.

4.5.3 Liquidity Position based on Age of Payables:

Age of creditors of operating three cement companies is furnished in table 4.11.

Table 4.11: Descriptive Statistics based on Age of Payables

	ARML	BMBC	EAPC	Computed industry average
Mean	105	80.22	74.1	86.4
Standard Deviation	14.24	16.35	3.3	11.3
Coefficient of Variation (%)	0.14	0.2	0.044	0.1
Maximum	125	103	71	100
Minimum	90	57	4	50

Table 4.11 shows that average age of creditors in case of ARML is very high (105 days), which indicates better management of the liquidity. Table 4.11 also exposed that BMBC and EAPC have shortened period. It indicates very satisfactory short-term liquidity for ARML and poor short-term liquidity for BMBC and EAPC.

Coefficient of variation of age of creditors of EAPC is 4.4% lower than whole industry average of 10%. It is an indication of consistency in this firm. In liquidity management perspective, it shows more consistency in this firm during the study period because it is lower than the industry average which is ten percent. There is lower variability in the age of creditors indicating efficient management of payables payment period.

ARML and BMBC show coefficient of variation of payables of 14% and 20 % respectively. These coefficients are higher than whole industry average. In liquidity management perspective, it is an indication of less consistency in these firms over the study period because it is higher than the coefficient of variation of the industry which is 10 percent. It is clear that there is a higher variability in the age of payables indicating poor payables management.

4.5.4 Impact of Cash Conversion Cycle on Liquidity measured by Current Ratio
4.5.4.1 Impact of Cash Conversion Cycle on Current Ratio in ARML
Results of regression analysis have been depicted in Table 4.13

Table 4.12:.Summary of CR and CCC of ARML

Year	Current Ratio	Cash Conversion Cycle
2008	1.02	75
2009	1.03	89
2010	1.75	78
2011	0.84	51
2012	1.22	96

Table 4.12 shows that the current ratio of ARML was below the ideal rule of thumb 2:1.This indicated an unsatisfactory liquidity position of the company during the years of study. Table 4.12 also shows that cash conversion cycle of ARML was on increasing trend from 75 days in 2008 to 96 days in 2012 except in 2011 where it was 51 days. This indicated that the company was taking longer to recover cash.

Table 4.13: Model summary of dependent variable (CR)

Model	R	R Square	Adjusted R square	Standard Error of the estimate
1	0.36	0.13	-0.16	0.38

Table 4.13 shows that the value of R^2 is 13percent.This indicates that about 13% of variation in current ratio is explained by the independent variable included in the model which is cash conversion cycle. This result indicates that cash conversion cycle influences the level of current ratio.

4.5.4.2 Impact of Cash Conversion Cycle on Current Ratio in BMBC

Results of regression analysis have been depicted in Table 4.15

Table 4.14:Summary of CR and CCC of BMBC

Year	Current Ratio	Cash Conversion Cycle
2008	1.84	47
2009	2.58	31
2010	1.72	-12
2011	2.62	18
2012	2.35	9

Table 4.14 shows that the current ratio of BMBC was on steady growth from 1.84 in 2008 to 2.35 in 2012 except in 2010 where it was 1.72.For the last two years of the study period, the current ratio of the company was higher than the ideal rule of thumb 2:1.This indicated a

satisfactory liquidity position of the company. Table 4.14 also shows that cash conversion cycle of BMBC was on decreasing trend from 47 days in 2008 to 9 days in 2012. This indicated that the company was shortening the period to recover cash. In 2010, the company received cash from sales 12 days before it paid its creditors.

Table 4.15: Model summary of dependent variable (CR)

Model	R	R Square	Adjusted R square	Standard Error of the estimate
1	0.20	0.04	-0.28	0.47

Table 4.15 shows that the value of R^2 is 4%.This indicates that about 4% of variation in current ratio is explained by the independent variable included in the model which is cash conversion cycle. This result indicates that cash conversion cycle influences the level of current ratio.

4.5.4.3 Impact of Cash Conversion Cycle on Current Ratio in EAPC

Results of regression analysis have been depicted in Table 4.17

Table 4.16: Summary of CR and CCC of EAPC

Year	Current ratio	Cash Conversion Cycle
2008	2.3	35
2009	2.1	4
2010	1.6	13
2011	1.5	31
2012	1.2	34

Table 4.16 shows that the current ratio of EAPC was on decreasing trend during the period of the study. This indicates that the liquidity position of the company has been degrading over the years. Table 4.16 also shows that the cash conversion cycle of the company was on

decreasing trend during the study period. This indicated that the company was better managing the length of time when it made payment and when it received cash inflow.

Table 4.17: Model summary of dependent variable (CR)

Model	R	R Square	Adjusted R square	Standard Error of the estimate
1	0.26	0.07	-0.24	0.50

Table 4.17 shows that the value of R^2 is 7%.This indicates that about 7% of variation in current ratio is explained by the independent variable included in the model which is cash conversion cycle. This result indicates that cash conversion cycle influences the level of current ratio.

