

## INFLUENCE OF LIQUIDITY ON FIRM PROFITABILITY, A CASE OF INVESTMENT FIRMS LISTED IN NAIROBI SECURITIES EXCHANGE (NSE), KENYA

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### ABSTRACT

*Liquidity and firm profitability are the critical indicators of the performance of firms in any given sector. Liquidity ratios such as current ratio, cash ratio and quick acid test ratio are used to measure the ability of a firm and meet its short-term maturing obligations. Margin of safety is determined by the level of the ratio. Profitability ratio are concerned with the relative profit and efficiency of utilization of service resources of a business. This study was guided by three specific objectives; the correlation between the current ratio and profitability of investment firms listed in (NSE), Kenya, the correlation between the quick acid test ratio and profitability of investment firms listed in (NSE), Kenya and the correlation between the cash ratio on profitability of investment firm listed in NSE Kenya. Return on Assets (ROA) and Return on Investment (ROI) were used as measures of the performance of listed investment firms in (NSE), Kenya. The study adopted a descriptive research design. The population of the study consisted all the investment firms listed in (NSE). The sampling technique was non-probability sampling technique for the all the investment firms listed in (NSE). The secondary data in the form of the annual reports and Accounts for the years 2014-2018 were be used. Simple correlation analysis was used to test the hypothesis at 10% level of significance. Analysis of data was tabulated and presented using frequency tables' percentages and explanations. A multi linear regression model was used to establish the relationship between independent and Dependent variables. The overall findings of the study indicated that: There is no significant positive correlation .between cash ratio and profitability; there was no definite significant correlation between acid-test ratio and profitability; there was a significant positive correlation between current ratio and profitability. The researcher recommends that corporate entities should not pursue extreme liquidity policies at the expense of their profitability, that is, they should strike a balance between Liquidity and profitability.*

**Key Words:** Liquidity, Profitability, Performance, Margin of Safety, ROA, ROI

## INTRODUCTION

The importance of financial statement analysis to business decision making cannot be over emphasized. In this current age of globalization and economic liberalization, businesses need to be up and doing if they are to secure their continuous existence in the competitive business environment. One of the relevant exercises that will give them an idea of whether or not their financial future is secured is financial statement analysis. Pandey (2005) posited that the basis for financial statement analysis of financial information. Financial is needed to predict, compare and evaluate a firm's earning ability and financial position. The third edition of the Oxford Dictionary of Accounting defines financial statement analysis is an analysis of the financial statement of a business, to assess its performance and financial position. Babatunde (2007) stated that financial statement the relationship between the items of the balance sheet and the profit and loss account. Thus, financial statement analysis involves the assessment of the financial ability and stability of a business of financial ratios in measuring the key areas of a business. Ibenta (2005) noted that one of the tools for financial statement analysis is financial ratios computed from a firm's financial statement which helps users of financial statements to gain an insight into the future performance of the firm.

Hussey, (2008) affirmed that, ratio analysis is a method of describing and interpreting the relationship of certain financial data which would otherwise be devoid of meaning. He also went further to state that financial ratios allows comparisons to be made between companies of different sizes, a particular company and the industry average, and the same company over a period of time. However, Anao (2002) argued that financial statement analysis can be carried out through the application of three (3) methods which are: trend analysis, percentage analysis and ratio analysis. However, he further argued that of all the three methods, ratio analysis is the most effective. In the opinion of Osiegbu and Nwakanma (2008), financial ratios are used to measure the relationship between a firm's performance in relation to an acceptable standard. Thus, financial ratios help in evaluating the financial performance and condition of a business concern, by studying the relationship among various financial factors in a business as disclosed by a single set of financial statement and the trend of these factors as shown in a series of financial statements. The measurement of profitability and liquidity is vital to the existence and continuous survival of business. It enables businesses to have a reasonable idea of their past financial performance (profitability) and current financial position (liquidity), which will further enable them to take corrective measures to forestall any future financial quagmire that may arise from future profitability and liquidity crisis. Osiegbu and Nwakanma (2008) viewed profitability as a function of a large number of policies and decisions. Ibenta (2005) viewed liquidity as the ability of a firm to meet its short term maturing obligations. Thus, in financial statement analysis, the measurement of profitability and liquidity is an important aspect that highlights a firm's financial health.

