THE RELATIONSHIP BETWEEN LIQUIDITY AND PROFITABILITY OF

FIRMS LISTED AT THE NSE

BY

IRINE LUMATETE

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DECLARATION

This project is my original work and has not been presented for a degree in any other university.

Signed:	Date: 8	1 11	2011
Signed:	Date:		

IRINE LUMATETE

D61/72712/2009

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

2 CMONT Date: NOV 8, 2011 Signed:....

MRS. WINNIE NYAMUTE,

Lecturer, Department of Finance and Accounting,

School of Business,

University of Nairobi.

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DEDICATION

I dedicate this work to my young family for their unwavering support, encouragement, motivation and understanding throughout the period of my studies.

ABSTRACT

This study examined the relationship between liquidity and profitability for companies listed at the Nairobi Stock Exchange. The objective of the study was to establish the relationship between liquidity and profitability over the short and medium term between 2004 and 2009.

Using descriptive research design, a sample of 41 companies listed at the NSE between 2004 and 2006 was used. Regression analysis of Return on Assets (ROA) as a measure of profitability and Current Ratio (CR) as a measure of liquidity was done. One way ANOVA was also used to test whether a low liquidity level will derail the upkeep- of high profitability.

The key findings from the study revealed a negative relationship between liquidity and profitability. It was also observed that low liquidity does not influence upkeep of high profitability but low profitability influences the upkeep of high liquidity in the medium term.

TABLE OF CONTENTS

DECLARATI	ON		II
ACKNOWLE	DGEN	1ENT	III
DEDICATION	NN		IV
ABSTRACT.			V
TABLE OF C	ONTE	NTS	VI
ABBREVIAT	IONS		VIII
CHAPTER 1	In	troduction	1
	1.1	Background of the study	1
	1.2	Statement of the Problem	4
	1.3	Objectives of the study	6
	1.4	Significance of the study	7
CHAPTER 2	Litera	ture Review	8
	2.1	Operational definitions	8
	2.2	Profitability versus Liquidity trade-off	8
	2.3	Hirigoyen Hypothesis	22
	2.2	Summary of the literature	23
CHAPTER 3	Resea	rch Methodology	25
	3.1	Research Design	25
	3.2	Population	25

	3.3	Sample	25
	3.4	Data collection	26
	3.4	Data analysis	26
CHAPTER 4 I	Data a	nalysis, results and discussion	29
	4.1	Descriptive statistics	29
	4.2	Testing hypothesis 1	31
	4.3	Testing hypothesis 2	33
CHAPTER 5 S	Summ	ary, conclusion and recommendation	36
	5.1	Introduction	36
	5.2	Summary of findings and results	37
	5.3	Conclusions and recommendations	38
	5.4	Limitations of the study	39
	5.5	Suggestions for further research	40
REFERENCI	ES		. 41
APPENDICF	ES		47

ABBREVIATIONS

- CBK Central Bank of Kenya
- CCC Cash Conversion Cycle
- CMA Capital Markets Authority
- Corr Correlation coefficient
- EBIT Earnings before Interest and Tax
- GDP Gross Domestic Product
- IPO Initial Public Offer
- KSE Karachi Stock Exchange
- NSE Nairobi Stock Exchange
- ROA Return on Assets
- ROE Return on Equity
- SME Small and Medium Enterprises
- WCM Working Capital Management

ANOVA-Analysis of Variance

CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND

Management of working capital is the part of financial management responsible for the control of the gross current assets which include the firms' cash, accounts receivables and inventories.

The quantum of investment in current assets has to be made in a manner that not only meets the needs of the forecasted sales but also provides a built in cushion in the form of safety stocks to meet unforeseen contingencies arising out of factors such as delays in arrival of raw material, sudden spurts in demand etc. Consequently, the investment in current assets for a given level of forecasted sales will be higher if the management follows a conservative attitude than when it follows an aggressive attitude. Thus, a company following a conservative approach is subject to a lower degree of risk than the one following an aggressive approach. Further, in the former situation the high amount of investment in current assets imparts greater liquidity to the company than under the latter situation wherein the quantum of investment in current asset is less. This aspect exclusively covers the liquidity dimension of working capital.Pandey (2008)

Once we recognize the fact that the total amount of financial resources at the disposal of a company is limited and these can be put to alternative uses, the larger the amount of investment in current assets, the smaller will be the amount available for investment in other profitable avenues at hand with the company. A conservative approach in respect of investment in current assets leaves fewer amounts for other investments than an aggressive approach does. Further, since the current assets will be more for a given level of sales forecast under the conservative approach, the turnover of current assets (calculated as ratio of net sales to current assets) will be less than what they would be under the aggressive approach. Even if we assume the same level of sales revenue, operating profit before interest and tax and net (operating) fixed assets, the company following a conservative policy will have a low percentage of operating profitability as compared to its counter part following an aggressive approach.Pandey (2008)

One of the main issues in working capital management is the trade off between lower profitability of current assets and the financial slack provided from it. According to Assaf Neto (2003, p.22), the liquid assets are usually less profitable than the fixed assets. Investment in working capital does not generate production or sales.

Kiprono (2004) studied the relationship between cash flows and earnings performance measures for companies listed in the Nairobi Stock Exchange (NSE). The results showed that there is a negative or indirect association between cash flow from financing and investing activities and returns performance indicators. There was a weak relationship between cash flows and performance indicators.

Mogere (2002) studied WCM among thirty public companies listed at the Nairobi Stock Exchange as at 31st December, 2002. The research findings showed that there were no significant differences in return on equity among companies that practice different working capital management policies.

Mathura (2009) analysed the influence of working capital management on corporate profitability. The key findings from the study showed that there exists a highly significant negative relationship between the accounts collection period and profitability. This means that more profitable firms take the shortest time to collect cash from their customers.

Eljelly (2004) in the study of the relationship between profitability and liquidity as measured by current ratio and cash gap (cash conversion cycle) found significant negative relation between the firm's profitability and its liquidity level. This relationship was more evident in firms with high current ratios and longer conversion cycles. At the industry level, however, the study found that the cash conversion cycle or the cash gap was of more importance as a measure of liquidity than the current ratio that affects profitability. According to him, the management of working capital becomes even more important during crises periods.

Hirigoyen (1985) argues that over the medium and long run the relationship between liquidity and profitability could become positive, in the sense that a low liquidity would result in a lower profitability due to greater need for loans, and low profitability would not generate sufficient cash flow, thus forming a vicious cycle.

Vieira (2010) did a study on the relationship between liquidity and profitability of airline companies in the world between 2005 and 2008. Using the financial data published by the companies, the relationship was studied with the help of statistical

procedures and also two-dimensional analysis. It was observed that there was a significant positive correlation between liquidity and profitability on the short run.

1.2 STATEMENT OF THE PROBLEM

The ultimate objective of the firm is to maximize the profit. But, preserving liquidity of the firm is as an important objective too. The problem is that increasing profits at the cost of liquidity can bring serious problems to the firm. Therefore there must be a trade off between these two objectives of firms. If we do not care about profit, we cannot survive for a longer period. On the other hand if we do not care about liquidity, we may face the problem of insolvency and bankruptcy. For these reason working capital management should be given proper consideration and will ultimately affect the profitability of the firm.

Kiprono (2004) studied the relationship between cash flows and earnings performance measures for companies listed in the Nairobi Stock Exchange (NSE). His objective was to determine the relationship between return on assets (ROA), return on equity (ROE), and return on net assets (RONA) against the cash flows of firms. To achieve this, regression analysis was employed on thirty companies listed at the NSE. The companies were picked randomly and were analyzed for the five year period between 1998 and 2003.He concluded that there is a positive or direct association between cash flows from operating activities and all the return performance indicators. The results also showed that there is a negative or indirect association between cash flow from financing and investing activities and returns performance indicators. On overall, there is a weak relationship between cash flows and performance indicators. Mathura (2009) analysed the influence of working capital management on corporate profitability. A sample of 30 firms listed on the NSE for the period 1993 to 2008 was used. Both the pooled OLS and the fixed assets regression models were used in the analysis. The key findings from the study showed that there exists a highly significant negative relationship between the accounts collection period and profitability. This means that more profitable firms take the shortest time to collect cash from their customers. it also revealed the existence of a highly significant positive relationship between inventory conversion period and profitability meaning that firms which maintain sufficiently high inventory level reduces costs of possible interruptions in the production process and loss of business due to scarcity of products. This reduces the firm supply costs and protects them against price fluctuations. Lastly, the study showed a significantly positive relationship between average payment period and profitability. This implies that the longer a firm takes to pay its creditors, the more profitable it is.