4.6 Relationship between Liquidity and Profitability Analysis
4.6.1 Impact of Liquidity Indicators on Profitability of ARML.

Multiple Correlation and Multiple Regression analysis of ARML have been depicted in Table 4.19 and table 4.20

Table 4.18: Summary of financial ratios of ARML

Year	Return on Capital Employed	Current Ratio	Quick Ratio	Cash Conversion Cycle
2008	0.21	1.02	0.6	75
2009	0.12	1.03	0.71	89
2010	0.1	1.75	1.4	78
2011	0.1	0.84	0.52	51
2012	0.11	1.22	0.71	96

Table 4.18 shows that the return on capital employed of ARML was on decreasing trend. This indicates a decreasing trend in profitability of the company during the study period. The current ratio of the company was below the standard conventional rule of 2:1 which means

that the liquidity position of the company was unsatisfactory. Quick ratio of the company was unsatisfactory during the study period except in 2010 where it was higher than the ideal rule of thumb i.e 1:1.The cash conversion cycle of ARML was on increasing trend from 75 days in 2008 to 96 days in 2012 except in 2011 where it was 51 days. This indicated that the company was taking longer to recover cash.

Table 4.19: Model Summary of dependent variable (ROCE)

Model	R	R Square	Adjusted R square	Standard Error of the estimate
1	0.41	0.17	2.32	0.08

Table 4.19 provides R and R^2 values. R value is 0.41 which represents multiple correlations between variables. R^2 value is 0.17 and indicates how much of the dependent variable (ROCE) can be explained by the independent variables (CR,QR, CCC).This shows that there is a relationship between return on capital employed and current ratio, quick ratio and cash conversion cycle.

Table 4.20 ANOVA of dependent variable (ROCE)

Model	Df	SS	MS	F	Sig
Regression	3	0.001478359	0.000492786	0.06842694	0.968487379
Residual	1	0.007201641	0.007201641		
Total	4	0.00868			

Sum of squares (SS).Mean Square (MS)

The overall significance of the model was assessed by Analysis of Variance or ANOVA (Table 4.20).The results indicate that our model is statistically insignificant as exemplified in the F value of 0.068 and a P-value superior to 5%.

Table 4.21: Regression coefficients of dependent variable (ROCE)

Model	Coefficients	Standard Error	t Stat	P-value
Intercept	0.115534241	0.243716383	0.474052008	0.71818461
Current Ratio	0.135125431	0.670811445	0.201435787	0.87345543
Quick Ratio	-0.17658794	0.639709531	-0.27604395	0.82853505
Cash Conversion Cycle	-0.0000867	0.003234051	-0.02682709	0.98292544

The coefficients of the variables shown in table 4.21 indicate that all the predictor variables make contribution to the variation in the criterion variable, albeit, at varying degrees of significance. For instance, CR makes the highest contribution to the prediction of the ROCE with a coefficient of 0.135.

The relationship between the dependent variable, ROCE and the independent variables, and their impact on profitability is shown in Table 4.21.

Table 4.21 shows that an increase in CR by one unit; the ROCE increased by 0.135 units that were statistically insignificant. Table 4.21 also shows that when QR increased by one unit, the ROCE decreased by 0.176 units, which was not statistically significant.

The relationship between CCC and ROCE is insignificantly negative. When CCC increases, the ROCE decreases. The implication of this result is that if the influence of the other independent variables is controlled, the CCC will bear a negative relationship with ROCE, even though it is not significant.

It is shown in table 4.19 that the multiple correlation coefficients between the dependent variable ROCE and the independent variables CR, QR, and CCC was 0.413. It indicates that the profitability was moderately responded by its CR, QR and CCC. The value of R square is

0.17. This means that 17 percent of variation in ROCE was explained by the independent variables CCC, CR and QR

4.6.2 Impact of Liquidity Indicators on Profitability of BMBC

Table 4.23 and table 4.25 show multiple regressions and multiple correlations analysis of BMBC.

Table 4.22: Summary of financial ratios for BMBC

Year	Return on Capital Employed	Current Ratio	Quick Ratio	Cash Conversion Cycle
2008	0.36	1.84	1.08	47
2009	0.35	2.58	1.71	31
2010	0.3	1.72	1.25	-12
2011	0.31	2.62	1.78	18
2012	0.21	2.35	1.55	9

Table 4.22 shows a decreasing trend in profitability of BMBC during the study period. Liquidity position of the company was satisfactory as it is shown by the increasing trend of quick ratio which was higher than the standard conventional rule of 1:1. Cash conversion cycle was on decreasing trend and shows that the company was better managing the length of time between when it made payment and when it received cash.

