Relationship Between Cash Flow and Earnings Performance Measures for Companies Listed on Nairobi Stock Exchange.

By

Kiprono D.K.

A Management Research Project Submitted in Partial Fulfillment of The Requirements for The Degree of Masters in Business Administration (MBA), Faculty of Commerce, University of Nairobi.

December 2004

TABLE OF CONTENTS

DECLARATION

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

SIGNED: ..... DATE: 4/3/2005

KIPRONO DANIEL KIPYATOR D61/P/7946/2000

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

M SIGNED: ..... DATE: 7/3/2005

MOSES ANYANGU.

Lecturer Department of Accounting

University of Nairobi.

DEDICATION

This project is dedicated in all sincerity and due respect to my parents for having granted me the opportunity to go to school and acquire knowledge.

ACKNOWLEDGEMENTS.

A project of this kind is without doubt beyond the efforts of a single individual. In this regard, I am indebted to both those who inspired me to pursue the course and those who assisted and guided me in this study.

First and foremost, my utmost gratitude goes to my supervisor Mr Moses Anyangu for his constant guidance and encouragement without which this project would not have seen the light of the day.

The course was smooth because of my caring and understanding wife, Diana Jelagat, my special thanks goes to her. To my children Sharon Jerop, Loma Jepkemoi and Nimrod Kiprotich, I am deeply indebted for their understanding and patience, which made them forego a lot of things because of my desire for additional knowledge.

I am also grateful to my MBA peers for their companionship and for creating a supportive environment that made my MBA course enjoyable. My sincere thanks goes to the teaching and support staff of the faculty of commerce, university of Nairobi for creating a conducive academic environment.

Above all, great thanks to GOD for the strength and inspiration to overcome the challenges of the MBA program and the various hardships of life that cropped up in the year 2003.

ABSRACT

This study sets out to determine the relationship between cash flows and earnings performance measures for companies listed at Nairobi Stock Exchange.

Financial reports for listed companies were obtained from Nairobi Stock Exchange for the years 1998 to 2002. From the data extracted from the financial reports, multiple regression analysis was performed with the aid of a statistical package (SPSS) to establish the relationship between cash flows and earnings performance measures i.e Return on assets (ROA), Return on equity (ROE) and Return on net assets (RONA).

The regression results displayed no significant relationship between cash flows and earnings performance measures for companies listed at Nairobi stock exchange.

1. INTRODUCTION

1.1 Background of Study

Most businesses fail for lack of cash than for want of profits. Profits are considered to be the most important measure of company performance. Investors and analysts judge companies by their ability to turn in increasing profits each reporting period. This is so in spite of the uncertainties involved in calculating these figures (http://www.planware.org, 2004).

Although the concept of profit is widely accepted and understood, the difficulties of profit calculation are not. It is difficult to explain to many non-accountants that profits shown in published accounts are really a matter of opinion and are not precise mathematical measures (Kelly & O'Connor, 1997).

In recent years, the investment community has increasingly supplemented traditional earnings-and balance statement-related metrics with analysis of companies' cash flow. A variety of forces have driven the rise of cash flow metrics, including changes in the activities and nature of the corporation, a desire to better gauge the health of corporations and regulatory changes in American equity markets (Giacomino and Mielke 1993).

Cash flow is essentially the movement of money into and out of a business; it's the cycle of cash inflows and cash outflows that determine a business' solvency. When more cash comes in than goes out, it is said to be a positive cash flow. A negative cash flow is when more cash goes out than comes in.

There is no generally accepted definition of "cash flow." Currently, this term designates a variety of values, which either examine the solvency and liquidity of a company or else measure the ongoing successes and growth of a company. These values include earnings before interest, taxes, depreciation and amortization (EBITDA), earnings before goodwill amortization, cash flow from operations, cash flow from investments, free cash flow and net operating profits after taxes (NOPAT). EBITDA and earnings before goodwill amortization are the most commonly used of these definitions. This lack of a generally accepted definition requires analysts and executives to carefully examine the accounting underlying cash flow values. The information conveyed by a cash flow figure will vary widely based on the variables used in calculation (Working Council For Chief Financial Officers, 2000).

According to Kelly and O'Connor (1997), cash flow, on the other hand, provides a much better method of control. A business needs to generate cash to keep going. In the short-term, the sources of cash are not of primary

concern. It is enough that a company can generate sufficient cash to meet its immediate obligations and so continue to operate. In the longer term, however, the sources from which the cash is generated may become a critical factor. If the core business of the company does not generate sufficient cash over time the business is unlikely to survive. Rupert Murdoch, the media entrepreneur, has continually shown an ability to generate cash for his enterprises. He has done this by both generating revenues from his core businesses (e.g. The Sun newspaper) and arranging loans. Many of his businesses have been run on very high borrowings. He has been in situations (e.g. in 1990) where considerable skill has been required to generate 'non-revenue' cash flows (i.e. loans) in order for his businesses to survive (Shawcross, 1993).

It is only recently that cash flow has been considered important for external reporting purposes. The introduction of funds flow statements into published accounts in the 1970s was the first attempt to rectify the absence of any formal cash flow report. The accounting standard that covered this area (SSAP10, 1975) did not require a proper cash flow report but suggested an optional funds flow statement instead. This was easier and less onerous to produce. It merely provided a link between the opening and closing balance sheets shown in the published accounts with no requirement to produce a detailed statement of in-flows and out-flows of cash. FRS 1 Cash Flow Statements, which was

introduced in September 1991, was orientated towards production of a more cash detailed statement in the published accounts. It was further revised in 1996 to improve the cash detail to be included in the published statement (Kelly & O'Connor, 1997).

Because cash flow analysis relies on different data than do other metrics, it naturally values companies differently. Thus, as cash flow analysis influences the buying and selling decisions of increasing numbers of analysts, this metric has the potential to affect company market values either positively or negatively. In particular, cash flow analysis tends to reward expenditures that reduce short-term profits but increase a company's potential for long-term growth and profitability. However, despite the growing influence of cash analysis on equity markets, more traditional measurement techniques should continue to play a major role in company valuation (Working Council For Chief Financial Officers, 2000).

1.2 Statement of The Problem

Cash inflows and outflows are the heartbeat of every business. One of the main reasons that businesses fail is their inability to meet their financial obligations when they fall due as they have run out of cash. Knowing how to maintain a healthy cash flow is essential to a successful business.

While failure to generate profits is critical to a business, it is only one cause of business failure. Profits don't guarantee positive cash flow. The immediate continued operation of a business is at risk of insolvency if it does not have the cash to finance working capital needs. Measuring the movement of money into and out of a business allows the business and management to monitor its liquidity/solvency position and set in place strategies to deal with shortages and surpluses.

Many companies at the Nairobi Stock Exchange use profits as their measure of performance and by which they are judged by investors and stockholders alike. However as indicated that profits don't guarantee positive cash flow, a healthy flow of cash can decrease the amount of debt financing required and increase profitability by reducing interest expenses. It can also help you to generate

income on surplus funds so the business can expand and grow. It is the heartbeat of an organization.

A lack of cash flow data has caused problems for investors and analysts in assessing a company's performance, liquidity, financial flexibility and operating capability (Figlewicz & Zeller, 1991). Zeller and Stanco (1994) reports on the uniqueness and stability of operating cash flow ratios, relative to accrual based financial ratios to measure a company's ability to pay. A profitable company may suddenly go bankrupt because of a shortage of cash to pay obligations when due, and a solvent company may be unprofitable for several years (Figlewicz & Zeller, 1991).

This study is set to investigate the impact of cash flows on the performance of the companies quoted at the Nairobi Stock Exchange. The question that this study seeks to answer is: Would the performances of the firms at the NSE as reported in their profit and loss accounts be the same if cash flows were used to assess their performances?

1.3 Objectives of Study

The objective of this study was to determine the relationship between cash flow and earnings performance measures for companies quoted at the Nairobi Stock Exchange.

1.4 Importance of the Study

This study will be of value to:

1. Current investors and firms at the Nairobi Stock Exchange and elsewhere and any other firm in competitive industry, it will add knowledge on the understanding of the importance of cash flow and cash flow statement in analyzing company performance.
2. To those using other methods of performance measurement, it will help them in realizing the difference it can make for a company to use cash flow statements in performance measurement, the results and the impact it can have on shareholders and investors.
3. To the academicians and researchers by providing more insight into relationship between cash flow and company performance. As the environment is very dynamic, the practitioners of management need to update themselves and the industry on the best practices required in the industry.

2. LITERATURE REVIEW

2.1 Cash Flow and Performance Measurement

As a business owner, one may want to review how well the company performs over a period of time. To measure the company's performance, the accountant prepares financial statements. While the balance sheet gives a snapshot of a firm's financial position, income statement and cash flow statement show performance over the period of time that ends on the date they are prepared. Of these two, the income statement is usually in the spotlight. It shows sales, expenses, and profits or losses for the period just ended. However, the statement of cash flows is often the most important of the three statements. Cash is the lifeblood of companies, especially small companies. It takes cash to pay employees, suppliers, and taxes (www.sba.gov, 2004).

Since the early 90's the accounting profession has experienced much pressure to increase the quality and contents of financial reporting. To lessen the criticism the accounting profession in the USA embarked on intensive research into the development of a conceptual framework. This was followed internationally by the issuing, during July 1989 of a document by the IASC titled 'Framework for the Preparation and Presentation of Financial Statements' (Opperman et al, 1995).

Giacomino and Mielke (1993) investigated whether the cash flow statement can enhance the usefulness of financial information for economic decision-making. The authors proposed nine cash flow-based ratios to be used for relative performance evaluation. They conducted an empirical study of cash flow statements to provide industry averages and to determine if the potential exist to develop benchmarks for the ratios by industry. The averages for the ratios or norms were computed for 1986 to 1988 in the electronics, food and chemical industries.

Giacomino and Mielke (1993) proposed operating cash flow ratios for relative performance evaluation in the United States of America (USA). Ratios were calculated for companies in the chemical, food and electronic industries. Three-year averages, which may be used as industry norms for the ratios were computed to determine if the potential exists to develop benchmarks for the ratios by industry. Jooste (1999) calculated similar ratios and a three-year average (1994 to 1996) for listed companies in South Africa. The aim of this paper was to compare the norms for the industries in South Africa (SA) to those in the USA.

2.2 Performance Measures

Other performance measures that can be used to measure the performance of an organization may include the measures such as Return on Assets (ROA), Return on Equity (ROE), Return on Net Assets (RONA) and Return on Operating Assets (ROOA).

2.2.1 Return on Net Assets (RONA)

According to Value Based Management Consultants (valuebasedmanagement.net, 2004) RONA or the Return On Net Assets equals the Net Operating Profit After Tax divided by the sum of cash, the working capital requirement and the fixed assets. A strong virtue of using RONA compared to traditional methods for measuring company success is that it also considers the assets a company uses to achieve its output.