Eljelly (2004) in the study of the relationship between profitability and liquidity At the industry level, the study found that the cash conversion cycle or the cash gap was of more importance as a measure of liquidity than the current ratio that affects profitability. According to him, the management of working capital becomes even more important during crises periods.

Vieira (2010) in the study of the relationship between liquidity and profitability of airline companies in the world found that there was a significant positive correlation

between liquidity and profitability on the short run. This result contradicted the findings by Hirigoyen (1985), Eljelly (2004), and Lamberg and Valming (2009).

Thus the empirical investigation of this theoretical construction was the main aim of this study. Most of the studies done dealt mostly with aspects of working capital management. None of the studies from Kenya has tried to resolve the trade off dilemma between liquidity and profitability. The study sought to confirm whether it is true that on the short run it is observed a negative relationship between liquidity and profitability, and if in the medium term this correlation becomes positive with specific emphasis to Kenyan firms irrespective of the segment and category. Most of the researches done have not looked at the impact of liquidity on profitability with emphasis to Kenya bearing in mind the Kenya capital markets authority regulations,CBK regulations and governing laws.

So the main questions in this study were; is there a negative relationship between liquidity and profitability in the short run? Is there a positive relationship between liquidity and profitability in the medium to long term?

1.3 OBJECTIVES OF THE STUDY

The study was aimed at establishing the relationship between liquidity and profitability of firms listed on the NSE.

1.4 SIGNIFICANCE OF THE STUDY

This study will be of help to academicians by contributing to the improvement of general knowledge in liquidity and profitability. It will also provide suggestions for future research.

It will act as a guide to finance managers in making decisions on the level of liquidity to maintain in order to increase profitability.

It will guide investors in decision making by assessing the medium term likelihood of profitability based on the level of liquidity of a company.

The study will help regulators and policy makers like CMA, NSE and CBK devise new standards establishing an appropriate level of liquidity for organizations.

CHAPTER TWO

LITERATURE REVIEW

2.1 OPERATIONAL DEFINATIONS

Profitability can be defined as the final measure of economic success achieved by a company in relation to the capital invested in it. This economic success is determined by the magnitude of the net profit (Pimentel et al, 2005 p.86).To achieve an appropriate return over the amount of risk accepted by the shareholders, is the main objective of companies operating in capitalist economies. After all, profit is the propulsive element of any investments in different projects. The assessment of profitability is usually done through the ROA (Return on Asset = Net income/Total Assets) and ROE (Return on Equity = Net Income/Equity)

Accounting liquidity is the company's capacity to liquidate maturing short term debt (within one year).maintaining adequate liquidity is much more than a corporate goal. It is a condition without which the continuity of a business can not be reached. It was measured in terms of current assets less current liabilities.

2.2 PROFITABILITY VERSUS LIQUIDITY TRADE-OFFS

There is much evidence in the financial literature that present the importance of WCM. Results of empirical analysis show that there is statistical evidence for strong relationship between the firm's profitability and its WCM efficiency. The first study of Smith (1974) came as an overview of management of working capital. Like other studies, this study also pointed out that theoretical development in finance during the past decades had ignored the area of working capital management. In relation to working capital management, Smith also described dual goals of profitability and

liquidity and suggested that the job of financial managers is to achieve a trade-off between the two. Smith also discussed several aggregate guidelines to analyze the working capital position.

According to Smith, one of the means of analyzing working capital management is financial simulation. His study indicated simulating future financial statements of a firm based on asset of simultaneous equation.

The second study of Smith (1974) relates to profitability versus liquidity tradeoffs in working capital management. The study suggested that parallel monthly forecasts of liquidity and profitability can be useful in evaluating tradeoffs between these two goals. Besides, such forecasts can also be useful in estimating the impact of certain working capital policies on those goals, and in reflecting the uncertainty of the future. The study illustrated the suggested procedures with a scenario of Smith Products, a wholesale firm. It can be viewed simply as further elaboration and illustration of procedures suggested by other studies concerning working capital management.

This study by Smith discussed individual and collective effects of accounts receivable, inventories, accounts payable, and other accruals on profitability and liquidity. On the basis of the several assumptions made, the study mainly observed as follows for the Smith products: a tightened inventory policy reduces necessary borrowing to a lower level than does faster collection of receivables or slower payments of current liabilities; profitability increases only slightly, a result only of lower interest expenses from lower levels of needed borrowing; and the necessary borrowing can be reduced if receivables, payables and inventory policies are tightened.

Vieira (2010) analysed the relationship between liquidity and profitability: An exploratory study of airline companies between 2005 and 2008. The aim was to verify the relationship between liquidity and profitability over the short and medium term. He used Return on Assets (ROA) determined as EBIT divided by Total assets, as a measure of profitability and current and quick ratios as measures of liquidity. Statistical correlation and two dimension analysis to understand the shifting pattern from one quadrant to the other was used. The analysis suggested that for the medium run the relationship was positive. It was observed that in almost 2/3 of the cases, companies with a bad indicator of profitability or liquidity faced a deterioration of the other indicator. Thus the equilibrium between liquidity and profitability seemed to be a condition for financial stability over the medium term.

E'tienne Bordeleau and Christopher Graham (2010) studied the impact of liquidity on bank profitability in the bank of Canada. The objective of the study was to find a relationship between level of liquidity holding and profitability. The variables used in the study were profitability as the dependent variable measured as return on assets. The dependent variable was regressed against a non-linear expression of relative liquid asset holdings as well as a set of control variables like real GDP and short term funding reliance. Results suggested that profitability is improved for banks that hold some liquid assets, however, there is a point at which holding further liquid assets diminishes a banks profitability, all else equal.

Lazaridis and Tryfonidis (2006) investigated the relationship between corporate profitability and working capital management using listed companies on the Athens Stock Exchange. Regression analysis was used. They discovered that a statistically significant relationship existed between firm's profitability and the cash conversion cycle. They concluded that businesses can create profits for their companies by handling correctly the cash conversion cycle keeping each component of the cash conversion cycle (that is accounts receivable, accounts payable, and inventory) to an optimum level.

Beneda et al (2008) using a sample of initial public offerings (IPO's), their study finds a significant positive association between higher levels of accounts receivable and operating performance. The study further finds that maintaining control (i.e. lower amounts) over levels of cash and securities, inventory, fixed assets, and accounts payables appears to be associated with higher operating performance, as well. They found that IPO firms which are experiencing unusually high growth tend not to perform as well as those with low to moderate growth. Further firms which are experiencing high growth tend to hold higher levels of cash and securities, inventory, fixed assets, and accounts payables. These findings tend to suggest that firms are willing to sacrifice performance (accept low or negative operating returns) to increase their growth levels. The higher level of growth is also associated with higher operating and financial risk. The findings of this study suggest that perhaps IPO firms should stay more focused on their operating performance than on maintaining high growth levels.

Kiprono (2004) studied the relationship between cash flows and earnings performance measures for companies listed in the Nairobi Stock Exchange (NSE). His objective was to determine the relationship between return on assets (ROA), return on equity (ROE), and return on net assets (RONA) against the cash flows of firms. To achieve

this, regression analysis was employed on thirty companies listed at the NSE. The companies were picked randomly and were analyzed for the five year period between 1998 and 2003. He concluded that there is a positive or direct association between cash flows from operating activities and all the return performance indicators. The results also showed that there is a negative or indirect association between cash flow from financing and investing activities and returns performance indicators. On overall, there is a weak relationship between cash flows and performance indicators. However, he noted that it is important to determine the impact of firm size in cash flow and earning performance indicators.

Huynh Phuong Dong & Jyh-tay Su (2010) did a study on the relationship between working capital management and profitability in Vietnam. The study was based on secondary data collected from listed firms in Vietnam stock exchange for the period of 2006-2008 in order to investigate the relationship between profitability, the cash conversion cycle and its components for listed companies. The findings showed that there is a strong negative relationship between profitability, measured through gross operating profit and the cash conversion cycle. This means as the cash conversion cycle increases, it will lead to a decline in profitability of the firm. Therefore the managers can create value for the shareholders by handling adequate cash and keeping each different component to an optimum level.

