

# Effect of Operational efficiency on Financial Performance of Cement Firms Listed at the Nairobi Securities Exchange, Kenya

Morris Irungu Kariuki, PhD

Lecturer, Department of Finance and Accounting, University of Nairobi, Kenya

Corresponding author: Morris Irungu Kariuki, PhD, Lecturer, University of Nairobi, Nairobi, Kenya.

---

## Abstract

The objective of this study was to determine the effect of operational efficiency on the financial performance of listed cement manufacturing Companies in Kenya. The study used a descriptive research design. Secondary data obtained from the published financial statement over the period 2005 to 2020 was used. Pearson correlation technique was used. Return on assets, Return on equity, total operating cost ratio, cost of sales ratio, distribution cost ratio and administration cost ratio were correlated. The tests of significance were done at 5%. The relationship between total operating cost and cost of sale ratios, individually, and financial performance was found to be negative, moderate and significant. The effect of administration cost ratio on financial performance was found to be positive while total operating cost ratio had a negative and significant effect on ROA. The study recommends that in order to improve financial performance of cement firms, management should focus on reducing the cost of sales.

**Key words:** Operating costs, return on assets, return of equity

---

Date of Submission: 09-07-2021

Date of Acceptance: 24-07-2021

---

## I. Operational Efficiency

Operational efficiency measures an entity's ability to generate revenue. It is a function of operating cost and sales with respect to merchandising enterprises; the numerator is usually operating costs and the denominator revenue or sales. Operating cost are the expenses associated with running business core operations on a daily basis. These expenses appear on the income statement. They include cost such as cost of sales, labour cost, administrative cost, selling and distribution cost. Operating cost usually exclude interest expense, non-recurring items and other income not directly related to a company's core business operations [1]. Financial reporting classifies expenses into three categories; operating expenses, financing expenses and capital expenses. Operating expenses are expenses that provide benefits only for the current period; the cost of labor and materials expended to create products which are sold in the current period are operating expenses. Financing expenses are expenses arising from the non-equity financing used to raise capital for the business; the most common example is interest expenses. Capital expenses are expenses that are expected to generate benefits over multiple periods; for instance, the cost of buying land and buildings is treated as a capital expense. Operating expenses are subtracted from revenues in the current period to arrive at a measure of operating income for the firm. Financing expenses are subtracted from operating earnings to estimate earnings to equity investors or net income. Capital expenses are written off over their useful life as depreciation or amortization charge [2].

According to [3], the traditional theory of cost categorizes cost as short run and long run costs. Further the costs are classified as total cost, average cost and marginal cost. Total cost comprise of fixed and variable cost. While the total fixed remain constant with respect to changes in output level, the total variable cost change as in direct proportion to the level of output. The change in firms operating cost can thus be explained by the changes in the level of output considering this behavioral classification.

Ratio analysis is a technique of analysis and interpretation of financial statement. It is the process of establishing and interpreting various ratios for helping in making certain decisions. It is the only means of better understanding of financial strengths and weakness of a firm. There are various ratios which can be calculated from information given in the financial statements [4]. According to [5], operating expense ratio is a useful way to study the operating cost of a business. The importance of operating expense ratio lies in the fact it is an indicator of the efficiency level of managing a business. A lower operating expense ratio indicates a greater profit. The operating expense ratio reflects the percentage of business revenue which is being utilized to pay operational expenses. Moreover, the operating expense ratio also represents individual operating expenses items in the form of a percentage of the revenue is also helpful in identifying potential problems.

While management can take certain actions to control expenses, the price of a product or service is typically a function of market demand. The operating expense ratio allows investors and analysts to understand

how efficiently a business is able to produce goods or supply services. When viewed over time, the operating expense ratio can also reveal if management is able to expand operations without dramatically increasing expenses. If revenues were to expand year-over-year and the operating expense ratio goes down; this would indicate that management is able to scale production efficiently; revenues expanded more quickly than expenses increased. This is a very positive outcome from a profitability standpoint [6]. This study used distribution cost, administration cost, cost of sales and total operating cost ratios as measures of operating efficiency.