Table 4.23: Model summary of dependent variable (ROCE)

Model	R	R Square	Adjusted R square	Standard Error of the estimate
1	0.999869	0.999738	0.99895	0.001925

Predictor: CR, QR, CCC. Dependent Variable: ROCE

Table 4.23 shows that R value is 0.99 and shows a high degree of correlation between variables.R² is 0.99 and indicates that 99% of variation in ROCE is explained by the independent variables CR, QR and CCC.

Table 4.24: ANOVA of dependent variable (ROCE)

Model	Df	SS	MS	F	Sig
Regression	3	0.014116294	0.004705431	1269.643469	0.020627
Residual	1	3.70610444	3.70610444		
Total	4	0.01412			

Table 4.24 assesses the overall significance of the model. The results indicate that the model is statistically significant as exemplified in the F value of 1269.6 and a P-value below to 5 %.

Table 4.25: Regression coefficients of dependent variable (ROCE)

Model	Coefficients	Standard Error	t Stat	P-value
Intercept	0.443821	0.005524275	80.34017231	0.007923644
Current Ratio	-1.03924	0.021536076	-48.2557550	0.013190731
Quick Ratio	1.383215	0.029529677	46.8415168	0.013588866
Cash Conversion Cycle	0.007124	0.000123163	57.84390274	0.011004727

The coefficients of the variables shown in table 4.25 indicate that all the predictor variables make contribution to the variation in the criterion variable, albeit, at varying degrees of

significance. For instance, QR makes the highest contribution to the prediction of the ROCE with a coefficient of 1.38.Table 4.25 shows the strength of relationship between the dependent variable, ROCE and all the independent variables taken together and the impact of these independent variables on the profitability of BMBC.

It is shown in table 4.25 that if CR increased by one unit; the ROCE decreased by 1.039 units that were statistically significant at 1% level. When quick ratio increased by one unit, the return on capital employed increased by 1.383 units, which was statistically significant at 1 % level.

The relationship between CCC and ROCE is also positive and statistically significant as exemplified in P-values of one percent. The implication is that ROCE and CCC are directly related. In other words the shorter the CCC, the better the ROCE and vice- versa.

The value of multiple correlation coefficients between the dependent variable ROCE and the independent variables is 0.99, which is a very good fit. It shows that 99% of profitability was highly influenced by CR, CCC and QR. The value of R square is 0. 999. This means that 99.9 per cent of variation in ROCE was explained by the variation in CCC, CR and QR.

4.6.3 Impact of Liquidity Indicators on Profitability of EAPC

Table 4.21 and table 4.23 show multiple regressions and multiple correlations analysis of EAPC.

Table 4.26: Summary of financial ratios of EAPC (2008-2012)

Year	Return on Capital Employed	Current Ratio	Quick Ratio	Cash Conversion Cycle
2008	0.187	2.3	1.38	35
2009	0.138	2.1	1.55	4
2010	0.09	1.6	0.94	13
2011	0.057	1.5	0.77	31
2012	0.052	1.2	0.42	34

Table 4.26 shows that the profitability of EAPC was on decreasing trend during the study period. Both current and quick ratios were on decreasing trend during the study period. This indicated that the liquidity position of the company has been decreasing over the study period. Cash conversion cycle of the company was on decreasing trend during the study period. This indicated that the company was better managing the length of time when it made payment and when it received cash inflow.

Table 4.27: Model Summary of dependent variable (ROCE)

Model	R	R Square	Adjusted R square	Standard Error of the estimate
1	0.992632985	0.985320242	0.941280969	0.013894264

Predictor: CR, QR, CCC. Dependent Variable: ROCE

Table 4.27 shows that R value is 0.99 and shows a high degree of correlation between variables. R^2 is 0.98 and indicates that 98% of variation in ROCE is explained by the independent variables CR,QR and CCC.

Table 4.28: ANOVA of dependent variable (ROCE)

Model	Df	SS	MS	F	Sig
Regression	3	0.012957749	0.004319	22.37367	0.153888
Residual	1	0.000193051	0.000193		
Total	4	0.0131508			

The overall significance of the model was assessed in Table 4.28.The results indicate that our model is statistically insignificant as exemplified in the F value of 22.3 and a P-value that is higher than 5%.

Table 4.29: Regression coefficients of dependent variable (ROCE)

Model	Coefficients	Standard Error	t Stat	P-value
Intercept	-0.21683497	0.066651972	-3.25324	0.189852
Current Ratio	0.38295527	0.165623171	2.312208	0.259865
Quick Ratio	-0.28712787	0.184977877	-1.55223	0.364345
Cash Conversion Cycle	-0.00231341	0.001869269	-1.2376	0.432652

The coefficients of the variables shown in table 4.29 indicate that all the predictor variables make contribution to the variation in dependent variable albeit, at varying degrees of significance. For instance, CR makes the highest contribution to the prediction of the ROCE with a coefficient of 0.38. But the P- values of all the predictor variables indicate insignificant impact on ROCE at 5 percent.