Reheman and Nasr (2007) studied the relationship between working capital management and its effect on liquidity as well on profitability of the firm. In this research, they selected a sample of 94 Pakistani firms listed on Karachi Stock Exchange for a period of 6 years from 1999 – 2004, they studied the effect of different

variables of working capital management including the average collection period, inventory turnover in days, average payment period, cash conversion cycle and current ratio on the net operating profitability of Pakistani firms. Debt ratio, size of the firm (measured in terms of natural logarithm of sales) and financial assets to total assets ratio were used as control variables. Person correlation and regression analysis were used in the analysis. The results showed a strong negative relationship between variables of working capital and profitability of the firm. It also depicted a significant negative relationship between liquidity and profitability.

Kamath (1989) examined the cash conversion cycle (CCC) as a liquidity indicator of the food industry Greek companies and tried to determine its relationship with the current and the quick ratios, with its component variables. He investigated the implications of the CCC in terms of profitability, indebtness and firm size. Therefore, five hypotheses were formed to investigate the contemporary liquidity measure of the CCC. The data was taken from the major companies in the food and beverage industry of Greece, which was a representative sector of the Greek industry as a whole and a very crucial industry for the whole economy, with rapid growth and expansion domestically and internationally. The methodology that was followed included regression and correlation analysis, as well as t-tests of two independent sample means. The results indicated that there was a significant positive relationship between the cash conversion cycle and the traditional liquidity measures of current and quick ratios. The cash conversion cycle was positively related to the return on assets and the net profit margin but had no linear relationship with the leverage ratios. On the other hand, the current and quick ratios had negative relationship with the debt to equity ratio, and a positive one with the times interest earned ratio. Finally, there was no difference between the liquidity ratios of large and small firms.

Mogere (2002), studied WCM among thirty public companies listed at the Nairobi Stock Exchange as at 31st December, 2002. The objective of the study was to determine the effect of the amount of long-term financing of current assets on the profitability of companies. It also addressed the question as to whether there is any significant relationship between working capital management policy and the profitability of a company as measured by the return on equity. The study also wanted to establish if public companies in different sectors in Kenya follow different working capital management policies. Simple regression analysis was done to establish the relationship between working capital policy and the return on equity. The results of the analysis showed that the commonly practiced working capital management policy among the public companies in Kenya is the aggressive approach policy. The findings of the research did not show any significant differences between the working capital management policies across the five sectors. Further, the research findings showed that there were no significant differences in return on equity among companies that practice different working capital management policies. The regression analysis also showed that the working capital management policy explained only fifty three percent of the variation in return to equity.

An individual company's investment in working capital will be related to the type of industry in which it operates and the essential Working Capital Policy each individual company adopts. This, he argued, would been partly due to the high cost of long-term funds in Kenya which for most part of the research period were above 20%. Management of most companies would thus tend to use the short-term funds like trade

creditors which often carry very minimal costs. The cost consideration thus dominates the need to match the duration of the source of funds with the life of the asset to be financed.

Mogere (2002) added that, under the maturity matching concept, one would have expected that the companies that require heavy investment in current assets would use more long term financing but this was not the case. The other source of long term funds namely the owners' equity, he notes, might also not have been attractive to the companies because of the costs for instance, floatation cost associated with raising such funds besides the annual dividend expectations from the shareholders.

Afza and Nazir (2009) investigated the traditional relationship between working capital management and a firm's profitability for a sample of 204 non-financial firms listed at Karachi stock exchange (KSE) for the period 1998-2008. The study found significant difference among their working capital requirements and financing policies across different industries. Moreover, regression results found a negative relationship between the firms' profitability and degree of aggressiveness of working capital investment and financing policies. They suggested that managers could create value if they adopt a conservative approach towards working capital investment and financing policies.

Antony (2006) did a study on the effects of the relationship between working capital of firms listed at the NSE and the economic activity in Kenya over the last twenty years (1986-2006). The period was selected because it gives enough duration to indicate trends in working capital position. The findings revealed that the liquidity of

the fifty firms in the study, as measured by the current and quick ratios, increased slightly during economic expansion and decreased during economic slowdowns. However, he further argues that the liquidity positions reacted differently to various economic indicators such as inflation and lending rates.

The study showed that for most firms, inflation was not significant. This means that the working capital decisions are indifferent to the fluctuations in inflation. With lending rates, the study revealed that rates indeed did affect the amount of working capital for the firms and this further showed that during times of economic contraction, working capital positions of firms improved.

Bardia (2004) in the study liquidity management, a case of Steal Authority of India Ltd (SAIL) sought to establish a relationship between liquidity maintained and profitability for the period between 1991-92 and 2001-02.Rank correlation co-efficient and t-test was used to test the significance of the relationship between liquidity and profitability. It was found that there was a significant correlation between liquidity and profitability in SAIL.

Loo (2007) did a survey of liquidity management approaches and their effect on profitability of commercial banks in Kenya. The objective was to identify liquidity management strategies employed by such banks and to study the relationship between banks liquidity management and profitability. He found out that, commercial banks in their lending activities extend credit only for short period and for purposes which resulted in self liquidation of credit. Banks with relatively tight liquidity were more profitable. Eljelly (2004) examined the relationship between profitability and liquidity as measured by current ratio and cash gap(cash conversion cycle) on a sample of joint stock companies in Saudi Arabia using correlation and regression analysis. The study found significant negative relation between the firm's profitability and its liquidity level, as measured by current ratio. This relationship is more evident in firms with high current ratios and longer conversion cycles. At the industry level, however, the study found that\t the cash conversion cycle or the cash gap was of more importance as a measure of liquidity than the current ratio that affects profitability. The size variable was also found to have significant effect on profitability at the industry level. Finally the results were stable over the period under study.

Deloof (2003) in the study 'does working capital affect profitability of Belgium firms? discussed that most firms had a large amount of cash invested in working capital. It can therefore be expected that the way in which working capital is managed will have a significant impact on profitability of those firms. Using correlation and regression tests he found a significant negative relationship between gross operating income and the number of days accounts receivable, inventories and accounts payable of Belgium firms. On the basis of these results he suggested that managers could create value for there shareholders by reducing the number of days accounts receivable and inventories to a reasonable minimum. The negative relationship between accounts payable and profitability is consistent with the view that less profitable firms wait longer to pay their bills.

Shin and Soenen (1998) in the study of efficiency working capital management and corporate profitability highlighted that efficient working capital management was

important in creating shareholders value. The way working capital was managed had a significant impact on both profitability and liquidity. The relationship between the length of net trading cycle, corporate profitability and risk adjusted stock return was examined using correlation and regression analysis, by industry and capital intensity. They found a strong negative relationship between length of the firms' net operating cycle and its profitability. In addition, shorter net trade cycles were associated with higher risk adjusted stock returns.

Olufemi Falope and Olubanjo Ajilore (2009) did a study on Working Capital Management and Corporate Profitability: Evidence from Panel Data Analysis of Selected Quoted Companies in Nigeria. The study aimed to provide empirical evidence about the effects of working capital management on profitability performance for a panel made up of a sample of Nigerian quoted non-financiał firms for the period 1996-2005. The study utilized panel data econometrics in a pooled regression, where time-series and cross-sectional observations were combined and estimated. The study found a significant negative relationship between net operating profitability and the average collection period, inventory turnover in days, average payment period and cash conversion cycle for a sample of fifty Nigerian firms listed on the Nigerian Stock Exchange. Furthermore, the study found no significant variations in the effects of working capital management between large and small firms. These results suggest that managers can create value for their shareholders if the firms manage their working capital in more efficient ways by reducing the number of day's accounts receivable and inventories to a reasonable minimum

Smith and Begemann (1997) in their study of measuring associations between working capital and return on investment found that the current and quick ratios registered insignificant associations whilst the comprehensive liquidity index indicated significant association with return on investment.

Ramachandranb and Janakiraman (2007) studied the relationship between working capital management efficiency (WCME) and EBIT of the paper industry in India during 1997-1998 to2005-2006.Ratio analysis was used in the analysis. The study revealed that the paper industry had managed the working capital satisfactorily. The accounts payable days had a significant negative relationship with EBIT, which indicates that by deploying payment to suppliers they improve the EBIT.The paper industry in India performed remarkably well during the period, however, less profitable firms waited longer to pay their bills, and pursue a decrease in cash conversion cycle.