The working capital approach to liquidity management has long been the prominent technique used for planning and controlling liquidity. However, instead of using working capital as a measure of liquidity, many financial analysis advocate the use of liquidity ratio, which have the advantage of making temporal or cross-sectional comparison possible. However, the ultimate measure of the effectiveness of liquidity management is the impact. It has no profit and shareholders value. Thus, the study aimed at determining the relationship between liquidity and profitability, using a sample of some selected publicly quoted companies in the Industrial /Domestic Products Industry in the manufacturing sector of the Kenyan economy.

## OBJECTIVES OF THE STUDY

The study sort to pursue the following objectives;

1. To determine the relationship between current ratio and profitability i.e. Return on Assets (ROA)
2. To determine the relationship between acid-test ratio and profitability, i.e. Returns on Assets (ROA)
3. To determine the relationship between return on capital employed and profitability i.e. Returns on Assets (ROA)

## THE THEORETICAL FRAMEWORK OF FINANCIAL STATEMENT ANALYSIS

According to Wild *et al* (2004), financial analysis is the use of financial statements to analyse a company's financial performance and position and to assess future financial performance. Finery (2006) viewed financial analysis as the process of collecting and refining financial data and presenting the refined financial information in a summary format, suitable for effective decision making. However, Moyer *et al* (2006) argued that "financial analysis is an exercise that assists in identifying the major strengths and weaknesses of a business enterprise, in addition to indicating whether the enterprise has enough cash to meet its financial obligations, an efficient inventory management policy, sufficient plants and equipment; and an efficient capital structure, all of which are necessary for the enterprise to achieve its goals of maximizing the wealth of shareholders. They also went to determine whether a satisfactory return is being earned for their risk. Babatunde (2008), viewed financial analysis as an exercise that can be undertaken by management as well as owners, investors, creditors, consultants and others." He, however, presaged that, the nature of the analysis will differ, depending on the purpose of the analyst."

## THE CORRELATION BETWEEN LIQUIDITY AND PROFITABILITY

Liquidity and profitability are two very important and vital aspects of corporate business life. No firm can survive without liquidity. A firm not making profit may be considered as sick but, one having no liquidity may soon meet its downfall and ultimately die. Liquidity management has thus, become a basic and broad aspect of judging the performance of a corporate entity (Bardia, 2007). It is thus, essential to maintain an adequate degree of liquidity for the smooth running of the business operations. The liquidity should be neither excessive nor inadequate. Excessive liquidity indicates accumulated idle funds, which do not earn any profit for the firm, and inadequate liquidity not only adversely affects the credit worthiness of the firm, but also interrupts the production process and hampers its earning capacity to a great extent. Thus, the need for efficient liquidity management in corporate businesses has always been significant for the smooth running of the business (Valrshney, (2008).

A lot of research work has been done on the area of focus. Lambery and Valmaing (2009) conducted a study on the impact of liquidity management on profitability: a study of the adoption of liquidity strategies in financial crisis? The major purpose of the study was to evaluate and compare the use and extent of liquidity practices in two time points and to measure, if the change in liquidity strategy is related to profitability. The research problem consisted of two main questions.