Return on Net Assets is similar to EVA [EVA = (RONA-WACC) x invested capital]. However using RONA instead of EVA is generally not recommended, because managers might bypass value-creating activities because they would reduce RONA (a risk if RONA is greater than WACC), or they might undertake value-destroying activities because they would increase RONA (if RONA is less than WACC).

Although Return on Net Assets (RONA) does not explicitly measure capital charges, it does remind managers that there is a cost to acquiring and holding assets. Ultimately maximizing EVA should rather be seen as the key to financial success than maximizing RONA.

Formula:

Net Sales - Operating Expenses = Operating Profit (EBIT)

Operating Profit (EBIT) - Taxes = Net Operating Profit After Tax (NOPAT)

Net Operating Profit After Tax (NOPAT)/ Net Assets = Return on Net Assets (RONA)

2.2.2 Return on Assets (ROA)

Return on assets measures a company's earnings in relation to all of the resources it had at its disposal [the shareholders' capital plus short and long-term borrowed funds]. Thus, it is the most stringent and excessive test of return to shareholders. If a company has no debt, its return on assets and return on equity figures will be the same. There are two acceptable ways to calculate return on assets.

1. Net Profit Margin x Asset Turnover
2. Net income divided by Average Assets for the Period

Where asset turnover tells an investor the total sales for each Ksh.1 of assets, return on assets [or ROA for short] tells an investor how much profit a

company generated for each Ksh.1 in assets. The return on assets figure is also a sure-fire way to gauge the asset intensity of a business (http://beginnersinvest.about.com).

2.2.3 Return on Equity (ROE)

A company's return on equity (ROE) reflects the productivity of the net assets (assets minus liabilities) a company's management has at its disposal. Whenever a company generates profits, there are four main ways to use that profit.

- Pay shareholders a dividend
- Pay down debt
- Buy back shares of company stock
- Reinvest in operations

Return on equity reveals how effectively reinvested earnings and capital that shareholders originally invested in the company are used to generate additional earnings. For example, profits might be used to acquire another company. Or, a new factory might be built, increasing the firm's output and sales. To calculate return on equity, take one year's (or four quarters') worth of earnings (often referred to as "net income") from the income statement. Next, look at shareholders' equity, on the balance sheet. Remember that net income reflects income generated over a period of time, whereas shareholder's equity listed on the balance sheet reflects a value at one point in time. You want to use a shareholder equity figure that covers the same period of time as the net income

figure. So, you'll average two shareholders' equity numbers, from the beginning and end of that period, adding them and then dividing by two. To finally arrive at the ROE, divide the year's earnings by the average shareholders' equity.

2.3 Importance of Cash Flow in Company Performance

There exists a multitude of options for measuring corporate progress, including those pertaining to financial performance. Any company, no matter how big or small, moves on cash and not profits. Financial obligations cannot be paid with profits, only cash (Stancill, 1987). The FASB, in its Discussion Memorandum on 'Reporting Funds Flow and Financial Flexibility', states as given that profitability and funds flows are different subjects (Gombola & Ketz, 1983). Accrual accounting does not measure cash flows.

An investigation on cash flows revealed that many authors agree on the importance of cash flow information. Cash flow may be viewed as the lifeblood of a company and the essence of its very existence (Rujoub et al, 1995).

Cash flow ratios can be used to answer such questions on a company's performance since debt obligations are met with cash. Such an analysis will result in adequate lines of credit, unrestricted cash availability, debt maturity schedules with respect to financing requirements and the willingness to issue

common equity. It will allow an analyst to examine a company's financial health, and how the company is managing its operating, investment and financing cash flows (Palepu et al, 2000). Profitable activities do not necessarily provide needed cash, and cash generating activities are not necessarily profitable.

According to Harper (2003), premature revenue recognition and delayed expenses are more intuitive than the distortions caused by the balance sheet, such as overvalued assets. Overvalued assets are considered a timing issue here because, in most (but not all) cases, "the bill eventually comes due." For example, in the case of overvalued assets, a company might keep depreciation expense low by carrying a long-term asset at an inflated net book value (where net book value equals gross asset minus accumulated depreciation), but eventually the company will be required to "impair" or write-down the asset, which creates an earnings charge. In this case, the company has managed to keep early period expenses low by effectively pushing them into future periods.

Many cash flow items have a direct counterpart, that is, an accrual item on the income statement. During a reporting period like a fiscal year or a fiscal quarter, the cash flow typically will not match its accrual counterpart. For example, cash spent during the year to acquire new inventory will not match cost of goods

sold (COGS). This is because accrual accounting gives rise to timing differences in the short run: on the income statement, revenues count when they are earned, and they're matched against expenses as the expenses are incurred. Expenses on the income statement are meant to represent costs incurred during the period that can be tracked either (1) to cash already spent in a prior period or (2) to cash that probably will be spent in a future period. Similarly, revenues are meant to recognize cash that is earned in the current period but either (1) has already been received or (2) probably will be received in the future. Although cash flows and accruals will disagree in the short run, they should converge in the long run, at least in theory (Harper, 2003).

The primary purpose of the cash flow statement, according to the FASB, is to assess a company's liquidity, solvency, viability and financial adaptability. According to Carslaw and Mills (1991) cash flow ratios must be developed to serve the objectives set out in the statement of cash flow, which is to assess:

- The ability to generate future positive net cash flows.
- The ability to meet obligations and pay dividends, and the need for external financing
- The reasons for differences between net income and net cash flows.

- The effects on the financial position of both cash and non-cash investing and financing transactions during a period

According to Giacomino and Mielke (1993), there are several important cash flow ratios that can be used to measure performance of a company at any given point in time. These ratios include the Cash flow adequacy ratio, Components of cash flow adequacy ratio, Debt coverage ratio, Impact of depreciation write-off ratio, Cash flow to sales ratio, Operating index ratio, and the Cash flow return on assets.

2.3.1 Cash flow adequacy ratio

The cash flow adequacy ratio indicates the adequacy of a company's operating activities to cover its long-term payments, purchase of assets and payments of dividends. Giacomino and Mielke (1993) consider a ratio of one as a reasonable target

2.3.2 Components of cash flow adequacy ratio

The long-term debt payment, dividend payout and reinvestment ratios each represent a major component of the denominator in the cash flow adequacy ratio. When expressed as percentages and added together, the three ratios show the percentage of cash from operations available for discretionary uses. A ratio of more than one, for the long-term debt payment (or reinvestment ratio) will

indicate the long-term debt to exceed operating cash flow. A company may use cash from investing and financing activities to pay obligation, but cash from operating activities represents the main source of long-term funds (Giacomino and Mielke 1993).

2.3.3 Debt coverage ratio

The debt coverage ratio estimates how many years, at the current level of cash from operations, it will take to retire all debt.

2.3.4 Impact of depreciation write-off ratio

The impact of the depreciation write-off ratio indicates the percentage of cash flow from operating activities that arises from the adding back of depreciation, adjustments and other write-offs. A company will be considered more efficient as well as sufficient if depreciation have a relatively low impact on cash from operations. The reinvestment ratio should exceed the depreciation write-off ratio over several years to indicate sufficient replacement of assets at higher current costs (Giacomino & Mielke, 1993).

2.3.5 Cash flow to sales ratio

The cash flow to sales ratio is a cash-flow-based measure of return on sales. It measures the percentage of each sales-dollar or shilling realized as cash from operations.

2.3.6 Operating index ratio

The operating index ratio compares cash from operations to income from continuing operations. It measures the cash-generating productivity of continuing operations. This ratio also indicates the extent of non-cash transactions included in operating income.

2.3.7 Cash flow return on assets

The cash flow return on asset ratio measures cash generated from assets used. This ratio can also be compared with accrual the return on asset ratio. According to Giacomino and Mielke (1993) the cash flow return on assets ratio for the electronic companies decreased from 1986 to 1988. This decrease may be due to a large increase in the reinvestment ratio.

2.4 Role of cash flow in firm valuation

Cash flows acts on valuations the way gravity acts on matter. The lower the cash flow, the greater the downward pull on valuation. (McGovern, 1996).

Cash flow is the constant flow of money in and out of a company. The outflow of cash is the money paid every month to salaries, suppliers, and creditors. The inflow is the money received from customers, lenders, and investors. (Investopedia.com)

Three popular approaches to value a privately held company include:

1. **Balance sheet approach.** This is the easiest way to value a business. It will more often than not, however, produce the lowest valuation. A company's book value is simply a firm's liabilities subtracted from its assets. Banks and insurance companies are often valued on this basis. Many analysts believe that using an "adjusted book value" formula will produce a more accurate picture because this method takes into account the fair market value of assets and liabilities rather than a firm's "historical book." Liquidation value is another way of using a company's balance sheet to arrive at a value. In this method, what's left after the assets are sold and the debts are paid is calculated. What is left is the value.
2. **Market comp approach.** In this approach, private companies are compared to comparable public companies. For example, if a similar public company is valued at, say, 23 times current earnings, then that yardstick can be applied to determine the value of the private company.

When using multiples, private companies are usually adjusted downward because of the lack of liquidity in exchanging shares for cash. Non-financial comparisons might include companies with similar products, markets or industry criteria. Financial comparisons might include size (revenues), EBITDA, cash flow, price to book, price to earnings or M&A companies.

3. **Discounted cash flow approach.** Simply stated, this means that an analyst capitalizes an anticipated income stream or cash flow in the future. This is accomplished by discounting a company's future income or cash flow at an assumed opportunity cost of capital. This is called bringing future anticipated income to "present value." This approach will generally, but not always, produce the highest value. (Fiduccia, 2001).

Regardless of how a business is valued, there are both quantitative and qualitative factors that play a role in a comprehensive appraisal. Many of the elements that go into a business valuation can be classified in three categories:

- "Hard numbers," such as historical profits, assets, cash flow and liabilities, are always important in determining the worth of a business.

- "Soft figures," such as income and cash flow projections, can be very important to a buyer or investor interested in the company.
- "Intangible assets," such as patents, brand names, quality or reputation of management, location, recipes, customer lists or goodwill often have a hand in determining the overall value of a business.

Most companies are valued for the purposes of a sale, merger or investment. For this reason, we must mention the concepts of fair market value and investment value. Fair market value is the value established between a willing buyer and a willing seller—it's just that simple. And even though a seller and buyer may arrive at fair market value in entirely different ways, in essence, it doesn't matter. Investment value, on the other hand, is generally regarded as FMV-adjusted (upward) for the special benefits that a buyer accrues from acquiring the new entity. These benefits might include cost savings or added purchasing power. The good news is, regardless of the valuation method employed or how the value is determined, no one can claim you're wrong. But do keep in mind that not everyone will necessarily agree with your assessment and may question the underlying assumptions that led to your valuation. For serious valuations, there are a number of professional services providers that specialize in valuing private companies. (Fiduccia, 2001).