Mathura (2009) analysed the influence of working capital management on corporate profitability. A sample of 30 firms listed on the NSE for the period 1993 to 2008 was used. Both the pooled OLS and the fixed assets regression models were used in the analysis. The key findings from the study showed that there exists a highly significant negative relationship between the accounts collection period and profitability. This means that more profitable firms take the shortest time to collect cash from their customers. it also revealed the existence of a highly significant positive relationship between inventory conversion period and profitability meaning that firms which maintain sufficiently high inventory level reduces costs of possible interruptions in the production process and loss of business due to scarcity of products. This reduces the

firm supply costs and protects them against price fluctuations. Lastly, the study showed a significantly positive relationship between average payment period and profitability. This implies that the longer a firm takes to pay its creditors, the more profitable it is.

Chulalongkon (2005) studied the relationship between net profit and short term liquidity of listed companies in automotive industry company in the stock exchange of Thailand (SET).Secondary data was analysed using linear, polynomial regression, growth regression and exponential regression. The analysis involved net profit or earnings before interest and tax (EBIT) (1997-2004) and short term liquidity. The study indicated that when net profit of a business changes, it will affect on the short term liquidity of such business, especially on current ratio and quick ratio.

Therefore, the management, investors, accounts receivable and financial institutions can use the net profit as useful reference information for work administration, investment decision making and credit consideration.

Singh and Asress (2009) assessed working capital adequacy and its impact on profitability and to investigate the relationship between profitability and liquidity of selected manufacturing firms in India. Natural logarithms of total current liabilities and relative solvency ratio were taken as dependent variables to measure the required size of current liabilities and firms' solvency level respectively. Independent variables were sales, return on assets, current ratio and cash conversion cycle. These were included in the panel data regression to assess for 250 firms for a period of 10 years. The regressed results indicated that sales and cash conversion cycle have highly positive significant effect to determine required current liabilities whereas return on

assets and current ratio have highly negative significant effect to determine the required current liabilities. The result of negative association between liquidity and profitability was statistically insignificant. With the help of student t-test, the study also revealed that firms with adequate working capital achieved better performance than those firms which have less working capital in relation to their operational size.

Berger (1995) analyses the statistical relationship between bank earnings and capital for U.S banks over the period 1983-1989 and finds that contrary to what one might expect in situations of perfect markets with symmetric information, there was a positive relationship between capital and return on equity. The results suggested that banks with higher level of capital see their finding costs decrease to such an extent that it more than offsets the costs of issuing additional capital. While Berger(1995) applies the concept of the 'expected bankruptcy cost hypothesis' in the realm of capital, it is also conceptually applicable to the impact of liquid assets on profitability, whereby banks holding more liquid assets benefit from a superior perception in funding markets, reducing their financing costs and increasing profitability.

At the same time, a recent paper by Morris and Shin (2010) sought to develop a model where the total credit risk of a bank is decomposed into insolvency risk and illiquidity risk. It was established that an increase in the liquidity ratio of a bank decreases the probability of an illiquid default.

These two concepts can be drawn together into the current paper. If an increase in the relative liquid assets holding of a bank decreases its probability of default, and if the expected bankruptcy cost hypotheses is indeed correct, then holding of liquid assets should exhibit a positive relationship with bank profits. At the same time holding

liquid assets imposes an opportunity cost on the bank given their low return relative to other assets, thus having a negative effect on profitability.

Therefore it is expected for liquid assets to exhibit a non-linear relationship to firms profitability in which increasing liquid assets would improve firms profitability through the expected bankruptcy cost hypotheses, as long as the marginal benefit of holding additional liquid assets outweighs the opportunity cost of their low relative return.

Concurrently, the impact of liquid assets on profitability can be affected by other factors such as the banks business model, or exogenous economic conditions.

Abel (2008) examined the impact of working capital management on cash holdings of small and medium-sized manufacturing enterprises in Sweden. The aim of the study was to theoretically derive significant factors related to working capital management which have influence on the cash level of SMEs and test these in large sample of Swedish manufacturing SMEs. The theoretical framework of the study was consisted of treaties of motives for holding cash, working capital management and cash level. He studied 13,287 Swedish manufacturing SMEs of legal form 'Aktienbolag'. The results were that cash holdings are negatively related to the presence of cash substitutes, namely inventory and accounts receivable. Furthermore, it confirmed that working capital management efficiency, measured by the cash conversion cycle, is positively related to cash levels.

2.3 HIRIGOYEN HYPOTHESIS

Most of the literature demonstrates the dilemma between profitability and liquidity.however, Hirigoyen (1985) questioned whether the trade off is also valid in

the medium and long run. According to this author, there shall be an interaction between liquidity and profitability, so that a low profitability will eventually compromise high profitability and low return making it harder to achieve a high liquidity level.

For Hirigoyen the profitability and solvency are necessary condition for the healthy existence of the company and both are conditioned by the strategy adopted in the medium and long term. On his work Hirigoyen was based on three premises, namely:

- 1. The profitability ensures the development of the company. However the obsessive quest for profitability may undermine the solvency of the company;
- The solvency reduces the total risk of the company, showing that the net working capital can reduce the risk of bankruptcy. However, a very large safety margin restricts profitability;
- 3. The profitability and solvency are conditioned by the company's strategy. The company's growth brings with it a progressive increase in financial needs for the operational cycle, leading to a change in the solvency capacity.

Hirigoyen (1985) concludes his study showing that profitability and liquidity are determinants of the company's equilibrated survival. These two factors are at the same time, the results (consequences) and restrictions (constraints).therefore the integration of both should lead to the goal of flexibility.

2.4 SUMMARY OF THE LITERATURE REVIEW

The literature reviewed in this study suggests that their exists a significant negative relationship between the firm's profitability and its liquidity level. Vieira (2010) in the

study of the relationship between liquidity and profitability of airline companies in the world found that there was a significant positive correlation between liquidity and profitability on the short run. This contradicts the other studies hence the reason for this study in relation to listed firms at the NSE.

CHAPTER THREE

RESEARCH METHODOLOGY

This section describes the research design, population and sampling, data and data collection instruments, data analysis and the models used for testing the hypotheses.

3.1 RESEARCH DESIGN

The study sought to establish the interdependence between two financial variables, liquidity and profitability. It observed the existence, direction and strength of this relationship for the short and medium term. The data that was collected aimed at quantifying the relationship between the dependent variable (Profitability) and independent variable (Liquidity), and then descriptive design was appropriate.

3.2 POPULATION

This study considered the 1343 firms listed at the Nairobi Stock Exchange as at November 2010 for the period 2004-2009. This was due to the availability and reliability of the financial statements in that they are subject to mandatory audits by recognized audit firms.Furthemore firms listed on the stock exchange market have an incentive to present profits if those exist in order to make their shares more attractive (Lazaridis and Tryfonidis, 2006).

3.3 SAMPLE

The scope of the study however was limited to 41 companies. This was due to availability of reliable data and the companies should have been listed for the entire period of the study.

3.4 DATA COLLECTION

Secondary data was obtained through review of the published accounts of the companies in the sample. To measure profitability, Return on Assets (ROA) which is obtained by dividing net income of the period by the total assets of the company was used. The data relating to Net Income and total assets was easily obtained from the final accounts.

To measure the liquidity level of the companies, the Current Ratio (CR) was chosen. This ratio measures the size of the short Current Assets in terms of the current liabilities. The values of Current Assets and Current Liabilities were also easily found on the Balance Sheets of the annual reports.

3.5 DATA ANALYSIS

The literature reviewed showed a negative relationship between liquidity and profitability. To replicate the methodology used by Viera (200), the following hypotheses were formulated;

Hypotheses 1;

In the short term the relationship between liquidity and profitability is negative.

Hypotheses 2

In the medium term, a low liquidity level will derail the upkeep of high profitability, and so a low profitability will derail the upkeep of a high liquidity hence positive relationship.

This study adopted the methodology by Vieira (2010). This is because the study explored the relationship between liquidity and profitability in the airline industry in the world. Replicating the same methodology will guide in arriving at a conclusion that is easily comparable with the above study.

Current ratio and return on Assets series was computed for all the firms under study for the entire period under analysis.

3.5.1 Statistical correlations

From the current ratio and ROA series collected from the sample it was possible to establish the correlation coefficient between these seies. The following correlation coefficients was used to test the relationship between liquidity and profitability.

.

The model that was used was regression analysis depicted as;

Y=a+bX

Where

Y=Profitability measured by ROA

X=Liquidity measure by the current ratio

This model was suited for the study because it shows the degree of association between two variables.

The correlation coefficients were also used in the analysis.

Corr (CR2005, ROA2005); corr (CR2006, ROA2006);...; corr (CR2010, ROA2010)

In order to observe the medium term relationship between the variables, a two dimensional analyses will be made. The firms will be classified according to its liquidity and profitability.