Samilogu and Dermirgunes (2008) also conducted a research on the effect of working capital management on firms profitability. In the course of the research 5,841 samples of financial statements of companies that were listed on the Istanbul Stock Exchange (ISE) were analyzed through regression analysis, and the analysis covered a period of ten (10) years from 1998 to 2007. From their findings, the researchers concluded that working capital management has a significantly negative relationship with profitability. Amit *et al* (2005) studied the relationship between liquidity and profitability in the context of Indian Pharmaceutical Industry and concluded that no definite relationship can be established between liquidity and profitability. Narware (2004) in his study of liquidity and profitability of NFL, a fertilizer company disclosed both negative and positive associations. Mukhopadhyay (2004) in his paper working capital management in heavy engineering firms, a case study indicated that loans and advances and other current assets hardly had any role to contribute in sales/business generation of the firm during 2002 to 2003. Bardia (2007) in his study on Steel Giant Sail for the period from 1991/92 to 2001/02, concluded that there is a positive relationship between liquidity and profitability. Sur *et al* (2001) revealed in their study of Indian Aluminum Producing Industry a very significant positive relationship between liquidity and profitability.

## RESEARCH METHODOLOGY

Esene (2005) while quoting Yomere and Agbonigbo (2009) research methodology and the methods procedures through which the researcher intended to accomplish his objectives. Thus this chapter sort

out a rationale for choosing a research population and samples. It also includes the data collection process and the statistical techniques adopted for testing the validity of the hypothesis already formulated.

### POPULATION AND SAMPLE SIZE

The researcher's interest will be to carry out a study on the correlation between liquidity and profitability as measured by the various liquidity ratios. The population of the study constitutes all the investment companies listed in NSE, Kenya.

### SAMPLING TECHNIQUE

The sampling technique adopted for the study was the non-probability sampling technique. This is when whatever elements of the population that are available are selected as sample items, without following any specific subject selection process Esene (2005). The sampling technique will be adopted because all the financial information of the population may not be available, hence the researcher had to use those that were fully available.

### METHODS OF DATA COLLECTION

Data to be used for the study will be secondary data from the annual Report and Account of the Investment Companies in NSE, Kenya. The use of secondary data will be necessary because of the quantifiable and verification nature of variables involved liquidity and profitability. Other secondary data and information used will be gotten from text books, journals, the internet, newspapers.

### DATA ANALYSIS AND PRESENTATION

Method of data analysis simply means the statistical technique be utilized in processing the data collected, with the view to arriving at valid conclusion. The statistical technique adopted for the study was simple correlation Analysis. Thus the model was used because of the fact that it measured the degree of association between the two variables, liquidity and profitability. The correlation coefficient (R) to be derived from the analysis was subjected is 10% level of significance test.

$$\text{Correlation coefficient} = \frac{n\sum XY - \sum X \sum Y}{\sqrt{(n\sum x^2 - (\sum x)^2)(n\sum y^2 - (\sum y)^2)}}$$

$$\frac{N\sum xy - \sum x \sum y}{\sqrt{n\sum x^2 - (\sum x)^2 (n\sum y^2 - (\sum y)^2)}}$$

Where: R = Correlation coefficient

N= Number of observations

$\sum$ = Summation sign

X= Independent Variables (Liquidity Ratios)

Y = Dependent Variable (profitability ROA)

To test for significance

DF = N -2

Where DF = Degree of freedom

N = Number of observations

**DECISION RULE FORMUALTION**

Accept Null Hypothesis (Ho) and reject alternative Hypothesis (H1) if the correlation coefficient (r) is significantly negative OL accept alternative Hypothesis and reject Null Hypothesis (H0) if the correlation coefficient (r) is significantly positive.

**TEST OF HYPOTHESIS**

**HYPOTHESIS ONE 1**

H1 current ratio in positively correlated with profitability

**TABLE 1:** I.e Return on Assets (ROA) (Let x be current ratio and y be (ROA))

**OLYMPIA CAPITAL HOLDINGS (PLC)**

SN	YEAR	X	Y	X2	Y2	XY
1	2014	2.28	1.22	5.1984	1.4884	2.7816
2	2015	2.30	9.30	5.29	86.49	21.390
3	2016	3.10	0.12	9.61	0.0144	0.372
4	2017	2.34	1.66	5.4756	2.7556	3.8844
5	2018	2.16	1.40	4.6656	1.96	3.024
	Σ=	12.18	13.70	30.2396	92.7084	31.452