The best things in life are free, and the same holds true for cash flow. Smart investors love companies that produce plenty of free cash flow (FCF). It signals a company's ability to pay debt, pay dividends, buy back stock, and facilitate the growth of business which are all important undertakings from an investor's perspective. However, while free cash flow is a great gauge of corporate health, it does have its limits and is not immune to accounting trickery. By establishing how much cash a company has after paying its bills for ongoing activities and growth, FCF is a measure that aims to cut through the arbitrariness and "guesstimations" involved in reported earnings. Regardless of whether a cash outlay is counted as an expense in the calculation of income or turned into an asset on the balance sheet, free cash flow tracks the money. (McClure, 2003).

The Key Inputs in DCF Valuation are:

- Discount Rate
- Cost of Equity, in valuing equity
- Cost of Capital, in valuing the firm
- Cash Flows
- Cash Flows to Equity
- Cash Flows to Firm

- Growth (to get future cash flows)
- Growth in Equity Earnings
- Growth in Firm Earnings (Operating Income)

Errors in estimating the discount rate or mismatching cash flows and discount rates can lead to serious errors in valuation. At an intuitive level, the discount rate used should be consistent with both the riskness and the type of cash flow being discounted.

- **Equity versus Firm:** If the cash flows being discounted are cash flows to equity, the appropriate discount rate is a cost of equity. If the cash flows are cash flows to the firm, the appropriate discount rate is the cost of capital.
- **Currency:** The currency in which the cash flows are estimated should also be the currency in which the discount rate is estimated.
- **Nominal versus Real:** If the cash flows being discounted are nominal cash flows (i.e., reflect expected inflation), the discount rate should be nominal (Damodaran, 2000).

Damodaran (2000) continues to say that cash flow assessment is important to assessing the credit risk of a company. Banks and other lenders use accounting numbers (as well as other information) to estimate a firm's future cash flows.

These estimates are then compared to projected future debt-service requirements. Companies with projected operating cash flows in excess of debt principal and interest payments are classified as good credit risks, while those with less favorable operating cash flow prospects are classified as high credit risks and may be denied credit, be charged higher interest rates, or have stringent conditions placed on their loans. Simply stated, accounting numbers play a key role in lending decisions by providing information that is used to assess the amount, timing, and uncertainty (i.e., risk) of a firm's future cash flows.

3. RESEARCH METHODOLOGY

3.1 Population

The population of interest in this study consisted of all the 47 companies listed at the Nairobi Stock Exchange as at 31st December 2002 as per appendix 1.

3.2 Sample

The intention of this project was to study all the firms quoted at the Nairobi Stock Exchange, excluding the companies listed in the Financial Institutions segment. The latter were excluded because of their nature of accepting deposits. This may make their cash flows not to give a reliable picture of performance.

Mumias sugar was listed in the year 2001. The company's financial statements for the period prior to the year of listing were not available at the Nairobi Stock Exchange. The company was therefore excluded from the analysis. The financial statements for Dunlop for the year 1998, Kenya orchards for the year 2002, Kenol for years 1998-2000 and KPLC for year 1998 were not available at Nairobi stock exchange. These companies were therefore excluded from the analysis. Kenya national mills was delisted in the year 2002, consequently the company was excluded from the analysis.

The remaining 31 companies therefore formed the sample for this study.

3.3 Data Collection

For purposes of this research, Secondary data was used. Data on companies' cash flows and performance indicators was obtained from the financial reports of these companies. These financial reports were obtained from the Nairobi Stock Exchange. Data was collected from financial reports of the past five years from 1998 to 2002.

3.4 Data Analysis

Using financial reports for the years 1998 to 2002, total cash flows, cash flow from operating activities, cash flow from investing activities, cash flow from financing activities, return on assets (ROA), Return on equity (ROE), return on net assets (RONA) and profit after tax were calculated as averages for the five years for each company.

Basic analysis begun with the determination of various measures of central tendency; namely mean, mode and median. Standard deviation and range were used as measures of dispersion (variation). Both simple regression and Multiple regression analysis were then performed to establish the relationship between cash flows and returns based performance indicators i.e. ROA, ROE and RONA. Average cash flows were regressed against performance indicators for the same period.

Both simple regression and multiple regression analysis were also used to determine the relationship between cash flows and profit after tax.

The following regression models were used

- $Y=a + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + e$
- $Y= a + \beta_1 X_1 + e$
- $Y= a + \beta_2 X_2 + e$
- $Y= a + \beta_3 X_3 + e$

Where:

Y represents the performance indicators (ROA, ROE, RONA and profit after tax), X_1 cash flow from operating activities, X_2 cash flow from investing activities, X_3 cash flow from financing activities.

β_1, β_2, β_3 are the slopes/gradients of cash-flows from operating activities X_1,cash flows from investing activities X_2 and cash-flows from financing activities X_3 respectively while a, is the constant and e is the error term.

Coefficient of correlation - R was used to establish the relationship between ROA, ROE, RONA and profit after tax as dependent variables and various cash flows as independent variables. A positive R showed a direct relationship while a negative R showed an inverse/indirect relationship.

Coefficient of determination - (R^2) was used to measure the total variation in the dependent variable (performance indicators) that was accounted for by the variation in the independent variable (cash flows).

F – Test was used to test for the significance of the overall model. The null hypothesis (i.e. the model lacking explanatory power) was rejected when the significance value F – statistic was less than 0.05 (significance level).

Durbin Watson test was used to test for autocorrelation in the model. It tested the independence of each value of cash flows at different observations. Durbin Watson value above 2 showed the absence of autocorrelation.

T – Test was used to test for the significance of each predictor variables (Constant and cash flows) in the model. The null hypothesis (i.e. the model lacking explanatory power) was rejected when the significance value t – statistic was less than 0.05 (significance level).

4. DATA ANALYSIS AND FINDINGS.

4.1 Introduction

The main objective of this study was to determine the relationship between cash flows and earnings performance measures for companies listed at the Nairobi stock exchange. In order to achieve this objective, both simple and multiple regression analysis were performed to establish the relationship between cash flows and earnings performance indicators i.e. ROA, ROE, RONA and profit after tax where Average cash flows were regressed against earnings performance indicators for the same period.

4.2 Descriptive statistics of companies surveyed.

Table 1 : Measures of central tendency for returns Performance indicators.

	ROA (%)	RONA (%)	ROE (%)
Mean	4.20	5.50	8.80
Median	5.00	6.00	7.00
Mode	5.00	6.00	7.00
Std deviation	5.70	9.90	18.00
Range	24.00	44.00	112.00
N	31	31	31

Table 1 and 2 presents descriptive statistics for the 31 companies in the sample.

The average mean of Return on Assets (ROA) for 31 companies studied was 4.2% with median as 5%, mode of 5% and standard deviation of 5.7%. The range was 24%.

The 31 companies studied and listed on the Nairobi Stock exchange gave an average mean of 5.5%, median of 6%, mode of 6%, standard deviation of 9.9% and a range of 44% for Return on Net Asset (RONA) as a measure of performance. Multiple modes existed and therefore the smallest value was shown.

When Return on Equity was used as a performance indicator, the mean was 8.8%, median of 7%, mode of 7%, standard deviation of 18% and a range of 112%.

Table 2: Measures of central tendency for Cash flows.

	OPERATING KSHS (000)	INVESTING KSHS (000)	FINANCING KSHS (000)	NET CASH FLOWS KSHS (000)
Mean	362,830.00	-209,512.00	-102,338.00	50,979.00
Median	101,075.00	-82,159.00	-33,442.00	6,400.00
Mode	-66,869.00	-1,787,200.00	-775,999.00	-161,912.00
Std. deviation	611,023.00	-390,002.00	181,530.00	150,136.00
Range	241,469.00	189,359.00	857,652.00	892034.40
N	31	31	31	31

The mean cash flows from operating activities was established to be Ksh. 362,830,000 compared to Ksh. -209,512,000 from investing activities and Ksh. -102,338,000 from financing activities. The resultant was a mean net cash flow (inflow) of Ksh. 50,979,000.

The median for cash flows from operating activities, investing activities and financing activities was Ksh.101,075,000 Ksh -82,159,000 and Ksh -33,442,000 respectively. The summation of these cash flows yielded a median of Ksh 6,400,000 as net cash inflows.

Multiple modes existed in all the categories of cash flows. In such cases the modes with the lowest values were shown. Thus the modes shown were Ksh.-66,869,000, Ksh -1,787,200,000 and Ksh -775,999,000 representing cash flows from operating activities, cash flows from investing activities and cash flows from financing activities respectively. The mode for net cash flows was Ksh. -161,912,000.

Deviations from mean (std. Deviation) was Ksh.611,023,000 for cash flows from operating activities, Ksh. – 390,002,000 for cash flows from investing activities and Ksh 181,530,000 for cash flows from financing activities. Consequently, the standard deviation for net cash flows was Ksh. 150,136,000.

There was a range of values to the tune of Ksh. 241,469,000 for cash flows from operating activities, Ksh. 189,359,000 for cash flows from investing activities and Ksh.857,652,000 for cash flows from financing activities. The range for net cash flows was Ksh.892,034,000.

4.3 Correlation analysis.

Table 3 : Pearson Correlation (R)

	Operating	Investing	Financing	ROA	RONA	ROE	Profit After tax
Operating	1.00	- 0.94	- 0.77	0.33	0.30	0.12	- 0.077
Investing	- 0.94	1.00	0.57	- 0.25	- 0.25	- 0.15	- 0.001
Financing	- 0.77	0.57	1.00	- 0.4	- 0.35	- 0.04	0.141

Table 3 above presents a pearsonian correlation matrix for the various variables employed in the study.

There was a positive relationship between Return on assets and cash-flows from operating activities with a correlation coefficient of 0.33 as opposed to a negative/inverse relationship with both cash-flows from investing activities and cash flows from financing activities whose coefficients of correlations were -0.25 and -0.4 respectively.

Coefficients of correlation between Return on Net Assets and cash flows were 0.30, - 0.25 and - 0.35 for cash flows from operating activities, investing activities and financing activities respectively.

The coefficients of correlation between Return on Equity and cash flows from operating activities, investing activities and financing activities were 0.12, - 0.15 and – 0.04 in that order.

There is a positive coefficient of correlation between profit after tax and cash flows from financing activities of 0.141 as opposed to negative coefficients of correlations between profits after tax and cash flows from both operating and investing activities of -0.077 and -0.001 respectively.

4.4 Test of overall model and autocorrelation.

Table 4: Test of Overall model and Autocorrelation -Multiple regression

Dependent Variable	R^2 (%)	F - Test Sig. α	Durbin Watson
1. ROA	15.70	0.16	1.67
2. RONA	12.40	0.30	2.10
3. ROE	2.50	0.88	1.90
4. Profit after tax	4.8	0.715	2.108

N.B all computations made using 0.05 as significance level

Table 4 above presents the results from tests of overall model and autocorrelation for multiple regression model.