## **II. Financial Performance**

Financial performance is measuring the results of a firm's policies and operations in monetary terms. These results are reflected in the firm's return on investment (ROI), return on assets (ROA), return on equity (ROE), value added, and growth in sales, profitability, organization effectiveness and business performance [7]. Financial performance is measured using key ratios to evaluate the financial position and income of a firm. These include ratio net income to average assets called return on assets (ROA), net income to equity called return on equity (ROE), net income to total investment called return on investment (ROI) [1]. Measuring financial performance accurately is critical for accounting purposes and remains a central concern for most organizations. This study used ROA and ROE to measure financial performance.

## **III. Listed Cement Companies in Kenya**

In Kenya, Cement manufacturing companies are located in different regions due to the proximity of raw materials, cheap labour and market. There are three listed cement manufacturer namely Bamburi Cement Limited (BCL), East Africa Portland (EAP) and Athi River Mining (ARM). East Africa Portland and Athi River Mining are located in Kajiado County while Bamburi Cement Limited is located in Mombasa County. East Africa Portland is a listed state corporation while the other two are listed public companies. The main operation for these cement firms is to manufacture and sell cement. Other business activities include manufacture and sale of ready mix concrete, precast products and rehabilitation of quarries that are used as source of raw materials for cement production. They also make concrete products such as ready mix concrete; paving blocks, pre-cast mold products, drainage and edge restraints products, fencing and walling products [8].

## **IV. Operational efficiency and financial performance**

Operating costs are a major element in the determination of operating income. Many decisions made by manager's result in expenditures on some combination of salaries, commissions, equipment, office supplies, and other operating expenses [9]. [10] argues that a key task confronted by an organization's management is how to achieve operational efficiency; how operating costs can be reduced without considerably impacting the organization's ability to contest with its competitors. [11] posits that operating expense includes administrative and selling expenses may have positive or negative impact on profitability of an organization because when management increases their operating expenses there are possibilities of increasing revenues. Operating expenses plays very important role for achieving the maximum revenue because through proper use of resources and expenses firm get huge sale which also generate greater profit for the organization.

Operating cost ratio is a measurement of operational efficiency. Operation efficiency refers to how effectively a business is able to generate income. Looking at the operation efficiency of a business assists the owner(s) in determining how the various aspects of the business such as production, financing, marketing among others affect the gross income of the business. According to [12], firms internal factors such as the extent to which operating costs are fixed or variable are primarily responsible for performance variation and organizations are expected to make changes based on best practices to their structural and infrastructural elements in order to attain selected performance goals.

## **V. Research Problem**

Operating expenses are a key component in the determination of operating income while operating income is a crucial component in financial performance measurement. The lower the company's operating expenses the more profitable it generally is. Operating expenses such as prices for raw materials or labour directly relate to the day-to-day decisions managers make. In most cases, the financial strategies manager employ to control operating expenses determine managerial flexibility and competency [6]. Further, the operating expenses ratio provides a yardstick for measuring operational efficiency of the firm. The operating expense ratio is, generally, calculated by dividing the operating expense of a business by its revenue. An evaluation of operating expense ratio overtime provides an idea of the behavior of operating expense. Certain expenses are within managerial discretion; therefore it should be seen whether change in discretionary expenses is due to changes in management policy. Year on year analysis of the variation in operating expense ratio may reveal whether the variations are temporary in nature or reflect a change in business policy [1]. [13] explain the operating expense ratio provides a useful measure of business performance. Yet, variations in this ratio,

temporary or long-lived, can occur due to factors beyond management control; such factors include changes in sales price, changes in demand of the product, changes in administrative or selling expenses or changes in the proportionate share of sales of different products with varying gross margins among others.