Classification is made obeying the following rules;

For liquidity, the companies with a current ratio higher than 1 are considered to have a high liquidity (H), and companies with current ratio below 1, a low liquidity (L) For the profitability, the classification is made according to ROA for the sample during the year. Companies are classified as having a high profitability (H) if their ROA is higher than the average ROA for the year and a low profitability (L) in the other case.

One way ANOVA was used to test whether a low liquidity level will derail the upkeep of high profitability, and so a low profitability will derail the upkeep of a high liquidity in the medium term.

CHAPTER FOUR

DATA ANALYSIS, RESULTS AND INTERPRETATION

This chapter presents the data analysis results. Data analysis was done using both excel and SPSS and the results are presented using tables. The main analysis tools used include: regression analysis, correlation analysis, frequencies and measures of central tendency and dispersion.

4.1 **DESCRIPTIVE STATISTICS**

Descriptive statistics for liquidity and profitability were computed. The results were as displayed in appendix 1.

LIQUIDITY

For the six years, the mean was greater than 1 (averaging to 7.3) indicating that firms in the NSE have high liquidity. It was however noted that the average current ratio for non-financial companies was 2.09. This shows that the companies in the financial sector have higher liquidity compared to those in the non-financial sector. The maximum values of current ratio serve to illustrate this finding even further. While the maximum current ratio in the six years for financial sector was 48.35, the maximum for the non-financial sector was much lower at 12.75.

The standard deviations of the current ratios remained fairly constant but showed a declining trend over the years ranging between 6.84 and 7.87. This indicates that there was not much change in the patterns of leverage for the companies for the six years. However, it is worth noting that except for year 2006, the interquartile range

consistently dropped from 10.01 in 2004 to 3.21 in 2009. This shows that 75% of companies tended towards the same current ratio.

Descriptive Statistics								
	N	Minimum	Maximum	Mean	Std. Deviation			
Current ratio	186	.31	12.75	2.0965	1.76787			
ROA	186	-24.56	57.25	16.1963	13.86800			
Valid N (listwise)	186							

Table 4.2Overall descriptive statistics for Liquidity (CR) % Profitability (ROA)% for years 2004 - 2009

PROFITABILITY

The average ROA was into a declining trend between 2004 and 2007, going from 13.84 in 2004 to 13.17 in 2008. Contrary to expectations, the average ROA rose to 13.21 in 2008, the year of the crises. This indicates that the financial crisis of 2008 may not have been heavily felt by Kenyan listed companies. The year 2008, however posts the highest standard deviation (14.19) and the second highest interquartile range (14.96). This indicates that there was greater variability in the performance of companies in year 2008. While some companies performed poorly, others did extremely well leading to the high deviations. This is confirmed by the very low minimum ROA of -24.56 and maximum of 41.05 posted in the same year.

4.2 TESTING HYPOTHESIS 1

The study sought to test two hypotheses using the NSE data. The first hypothesis was: H_0 : On the short term the relationship between liquidity and profitability is not negative.

H₁: On the short term the relationship between liquidity and profitability is negative.

In order to test this hypothesis the data was first tested for linearity for each of the six years. The standardized residuals were plotted in order to test for normality since linear distribution assumes that the variable has a normal distribution. The results are shown in the Normal P-P plots as shown in the table below.





 Table 4.3
 Normal P-P Plot of Regression Standardized Residuals

From the table above, it was observed that the data were not normally distributed hence the assumption for normality for linear distribution was not met.

While Pearson correlation coefficient is the most common tool to measure the relationship between two variables, it requires that the data be normally distributed. The test of hypothesis was therefore conducted using Spearman correlation which does not require that the data be normally distributed. This coefficient is a non parametric statistic measure of correlation between two series; it uses a monotonic function to describe the relationship between two variables. However, unlike Pearson's coefficient, it is less sensitive to outliers' observations. The coefficient is a value between +1 and -1 inclusive. A value of 1 implies that an equation describes the relationship between the 2 series perfectly, i.e. the first series increases in the same proportion as the second one. A value of -1 implies that all data points lies on a line for which if the first series increases the second have a perfectly proportional decrease. A value of 0 implies that there is no linear correlation between the variables.

The interpretation of the correlation is subjective. A correlation of 0.9 can be considered low while verifying a physical law with high-quality instruments; however for a social sciences relationship it will usually be considered high, since the series are usually dependent of a variety of factors that are impossible to be observed (Stat Soft, 2010). The table below shows the correlation coefficients between current ratio and ROA for each of the six years.

	2004	2005	2006	2007	2008	2009
Correlation	240	365*	490**	471**	232	252
Coefficient						
Sig. (2-tailed)	-	.018	.001	.002		54p
N	42	42	42	42	41	42

Table 4.4Spearman's Rho for Liquidity and Leverage

From the table above, the correlation coefficients for years 2005, 2006 and 2007 were found to be negative, fairly strong and statistically significant at 1% significance level. The correlation coefficients for the other three years 2004, 2008 and 2009 were negative but not statistically significant (P>0.01). Thus the hypothesis is confirmed for the 3 years (P<0.01).

4.3 **TESTING HYPOTHESIS 2**

The second hypothesis tested was:

H₀: On the medium term a low liquidity level will not derail the upkeep of high profitability, and also a low profitability will not derail the upkeep of a high liquidity

 H_1 : On the medium term a low liquidity level will derail the upkeep of high profitability, and also a low profitability will derail the upkeep of a high liquidity To test this hypothesis, low liquidity was defined as current ratio less than 1; high profitability was defined as ROA greater than the average ROA for the particular year. These were then subjected to a one way ANOVA. The results of the regression analysis are shown in appendix 5 and summarised in the table below.

	Sum of				
	Squares	df	Mean Square	F	Sig.
Between Groups	312.292	1	312.292	1.909	-
Within Groups	40728.170	249	163.567		
Total	41040.462	250			

Fable 4.5ANOVA	Results for Profital	oility with I	Liquidity leve	el as the factor
----------------	----------------------	---------------	----------------	------------------

	Sum of				
	Squares	df	Mean Square	F	Sig.
Between Groups	5667.574	1	5667.574	57.052	.000
Within Groups	23046.979	232	99.340		
Total	28714.553	233			

 Table 4.6
 ANOVA Results for Liquidity with ROA level as the factor

From table 4.5 above, it was found that profitability does not rely on the level of liquidity (P>0.05). Thus the first part of the hypothesis is not substantiated hence it was concluded that low liquidity does not derail upkeep of high profitability.

However, from table 4.6 above, it was found that liquidity is dependent on profitability (P<0.05). This can be seen where poor performance compels firms to seek additional funds thus lowering liquidity level in subsequent years. Thus the second part of the hypothesis is substantiated and it was concluded that low profitability will derail the upkeep of a high liquidity in the medium term.



CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 INTRODUCTION

This chapter is a synthesis of the entire study. It presents a summary of the major findings, discussion of findings, conclusions and recommendations.

5.2 SUMMARY OF FINDINGS AND DISCUSSIONS

The study examined the liquidity of the listed firms and established that the annual average of current ratios for NSE listed firms were all greater than 1 for the six years examined indicating high levels of liquidity. Further, it was found that the financial sector has a higher liquidity level than non-financial companies.

Regarding profitability, it was found that the average annual profitability was into a declining trend between 2004 and 2007. The year 2008, however showed the highest variability in firm performance indicating that while some firms did very poorly, others performed well. The year 2008 reported the lowest ROA in the six years examined. This is confirmed by the very low minimum ROA of -24.56 and maximum of 41.05 posted in the same year. It was also found for each of the six years, Profitability was negatively related with liquidity. Statistically significant correlations were observed in years 2005 – 2007, while the rest were not significant.

Having divided liquidity into low and high, ANOVA results showed that low liquidity does not influence upkeep of high profitability. Contrariwise, low profitability influences the upkeep of high liquidity in the medium term.

The annual average of current ratios for NSE listed firms were all greater than 1 for the six years examined indicating high levels of liquidity. Those of the financial sector companies were even much higher which can be attributed to the nature of the business as well as legal requirements for a specific minimum liquidity levels among financial institutions. The non-financial sector firms posted an average liquidity greater than 1 indicating that the firms have largely taken a conservative stand on liquidity. This contradicts Huff, et al.'s (1999) results where he found that smaller firms more often present extreme liquidity levels, (very low and very small), while larger companies tend to have a more stable and around 1.0 current ratio.