When ROA as a performance indicator (dependent variable) is regressed against cash flows (predictor variables), the coefficient of determination is 0.157; thus 15.7% of total variation in ROA is accounted for by the variations in cash flows. The F – significant is 0.16 while the Durbin Watson value is 1.67.

When Return on Net Assets as a performance indicator (dependent variable) is regressed against cash flows (predictor variable) R^2 is 0.124; hence 12.4% of the total variations in RONA is accounted for by variations in cash flows. Significant F is 0.30 while Durbin Watson is 2.10.

When Return on Equity (ROE) as a performance indicator (dependent variable) is regressed against cash flows (predictor variable), R^2 is 0.025; hence 2.5% of the total variations in ROE is accounted for by variations in cash flows. Significant F is 0.88 while Durbin Watson is 1.90.

When profit after tax as a dependent variable is regressed against cash flows (predictor variable), R^2 is 0.048; hence 4.8% of the total variations in profit after tax is accounted for by variations in cash flows. Significant F is 0.715 while Durbin Watson is 2.108.

Table 5: Test of Overall model and Autocorrelation –simple regressions.

Dependent variable	Independent variable	R^2 (%)	F - Test Sig. α	Durbin watson
ROA	Operating	10.5	0.075	1.894
	Investing	6.2	0.177	1.872
	Financing	15.6	0.028	1.660
RONA	Operating	9.2	0.098	2.228
	Investing	6.1	0.182	2.245
	Financing	12.1	0.055	2.029
ROE	Operating	1.5	0.510	1.799
	Investing	2.2	0.423	1.843
	Financing	0.2	0.817	1.771
Profit After tax	Operating	0.6	0.679	2.140
	Investing	0.0	0.997	2.121
	Financing	2	0.450	2.160

Table 5 presents the results from tests of overall model and autocorrelation for simple regression models.

When ROA is regressed against cash flow from operating activities, coefficient of determination R^2 is 0.105, thus 10.5% of total variations in ROA is accounted for by variation in cash flow from operating activities. Significant F is 0.075 while Durbin Watson is 1.894.

When ROA is regressed against cash flow from investing activities, coefficient of determination R^2 is 0.062, thus 6.2% of total variations in ROA is accounted for by variation in cash flow from investing activities. Significant F is 0.177 while Durbin Watson is 1.872.

When ROA is regressed against cash flow from financing activities, coefficient of determination R^2 is 0.156, thus 15.6% of total variations in ROA is accounted for by variation in cash flow from financing activities. Significant F is 0.028 while Durbin Watson is 1.660.

When RONA is regressed against cash flow from operating activities, coefficient of determination R^2 is 0.092, thus 9.2% of total variations in RONA is accounted for by variation in cash flow from operating activities. Significant F is 0.098 while Durbin Watson is 2.228.

When RONA is regressed against cash flow from investing activities, coefficient of determination R^2 is 0.061, thus 6.1% of total variations in RONA is accounted for by variation in cash flow from investing activities. Significant F is 0.182 while Durbin Watson is 2.245.

When RONA is regressed against cash flow from financing activities, coefficient of determination R^2 is 0.121, thus 12.1% of total variations in RONA is accounted for by variation in cash flow from financing activities. Significant F is 0.055 while Durbin Watson is 2.029.

When ROE is regressed against cash flow from operating activities, coefficient of determination R^2 is 0.015, thus 1.5% of total variations in ROE is accounted for by variation in cash flow from operating activities. Significant F is 0.510 while Durbin Watson is 1.799.

When ROE is regressed against cash flow from investing activities, coefficient of determination R^2 is 0.022, thus 2.2% of total variations in ROE is accounted for by variation in cash flow from investing activities. Significant F is 0.423 while Durbin Watson is 1.843.

When ROE is regressed against cash flow from financing activities, coefficient of determination R^2 is 0.002, thus 0.2% of total variations in ROE is accounted for by variation in cash flow from financing activities. Significant F is 0.817 while Durbin Watson is 1.771.

When Profit after tax is regressed against cash flow from operating activities, coefficient of determination R^2 is 0.006, thus 0.6% of total variations in Profit after tax is accounted for by variation in cash flow from operating activities. Significant F is 0.679 while Durbin Watson is 2.140.

When Profit after tax is regressed against cash flow from investing activities, coefficient of determination R^2 is 0.00, thus Profit after tax is not accounted for by variation in cash flow from investing activities. Significant F is 0.997 while Durbin Watson is 2.121.

When Profit after tax is regressed against cash flow from financing activities, coefficient of determination R^2 is 0.02, thus 2 % of total variations in profit after tax is accounted for by variation in cash flow from financing activities. Significant F is 0.450 while Durbin Watson is 2.160.

4.5 Test of significance of predictor variables

Table 6. Individual parameters test – multiple regression

	Cash flow Activity	β_1	T – test Sig α
1. **ROA**	Operating	$5.46*10^{-9}$	0.95
	Investing	$1.3*10^{-9}$	0.99
	Financing	$-1.12*10^{-7}$	0.35
	Constant (β_0)	$2.91*10^{2}$	0.02
2. **RONA**	Operating	$-1.37*10^{-9}$	0.99
	Investing	$-1.95*10^{-8}$	0.911
	Financing	$-1.70*10^{-7}$	0.42
	Constant (β_0)	$3.38*10^{2}$	0.115
3. **ROE**	Operating	$-1.24*10^{-8}$	0.97
	Investing	$-1.04*10^{-7}$	0.77
	Financing	$5.01*10^{-8}$	0.91
	Constant (β_0)	$7.60*10^{-8}$	0.08
4. Profit after tax	Operating	- 12.346	0.474
	Investing	- 17.678	0.398
	Financing	- 1.585	0.95
	Constant (β_0)	$3.504594*10^{9}$	0.169

NB:Computations in Table 6 made using 0.05 as significance level .

Table 6 presents the results from tests of significance of predictor variables when multiple regression model is used.

The coefficients (β_1) or slopes of predictor variables when ROA is regressed against cash flows using the multiple regression model are $5.46*10^{-9}$, $1.3*10^{-9}$, and $-1.12*10^{-7}$ for cash flows from operating activities, investing activities and financing activities respectively with a constant (β_0) of $2.91*10^{-2}$. Significant t – values for cash flows from operating activities, investing activities and financing activities are 0.95, 0.99, and 0.35 respectively with 0.02 as the value for constant.

When RONA is regressed against cash flows using the multiple regression model, the slopes of predictor variables are $-1.37*10^{-9}$, $-1.95*10^{-8}$ and $-1.70*10^{-7}$for cash flows from operating activities, investing activities and financing activities respectively with a constant of $3.38*10^{-2}$. Significant t – values for cash flows from operating activities, investing activities and financing activities are 0.99, 0.911, and 0.42 respectively with 0.115 as the value for the constant.

When ROE is regressed against cash flows using multiple regression model, the slopes of predictor variables are $-1.24*10^{-8}$, $-1.038*10^{-7}$ and $5.01*10^{-8}$ for cash flows from operating activities, investing activities and financing activities respectively with a constant of $7.60*10^{-2}$. Significant t – values for cash flows from operating activities, investing activities and financing activities are 0.97,0.77 and0.91 respectively with 0.08 as the value for the constant.

When profit after tax is regressed against cash flows using multiple regression model, the slopes of predictor variables are -12.346, -17.678 and -1.585 for cash flows from operating activities, investing activities and financing activities respectively with a constant of 3,504,594,000. Significant t – values for cash flows from operating activities, investing activities and financing activities are 0.474,0.398 and0.95 respectively with 0.169 as the value for the constant.

Table 7. Individual parameters test – simple regression.

	Cash flow activity	β_1,	T – test Sig α
ROA	Operating	$3.035*10^{-8}$	0.075
	Constant	$3.125*10^{-2}$	0.011
ROA	Investing	$-3.65*10^{-8}$	0.177
	Constant	$3.462*10^{-2}$	0.005
ROA	Financing	$-1.24*10^{-7}$	0.028
	Constant	$2.953*10^{-2}$	0.012
RONA	Operating	$4.922*10^{-8}$	0.00
	Constant	$3.698*10^{-2}$	0.077
RONA	Investing	$-6.27*10^{-8}$	0.182
	Constant	$4.171*10^{-2}$	0.046
RONA	Financing	$-1.90*10^{-7}$	0.055
	Constant	$3.538*10^{-2}$	0.082
ROE	Operating	$3.800*10^{-8}$	0.510
	Constant	$7.428*10^{-2}$	0.074
ROE	Investing	$-7.23*10^{-8}$	0.423
	Constant	$7.292*10^{-2}$	0.071
ROE	Financing	$-4.52*10^{-8}$	0.817
	Constant	$8.344*10^{-2}$	0.045
After tax profit	Operating	-1.438	0.679
	Constant	$3.412563*10^{9}$	0.169
After tax profit	Investing	$-2.35*10^{-2}$	0.997
	Constant	$2.886047*10^{9}$	0.232
After tax profit	Financing	8.809	0.450
	Constant	$3.792520*10^{9}$	0.120

Table 7 presents the results from tests of significance of predictor variables when simple regression model is used.

When ROA is regressed against cash flow from operating activities, the slope of the predictor variable (cash flow from operating activities) is $3.035*10^{-8}$ with a constant (β_0) of $3.125*10^{-2}$.Significant t – value for the predictor variable is 0.075 with 0.011 as the value for the constant.

When ROA is regressed against cash flow from investing activities, the slope of the predictor variable (cash flow from investing activities) is $-3.65*10^{-8}$ with a constant (β_0) of $3.462*10^{-2}$.Significant t – value for the predictor variable is 0.177 with 0.05 as the value for the constant.
When ROA is regressed against cash flow from financing activities, the slope of the predictor variable (cash flow from financing activities) is $-1.24*10^{*-7}$ with a constant (β_0) of $2.953*10^{-2}$.Significant t – value for the predictor variable is 0.028 with 0.012 as the value for the constant.

When RONA is regressed against cash flow from operating activities, the slope of the predictor variable (cash flow from operating activities) is $4.922*10^{-8}$ with a constant (β_0) of $3.698*10^{-2}$.Significant t – value for the predictor variable is 0.00 with 0.077 as the value for the constant.

When RONA is regressed against cash flow from investing activities, the slope of the predictor variable (cash flow from investing activities) is $-6.27*10^{-8}$ with a constant (β_0) of $4.171*10^{-2}$.Significant t – value for the predictor variable is 0.182 with 0.046 as the value for the constant.

When RONA is regressed against cash flow from financing activities, the slope of the predictor variable (cash flow from financing activities) is $-1.90*10^{*-7}$ with a constant (β_0) of $3.538*10^{-2}$.Significant t – value for the predictor variable is 0.055 with 0.082 as the value for the constant.