Table 4.29 shows the relationship between the dependent variable, ROCE and the independent variables, CR, QR and CCC and the impact of these independent variables on dependent variable. Table 4.29 shows that when CR increased by one unit, the ROCE increased by 0.383units that was statistically insignificant. The table also shows that when QR increased by one unit, the ROCE decreased by 0.2871 units, which was not statistically significant.

From the table 4.29, the regression coefficient relating CCC to ROCE is -0.00231.The result confirms a negative relationship between cash conversion period and firm profitability.

From the analysis, the multiple correlation coefficients between the dependent variable ROCE and the independent variables CR, QR, and CC is 0.99. It shows that the dependent variable was highly responded by its independent variables. It is also proved by the value of R square that 98 per cent of variation in ROCE was explained by the variation in CCC, CR and QR.

4.7 Chapter Summary

Chapter four provided the study findings on measures of liquidity management and factors that affect liquidity management in listed cement companies on NSE. It also provided the findings on relationship between liquidity and profitability in these companies.

The objective of this study was to examine the liquidity management efficiency and the relationship between liquidity and profitability. The findings of the study revealed that correlation and regression results are significantly positive associated to the profitability of the company.

The next chapter presents a discussion of the findings based on the research questions, the conclusions derived from the findings and recommendations for improvement and further research.

CHAPTER FIVE

5.0 DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the summary of the findings of the study. Section 5.2 presents the summary of the research methodology and research findings, section 5.3 discusses the major research findings related to the objective of the study, section 5.4 presents conclusions on the findings of the study and section 5.5 provides the recommendations for improvement and further research.

5.2 Summary

The main purpose of this present study was to establish liquidity management measures of cement producing companies listed on the Nairobi Securities Exchange (NSE).The study also examined the relationship between liquidity and profitability. The study sought to answer the questions of:

i) What are the measures of liquidity management in listed cement manufacturing firms on NSE?

ii) What are the factors that affect liquidity management of listed cement manufacturing firms on NSE?

iii) Is there any relationship between liquidity and profitability in listed cement manufacturing firms on NSE?

Three Kenyan cement companies listed on Nairobi Securities Exchange have been purposefully selected for the study purpose. The companies are (i) Athi River Mining Limited (ARML) (ii) Bamburi Cement Limited (BMBC) and (iii) East African Portland Cement Company Limited (EAPC).

The study related to a period of five years starting from 2008 and ending to 2012.For the purpose of the study only secondary data have been used. The study was based on the secondary data obtained from the financial statements of the respective companies. During

the analysis in this study, various accounting and statistical tools and techniques were applied. Accounting techniques included ratio analysis, while among statistical techniques the Mean, Standard Deviation, Coefficient of Variation, multiple correlations, multiple regression analysis and coefficient of determination (R^2) were applied. These techniques were used at different places in the light of required analysis.

The measures of liquidity management were examined under the following subsections, liquidity position based on current ratio and liquidity management based on quick ratio. The research findings revealed that the mean values of current ratio was 1.71 which is below the standard conventional rule of 2:1.This indicated that on average the listed cement companies might find difficult to meet their short term maturing obligations. However, with the maximum of 2.22 for the current ratio showed that some of the companies were doing very well liquid wise, as they were not likely to encounter any difficulty in meeting their short term obligations. On an average the quick ratio was 1.09 which was satisfactory compared to the standard conventional rule of 1:1.

Factors that affect liquidity requirement of cement manufacturing firms were examined during this study under the following subsection, liquidity position based on age of inventory, liquidity position based on age of receivables, liquidity position based on payables and impact of cash conversion cycle on level of liquidity measured by current ratio.

The study revealed that age of inventory for BMBC and EAPC was 78 days and 69 days respectively and was very satisfactory compared to industry average of 85 days. These companies showed efficient management of inventory because more frequently the stocks are sold, the lesser amount of money is required to finance the inventory. Compared to industry average, age of inventory of ARML was 109 days and was unsatisfactory .This indicated an inefficient management of inventory. Age of receivables was 21 days and 28 days for BMBC and EAPC respectively and was satisfactory compared to industry average of 41 days. This showed that the companies collected receivables earlier than required.

Age of receivables was 74 days for ARML and was unsatisfactory compared to the industry average. This showed that customers took more time to pay their debts than required.

Age of payables was 105 days and was satisfactory in case of ARML compared to industry average of 86 days. Age of payables was unsatisfactory in case of the remaining companies Age of payables was 80 days for BMBC and 74 days for EAPC.

Regression analysis was carried out to examine the relationship between current ratio and cash conversion cycle. In case of ARML, the results of regression analysis revealed that about 13% of variation in liquidity measured by current ratio was explained by the number of days of cash conversion cycle. During the period of the study, the average current ratio was 1.17 and the average number of days of cash conversion cycle was 78 days while the CCC industry average was 40 days. This showed that the cash conversion cycle was not satisfactory and had a negative impact on current ratio.