SOURCE: Researcher’s calculation

$$\begin{aligned}
 \text{Correlation coefficient (r)} &= \frac{n\sum xy - \sum x \sum y}{\sqrt{n\sum x^2 - (\sum x)^2} \sqrt{n\sum y^2 - (\sum y)^2}} \\
 &= \frac{5 \times 31.452 - 12.18 \times 13.70}{\sqrt{5 \times 30.2396 - 148.3524} \sqrt{5 \times 92.7084 - 187.69}} \\
 &= \frac{157.26 - 166.8666}{\sqrt{151.198 - 148.3524} \sqrt{463.542 - 187.69}} \\
 &= 9.606 \\
 &= (1.687) (16.609) \\
 &= -9.606 / 28.0194 \\
 &= 0.3428
 \end{aligned}$$

Test of significance to test for the significance of association between the two variables correlated. To determine the degree of freedom (Df) which enable us determine the critical value of r.

$$DF = N - 2$$

$$5 - 2 = 3$$

At 3 degrees of freedom and at 10% level of significance the critical value of (r) is  $\pm 0.805$  hence it is not significant. Decision; since the computed value of (r) is less than the critical value of  $\pm 0.805$  accept the null hypothesis and reject the alternative hypothesis

**TABLE 2: TRANS-CENTUARY (PLC)**

S/N	YEAR	X	Y	X <sup>2</sup>	Y <sup>2</sup>	XY
1	2014	1.98	0.96	3.9204	0.9216	1.9008
2	2015	1.88	0.72	3.5344	0.5184	1.3536
3	2016	0.14	0.74	0.0196	0.5476	0.1036
4	2017	0.10	1.00	0.010	1.00	0.1000
5	2018	1.18	0.38	1.3924	0.1444	0.4484
	$\Sigma$	5.28	3.80	8.8768	3.132	3.9064

$$\text{Correlation coefficient (r)} = \frac{n \sum xy - \sum x \sum y}{\sqrt{n \sum x^2 - (\sum x)^2 (n \sum y^2 - (\sum y)^2)}}$$

$$r = \frac{5 \times 3.9064 - 5.28 \times 3.80}{\sqrt{5 \times 8.8768 - 27.8784} \sqrt{5 \times 3.132 - 14.44}}$$

$$= \frac{19.532 - 20.064}{\sqrt{44.3384 - 27.8784} \sqrt{15.66 - 14.44}}$$

$$= \frac{-0.532}{\sqrt{16.46} \sqrt{1.22}}$$

$$= \frac{-0.532}{4.06 \times 1.105}$$

$$= \frac{-0.532}{4.4863}$$

$$= -0.1186$$

**Test of significance**

Since the computed value of (r) is lower than the critical value of (r) i.e. 0.1186 < 0.805, it means that the computed value of (r) is not significant  
 Decision since the computed value of (r) is lower than the critical value of (r) accept the Null hypothesis and reject the alternate hypothesis

**Hypothesis Two (2)**

H1: Acid test Ratio is positively correlated with profitability i.e. Return on Assets (ROA)  
 Let x be acid test Ratio and Y be Return on Assets (ROA)

**Table 3: Transcentuary (PLC)**

SN	YEARS	X	Y	X <sup>2</sup>	Y <sup>2</sup>	XY
1	2014	1.22	11.2	1.4884	125.44	13.664
2	2015	9.3	15.6	86.49	243.36	145.08
3	2016	0.12	24.4	0.0144	595.36	2.928
4	2017	1.66	16.4	2.7556	268.96	27.224
5	2018	1.40	18.6	1.96	345.96	26.04
	Σ	13.7	86.20	92.7084	1579.1	214.936