When ROE is regressed against cash flow from operating activities, the slope of the predictor variable (cash flow from operating activities) is $3.800*10^{-8}$ with a constant (β_0) of $7.428*10^{-2}$.Significant t – value for the predictor variable is 0.510 with 0.074 as the value for the constant.

When ROE is regressed against cash flow from investing activities, the slope of the predictor variable (cash flow from investing activities) is $-7.23*10^{-8}$ with a constant (β_0) of $7.292*10^{-2}$.Significant t – value for the predictor variable is 0.423 with 0.071 as the value for the constant.

When ROE is regressed against cash flow from financing activities, the slope of the predictor variable (cash flow from financing activities) is $-4.52*10^{*-8}$ with a constant (β_0) of $8.344*10^{-2}$.Significant t – value for the predictor variable is 0.817 with 0.045 as the value for the constant.

When profit after tax is regressed against cash flow from operating activities, the slope of the predictor variable (cash flow from operating activities) is – 1.438 with a constant (β_0) of $3.412563*10^{9}$.Significant t – value for the predictor variable is 0.679 with 0.169 as the value for the constant.

When profit after tax is regressed against cash flow from investing activities, the slope of the predictor variable (cash flow from investing activities) is $-2.35*10^{-2}$ with a constant (β_0) of $2.886047*10^9$.Significant t – value for the predictor variable is 0.997 with 0.232 as the value for the constant.

When profit after tax is regressed against cash flow from financing activities, the slope of the predictor variable (cash flow from financing activities) is 8.809 with a constant (β_0) of $3.792520*10^9$.Significant t – value for the predictor variable is 0.055 with 0.082 as the value for the constant.

5. SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.0 Summary of findings and Conclusions.

This study concludes that :

i) There is a positive or direct association between cash-flows from operating activities and all the return performance indicators ie Return on assets, Return on Net assets and Return on equity as evidenced by pearsonian coefficients of correlation.

ii) There is a negative or indirect association between cash-flows from investing activities and cash-flows from financing activities and returns performance indicators i.e Return on assets, Return on Net assets an Return on Equity as reflected by pearsonian coefficients of correlation.

iii) Arising from tests of overall model and auto correlation, there is a weak relationship between cash flows and performance indicators as evidenced by the low co-efficient of determination and F-tests. The multiple regression model explains only 15.7%, 12.4%, 2.5% and 4.8% of the variations in ROA, RONA, ROE and profit after tax respectively. The model therefore has a weak explanatory power.

iv) From the results from tests for autocorrelation summarized on table D, Return on assets and Return on equity signifies a condition of auto correlation since their Durbin Watson values are less than two (2). For Return on net assets there's no auto correlation.

v) Arising from the results from tests of individual parameters as summarized on table E, all the cash flows considered individually has minimal contribution to the overall model.

5.1 Limitations of the study.

Considering that it is difficult to have a perfect research situation, it is then expected that this research will have some limitations. There is need to highlight some of these limitations so that the conclusions can be understood in view of the weaknesses of the research study.

Some of the limitations of this research study are:

i) computations of earnings performance measures are based on accounting data. Accounting practices differ between firms and this may introduce bias into the study.

ii) The study focused only on the companies listed at Nairobi stock exchange. However, there are less than sixty companies that are listed while there are many other unlisted private companies operating in Kenya. Consequently, the findings of this study cannot be generalized.

5.2 Suggestions for further research.

Further research on cash flows and earnings based performance measures could focus on the following areas:

i) Extend this study to include companies not listed at Nairobi stock exchange.

ii) Undertake to establish the relationship if any between firm size, cash flows and earnings performance measures.

REFERENCES

ASC (1975) SSAP10: Source and Application of Funds

Carslaw, C.A. & Mills, J.R. (1991). **Developing ratios for effective cash flow statement analysis.** Journal of Accountancy, November, pp. 63-70.

Fiduccia, B. (2001) **Whether you're selling your business, getting insurance or sorting through estate taxes, knowing your business's value comes in handy,** Entrepreneur's Start-Ups magazine, http://www.entrepreneur.com

Figlewicz, R.E. & Zeller, T.L. (1991). **An analysis of performance, liquidity, coverage and capital ratios from the statement of cash flow**. ABER, Vol. 22(1) Spring pp. 64-81.

Giacomino, D.E. & Mielke, D.E. (1993). **Cash flows: another approach to ratio analysis**. Journal of Accountancy, March, pp. 55-58.

Gombola & Ketz (1983), **A note on cash flow and classification patterns of financial ratios,** The Accounting review, Vol. LVIII (1), pp 105-114

Harper, David (2003) **Advanced Financial Statements Analysis,** Investopedia.com, http://www.investopedia.com/

A dot-com investor confesses to a fit of irrational exuberance.

http://www.planware.org/workcap.htm

Jooste, L. (1999). **An evaluation of listed companies by means of cash flow ratios** South African Journal of Economic and Management Science, Vol. 2(1), pp. 128-42

Kelly, J., O'Connor, J., (1997) **Is Profit More Important Than Cashflow? Management Accounting**: Magazine for Chartered Management Accountants, 00251682, June97, Vol. 75, Issue 6

McGovern, R. (2002) **It's the Cash Flow, Stupid!** Sunday Business Dublin, Ireland

Oppermann, H.R.B., Booysen, S.F., Koen, M. & Vorster, Q. (1995). **Accounting statements and guideline**. Kenwyn: Juta.

Palepu, K.G., Healy, P.M. & Bernard, V.L. (2000). **Business analysis & valuation Using financial statements (2nd ed)**. City, OH: Thompson Learning.

Petersen, M.A. (2002) **Cash Flow in Company Valuation**, Northwestern University, Kellogg Graduate School of Management Finance

Shawcross, William (1993), **Murdoch**. Simon & Schuster, New York
Stancill, J.M. 1987. **Getting things done**. Harvard Business Review, March-April, pp. 12-18.

Working Council For Chief Financial Officers, (2000) **The Emergence of Cash Flow Analysis**, Corporate Executive Board l Washington, D.C
www.sba.gov/starting_business/ startup/consumerguide.html

Zeller, T.L. & Stanko, B.B. (1994). **Operating cash flow ratios measure a retail firm's "ability to pay"**. Journal of Applied Business Research, Fall, Vol. 10(4), pp. 51-60.

APPENDIX 1: LIST OF QUOTED COMPANIES

AGRICULTURAL SECTOR.

Brooke Bond (k) ltd
Eaagards ltd
George Williamson Tea (k) ltd
Kapchorua tea company ltd
Limuru tea ltd
Sasini tea & coffee ltd
Rea vipingo ltd

COMMERCIAL AND SERVICES SECTOR.

A Baumann ltd
Car and general ltd
Hutchings biemier
Cmc holdings
Kenya airways
Uchumi supermarkets ltd
Marshals E.A ltd
Nation media group
Tourism promotion services serena
Standard news papers
Express (k) ltd

FINANCE & INVESTMENT

City trust express (k) ltd
Pan Africa insurance company ltd
Housing finance ltd
Barclays bank of Kenya ltd
Cfc bank
Standard chartered bank
Diamond trust bank
Icdc investments ltd
Jubilee insurance ltd
National bank of Kenya ltd
Nic bank.

INDUSTRIAL & ALLIED

Athi river mining
Boc (k) ltd
Bamburi cement ltd
British American tobacco (k) ltd
Crown berger (k) ltd
Dunlop (k) ltd
E. A Breweries
E.A cables ltd
E.A packaging industries ltd
E.A Portland cement company ltd
Firestone (E.A) ltd
Kenya national mills
Kenya power & lighting co. ltd
Kenya orchards.
Kenya oil
Mumias sugar.
Total (k) ltd
Unga group ltd

Regression

Descriptive Statistics

	Mean	Std. Deviation	N
ROA	4.226E-02	5.714E-02	31
OPERATIN	362830.1	611023.9093	31
INVESTIN	-209512	390002.4357	31
FINANCIN	-102339	181530.6305	31

Correlations

		ROA	OPERATIN	INVESTIN	FINANCIN
Pearson Correlation	ROA	1.000	.325	-.249	-.395
	OPERATIN	.325	1.000	-.935	-.773
	INVESTIN	-.249	-.935	1.000	.572
	FINANCIN	-.395	-.773	.572	1.000
Sig. (1-tailed)	ROA	.	.037	.089	.014
	OPERATIN	.037	.	.000	.000
	INVESTIN	.089	.000	.	.000
	FINANCIN	.014	.000	.000	.
N	ROA	31	31	31	31
	OPERATIN	31	31	31	31
	INVESTIN	31	31	31	31
	FINANCIN	31	31	31	31

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	FINANCIN, INVESTIN, OPERATIN[a]	.	Enter

a. All requested variables entered.

b. Dependent Variable: ROA

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics			
					R Square Change	F Change	df1	df2
1	.396[a]	.157	.063	5.530E-02	.157	1.677	3	27

a. Predictors: (Constant), FINANCIN, INVESTIN, OPERATIN

b. Dependent Variable: ROA

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.538E-02	3	5.127E-03	1.677	.196[a]
	Residual	8.256E-02	27	3.058E-03		
	Total	9.794E-02	30			

a. Predictors: (Constant), FINANCIN, INVESTIN, OPERATIN

b. Dependent Variable: ROA

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for	
		B	Std. Error	Beta			Lower Bound	Upper Boun
1	(Constant)	2.911E-02	.012		2.478	.020	.005	.05
	OPERATIN	5.464E-09	.000	.058	.068	.946	.000	.00
	INVESTIN	1.298E-09	.000	.009	.013	.989	.000	.00
	FINANCIN	-1.12E-07	.000	-.355	-.952	.350	.000	.00

a. Dependent Variable: ROA

Coefficient Correlations[a]

Model			FINANCIN	INVESTIN	OPERATIN
1	Correlations	FINANCIN	1.000	.665	.816
		INVESTIN	.665	1.000	.946
		OPERATIN	.816	.946	1.000
	Covariances	FINANCIN	1.379E-14	7.616E-15	7.710E-15
		INVESTIN	7.616E-15	9.496E-15	7.413E-15
		OPERATIN	7.710E-15	7.413E-15	6.466E-15

a. Dependent Variable: ROA

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions			
				(Constant)	OPERATIN	INVESTIN	FINANCIN
1	1	3.011	1.000	.04	.00	.01	.01
	2	.634	2.180	.94	.00	.01	.00
	3	.336	2.993	.02	.00	.05	.33
	4	1.882E-02	12.650	.00	.99	.94	.65

a. Dependent Variable: ROA

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	2.122E-02	.1224	4.226E-02	2.264E-02	31
Residual	-.1121	.1398	3.134E-18	5.246E-02	31
Std. Predicted Value	-.929	3.540	.000	1.000	31
Std. Residual	-2.028	2.529	.000	.949	31

a. Dependent Variable: ROA

Regression

Descriptive Statistics

	Mean	Std. Deviation	N
ROA	4.226E-02	5.714E-02	31
OPERATIN	362830.1	611023.9093	31