In case of BMBC, the results of regression analyses revealed that about 4% of variation in liquidity measured by current ratio was explained by the number of days of cash conversion cycle. During the period of study average current ratio was 2.22 and the average number of days of cash conversion cycle was 19 days while the CCC industry average was 40 days. This showed that the cash conversion cycle was satisfactory and had a positive impact on liquidity measured by current ratio.

In case of EAPC, the findings revealed that about 7% of variation in current ratio was explained by number of days of cash conversion cycle. During the period of study the average current ratio was 1.74 and the average number of days of cash conversion cycle was 23 days while the industry average was 40 days. This showed that the cash conversion cycle was satisfactory and had a positive impact on current ratio.

The study revealed that the cement company listed on NSE generated a mean return on capital employed of about 17% with a minimum of 12% and a maximum of 25%. The investigation using both correlation and regression analysis revealed that liquidity ratios measured by current ratio and quick ratio had a positive relationship with profitability measured by return on capital employed. The findings of this study also revealed that cash conversion cycle had a negative relationship with profitability.

5.3 Discussion

5.3.1 Measures of Liquidity Management

From the analyses, traditional liquidity measures namely current ratio and quick ratio were used as independent variables. This is consistent with the findings of Sayeda T.(2011) who studied Liquidity Management of Cement Industry of Bangladesh using Current Ratio and Quick ratio which are measures of liquidity of a Firm. The computation of these liquidity ratios is also consistent with the findings of Panigrahi (2013) who studied Liquidity Management of Indian Cement Companies using Current Ratio and Quick Ratio as measures of liquidity. According to Panigrahi adequate liquidity and its careful management can make significant difference between the success and failure of a firm. Quick ratio will help know whether can disburse their current debt, exclude to sell any inventory. It's essential for a firm to concern on this because, if they need to sell inventory, they also need a customer to purchase that inventory (Chinmoy, 2009).

Liquidity ratio shows the liquidity management strategy and the higher it is the more liquid is an organization (Bolek, 2012).Some current assets are either temporary or permanent. The temporary part of current assets may be financed by short term liabilities while the permanent part may be financed by equity. The more equity is utilized to finance temporary current assets the more relaxed the liquidity management policy and the higher the level of current ratio. When permanent current assets are financed by short term liabilities, then the CR is lower.

Liquidity ratios assess a company's capability to meet the payment obligations by comparing the cash and near-cash with the payment obligations. If the coverage of the latter by the former is not sufficient, it shows that the company might face difficulties in meeting its immediate financial obligations. This can, in turn, affect the company's business operations and profitability. Liquidity management is vital for every organization that means to pay current obligations on business, the payment obligations comprise operating and financial expenses that are short term but maturing long term debt. Liquidity ratios are used for liquidity management in every company in the form of current ratio, quick ratio and Acid test ratio that greatly affect on profitability of company. So business has sufficient liquid assets

(Cash, Bank) to meet the payment schedule by comparing the cash and near-cash with the payment obligations. Liquidity ratios work with cash and near-cash assets of a business on one side, and the immediate payment obligations (current liabilities) on the other side. The near-cash assets mainly comprise inventories of finished goods, raw materials and receivables from customers. The payment obligations include operating and financial expenses that must be paid shortly, maturing installments under long-term debt and dues to suppliers (Amalendu, 2011).

For manufacturing operations to be run effectively and efficiently, optimum cash management techniques must be adopted as cash shortage can disrupt the firm's manufacturing operation, while excessive cash can simply remain idle, without contributing anything in terms of return towards the firm's profitability (Damilola,2006).

Many organizations that are profitable on paper are forced into cash management assumes more importance than other current assets because cash is the most significant asset that a firm holds. Cash is unproductive unlike fixed assets or inventories if it does not produce goods for resale notwithstanding management's considerable time is devoted to managing it. The importance of managing cash to a manufacturing concern as identified by Alfred (2007) are: Management of cash aids the achievement of liquidity and control, it brings about proper planning with regard to cash disbursement and receipts over cash positions to keep the firm sufficiently liquid and to use excess cash in some profitable venture, the management of cash is also significant since we cannot rightly predict accurately cash flow behavior in the future, through cash management appropriate strategies are developed thereby providing innovation for cash receipts and payments, it also aids maintaining adequate control over cash position to keep the firm sufficiently liquid and to use excess of cash in some profitable ventures.

The primary purpose of cash management is therefore to reduce cost. However, a cost-benefit analysis of cash management is also needed. Such costs of cash management include cost of interest payments, cost of collection, cost of disbursement of funds, etc.