SOURCE: Researcher's calculations

$$\text{Correlation coefficient (r)} = \frac{n\sum xy - \sum x \sum y}{\sqrt{N \sum x^2 - (\sum x)^2 (n\sum y^2 - \sum y)^2}}$$

$$\begin{aligned} & \frac{5 \times 214.936 - 13.7 \times 86.20}{\sqrt{5 \times 92.7084 - (13.7)^2 (5 \times 1579.1 - 7430.44)}} \\ & = \frac{1,074.68 - 1,180.94}{\sqrt{(463.542 - 187.69) (7895.5 - 7430.44)}} \\ & = \frac{-106.26}{\sqrt{16.609 (465.06)}} \\ & = \frac{-106.26}{358.173} \\ & = -0.297 \end{aligned}$$

Test of significance since the computed value of r is less than the critical value of (r) i.e. -0.297 < 0.805 it means that the computed value of (r) is not significant.

Decision since the computed value of (r) is less than critical value of (r) accept the null hypothesis and reject the alternate hypothesis.

SN	YEARS	X	Y	X <sup>2</sup>	Y <sup>2</sup>	XY
1	2014	0.96	0.28	0.9216	0.0784	0.2688
2	2015	0.72	1.40	0.5184	1.9600	1.008
3	2016	0.74	0.00	0.5476	0.000	0.000
4	2017	1.00	0.60	1.00	0.360	0.600
5	2018	0.38	49.00	0.1444	2.401	18.62
	Σ	3.80	51.28	3.132	2403.4	20.4968

$$\text{Correlation coefficient}(r) = \frac{n\sum xy - \sum x \sum y}{\sqrt{n\sum x^2 - (\sum x)^2 (n\sum y^2 - (\sum y)^2)}}$$

$$r = \frac{5 \times 20.4968 - 3.80 \times 51.28}{\sqrt{5 \times 3.132 - 14.44 (\sqrt{5 \times 2403.4 - 2629.6384})}}$$

$$R = \frac{102.484 - 194.864}{\sqrt{(15.66 - 14.44) (12,017 - 2,629.6384)}}$$

$$= \frac{-92.38}{\sqrt{1.22 \times 9387.3616}}$$

$$r = \frac{-92.38}{(1.105)(96.9)}$$

$$r = \frac{-92.38}{107.0745}$$

$$= -0.863$$

### Test the significance

Since the computed value of (r) is greater than the critical value of (r) i.e.  $-0.863 > -0.805$  it means that the computed value of (r) is significance.

Decision: Since the computed value of (r) is higher than the critical value of accept the alternate hypothesis and reject the Null n hypothesis,

H1 current ratio and acid test ratio is positively correlated with profitability i.e ROA  
 Let x be cash and y be Return on Assets (ROA)

**Table 4: Centum investment company (PLC)**

S/N	YEARS	X	Y	X <sup>2</sup>	Y <sup>2</sup>	XY
1	2014	0.22	56.7	0.0484	3214.89	12.474
2	2015	0.16	15.6	0.0256	243.360	249.60
3	2016	0.52	24.4	0.2704	595.360	12.688
4	2017	2.58	16.4	6.6564	268.960	42.312
5	2018	0.38	18.6	0.1444	345.960	7.068
	Σ	3.86	131.7	6.902	4668.54	324.142

Source: researcher's calculation

$$\text{Correlation coefficient (r)} = \frac{n\sum xy - \sum x \sum y}{\sqrt{n\sum x^2 - (\sum x)^2 (n\sum y^2 - \sum y)^2}}$$

$$r = \frac{5 \times 324.142 - 3.86 \times 131.7}{\sqrt{5 \times 6.902 - 14.8996 (23342.7 - 17344.89)}}$$

$$r = \frac{1620.71 - 508.362}{\sqrt{34.51 - 14.8996 (23342.7 - 17344.89)}}$$

$$r = \frac{1112.348}{\sqrt{19.6104 \times 5997.8}}$$

$$r = \frac{1112.348}{4.4284 \times 77.41}$$

$$r = \frac{112.348}{342.802}$$

$$r = 0.0331$$

### Test of significance

Since the computed value of (r) is greater than the critical value i.e. -0.0331 > 0.805, it means that it is significant. Decision, Since the computed value of (r) is greater than the critical value of (r) accept the alternate hypothesis and reject the null hypothesis