Correlations

		ROA	OPERATIN
Pearson Correlation	ROA	1.000	.325
	OPERATIN	.325	1.000
Sig. (1-tailed)	ROA	.	.037
	OPERATIN	.037	.
N	ROA	31	31
	OPERATIN	31	31

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	OPERATIN[a]	.	Enter

a. All requested variables entered.

b. Dependent Variable: ROA

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	S
1	.325[a]	.105	.074	5.497E-02	.105	3.415	1	29	

a. Predictors: (Constant), OPERATIN

b. Dependent Variable: ROA

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.032E-02	1	1.032E-02	3.415	.075[a]
	Residual	8.762E-02	29	3.022E-03		
	Total	9.794E-02	30			

a. Predictors: (Constant), OPERATIN

b. Dependent Variable: ROA

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	3.125E-02	.012		2.710	.011	.008	.055
	OPERATIN	3.035E-08	.000	.325	1.848	.075	.000	.000

a. Dependent Variable: ROA

Coefficient Correlations[a]

Model			OPERATIN
1	Correlations	OPERATIN	1.000
	Covariances	OPERATIN	2.698E-16

a. Dependent Variable: ROA

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	OPERATIN
1	1	1.517	1.000	.24	.24
	2	.483	1.772	.76	.76

a. Dependent Variable: ROA

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	2.922E-02	.1025	4.226E-02	1.854E-02	31
Residual	-.1006	.1383	-8.95E-19	5.404E-02	31
Std. Predicted Value	-.703	3.248	.000	1.000	31
Std. Residual	-1.829	2.517	.000	.983	31

a. Dependent Variable: ROA

Regression

Descriptive Statistics

	Mean	Std. Deviation	N
ROA	4.226E-02	5.714E-02	31
INVESTIN	-209512	390002.4357	31

Correlations

		ROA	INVESTIN
Pearson Correlation	ROA	1.000	-.249
	INVESTIN	-.249	1.000
Sig. (1-tailed)	ROA	.	.089
	INVESTIN	.089	.
N	ROA	31	31
	INVESTIN	31	31

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	INVESTIN[a]	.	Enter

a. All requested variables entered.

b. Dependent Variable: ROA

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics			
					R Square Change	F Change	df1	df2
1	.249[a]	.062	.030	5.629E-02	.062	1.914	1	29

a. Predictors: (Constant), INVESTIN

b. Dependent Variable: ROA

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6.065E-03	1	6.065E-03	1.914	.177[a]
	Residual	9.188E-02	29	3.168E-03		
	Total	9.794E-02	30			

a. Predictors: (Constant), INVESTIN

b. Dependent Variable: ROA

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for	
		B	Std. Error	Beta			Lower Bound	Upper Boun
1	(Constant)	3.462E-02	.012		3.006	.005	011	.05
	INVESTIN	-3.65E-08	.000	-.249	-1.384	.177	.000	.00

a. Dependent Variable: ROA

Coefficient Correlations[a]

Model			INVESTIN
1	Correlations	INVESTIN	1.000
	Covariances	INVESTIN	6.943E-16

a. Dependent Variable: ROA

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	INVESTIN
1	1	1.479	1.000	.26	.26
	2	.521	1.685	.74	.74

a. Dependent Variable: ROA

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	3.057E-02	9.977E-02	4.226E-02	1.422E-02	31
Residual	-.1061	.1352	-3.58E-18	5.534E-02	31
Std. Predicted Value	-.822	4.045	.000	1.000	31
Std. Residual	-1.885	2.401	.000	.983	31

a. Dependent Variable: ROA

Regression

Descriptive Statistics

	Mean	Std. Deviation	N
ROA	4.226E-02	5.714E-02	31
FINANCIN	-102339	181530.6305	31

Correlations

		ROA	FINANCIN
Pearson Correlation	ROA	1.000	-.395
	FINANCIN	-.395	1.000
Sig. (1-tailed)	ROA	.	.014
	FINANCIN	.014	.
N	ROA	31	31
	FINANCIN	31	31

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	FINANCIN[a]	.	Enter

a. All requested variables entered.

b. Dependent Variable: ROA

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics			
					R Square Change	F Change	df1	df2
1	.395[a]	.156	.127	5.339E-02	.156	5.365	1	29

a. Predictors: (Constant), FINANCIN

b. Dependent Variable: ROA

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.529E-02	1	1.529E-02	5.365	.028[a]
	Residual	8.265E-02	29	2.850E-03		
	Total	9.794E-02	30			

a. Predictors: (Constant), FINANCIN

b. Dependent Variable: ROA

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for	
		B	Std. Error	Beta			Lower Bound	Upper Boun
1	(Constant)	2.953E-02	.011		2.672	.012	.007	.05
	FINANCIN	-1.24E-07	.000	-.395	-2.316	.028	.000	.00

a. Dependent Variable: ROA

Coefficient Correlations[a]

Model			FINANCIN
1	Correlations	FINANCIN	1.000
	Covariances	FINANCIN	2.883E-15

a. Dependent Variable: ROA

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	FINANCIN
1	1	1.497	1.000	.25	.25
	2	.503	1.726	.75	.75

a. Dependent Variable: ROA

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	1.938E-02	.1260	4.226E-02	2.258E-02	31
Residual	-.1143	.1394	1.343E-18	5.249E-02	31
Std. Predicted Value	-1.014	3.711	.000	1.000	31
Std. Residual	-2.141	2.610	.000	.983	31

a. Dependent Variable: ROA

Regression

Descriptive Statistics

	Mean	Std. Deviation	N
RONA	5.484E-02	9.933E-02	31
OPERATIN	362830.1	611023.9093	31
INVESTIN	-209512	390002.4357	31
FINANCIN	-102339	181530.6305	31

Correlations

		RONA	OPERATIN	INVESTIN	FINANCIN
Pearson Correlation	RONA	1.000	.303	-.246	-.347
	OPERATIN	.303	1.000	-.935	-.773
	INVESTIN	-.246	-.935	1.000	.572
	FINANCIN	-.347	-.773	.572	1.000
Sig. (1-tailed)	RONA	.	.049	.091	.028
	OPERATIN	.049	.	.000	.000
	INVESTIN	.091	.000	.	.000
	FINANCIN	.028	.000	.000	.
N	RONA	31	31	31	31
	OPERATIN	31	31	31	31
	INVESTIN	31	31	31	31
	FINANCIN	31	31	31	31

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	FINANCIN, INVESTIN, OPERATIN[a]	.	Enter

a. All requested variables entered.

b. Dependent Variable: RONA

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	S
1	.352[a]	.124	.027	9.799E-02	.124	1.275	3	27	

a. Predictors: (Constant), FINANCIN, INVESTIN, OPERATIN

b. Dependent Variable: RONA

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3.672E-02	3	1.224E-02	1.275	.303[a]
	Residual	.259	27	9.602E-03		
	Total	.296	30			

a. Predictors: (Constant), FINANCIN, INVESTIN, OPERATIN

b. Dependent Variable: RONA

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	3.388E-02	.021		1.628	.115	-.009	.077
	OPERATIN	-1.37E-09	.000	-.008	-.010	.992	.000	.000
	INVESTIN	-1.95E-08	.000	-.076	-.113	.911	.000	.000
	FINANCIN	-1.70E-07	.000	-.310	-.816	.422	.000	.000

a. Dependent Variable: RONA

Coefficient Correlations[a]

Model			FINANCIN	INVESTIN	OPERATIN
1	Correlations	FINANCIN	1.000	.665	.816
		INVESTIN	.665	1.000	.946
		OPERATIN	.816	.946	1.000
	Covariances	FINANCIN	4.331E-14	2.392E-14	2.421E-14
		INVESTIN	2.392E-14	2.982E-14	2.328E-14
		OPERATIN	2.421E-14	2.328E-14	2.030E-14

a. Dependent Variable: RONA

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions			
				(Constant)	OPERATIN	INVESTIN	FINANCIN
1	1	3.011	1.000	.04	.00	.01	.01
	2	.634	2.180	.94	.00	.01	.00
	3	.336	2.993	.02	.00	.05	.33
	4	1.882E-02	12.650	.00	.99	.94	.65

a. Dependent Variable: RONA

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	2.354E-02	.1701	5.484E-02	3.499E-02	31
Residual	-.2235	.1945	-1.52E-17	9.296E-02	31
Std. Predicted Value	-.895	3.295	.000	1.000	31
Std. Residual	-2.281	1.985	.000	.949	31

a. Dependent Variable: RONA

Regression

Descriptive Statistics

	Mean	Std. Deviation	N
RONA	5.484E-02	9.933E-02	31
OPERATIN	362830.1	611023.9093	31

Correlations

		RONA	OPERATIN
Pearson Correlation	RONA	1.000	.303
	OPERATIN	.303	1.000
Sig. (1-tailed)	RONA	.	.049
	OPERATIN	.049	.
N	RONA	31	31
	OPERATIN	31	31

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	OPERATIN[a]	.	Enter

a. All requested variables entered.

b. Dependent Variable: RONA

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	S
1	.303[a]	.092	.060	9.628E-02	.092	2.927	1	29	

a. Predictors: (Constant), OPERATIN

b. Dependent Variable: RONA

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2.714E-02	1	2.714E-02	2.927	.098[a]
	Residual	.269	29	9.270E-03		
	Total	.296	30			

a. Predictors: (Constant), OPERATIN

b. Dependent Variable: RONA

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	3.698E-02	.020		1.831	.077	-.004	.078
	OPERATIN	4.922E-08	.000	.303	1.711	.098	.000	.000

a. Dependent Variable: RONA

Coefficient Correlations[a]

Model			OPERATIN
1	Correlations	OPERATIN	1.000
	Covariances	OPERATIN	8.277E-16

a. Dependent Variable: RONA

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	OPERATIN
1	1	1.517	1.000	.24	.24
	2	.483	1.772	.76	.76

a. Dependent Variable: RONA

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	3.369E-02	.1525	5.484E-02	3.008E-02	31
Residual	-.2359	.1924	-2.69E-17	9.466E-02	31
Std. Predicted Value	-.703	3.248	.000	1.000	31
Std. Residual	-2.450	1.998	.000	.983	31

a. Dependent Variable: RONA

Regression

Descriptive Statistics

	Mean	Std. Deviation	N
RONA	5.484E-02	9.933E-02	31
INVESTIN	-209512	390002.4357	31

Correlations

		RONA	INVESTIN
Pearson Correlation	RONA	1.000	-.246
	INVESTIN	-.246	1.000
Sig. (1-tailed)	RONA	.	.091
	INVESTIN	.091	.
N	RONA	31	31
	INVESTIN	31	31