5.3.2 Factors that affect Liquidity Management

From the analysis, the findings of this study show that corporate liquidity is influenced by cash conversion cycle (CCC) .Cash conversion cycle is a factor which determines the level of liquidity of a firm. Regression analysis showed that current ratio increased with a decrease in the number of cash conversion cycle. The results are consistent with the findings of Monika Bolek (2013) who studied liquidity management of firms listed on Stock Exchange of Poland and found a negative relationship between current ratio and cash conversion cycle.

The results of this study revealed that the CCC portrayed and averaged 40 days with a standard deviation of 18 days. This indicated that on average it took 40 days before cash is collected from the sales measured from when the inventory is actually paid for in the cement manufacturing industry. The implication of this is that a firm with a relatively shorter period of cash conversion cycle is more liquid. Hence, shortening the firm's cash conversion cycle is potential way for the firm to create additional shareholder's wealth. This is in line with Rahemen and Nasr (2007) who found a strong negative relationship between cash conversion cycle and liquidity. This is also consistent with the findings of many other studies over the world including Lazaridis and Tryfonidis (2006) that a decrease in the cash conversion cycle will generate more liquidity for a company. The authors also found that the longer a firm delays its payments the higher level of liquidity it reserves and uses in order to increase profitability.

To manage the cash conversion cycle requires good inventory, credit and collection management policies. Therefore cash conversion cycle comprises three elements, namely; inventory, accounts payable and accounts receivable. For better liquidity management and to ensure short cash conversion cycle, it is paramount to assess, manage and take appropriate actions to improve each components (Thachappilly, 2009). According to Bodie and Merton (2000), a firm can decrease its need for working capital by making inventory control process efficient so that there is reduction in the amount of times goods remain in inventory, making account receivable process efficient to ensure timely receipt of money and managing the accounts payable.

The cash conversion cycle is a dynamic factor that influences corporate liquidity indicating the number of days it takes a firm to recover the cash it has spent in an operating cycle. According to Bolek and Wolski (2010), a low cash conversion cycle shows that the firm can recover its cash from the sales of its products faster. The more cash the firm has, the more liquid it will be in the dynamic sense of liquidity. A high cash conversion cycle shows that it takes the company to recover cash from operating process, which indicates liquidity problems. A low cash conversion cycle is connected to reducing inventories, faster receivables collection, and extent payment terms. A negative cash conversion cycle shows that the firm's suppliers are financing its growth in sales, usually at zero cost. Based on theoretical analysis, it can be seen that current ratio depends more on the structure of balance sheet items while cash conversion cycle is more related to turnover (Monika, 2012).

There are many factors that ascertain the financial performance and solidity of a firm. These comprise analysis of working capital, cash conversion cycle and liquidity analysis. Proper assessment and management of these factors are must as they are key components for smooth running and for proactive approach towards growth and expansion of a company. Operating capital also referred to working capital is the basis and use of short-term capital including current assets and current liabilities. A higher working capital would mean that the firm has more cash or current assets to expand its activities. Similarly too low working capital would delay the growth of the company and may bring difficulties to company in paying its obligations (Buchmann and Jung, 2010)

Chiou and Cheng (2006) reported that further to firm features, working capital is also associated to the financial situation, especially the fluctuations in the business indicators. An improper management of working capital, that is allocating excessive funds than the desired level, will turn management into inefficient and will subsequently decrease the profits of short-term investments. Appropriating working capital is an essential element while making financial decision as working capital is an investment in asset that requires proper and suitable financial arrangements and planning. Zariyawati (2009) confirmed that the key requirement for managing working capital consists of proper maintenance and management of liquidity in day to day operations to ensure its smooth running and to maintain its liquidity in day-to-day operation to ascertain its smooth running and convene its debts.

From the analysis, cash conversion cycle of selected firms was on decreasing trend during the whole period under study. This revealed that selected firms were better managing the length of time between when they made payment and when they received cash inflow. According to Uyar (2009) managing current assets and liabilities that is liquidity management is essential for the successful management of a company. Not managing the liquidity well leads the company to external financing, which might not always be possible for a company. This can be evaluated through the cash conversion cycle of the company. Cash conversion cycle shows the working capital efficiency. It is a good indicator of the wellbeing of a firm (Harper, 2010). Working capital shows the length of time that exists between when cash outflows a firm at the beginning of production process and when it inflows. Company first buys inventory from its suppliers in the form of either raw materials or finished goods, even if the inventory is in the form of finished goods, it may stay on the shelf for some time before it is sold. A company usually buys its inventory on credit, which suggests that it does not have to pay cash immediately at the time of purchase. The inventory is often sold on credit when it is delivered. The cash cycle of a company is the length of time when the process is initiated by the purchase of the inventory and is concluded when the cash is received from the sale of completed good transformed from the raw material. CCC therefore is a measure of average number of days of operating capital being provided in the operating cycle (Berk and De Marzo, 2007)

According to Uyar (2009) Cash Conversion Cycle is a useful way of evaluating the liquidity of a company. It assesses the time lag between payments in cash for purchasing inventories and funds receivables collection from the customers. Cash Conversion Cycle is mentioned in the context of working capital management. Cash Conversion Cycle is a comprehensive measure of working capital as it indicates the time between the purchase of raw material and the collection of funds from the finished goods sold to customers. Thus it measures the time a fund has been invested in working capital by the company. The company's objective should be to shorten the Cash Conversion Cycle without negatively affecting operations. Profits will be improved, since the longer the Cash Conversion Cycle the more the need for costly external borrowing.