The Kenyan cement industry has seen a steady increase in production capacity driven by the entry of new private cement producers into the market and extensive capacity expansion by existing players in response to increasing competition. This has led to consistent oversupply of cement in the market. The challenges of dampened profitability margins caused by increased competition among the existing cement producers as well as the threat of competition from cheaper imports has increased the need for cost containment through increased productivity and more efficient operations to ensure sustainable world class competitiveness [14]. To enhance profitability the companies must be able to manage and control operation cost.

Several studies have evaluated the effect of various operating costs on financial performance. [15] found that inventory management had a significant effect on profitability and operating cash flow. [10] found that operating expenses had a negative effect on net profit of cement manufacturer in Pakistan. [16] established that operating expenses had a positive and statistically significant effect on profitability. [17] explored the determinants of financial performance of manufacturing companies in Ghana. It was found that firm specific variables such as asset structure and operating cost ratio negatively affected financial performance. Studies evaluating the effect of operating expense on financial performance are limited. Further as evidenced in the aforementioned studies, the findings are mixed. It is this gap that this study sought to fill by answering the question: what is the effect of operational efficiency on financial performance of cement companies listed at the Nairobi Securities Exchange?

### **Research Objectives**

To determine the effect of operational efficiency on the financial performance of cement companies listed at the Nairobi Securities Exchange.

## **VI. Literature Review**

This study was underpinned on financial ratios as a tool for understanding financial performance. It was also anchored on the traditional theory of cost [3] and the theory of constraints [18].

[10] studied the impact of operating expenses on net profit margin of cement sector of Pakistan. The objective of the study was to find out the relationship between operating expenses and profitability of cement sectors. The study used descriptive research design. Fixed effect regression model was used to analyze the relationship. The study found that there was a negative relationship between operating expenses and net profit margin. The study noted that cement sector operation expenses are more as compared to sales resulting in a decline in profitability. It recommended that the cement sectors of Pakistan needed to be improving quality and proper utilization of all resources for maximizing the profit margin.

[15] studied the effect of inventory management on firm profitability and operating cash flows of Kenya Breweries Limited, beer distribution firms in Nairobi County. The purpose of the study was to examine effect of inventory management on firm's profitability and operating cash flows of Kenya Breweries Limited beer distribution firms in Nairobi County. The study employed a descriptive research design. The study used a census of six Kenya Breweries Limited beer distribution firms in Nairobi County. Secondary data was used. Data was analyzed using regression methodology. The study found a significant relationship between the management of inventory and the operating cash flows of Kenya Breweries Beer distribution firms in Nairobi County. It also found that inventory management significantly influences firm profitability and operating cash flows of Kenya Breweries beer distribution firms in Nairobi County, Kenya. The study recommended that the company needed to adopt better inventory management practices to optimize profitability.

[19] examined the impact of firm's input costs on firm profitability in the Nigerian brewery industry. The objectives of the study were to evaluate the effect of cost of sales and operating cost on profitability of brewery firms in Nigeria. The study used cross sectional data from annual reports of the sampled brewery firms over the period 1999 to 2010. Data was analyzed using the ordinary least squares regression. The study found that cost of sales was a major factor in determining the profitability of Nigerian brewers. It also found that operating expense had a positive and statistically significant effect on profitability. The study recommended that companies in the industry needed to systematically increase the operating cost in key areas of to increase profitability.

[20] studied the effect of information technology on firms profitability. The objectives of the study was to determine whether investments in information technology help improve sales, or is it because they help reduce overall operating expenses and how the effect of IT on profitability compare with that of advertising and of

research and development. The study found that IT has a positive impact on profitability. The effect of IT investments on sales and profitability is higher than that of other discretionary investments, such as advertising and R&D. A significant portion of the impact of IT on firm profitability is accounted for by IT enabled revenue growth, but there is no evidence for the effect of IT on profitability through operating cost reduction. Taken together, these findings suggest that firms have had greater success in achieving higher profitability through IT-enabled revenue growth than through IT-enabled cost reduction. They also provide important implications for managers to make allocations among discretionary expenditures such as IT, advertising, and R&D. With regard to IT expenditures, the results imply that firms should accord higher priority to IT projects that have revenue growth potential over those that focus mainly on cost savings.