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	INVESTIN[a]	.	Enter

a. All requested variables entered.

b. Dependent Variable: RONA

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	S
1	.246[a]	.061	.028	9.792E-02	.061	1.868	1	29	

a. Predictors: (Constant), INVESTIN

b. Dependent Variable: RONA

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.791E-02	1	1.791E-02	1.868	.182[a]
	Residual	.278	29	9.588E-03		
	Total	.296	30			

a. Predictors: (Constant), INVESTIN

b. Dependent Variable: RONA

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	4.171E-02	.020		2.082	.046	.001	.083
	INVESTIN	-6.27E-08	.000	-.246	-1.367	.182	.000	.000

a. Dependent Variable: RONA

Coefficient Correlations[a]

Model			INVESTIN
1	Correlations	INVESTIN	1.000
	Covariances	INVESTIN	2.101E-15

a. Dependent Variable: RONA

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	INVESTIN
1	1	1.479	1.000	.26	.26
	2	.521	1.685	.74	.74

a. Dependent Variable: RONA

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	3.475E-02	.1537	5.484E-02	2.444E-02	31
Residual	-.2443	.1879	-2.24E-17	9.627E-02	31
Std. Predicted Value	-.822	4.045	.000	1.000	31
Std. Residual	-2.495	1.919	.000	.983	31

a. Dependent Variable: RONA

Regression

Descriptive Statistics

	Mean	Std. Deviation	N
RONA	5.484E-02	9.933E-02	31
FINANCIN	-102339	181530.6305	31

Correlations

		RONA	FINANCIN
Pearson Correlation	RONA	1.000	-.347
	FINANCIN	-.347	1.000
Sig. (1-tailed)	RONA	.	.028
	FINANCIN	.028	.
N	RONA	31	31
	FINANCIN	31	31

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	FINANCIN[a]	.	Enter

a. All requested variables entered.

b. Dependent Variable: RONA

Model Summary[b]

					Change Statistics				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	S
1	.347[a]	.121	.090	9.473E-02	.121	3.983	1	29	

a. Predictors: (Constant), FINANCIN

b. Dependent Variable: RONA

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3.574E-02	1	3.574E-02	3.983	.055[a]
	Residual	.260	29	8.974E-03		
	Total	.296	30			

a. Predictors: (Constant), FINANCIN

b. Dependent Variable: RONA

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for E	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	3.538E-02	.020		1.804	.082	-.005	.075
	FINANCIN	-1.90E-07	.000	-.347	-1.996	.055	.000	.000

a. Dependent Variable: RONA

Coefficient Correlations[a]

Model			FINANCIN
1	Correlations	FINANCIN	1.000
	Covariances	FINANCIN	9.077E-15

a. Dependent Variable: RONA

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	FINANCIN
1	1	1.497	1.000	.25	.25
	2	.503	1.726	.75	.75

a. Dependent Variable: RONA

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	1.986E-02	.1829	5.484E-02	3.451E-02	31
Residual	-.2229	.1929	-1.16E-17	9.314E-02	31
Std. Predicted Value	-1.014	3.711	.000	1.000	31
Std. Residual	-2.353	2.037	.000	.983	31

a. Dependent Variable: RONA

Regression

Descriptive Statistics

	Mean	Std. Deviation	N
ROE	8.806E-02	.1890	31
OPERATIN	362830.1	611023.9093	31
INVESTIN	-209512	390002.4357	31
FINANCIN	-102339	181530.6305	31

Correlations

		ROE	OPERATIN	INVESTIN	FINANCIN
Pearson Correlation	ROE	1.000	.123	-.149	-.043
	OPERATIN	.123	1.000	-.935	-.773
	INVESTIN	-.149	-.935	1.000	.572
	FINANCIN	-.043	-.773	.572	1.000
Sig. (1-tailed)	ROE	.	.255	.212	.408
	OPERATIN	.255	.	.000	.000
	INVESTIN	.212	.000	.	.000
	FINANCIN	.408	.000	.000	.
N	ROE	31	31	31	31
	OPERATIN	31	31	31	31
	INVESTIN	31	31	31	31
	FINANCIN	31	31	31	31

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	FINANCIN, INVESTIN, OPERATIN[a]	.	Enter

a. All requested variables entered.

b. Dependent Variable: ROE

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	S
1	.158[a]	.025	-.083	.1967	.025	.230	3	27	

a. Predictors: (Constant), FINANCIN, INVESTIN, OPERATIN

b. Dependent Variable: ROE

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2.671E-02	3	8.904E-03	.230	.875[a]
	Residual	1.044	27	3.868E-02		
	Total	1.071	30			

a. Predictors: (Constant), FINANCIN, INVESTIN, OPERATIN

b. Dependent Variable: ROE

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for	
		B	Std. Error	Beta			Lower Bound	Upper Bour
1	(Constant)	7.595E-02	.042		1.818	.080	-.010	.16
	OPERATIN	-1.24E-08	.000	-.040	-.043	.966	.000	.00
	INVESTIN	-1.04E-07	.000	-.214	-.299	.767	.000	.00
	FINANCIN	5.006E-08	.000	.048	.120	.905	.000	.00

a. Dependent Variable: ROE

Coefficient Correlations[a]

Model			FINANCIN	INVESTIN	OPERATIN
1	Correlations	FINANCIN	1.000	.665	.816
		INVESTIN	.665	1.000	.946
		OPERATIN	.816	.946	1.000
	Covariances	FINANCIN	1.745E-13	9.634E-14	9.753E-14
		INVESTIN	9.634E-14	1.201E-13	9.378E-14
		OPERATIN	9.753E-14	9.378E-14	8.179E-14

a. Dependent Variable: ROE

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions			
				(Constant)	OPERATIN	INVESTIN	FINANCIN
1	1	3.011	1.000	.04	.00	.01	.01
	2	.634	2.180	.94	.00	.01	.00
	3	.336	2.993	.02	.00	.05	.33
	4	1.882E-02	12.650	.00	.99	.94	.65

a. Dependent Variable: ROE

Casewise Diagnostics[a]

Case Number	Std. Residual	ROE
27	4.201	.91

a. Dependent Variable: ROE

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	5.444E-02	.2143	8.806E-02	2.984E-02	31
Residual	-.2814	.8262	-1.79E-17	.1866	31
Std. Predicted Value	-1.127	4.231	.000	1.000	31
Std. Residual	-1.431	4.201	.000	.949	31

a. Dependent Variable: ROE

Regression

Descriptive Statistics

	Mean	Std. Deviation	N
ROE	8.806E-02	.1890	31
OPERATIN	362830.1	611023.9093	31

Correlations

		ROE	OPERATIN
Pearson Correlation	ROE	1.000	.123
	OPERATIN	.123	1.000
Sig. (1-tailed)	ROE	.	.255
	OPERATIN	.255	.
N	ROE	31	31
	OPERATIN	31	31

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	OPERATIN[a]	.	Enter

a. All requested variables entered.

b. Dependent Variable: ROE

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	S
1	.123[a]	.015	-.019	.1907	.015	.445	1	29	

a. Predictors: (Constant), OPERATIN

b. Dependent Variable: ROE

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.617E-02	1	1.617E-02	.445	.510[a]
	Residual	1.055	29	3.638E-02		
	Total	1.071	30			

a. Predictors: (Constant), OPERATIN

b. Dependent Variable: ROE

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	7.428E-02	.040		1.856	.074	-.008	.15
	OPERATIN	3.800E-08	.000	.123	.667	.510	.000	.00

a. Dependent Variable: ROE

Coefficient Correlations[a]

Model			OPERATIN
1	Correlations	OPERATIN	1.000
	Covariances	OPERATIN	3.248E-15

a. Dependent Variable: ROE

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	OPERATIN
1	1	1.517	1.000	.24	.24
	2	.483	1.772	.76	.76

a. Dependent Variable: ROE

Casewise Diagnostics[a]

Case Number	Std. Residual	ROE
27	4.386	.91

a. Dependent Variable: ROE

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	7.174E-02	.1635	8.806E-02	2.322E-02	31
Residual	-.2817	.8366	-8.95E-18	.1875	31
Std. Predicted Value	-.703	3.248	.000	1.000	31
Std. Residual	-1.477	4.386	.000	.983	31

a. Dependent Variable: ROE

Regression

Descriptive Statistics

	Mean	Std. Deviation	N
ROE	8.806E-02	.1890	31
INVESTIN	-209512	390002.4357	31

Correlations

		ROE	INVESTIN
Pearson Correlation	ROE	1.000	-.149
	INVESTIN	-.149	1.000
Sig. (1-tailed)	ROE	.	.212
	INVESTIN	.212	.
N	ROE	31	31
	INVESTIN	31	31

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	INVESTIN[a]	.	Enter

a. All requested variables entered.

b. Dependent Variable: ROE

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics			
					R Square Change	F Change	df1	df2
1	.149[a]	.022	-.011	.1900	.022	.660	1	29

a. Predictors: (Constant), INVESTIN

b. Dependent Variable: ROE

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2.384E-02	1	2.384E-02	.660	.423[a]
	Residual	1.047	29	3.611E-02		
	Total	1.071	30			

a. Predictors: (Constant), INVESTIN

b. Dependent Variable: ROE

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for	
		B	Std. Error	Beta			Lower Bound	Upper Boun
1	(Constant)	7.292E-02	.039		1.875	.071	-.007	.15
	INVESTIN	-7.23E-08	.000	-.149	-.812	.423	.000	.00

a. Dependent Variable: ROE

Coefficient Correlations[a]

Model			INVESTIN
1	Correlations	INVESTIN	1.000
	Covariances	INVESTIN	7.914E-15

a. Dependent Variable: ROE

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	INVESTIN
1	1	1.479	1.000	.26	.26
	2	.521	1.685	.74	.74

a. Dependent Variable: ROE

Casewise Diagnostics[a]

Case Number	Std. Residual	ROE
27	4.389	.91

a. Dependent Variable: ROE

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	6.489E-02	.2021	8.806E-02	2.819E-02	31
Residual	-.2765	.8341	-1.61E-17	.1868	31
Std. Predicted Value	-.822	4.045	.000	1.000	31
Std. Residual	-1.455	4.389	.000	.983	31

a. Dependent Variable: ROE

Regression

Descriptive Statistics

	Mean	Std. Deviation	N
ROE	8.806E-02	.1890	31
FINANCIN	-102339	181530.6305	31

Correlations

		ROE	FINANCIN
Pearson Correlation	ROE	1.000	-.043
	FINANCIN	-.043	1.000
Sig. (1-tailed)	ROE	.	.408
	FINANCIN	.408	.
N	ROE	31	31
	FINANCIN	31	31

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	FINANCIN[a]	.	Enter

a. All requested variables entered.