5.3.3 Relationship between Liquidity and Profitability

This study showed that the multiple correlation coefficients between the dependent variable, return on capital employed (ROCE) and the independent variables Current Ratio (CR), Quick Ratio (QR) and Cash Conversion Cycle (CCC) were strongly correlated. Findings of this study showed that correlation and regression outputs are highly positive associated to the profitability. The study used both correlation and regression analysis and revealed that liquidity ratios measure by Current Ratio (CR),Quick Ratio (QR) and Cash Conversion Cycle (CCC) have a strong relationship with profitability measured by Return on Capital Employed (ROCE).

The findings are consistent with the findings of Owolabi, Obiator and Okwu (2011) investigating liquidity and profitability relationship in business organization using some selected quoted companies in Nigeria and they concluded that a positive relationship exists between the two variables in processing and manufacturing companies respectively. The findings are also similar to that of Vijaykumar (2011) study the management of corporate liquidity and profitability in Indian auto mobile companies and conclude that Indian auto mobile has been able to achieve high scores on the various components of liquidity management which has a positive impact on its profitability. Amalendu and Sri (2011) also carried out a research on the importance of liquidity management on profitability in steel companies in India using, Return on Capital Employed (ROCE) as a measure of profitability and Current Ratio (CR), Quick Ratio (QR) as measure of liquidity and concluded that there was positive relationship between CR,QR and ROCE.

This study also revealed that CR and QR are positively associated with ROCE, while CCC is negatively associated with ROCE. This study found a negative relationship between cash conversion cycle and profitability of the company. This complies with the finding of Tryfonidis (2006) and many others. The findings also concur with those of Jelly (2004),who reported that cash conversion cycle is a better measure of liquidity than current ratio and it has a negative relationship with profitability. Nobanee (2009), Chaterjee (2010), Nobanee et al. (2010), Akgun and Meltem (2010) and Rezazade and Heidarian (2010) have all reported a negative relationship between CCC's components with profitability. One of the effective ways for shortening CCC is to shorten the period of receivable accounts, delaying the

payment of payable accounts and inventories. By shortening CCC, firm profitability improves.

The findings of this study are also consistent with those of Mathuva (2009) who examined the influence of liquidity management components on corporate profitability by using a sample of 30 manufacturing companies listed on NSE for the periods 1993 to 2008. His study used Pearson and Spearman's correlations, the pooled ordinary least square (OLS), and the fixed effects regression models for data analysis. The key findings of his study were that there existed a highly significant negative relationship between profitability and the time it takes for companies to collect cash from their customers.

The implication of this is that a company with a relatively shorter period of cash conversion cycle is more profitable. Hence, shortening the company's CCC is a potential way for the company to create additional shareholder's wealth. This is consistent with Nasr (2007) who found a strong negative relationship between profitability and cash conversion cycle.

For conventional measure of liquidity, profitability is positively related to current ratio. Liquidity ensures the management of current assets and liabilities in a way that the short-term obligations are met along with not overinvesting in current assets.

The findings of this study showed a significant correlation between liquidity and profitability. Raheman and Nasr (2007) pointed out that the ultimate objective of any company is to optimize profit, but protecting the liquidity of a company is an imperative purpose too. Attracting this balance is difficult as if measures are undertaken to increase liquidity by availing current assets would negatively impact profitability as this would restrict investment. But if resources are invested to earn greater profits, it would lower liquidity. However, the challenge is that compromising on liquidity by increasing the profits of a company can put the company in trouble. Hence, there should be a well- designed trade- off between these two essential objectives of the companies. Achievement of one at the expense of the other should not be done as both have significant importance in the company. A firm cannot survive for a longer period of time, unless it does not give due importance to the profit as it is the core purpose of any business. On another hand too much emphasize on profitability at the cost of liquidity may run the company in serious troubles of insolvency.

Thus liquidity management should be given proper consideration as it ultimately affects both profitability and liquidity of the company.

5.4 CONCLUSIONS

5.4.1 Measures of Liquidity Management

From the analysis, current and quick ratios were computed to determine liquidity position of the companies under study. Current ratio showed the ability of a company to satisfy current liabilities utilizing current assets. Quick ratio depicted the ability to satisfy current liabilities using the most liquid of current assets.