[17] explored the determinants of market and book based financial performance of manufacturing companies in Ghana. An exploratory research design was used. The study analyzed data for eleven listed manufacturing companies covering a period of seven years. Panel regression was adopted for the analysis. The study noted that both the market and book based financial performance of the manufacturing companies were above the average performance of the manufacturing industry. Firm specific variables such as tangibility, asset structure and operating cost ratio of the manufacturing companies influenced the book based financial performance measured as earnings per share (EPS) and Tobin's Q negatively.

### VII. Research Methodology

A descriptive research design was used to undertake the study. It was a census study for the three listed cement makers. The researcher made use of secondary data. Data was obtained from published financial statements of the three cement companies. The data collected consist of operating expenses, total assets and net income. A data collection schedule was used to record the data. Data was collected for a period of fifteen years from 2005 to 2020. Descriptive statistics and Karl Pearson correlation was used for data analysis. Return on assets was operationalized as net income divided by total assets. While return on equity was operationalized as net income divided by total equity. The significance of the correlation was evaluated using t-test at 5% level of significance.

### VIII. Data Analysis, Finding and Interpretation

The study collected complete data for 15 years each for Bamburi Cement and Athi River Mining while it obtain complete date for 10 years for East Africa Portland. The study yielded 40 data points. According to [22] at least 30 data points are required for inferential statistics.

**Table 1: Cost of sales ratio**

	Minimum	Maximum	Mean	Std. Deviation	
BCL	51.06	76.50	67.27	8.85975	
EAP	67.09	142.33	85.93	21.99487	
ARM	63.76	84.61	70.1	6.01813	
INDUSTRY	51.06	142.33	75.0	17.41010	

Table 1 show that the mean cost of sales ratio for the industry was 75.07 %. This means that cost of sales are significant component of operating cost and its management and control cannot be overemphasized. EAP has cost of sales proportions greater than the industry's average yet it maintained the highest variability compared to the industry's average.

**Table 2: Administration cost ratio**

	Minimum	Maximum	Mean	Std. Deviation	
BCL	3.21	10.06	6.11	2.16906	
EAP	5.53	63.26	17.64	13.73749	
ARM	8.44	12.07	10.21	1.17037	
INDUSTRY	3.21	63.26	11.93	9.97802	

According to Table 2, the mean administration cost ratio for the industry was 11.93 %. EAP has administration ratio greater than the average while it also a higher variability compared to the industry's average.

**Table 3: Distribution cost ratio**

	Minimum	Maximum	Mean	Std. Deviation	
BCL	.71	11.81	3.40	3.48642	
EAP	.92	9.13	4.90	2.56901	
ARM	.86	9.82	4.53	3.10330	

INDUSTRY	.71	11.81	4.44	3.10123
----------	-----	-------	------	---------

Table 3 show that the mean percentage of distribution cost for the industry was 4.44 %. EAP and ARM have distribution cost ratio greater than the average. While BCL maintained the highest variability compared to the industry’s average.

**Table 4: Total operating cost ratio**

	Minimum	Maximum	Mean	Std. Deviation
BCL	65.86	83.39	76.77	5.22262
EAP	82.02	168.63	108.47	30.01540
ARM	79.41	97.32	84.92	5.57268
INDUSTRY	65.86	168.63	91.45	23.95844

According to Table 4, the mean total operating cost ratio for the industry was 91.45 %. EAP has total operating cost ratio greater than the average yet it had the highest variability compared to the industry’s average.

**Table 5: Tests of Normality**

	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
ROA	.088	40	.200 <sup>*</sup>	.982	40	.761
ROE	.158	40	.014	.948	40	.063

According to [23], when the significance levels of K-S and S-W tests are insignificantly ( $p > .05$ ) different; it indicates that the assumption of normality has been meet and vice versa. The results in Table 5 therefore show that ROA and ROE did not significantly ( $p > .05$ ) deviate from normal.