**Table 5: Trans- century (PLC)**

SN	YEARS	X	Y	X2	Y2	XY
1	2014	0.70	0.28	0.49	0.0784	0.196
2	2015	0.48	1.40	0.2304	0.2304	0.672
3	2016	0.14	0.00	0.0196	0.000	0.0000
4	2017	0.20	0.60	0.040	0.360	0.120
5	2018	0.14	49.00	0.00196	2401	6.86
	Σ	1.66	51.28	0.7996	2401.7	7.848

SOURCE: Researcher's calculation

$$\text{Correlation coefficient}(r) = \frac{n\sum xy - \sum x \sum y}{\sqrt{n\sum x^2 - (\sum x)^2 (n\sum y^2 - \sum y)^2}}$$

$$r = \frac{5 \times 7.848 - 1.66 \times 51.28}{\sqrt{5 \times 0.7996 - (1.66)^2 (5 \times 2401.7 - 2629.6)}}$$

$$= \frac{39.24 - 85.1248}{\sqrt{3.998 - 2.7556 (12,008.5 - 2629.6)}}$$

$$= \frac{-45.8848}{\sqrt{14.9211}}$$

$$= \frac{-45.8848}{1.2215}$$

$$= -37.56$$

$$= -37.56$$

$$= -37.56$$

$$= -37.56$$

$$= -37.56$$

$$= -37.56$$

$$= -37.56$$

$$= -37.56$$

### Test of significance

Since the computed value of (r) is less than the critical value of (r) i.e.  $-0.425 < -0.805$ , it means that, it is not significant.

Decision: Since the computed value of (r) is less than the critical value of (r) accept the Null hypothesis and reject the alternate hypothesis

**TABLE OLYMPIA CAPITALHOLDINGS (PLC)**

SN	YEARS	X	Y	X <sup>2</sup>	Y <sup>2</sup>	XY
1	2014	0.7	0.28	0.49	0.0784	0.196
2	2015	0.48	1.40	0.2304	1.96	0.672
3	2016	0.14	0.00	0.0196	0.00	0.00
4	2017	0.20	0.6	0.04	0.360	0.120
5	2018	0.14	49.0	0.0196	2401	6.86
	Σ	1.66	51.28	0.7996	2403.4	7.848

$$\text{Correlation coefficient (r)} = \frac{n\sum xy - \sum x \sum y}{\sqrt{n\sum x^2 - (\sum x)^2 (n\sum y^2 - \sum y)^2}}$$

$$r = \frac{5 \times 7.848 - 1.66 \times 51.28}{\sqrt{5 \times 0.7996 - 2.7556} \sqrt{5 \times 2403.4 - 2629.6}}$$

$$\frac{39.24 - 85.1248}{\sqrt{3.998 - 2.7556} \sqrt{12017 - 2629.6}}$$

$$\frac{-45.8848}{(\sqrt{1.2424} \quad (\sqrt{9,387.4}))}$$

$$r = \frac{-45.8848}{\sqrt{1.2424} \sqrt{9387.4}}$$

$$r = \frac{-45.8848}{1.115 \times 96.89}$$

$$r = \frac{-45.8848}{108.032}$$

$$r = -0.427$$

**Test of Significance**

Since the computed value of (r) is less than the critical value of ® i.e. -0.427 < -0.805, it means that it is not significance. Decision. Since the computed value of ( r ) in less than the critical value accept the null hypothesis and reject the alternate hypothesis

## DISCUSSION AND FINDINGS

The analysis conducted in the study indicates that Olympia capital holdings depicted a positive correlation coefficient between current ratio and profitability as represented by correlation coefficients  $R$ .