The study tested the hypothesis that: On the short term, the relationship between liquidity and profitability is negative. The results indicated a negative relationship for each of the six years, though the correlation in three years was not statistically significant. This conforms to past studies where it was found that liquidity was negatively related to profitability.

Additionally, the study examined the hypothesis: On the medium term a low liquidity level will derail the upkeep of high profitability, and also a low profitability will derail the upkeep of a high liquidity. It was established that while low liquidity did not derail upkeep of high profitability, low profitability on the other hand could derail upkeep of high liquidity. This could be interpreted to mean that firms do not necessarily alter liquidity levels for as long profitability remains high in the medium term. This is supported by the first hypothesis where it was established that liquidity and profitability have a negative relationship. On the other hand, firms experiencing low profitability are forced to lower their liquidity levels to so as to increase their levels of return since liquidity has been found to be negatively related with firm performance.

5.3 CONCLUSIONS AND RECOMMENDATIONS

The study examined the relationship between liquidity and profitability of firms listed at the NSE for the period of 2004 to 2009 by help of statistical procedures, the study sought to examine the relationship between these variables for the short and long term. Thus the study sought to provide answers to each of the research questions;

Is there a negative relationship between liquidity and profitability in the short run?

Yes, it was observed that for the years studied, there was a significant negative relationship between liquidity and profitability. The results indicated that for the studied companies, on the short term the higher the liquidity level of the company, the lower its profitability. This confirms the usual findings from the literature, indicating that for this sample the dilemma between liquidity and profitability on the short term do exist.

Is there a positive relationship between liquidity and profitability on the medium to long term?

No, it was observed that companies with a poor indicator of liquidity will not derail upkeep of high profitability while a company with low indicator of profitability does

influence upkeep of high profitability. This indicates that companies with low profitability will consume the current assets and reduce borrowing in order to increase profitability. This is inline with the negative correlation between liquidity and profitability observed in testing the first hypothesis. This contradicts Hirigoyen theory that a company with a poor indicator of liquidity or profitability would have the other indicator deteriorated on the medium term, indicating a positive relationship between liquidity and profitability on the medium term.

Based on the conclusions of the study, it is recommended that while firms tend to equilibrate their current liabilities with their current assets in the medium term, they should exploit the advantages presented by having low liquidity levels.

5.4 LIMITATIONS OF THE STUDY

There was lack of enough research time to enable the analysis to be done for a longer period of time. The definition of medium term as 2004 to 2009 was limiting. This would have helped to analyse the relationship in the long term.

Due to the need for reliable data, qualitative analysis was not possible to establish the views of the finance managers in relation to the relationship between liquidity and profitability.

Time limitation did not allow the companies to be analysed by segment and then comparison be made. The findings therefore are general to all the companies listed at the NSE.

Regression analysis and ANOVA was the methodology used to analyse the data. This was due to ease of access to programmes like SPSS to analyse the data.

5.5 SUGGESTIONS FOR FURTHER RESEARCH

The study was based on all companies listed on the NSE and no attempt was made to conduct analysis by sector. Future studies should consider demarcating the sectors so as to reveal whether there are any differences in the relationship between liquidity and profitability in different sectors.

A longer period of analysis would be interesting to study, especially to observe the long term movement of the companies over the two-dimensional analysis for liquidity and profitability.

These need to study the relationship before and after the financial crisis and compare these results.

It would be interesting to execute a qualitative research in order to answer how the firm's managers observe the relationship of liquidity and profitability, i.e if they observe a dilemma between these two financial indicators or they think they are interdependent.

Finally, some more elaborate procedures such as linear programming and time series analyses would be able to give a deeper explanation regarding the relationship of these two financial indicators.

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APPENDICES

APPENDIX 1: STATISTICAL RESULTS FOR THE SAMPLE LIQUIDITY (CR) %

PROFITABILITY (ROA) %

-	Liquidity (CR)				Profitability (ROA)							
	2004	2005	2006	2007	2008	2009	2004	2005	2006	2007	2008	2009
Mean	6.98	7.37	7.67	7.87	7.27	6.84	13.84	13.78	13.42	13.17	13.21	13.46
Standard												
deviation	10.30	10.24	10.84	11.64	11.30	11.18	12.85	14.00	11.14	11.00	14.19	13.96
Coefficie												
nt of												
variation	105.99	104.82	117.46	135.39	127.70	124.91	165.08	196.26	124.18	121.03	201.36	194.81
Minimum	0.57	0.52	0.65	0.78	0.36	0.31	-6.13	-16.34	-2.94	-1.98	-24.56	-14.55
lst												
Quartile	1.38	1.41	1.35	1.32	1.32	1.34	5.10	6.59	6.49	6.02	5.73	5.78
3rd												
Quartile	11.39	9.93	10.51	9.42	6.21	4.55	21.82	23.13	19.86	18.73	20.69	17.89
Maximu	-											
m	44.38	41.19	43.57	44.98	41.05	48.35	52.96	46.40	41.86	46.44	41.05	57.25
Range	43.81	40.67	42.92	44.20	40.69	48.04	59.09	62.74	44.80	48.42	50.51	71.80
1st to 3rd												
Quartile												
range	10.01	8.53	9.16	8.10	4.89	3.21	16.72	16.54	13.37	12.71	14.96	12.11

APPENDIX 2: NSE LISTED COMPANIES INVOLVED IN THE STUDY

AthiRiver Mining

Bamburi Cement

Barclays Bank Ltd

Bat Kenya

BocKenya

Car & General(K) Ltd

Centum Investment

Cfc Stanbic Bank

City Trust Ltd

Cmc Holdings

Crown Be

Diamond Trust Bank Kenya Ltd

Eaagads Ltd

Eabl

East African Portland cement Ltd

Express

Housing Finance Co.Ltd

Jubilee Holdings Ltd

Kakuzi Ltd

Kapchoru Tea Co.Ltd

KCB

Kenol\Kobil Ltd

Kenya Airways

Kplc

Limuru Tea Co.Ltd

Marshall E.A Ltd

Mumias Sugar Nco. Ltd

Nation Media Group

Nbk

Nic Bank

Olympia Capital Holdings

Pan Africa Insurance Holdings Ltd

Rea Vipingo Plantations Ltd

Sameer Africa Ltd

Sasini Ltd

Standard Chartered Bank Ltd

Standard Group Ltd

Total Kenya Ltd

TpsEastern Afria Ltd

UngaGroup Ltd

Williams Tea Kenya Ltd

APPENDIX 3

DESCRIPTIVES VARIABLES=CR ROA /STATISTICS=MEAN STDDEV MIN MAX.

Descriptives

Notes							
Output Creat	ted	25-Aug-2011 16:10:47					
comments							
Input	Data	A:\1. MB\IRENE.NSE\DATA1b.sav					
	Active Dataset	DataSet1					
	Filter	<none></none>					
	Weight	<none></none>					
	Split File	Period					
	N of Rows in Working Data File	252					
Missing Value	Definition of Missing	User defined missing values are treated as missing.					
Handling	Cases Used	All non-missing data are used.					
Syntax		DESCRIPTIVES VARIABLES=CR ROA /STATISTICS=MEAN STDDEV MIN MAX.					
Resources	Processor Time	0:00:00.015					
	Elapsed Time	0:00:00.024					

[DataSet1] A:\1. MB\IRENE.NSE\DATA1b.sav

Period = 2004.00

Descriptive Statistics^a

	N	Minimum	Maximum	Mean	Std. Deviation
rent ratio	42	.57	44.38	6.9842	10.29512
A	42	-6.13	52.96	13.8480	12.84824
id N	42				
Imse)					
3 Denia d Or	004.00				

a Period = 2004.00

^Period = 2005.00

Descriptive Statistics^a

N	Minimum	Maximum	Mean	Std. Deviation
42	.52	41.19	7.3789	10.23801
42	-16.34	46.40	13.7747	14.00916
42				
	N 42 42 42	N Minimum 42 .52 42 -16.34 42	N Minimum Maximum 42 .52 41.19 42 -16.34 46.40 42 -16.34 46.40	N Minimum Maximum Mean 42 .52 41.19 7.3789 42 -16.34 46.40 13.7747 42 -16.34 46.40 13.7747

Period = 2005.00

period = 2006.00

Descriptive Statistics ^a					
	N	Minimum	Maximum	Mean	Std. Deviation
Current	42	.65	43.57	7.6474	10.83780
ROA	42	-2.94	41.86	13.4186	11.14363
Valid N (listwise)	42				
Revied = 2006.0	0				

a. Period 2006.00

Period = 2007.00

Descriptive Statistics^{*} N Minimum Maximum Mean Std. Deviation 42 .78 7.8682 Current 44.98 11.63559 ratio ROA 42 -1.98 46.44 13.1725 11.00152 Valid N 42 (listwise)

a. Period = 2007.00

Period = 2008.00

Descriptive Statistics^a Ν Minimum Maximum Mean Std. Deviation Current 41 .36 41.05 7.2679 11.30063 ratio ROA 42 -24.56 50.51 14.19015 13.2086 Valid N 41 (listwise) a Period = 2008.00

Period = 2009.00

Descriptive Statistics^a N Minimum Maximum Mean Std. Deviation Current 42 .31 48.35 6.8383 11,17617 ratio ROA 42 -14.55 57.25 13.4553 13.95748 Valid N 42 (stwise)

Period = 2009.00 а.