b. Dependent Variable: ROE

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics			
					R Square Change	F Change	df1	df2
1	.043[a]	.002	-.033	.1920	.002	.055	1	29

a. Predictors: (Constant), FINANCIN

b. Dependent Variable: ROE

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2.019E-03	1	2.019E-03	.055	.817[a]
	Residual	1.069	29	3.686E-02		
	Total	1.071	30			

a. Predictors: (Constant), FINANCIN

b. Dependent Variable: ROE

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for	
		B	Std. Error	Beta			Lower Bound	Upper Boun
1	(Constant)	8.344E-02	.040		2.099	.045	.002	.16
	FINANCIN	-4.52E-08	.000	-.043	-.234	.817	.000	.00

a. Dependent Variable: ROE

Coefficient Correlations[a]

Model			FINANCIN
1	Correlations	FINANCIN	1.000
	Covariances	FINANCIN	3.729E-14

a. Dependent Variable: ROE

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	FINANCIN
1	1	1.497	1.000	.25	.25
	2	.503	1.726	.75	.75

a. Dependent Variable: ROE

Casewise Diagnostics[a]

Case Number	Std. Residual	ROE
27	4.320	.91

a. Dependent Variable: ROE

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	7.975E-02	.1185	8.806E-02	8.203E-03	31
Residual	-.2988	.8295	-5.37E-18	.1888	31
Std. Predicted Value	-1.014	3.711	.000	1.000	31
Std. Residual	-1.556	4.320	.000	.983	31

a. Dependent Variable: ROE

Regression

Descriptive Statistics

	Mean	Std. Deviation	N
PROFIT	2890978	11360587.72	31
OPERATIN	362830.1	611023.9093	31
INVESTIN	-209512	390002.4357	31
FINANCIN	-102339	181530.6305	31

Correlations

		PROFIT	OPERATIN	INVESTIN	FINANCIN
Pearson Correlation	PROFIT	1.000	-.077	-.001	.141
	OPERATIN	-.077	1.000	-.935	-.773
	INVESTIN	-.001	-.935	1.000	.572
	FINANCIN	.141	-.773	.572	1.000
Sig. (1-tailed)	PROFIT	.	.340	.498	.225
	OPERATIN	.340	.	.000	.000
	INVESTIN	.498	.000	.	.000
	FINANCIN	.225	.000	.000	.
N	PROFIT	31	31	31	31
	OPERATIN	31	31	31	31
	INVESTIN	31	31	31	31
	FINANCIN	31	31	31	31

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	FINANCIN, INVESTIN, OPERATIN[a]	.	Enter

a. All requested variables entered.

b. Dependent Variable: PROFIT

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	S
1	.220[a]	.048	-.057	11682536.1	.048	.456	3	27	

a. Predictors: (Constant), FINANCIN, INVESTIN, OPERATIN

b. Dependent Variable: PROFIT

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.87E+14	3	6.229E+13	.456	.715[a]
	Residual	3.69E+15	27	1.365E+14		
	Total	3.87E+15	30			

a. Predictors: (Constant), FINANCIN, INVESTIN, OPERATIN

b. Dependent Variable: PROFIT

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for	
		B	Std. Error	Beta			Lower Bound	Upper Boun
1	(Constant)	3504594	2482001		1.412	.169	-1588052.536	8597239.90
	OPERATIN	-12.346	16.988	-.664	-.727	.474	-47.202	22.51
	INVESTIN	-17.678	20.588	-.607	-.859	.398	-59.920	24.56
	FINANCIN	-1.585	24.811	-.025	-.064	.950	-52.492	49.32

a. Dependent Variable: PROFIT

Coefficient Correlations[a]

Model			FINANCIN	INVESTIN	OPERATIN
1	Correlations	FINANCIN	1.000	.665	.816
		INVESTIN	.665	1.000	.946
		OPERATIN	.816	.946	1.000
	Covariances	FINANCIN	615.581	339.933	344.126
		INVESTIN	339.933	423.855	330.885
		OPERATIN	344.126	330.885	288.578

a. Dependent Variable: PROFIT

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions			
				(Constant)	OPERATIN	INVESTIN	FINANCIN
1	1	3.011	1.000	.04	.00	.01	.01
	2	.634	2.180	.94	.00	.01	.00
	3	.336	2.993	.02	.00	.05	.33
	4	1.882E-02	12.650	.00	.99	.94	.65

a. Dependent Variable: PROFIT

Casewise Diagnostics[a]

Case Number	Std. Residual	PROFIT
20	4.797	61872367

a. Dependent Variable: PROFIT

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	-5403127	6688755	2890978	2495890.2590	31
Residual	-6669725	5.6E+07	6.760E-10	11083026.89	31
Std. Predicted Value	-3.323	1.522	.000	1.000	31
Std. Residual	-.571	4.797	.000	.949	31

a. Dependent Variable: PROFIT

Regression

Descriptive Statistics

	Mean	Std. Deviation	N
PROFIT	2890978	11360587.72	31
OPERATIN	362830.1	611023.9093	31

Correlations

		PROFIT	OPERATIN
Pearson Correlation	PROFIT	1.000	-.077
	OPERATIN	-.077	1.000
Sig. (1-tailed)	PROFIT	.	.340
	OPERATIN	.340	.
N	PROFIT	31	31
	OPERATIN	31	31

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	OPERATIN[a]	.	Enter

a. All requested variables entered.

b. Dependent Variable: PROFIT

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	
1	.077[a]	.006	-.028	11520210.7	.006	.174	1	29	

a. Predictors: (Constant), OPERATIN

b. Dependent Variable: PROFIT

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2.31E+13	1	2.315E+13	.174	.679[a]
	Residual	3.85E+15	29	1.327E+14		
	Total	3.87E+15	30			

a. Predictors: (Constant), OPERATIN

b. Dependent Variable: PROFIT

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for	
		B	Std. Error	Beta			Lower Bound	Upper Bou
1	(Constant)	3412563	2416819		1.412	.169	-1530386.503	8355511.8
	OPERATIN	-1.438	3.442	-.077	-.418	.679	-8.478	5.6

a. Dependent Variable: PROFIT

Coefficient Correlations[a]

Model			OPERATIN
1	Correlations	OPERATIN	1.000
	Covariances	OPERATIN	11.849

a. Dependent Variable: PROFIT

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	OPERATIN
1	1	1.517	1.000	.24	.24
	2	.483	1.772	.76	.76

a. Dependent Variable: PROFIT

Casewise Diagnostics[a]

Case Number	Std. Residual	PROFIT
20	5.099	61872367

a. Dependent Variable: PROFIT

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	38359.80	3508691	2890978	878373.6425	31
Residual	-3854455	5.9E+07	4.657E-10	11326579.94	31
Std. Predicted Value	-3.248	.703	.000	1.000	31
Std. Residual	-.335	5.099	.000	.983	31

a. Dependent Variable: PROFIT

Regression

Descriptive Statistics

	Mean	Std. Deviation	N
PROFIT	2890978	11360587.72	31
INVESTIN	-209512	390002.4357	31

Correlations

		PROFIT	INVESTIN
Pearson Correlation	PROFIT	1.000	-.001
	INVESTIN	-.001	1.000
Sig. (1-tailed)	PROFIT	.	.498
	INVESTIN	.498	.
N	PROFIT	31	31
	INVESTIN	31	31

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	INVESTIN[a]	.	Enter

a. All requested variables entered.

b. Dependent Variable: PROFIT

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	S
1	.001[a]	.000	-.034	11554796.1	.000	.000	1	29	

a. Predictors: (Constant), INVESTIN

b. Dependent Variable: PROFIT

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2.53E+09	1	2528032437	.000	.997[a]
	Residual	3.87E+15	29	1.335E+14		
	Total	3.87E+15	30			

a. Predictors: (Constant), INVESTIN

b. Dependent Variable: PROFIT

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for E	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	2886047	2364581		1.221	.232	-1950063.517	7722157.608
	INVESTIN	-2.35E-02	5.409	-.001	-.004	.997	-11.087	11.040

a. Dependent Variable: PROFIT

Coefficient Correlations[a]

Model			INVESTIN
1	Correlations	INVESTIN	1.000
	Covariances	INVESTIN	29.260

a. Dependent Variable: PROFIT

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	INVESTIN
1	1	1.479	1.000	.26	.26
	2	.521	1.685	.74	.74

a. Dependent Variable: PROFIT

Casewise Diagnostics[a]

Case Number	Std. Residual	PROFIT
20	5.104	61872367

a. Dependent Variable: PROFIT

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	2883431	2928114	2890978	9179.7466	31
Residual	-3229195	5.9E+07	3.906E-10	11360584.01	31
Std. Predicted Value	-.822	4.045	.000	1.000	31
Std. Residual	-.279	5.104	.000	.983	31

a. Dependent Variable: PROFIT

Regression

Descriptive Statistics

	Mean	Std. Deviation	N
PROFIT	2890978	11360587.72	31
FINANCIN	-102339	181530.6305	31

Correlations

		PROFIT	FINANCIN
Pearson Correlation	PROFIT	1.000	.141
	FINANCIN	.141	1.000
Sig. (1-tailed)	PROFIT	.	.225
	FINANCIN	.225	.
N	PROFIT	31	31
	FINANCIN	31	31

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	FINANCIN[a]	.	Enter

a. All requested variables entered.

b. Dependent Variable: PROFIT

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	S
1	.141[a]	.020	-.014	11439748.5	.020	.586	1	29	

a. Predictors: (Constant), FINANCIN

b. Dependent Variable: PROFIT

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	7.67E+13	1	7.672E+13	.586	.450[a]
	Residual	3.80E+15	29	1.309E+14		
	Total	3.87E+15	30			

a. Predictors: (Constant), FINANCIN

b. Dependent Variable: PROFIT

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for	
		B	Std. Error	Beta			Lower Bound	Upper Bour
1	(Constant)	3792520	2368111		1.601	.120	-1050809.930	8635850.29
	FINANCIN	8.809	11.506	.141	.766	.450	-14.722	32.34

a. Dependent Variable: PROFIT

Coefficient Correlations[a]

Model			FINANCIN
1	Correlations	FINANCIN	1.000
	Covariances	FINANCIN	132.377

a. Dependent Variable: PROFIT

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	FINANCIN
1	1	1.497	1.000	.25	.25
	2	.503	1.726	.75	.75

a. Dependent Variable: PROFIT

Casewise Diagnostics[a]

Case Number	Std. Residual	PROFIT
20	5.065	61872367

a. Dependent Variable: PROFIT

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	-3043537	4511874	2890978	1599177.5358	31
Residual	-4406994	5.8E+07	-1.50E-10	11247470.14	31
Std. Predicted Value	-3.711	1.014	.000	1.000	31
Std. Residual	-.385	5.065	.000	.983	31

a. Dependent Variable: PROFIT