However they were not significant at 10% level when compared against a table of critical value of  $(r)$  (0.805, hence Null hypothesis was accepted. Trans century depicted a negative correlation between current ratio and profitability, and represented by correlation coefficient  $(r)$  -0.1186. When compared against the critical value of -0.805, it was not significant at 10% level. Hence Null hypothesis accepted reject. After from the above analysis out of the three companies studied, 75% of them indicated that the current ratio has a significance positive correlation with profitability.

The researcher believes that the reasons for this positive relationship between current ratio and profitability is simply because idle funds, especially when they are borrowed generate project and less costs in the business.

The two companies depicted a negative correlation between Acid Test Ratio and thus, from the above results, 50% of the companies analyzed indicated a significant negative correlation between current ratio and acid test ratio. Hence there is no definite correlation between current ratio and profitability in this analysis.

On the other side, the correlation between cash ratio and profitability, the analysis conducted indicated that out of three companies studied indicated a negative correlation between liquidity and profitability as represented by correlation coefficient  $(r)$  of 0.0331 which was positive. When compared against the critical value of correlation coefficient  $(r)$  of 0.805 they were all not significant at 10% level, hence Null hypothesis was accepted.

## CONCLUSION

From the findings of this study the researcher concludes that: there is a significant positive correlation between current ratio and profitability as measured by return on Assets. There is no definite significant correlation between Acid test ratio and profitability as measured by Return on Assets and there is a positive correlation between cash ratio and profitability as measured by return on Assets.

## RECOMMENDATIONS

Based on the conclusion drawn, the researcher recommends that firm should maintain a moderate level of liquidity that does not threaten their going concern status, and yet allows them to make adequate profits on their investments. This is because the negative correlation between liquidity and profitability indicates that both of them have an inverse relationship such that gaining more of one means losing more of the other. Therefore firms should try to find an optimum balance.

The researcher also recommends that other researchers should carry out studies on the vulnerability of earnings for ordinary shareholders and leverage ratio that shows the degree of financial risk of a company. Another area could be on long term solvency and stability ratio to know the ability of the company in meeting its long term obligations.

## Test of Regression Model Assumptions

To establish the suitability of the data obtained for regression analysis, tests of normality multicollinearity, homoscedasticity and auto correlation were carried out and the results are as presented.

### Normality Test

Analysis of normality of residuals was tested using one sample Kolmogorov-Smirnov and Shapiro Wilk test. If  $P < 0.05$  then there was a significant difference of the data elements from the distribution mean hence normal distribution. All  $P$  values were greater than 0.05 significance level.

### Multicollinearity Test

To test multicollinearity the study adopted variance inflation factors (VIF) and tolerance levels. If the  $VIF < 3$  then the data does not suffer from multicollinearity and  $VIF > 3$  then multicollinearity exist. According to the tests conducted it revealed that all VIF values were less than 3 indicating that the data did not suffer from multicollinearity issues

### **Homoscedasticity Test**

Devene's Test of Equality of Error Variances was used to test the null hypothesis that data does not suffer from homoscedasticity. If the reported  $p > .05$  then variance between data items was considered insignificant and therefore the data is largely homoscedastic but is  $p < .05$  significance level then the variance between the data elements is statistically significant thus heteroscedastic. The results show that  $P > .05$  thus data was homoscedastic.

### **Test for Autocorrelation**

Durbin Watson coefficient was used to test for autocorrelation. The Durbin Watson returned a value of .523 which indicated that positive autocorrelation existed. This was resolved by applying the Cochrane-Orcutt and Prais Winsten procedures. On application of these procedures a Durbin Watson coefficient of 1.937 was derived which implied that data was independent of the serial correlation.

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## Appendix one

### List of Investment Firms in NSE Kenya

- ✓ Olympia Capital Holdings (PLC)
- ✓ Centum Investment Company(PLC)
- ✓ Trans-century (PLC)
- ✓ Home Africa Limited
- ✓ Kurwitu Ventures (PLC)