FREQUENCIES VARIABLES=CR ROA /NTILES=4 /STATISTICS=RANGE MODE /ORDER=ANALYSIS.

Frequencies

[DataSet0] A:\1. MB\IRENE.NSE\DATA1.sav

Period = 2004.00

Statistics^b

		Current ratio	ROA	_
N	Valid	4	12 42	2
	Missing		0 (0
Mode		.5	7 ^a -6.13	а
Range		43.8	31 59.09	9
Percentiles	25	1.381	1 5.1025	5
	50	2.269	96 10.1845	5
	75	11.392	21.8200	D

a Multiple modes exist. The smallest value is shown

b. Period = 2004.00

Frequency Table

Period = 2005.00

Statistics ^b				
		Current ratio	ROA	
N	Valid	42	42	
	Missing	0	0	
Mode		.52ª	-16.34 ^ª	
Range		40.67	62.74	
Percentiles	25	1.4045	6.5879	
	50	2.1258	9.4043	
	75	9.9931	23.1325	

a. Multiple modes exist. The smallest value is shown

b. Period = 2005.00

Period = 2006.00

	Statistics"				
		Current ratioN	ROA		
N	Valid	42	42		
	Missing	0	0		
Mode		.65 ^a	-2.94 ^a		
Range		42.92	44.80		
Percentiles	25	1.3481	6.4918		
	50	2.2230	9.6400		
	75	10.5100	19.8625		

a Multiple modes exist. The smallest value is shown

^{b.} Period = 2006.00

Period = 2007.00

Statistics					
			Current ratio		ROA
N	Valid			42	42
	Missing			0	0
Mode		1.2	.7	8 ^a	-1.98 ^a
Range			44.1	20	48.42
Percentiles	25		1.32	33	6.0279
	50		2.07	45	8.5570
	75		9.42	00	18.7300

a. Multiple modes exist. The smallest value is shown

b. Period = 2007.00

Period = 2008.00

Statistics^b

		Current ratio	ROA
N	Valid	41	42
	Missing	1	0
Mode		_36 ^ª	-24.56 ^a
Range		40.69	75.07
Percentiles	25	1.3155	5.7344
	50	1.8537	8.9350
	75	6.2100	20.6850

a. Multiple modes exist. The smallest value is shown

b. Period = 2008.00

Period = 2009.00

	Statistics"				
		Current ratio	ROA		
N	Valid	42	42		
	Missing	0	0		
Mode		.31 ^a	-14.55 ^ª		
Range		48.04	71.80		
Percentiles	25	1.3409	5.7752		
	50	2.0519	9.6200		
	75	4.5529	17.8850		

a. Multiple modes exist. The smallest value is shown

b. Period = 2009.00

APPENDIX 4

FILTER OFF. USE ALL. EXECUTE. NONPAR CORR /VARIABLES=CR ROA /PRINT=SPEARMAN TWOTAIL N(ISSING=PAIRWISE.

Nonparametric Correlations

	Notes	
Output Created		25-Aug-2011 12:57:29
Comments		
Input	Data	A:\1. MB\IRENE.NSE\DATA1b.sav
	Active Dataset	DataSet1
	Filter	<none></none>
	Weight	<none></none>
	Split File	Period
	N of Rows in Working Data File	252
lissing Value	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics for each pair of variables are based on all the cases with valid data for that pair.
yntax		NONPAR CORR /VARIABLES=CR ROA /PRINT=SPEARMAN TWOTAIL NOSIG /MISSING=PAIRWISE
lesources	Processor Time	0:00:00.015
	Elapsed Time	0:00:00.033
	Number of Cases Allowed	174762 cases ^a

Based on availability of workspace memory

[DataSet1] A:\1. \IRENE.NSE\DATA1b.sav

eriod = 2004.00

Correlations^a

			Current ratio	ROA
≫arman's rho	Current ratio	Correlation Coefficient	1.000	240
		Sig. (2-tailed)		.125
		N	42	42
	ROA	Correlation Coefficient	240	1.000
		Sig. (2-tailed)	.125	X
_		N	42	42

Period = 2004.00

Period = 2005.00

O a sea latis	
Correlatio	ns –

			Current ratio	ROA
Spearman's rho	Current ratio	Correlation Coefficient	1.000	365
		Sig. (2-tailed)		.018
		N	42	42
	ROA	Correlation Coefficient	365	1.000
		Sig. (2-tailed)	.018	3
		N	42	42

Correlation is significant at the 0.05 level (2-tailed).

3. Period = 2005.00

Period = 2006.00

		Correlations ^a		
			Current ratio	ROA
Spearman's rho	Current ratio	Correlation Coefficient	1.000	490
		Sig. (2-tailed)	÷	.001
		Ν	42	42
	ROA	Correlation Coefficient	490	1.000
		Sig. (2-tailed)	.001	
		Ν	42	42

* Correlation is significant at the 0.01 level (2-tailed).

1. Period = 2006.00

Period = 2007.00

		Correlations [®]		
			Current ratio	ROA
Spearman's rho	Current ratio	Correlation Coefficient	1.000	471
		Sig. (2-tailed)		.002
ROA		Ν	42	42
	Correlation Coefficient	471	1.000	
		Sig. (2-tailed)	.002	
		N	42	42

**. Correlation is significant at the 0.01 level (2-tailed).

a. Period = 2007.00

Period = 2008.00

		Correlations [*]		
			Current ratio	ROA
Spearman's rho	Current ratio	Correlation Coefficient	1.000	232
		Sig. (2-tailed)		.144
1		Ν	41	41
	ROA	Correlation Coefficient	232	1.000
	Sig. (2-tailed)	.144	×	
-		Ν	41	42

1 Period = 2008.00

Period = 2009.00

		Correlations		
			Current ratio	ROA
Spearman's rho	Current ratio	Correlation Coefficient	1.000	252
		Sig. (2-tailed)	8	.108
		Ν	42	42
	ROA	Correlation Coefficient	252	1.000
		Sig. (2-tailed)	.108	
		N	42	42

1. Period = 2009.00

PPENDIX 5

ression

	Notes	
utput Created		25-Aug-2011 12:47:37
omments		
put	Data	A:\1. MB\IRENE.NSE\DATA1b.sav
	Active Dataset	DataSet1
	Filter	<none></none>
	Weight	<none></none>
	Split File	Period
	N of Rows in Working Data File	252
issing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics are based on cases with no missing values for any variable used.
mtax		REGRESSION /MISSING LISTWISE /STATISTICS COEFF OUTS R ANOVA /CRITERIA=PIN(.05) POUT(.10) /NOORIGIN /DEPENDENT ROA /METHOD=ENTER CR /RESIDUALS NORM(ZRESID).
esources	Processor Time Elapsed Time	0:00:01.810 0:00:02.164
	Memory Required	1396 bytes
	Additional Memory Required for Residual Plots	312 bytes

leriod = 2004.00

Variables Entered/Removed^{b,c}

del	Variables Entered	Variables Removed	Method
	Current ratio ^a		Enter

All requested variables entered.