The study revealed that Bamburi Cement Company had satisfactory current and quick ratio during the study period. This indicated that the company had a satisfactory liquidity position. The current ratio of ARML and EAPC was unsatisfactory because it was lower than the conventional standard rule. These firms must ensure that they have sufficient liquid resources to meet the short term obligations as required. If the firm operates strictly on cash basis or it is able to pay its creditors after it collects from its customers, then the situation is in favor of the firm. Otherwise, any moment the present situation may create serious financial troubles for the firm which may even lead it towards liquidation.

5.4.2 Factors that affect Liquidity Management

The findings of the study carried on the three selected cement companies revealed that corporate liquidity is influenced by level of cash conversion cycle measured by inventory turnover, receivables collection period, and payables payment period. The longer the cash conversion cycle the more the firm must invest in working capital, while the shorter cash conversion cycle, the fewer funds are tied up in the working capital .Corporate liquidity is influenced by the cash cycle because cash cycle measures the average amount of time that cash is tied up in operations process. Therefore, a firm with a short cash cycle is expected to have higher levels of cash. The study further concludes that the shorter the cash conversion cycle, the more efficiently cash is managed and ultimately the more liquid the firm is. On the other hand, the longer the cash conversion cycle, less cash is available in the firm.

5.4.3 Relationship between Liquidity and Profitability

This analysis has shown degree of relevance of liquidity and profitability in the three selected quoted companies. From the analysis, a positive relationship exists between liquidity and profitability in a company in the cement industry. The regression results indicated that CCC has a negative relationship with profitability that as CCC increases, profitability decreases. This means that firms with high cash conversion cycle earn lower profits as compared to firms with low cash conversion cycle.

5.5 Recommendations

5.5.1 Recommendation for improvement

5.5.1.1 Measures of Liquidity Management

Firms should maintain the ideal current and liquid ratio, which is not there in case of some of the firms we have analyzed. Liquidity plays a key role in the successful operating of a business company. A company should ensure that it does not suffer from lack-of or excess liquidity to meet its short-term obligations. A study of liquidity is important to both the internal and the external analysts because of its close relationship with day-to-day operating activities. Liquidity requirement of a company depends on the nature of the company and there is no specific rule on determining the optimal level of liquidity that a company can maintain to ensure positive impact on profitability. One should try to maximize or minimize the liquidity ratios; one should try to optimize them in relation to the firm's goals, which in case of a commercial organization is probably the maximization of profit on total assets employed. The lower the liquidity ratios are, the more vulnerable the firm is to pressure from creditors which it is unable to meet their requirements.

5.5.1.2 Factors that affect Liquidity Management

The study recommends that to ensure better cash management, that is shorter CCC, which would invariably lead to better liquidity in the cement industry, the duration of time that goods are held in inventory should be reduced. This can be accomplished by improving the inventory control process. Also, accounts receivable should be collected more quickly by improving the efficiency of the collection process as debt should be collected in line with the

agreed credit terms. Managers should focus on reducing cash conversion cycles and try to collect receivables as soon as possible because it is better to receive inflows sooner than later. Managers should reduce inventory periods and try to delay payables because it will provide them opportunities to invest in different profitable areas thus increasing the firms' profitability.

5.5.1.3 Relationship between Liquidity and Profitability

It is very clear that the efficient management of liquidity has a positive effect on the firms' profitability. So this study clearly asserts that, listed firms in the cement industry in Kenya have enough scope to enhance their profitability by handling their liquidity in more efficient ways. Especially, the inventory turnover if handled efficiently can produce a significant positive impact on profitability of the firm. Thus this study finds enough evidences that a firm is likely to enjoy better profitability if the firm manages its liquidity with better efficiency and focuses on cash position with more care.

5.5.2 Recommendation for Further Research

Future research should put effort in increasing the trend of analysis to determine the effect of cash management on profitability overtime and also use a different model to prove the significant negative relationship between cash conversion cycle and profitability .The scope of further research may be also extended to the working capital components management including marketable securities.

The study was based on three listed companies of the Cement Industry in Kenya. Similar study should be done on the same topic to cover all cement companies operating in cement industry of Kenya.

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Appendix 1 Data Collection (in Kshs'000')

YEAR	ARML			BMBC		
	CA	CL	PAT	CA	CL	PAT
2008	1,885,011	1,842,931	503,454	10,036,000	5,443,000	3,412,000
2009	3,194,254	3,105,404	645,774	12,773,000	4,944,000	6,970,000
2010	5,073,535	2,900,811	1,075,268	12,863,000	7,464,000	5,299,000
2011	3,756,304	4,453,136	1,150,498	13,356,000	5,097,000	5,859,000
2012	7,936,410	6,502,840	1,245,638	16,462,000	7,011,000	4,882,000

YEAR	EAPC		
	CA	CL	PAT
2008	2,661,738	1,176,375	536,652
2009	3,131,045	1,512,392	1,834,054
2010	2,911,680	1,836,650	(284,051)
2011	3,172,070	2,100,179	1,717
2012	2,635,509	2,265,774	(821,486)