Period = 2004.00

Dependent Variable: ROA

Model Summary^{b,c}

			Adjusted R	Std. Error of the
del	R	R Square	Square	Estimate
	262*	.069	.045	12.55366

Predictors: (Constant), Current ratio

^period = 2004.00

Dependent Variable: ROA

ANOVA

del		Sum of Squares	df	Mean Square	F	Sig.
	Regression	464	394	1 464 394	2.947	094
	Residual	6303	773 4	0 157.594		
	Total	6768	167 4	1		

Predictors: (Constant), Current ratio

^{Period} = 2004.00

Jependent Variable: ROA

Coefficients^{a,b}

	Unstandardized Coefficient	s	Standardized Coefficients		
odel	В	Std. Error	Beta	t	Sig.
(Constant)	16.131	2.350		6 865	.000
Current ratio	327	.190	262	-1.717	.094
Period = 2004.00		^			

Dependent Variable: ROA

redicted Value 1.6232 15 9457 13 8480 3 36551 esidual -21.52765 37.69724 .00000 12.39962 d. Predicted Value -3.632 .623 .000 1.000	51 4	3 36551	40.0400			
esidual -21.52765 37.69724 .00000 12.39962 d. Predicted Value -3.632 .000 1.000	12 A		13 8480	15 9457	1.6232	edicted Value
d Predicted Value -3.632 .000 1.000	/< · ·	12.39962	.00000.	37.69724	-21.52765	esidual
	00 4:	1.000	.000	.623	-3.632	d. Predicted Value
g Residual -1.715 3.003 .000 988	38 4:	988	.000	3.003	-1.715	d. Residual

eriod = 2005.00

	Variables Entered/F	Removed ^{b,c}			
Indel	Variables Entered	Variables Removed	Method		
	Current ratio*		Enter		
All requested var	iables entered.				
Period = 2005.00	0				
Dependent Varia	ble: ROA				
	Mod	el Summary ^{b,c}			
			Adjusted R	Std. Error of the	
odel	R	R Square	Square	Estimate	
	295ª	.087	064	13.55404	
Predictors: (Cons	stant), Current ratio				
Penod = 2005.00	0				
Dependent Varial	ble: ROA				
		ANOVA			
odel		Sum of Squares	df	Mean Square	F
	Regression	698.039	1	698.039	3.800
	Residual	/348.478	40	183.712	
Predictors: (Cone	total	8046.518	41		
Panod - 2005 Of					
Dependent Vorial					
Contraction and	DIE. ROA				
		n in ab			
		Coefficients			
				Standardized	
Mal			<u>s</u>	Coefficients	
33	(Constant)	B 16 740	Sta. Error	Beta	t 6.470
	Current ratio	10.749	2.009	205	1.040
Period = 2005.00		403	.207	- 290	-1.345
Dependent Varial					
in a second world					
		a state and the state			
1		Residuals Statistics ^{***}			

. ..

Sig.

Sig.

000 .058

058ª

	Minimum	Maximum	Mean	Std. Deviation	N
micted Value	_1479	16 5409	13.7747	4.12618	42
dual	-32.28857	30.50749	.00000	13.38772	42
Predicted Value	-3.303	.670	.000	1.000	42
Residual	-2.382	2.251	.000	.988	42

Penod = 2005.00

Dependent Variable ROA

veriod = 2006.00

odel	Variables Entered	Variables Removed	Method
	Current ratio		Enter

All requested variables entered.

Period = 2006.00

Dependent Variable: ROA

Model Summary^{b,c}

odel	R	R Square	Square	Estimate
	.348*	.121	.099	10.57812

Predictors: (Constant), Current ratio

Period = 2006.00

Dependent Variable: ROA

ANOVA ^{b,c}							
odel		Sum of Squares	df	Mean Square	F	Sig.	
Regression		615.537	1	615.537	5.501	.024 ^a	
Residual		4475.863	40	111.897			
Total		5091.399	41				
					_		

Predictors: (Constant), Current ratio

Period = 2006.00

Dependent Variable: ROA

	Coefficients ^{a,b}				
	Unstandardized Coefficients		Coefficients		
lodel	В	Std. Error	Beta	t	Sig.
(Constant)	16.153	2.006		8.053	.000
Current ratio	358	.152	348	-2.345	.024

Period = 2006.00

Dependent Variable: ROA

Residuals Statistics^{a,b} Minimum Maximum Mean Std. Deviation Ν edicted Value 5758 15.9206 13 4186 3.87467 42 sidual -18.19953 26.86330 .00000 10.44832 42 J. Predicted Value -3.315 42 .646 .000 1.000 I. Residual -1.720 2.540 .000 988 42

Period = 2006.00

Dependent Variable: ROA

eriod = 2007.00

del	Variables Entered	Variables Removed	Method
	Current ratio		Enter

All requested variables entered.

Jependent Variable: ROA

-		Model Summary ^{b,c}		
el	R	R Square	Square	Estimate
	328 ^a	.108	.085	10.52209

redictors: (Constant), Current ratio

^{Briod} = 2007.00

Pependent Variable: ROA

ANOVA ^{b,c}							
lodel	Sum of Squares	df	Mean Square	F	Sig		
Regression	533.795	1	533.795	4.821	034 ^a		
Residual	4428.574	40	110.714				
Total	4962.369	41					

Predictors: (Constant), Current ratio

Period = 2007.00

Dependent Variable: ROA

Coefficients ^{a,b}								
Unstandardized Coefficients		s	Coefficients					
lodel	В	Std. Error	Beta	t	Sig.			
(Constant)	15 613	1.967		7.935	000			
Current ratio	310	.141	328	-2.196	034			

Period = 2007 00

Dependent Variable: ROA

	Minimum	Maximum	Mean	Std. Deviation	N
redicted Value	1.6640	15 3692	13.1725	3.60824	42
esidual	-16.96436	31.51180	.00000	10.39298	42
td. Predicted Value	-3.190	609	000	1.000	42
td. Residual	-1.612	2.995	.000	.988	42

Period = 2007.00

Dependent Variable: ROA

⁹eriod = 2008.00

lodel	Variables Entered	Variables Removed	Method
	Current ratio		Enter
All requested variables entit	ered		

Period = 2008.00

Dependent Variable: ROA

Model Summary ^{b.c}							
odel	R	R Square	Square	Estimate			
	_223 ^a	.050	.025	14.11175			
Predictors: (Constant), Cur	rent ratio						

Period = 2008.00

Dependent Variable: ROA

ANOVA

		· 1	•	Sig.
Regression 404.985	1	404.985	2.034	.162 ^a
Residual 7766 513	39	199.141		
Total 8171.498	40			

Predictors: (Constant), Current ratio

Period = 2008.00

Dependent Variable: ROA

		Coefficients ^{a,b}						
		Unstandardized Coeffic	Unstandardized Coefficients		Coefficients			
odel		В		Std. Error	Beta	t	Sig.	
	(Constant)	15.4	76	2 630		5.885		000
	Current ratio	2	:82	.197	223	-1 426		.162
Period = 2008.00							L	

Dependent Variable: ROA

Residuals Statistics ^{a,b}						
	Minimum	Maximum	Mean	Std. Deviation	N	
Predicted Value	3.9178	15.3744	13,4298	3.18192	41	
Residual Std Predicted Value	-39.67198 -2.989	35.59046 .611	00000	13.93423 1.000	41 41	
Std Residual	-2.811	2.522	.000	.987	41	

Period = 2008 00
 Dependent Variable: ROA

p Dependent Vallable. ROA

Period = 2009.00

Model	Variables Entered	Variables Removed	Method
1	Current ratio		Enter
 All requested up 			

a All requested variables entered.b. Period = 2009.00

D. 1 Chod 2000.00

c. Dependent Variable: ROA

Model Summary ^{b,c}							
Model	R	R Square	Square	Estimate			
1	.223 ⁸	.0	.026	13.77450			
a Predictors: (Constant), Cur	rent ratio						

b. Period = 2009.00

c. Dependent Variable: ROA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	397.788	1	397.788	2.097	.15
1	Residual	7589.473	40	189.737		
1	Total	7987.261	41			
la contra c						1

a. Predictors: (Constant), Current ratio

b. Period = 2009.00

c. Dependent Variable: ROA

Coefficients ^{a,b}						
	Unstandardized Coefficient	s	Coefficients			
Model	В	Std. Error	Beta	t	Sig.	
(Constant)	15.361	2.500		6.144	00	
Current ratio	279	.192	223	-1 448	.15	

a. Period = 2009.00

0. Dependent Variable: ROA

Residuals Statistics ^{**}						
	Minimum	Maximum	Mean	Std. Deviation	N	
Predicted Value	1.8859	15.2757	13 4553	3.11483	42	
Residual	-29 66407	42.95814	.00000	13.60548	42	
Std. Predicted Value	-3.714	.584	.000	1.000	42	
Std. Residual	-2.154	3.119	.000	988	42	

Period = 2009.00

Dependent Variable: ROA

xv