**Table 6: Return on Assets**

	Minimum	Maximum	Mean	Std. Deviation
BAM	.97	21.71	10.93	6.19454
EAP	-10.21	30.97	4.49	11.58291
ARM	-5.56	9.37	4.23	4.06364
INDUSTRY	-10.21	30.97	7.03	8.87695

Table 6 shows that the mean return on assets for the industry was 7.03 %. EAP and ARM have ROA proportions lesser than the average. While EAP maintained a higher variability compared to the industry’s average

**Table 7: Return on equity**

	Minimum	Maximum	Mean	Std. Deviation
BCL	1.12	33.28	15.64	9.36480
EAP	-16.70	51.82	7.15	19.99499
ARM	-17.16	23.81	13.01	11.73956
INDUSTRY	-17.16	51.82	12.47	15.20716

Table 7 shows that the mean return on equity for the industry was 12.47 %. EAP had ROE proportions lesser than the average and it maintained a higher variability compared to the industry’s average

**Table 8: Correlation matrix for return on assets**

	1	2	3	4	5
Cost of sales ratio	1				
Distribution cost ratio	-.003	1			
Administration cost ratio	.451**	.085	1		
Total Operating Cost ratio	.003	.602	.716**	1	
ROA	.922**	.182	.000	.000	1
	-.463**	-.071	.061	-.351*	
	.003	.665	.710	.026	

\*. significance at the 0.05 level (2-tailed), \*\*. significance at the 0.01 level, N=40

Table 8 indicates the result of correlation analysis. The correlation between return on assets on one hand and distribution cost ratio and administration cost ratio on the other were found to be insignificant ( $p > .05$ ).

However, that cost of sale ratio and operating cost ratio were significant (p<.05) moderately and negatively related with ROA.

**Table 9:Correlation matrix for return on equity**

	1	2	3	4	5
Cost of sales ratio	1				
Distribution cost ratio	-.003	1			
Administration cost ratio	.451**	.085	1		
Total Operating Cost ratio	.922**	.182	.716**	1	
ROE	-.478**	-.036	.039	-.363*	1

\*. significance at the 0.05 level (2-tailed), \*\*. significance at the 0.01 level, N=40

Correlation analysis show in Table 9 between return on assets on one hand and distribution cost ratio and administration cost ratio on the other were found to be insignificant (p>.05). However, that of cost of sales ratio and total operating cost ratio were significantly (p<.05), moderately and negatively related with ROE.

**Regression analysis of ROA against individual operating costs ratio**

The model used to measure the effect of operating cost on return on asset was;

$$y_i = b_0 + b_1x_1 + b_2x_2 + b_3x_3 + b_4x_4 + \varepsilon_i \dots\dots\dots (1)$$

Where:  $y_i$  = Return on assets (ROA)

$b_0$  = Level of ROA in the absence of operating cost ratio

$b_i$  = Intercepts for individual operating costs ratio

$x_i$  = Operating cost

$\varepsilon_i$  = Error term

**Table 10:Model Summary for ROA**

Model	R	R Square	Adj. R Square	Std. Error of the Estimate
1	.562 <sup>a</sup>	.316	.259	.07639

a. Predictors: (Constant), distribution, finance cost, administration, cost of sales

Results in Table 10 indicates that operating cost ratio explain 56.2% of the variation in ROA. It follows that other factors outside debt experiences explain 43.8 % of variation in ROA.

**Table 11:Anova for ROA**

Model	Sum of Squares	Df	Mean Square	F	Sig.
1 Regression	.097	3	.032	5.553	.003 <sup>b</sup>
Residual	.210	36	.006		
Total	.307	39			

a. Dependent Variable: ROA

b. Predictors: (Constant) distribution, administration, cost of sales

Results in Table 11 imply the model is valid, F=5.553, p=.003. The F-ratio was significant (p=.003). This shows that the regression model has zero likelihood of giving wrong predictions.

**Table 12:Regression coefficients for ROA**

	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	.284	.058		4.881	.000
Cost of sales	-.317	.079	-.621	-4.020	.000
Distribution cost	-.292	.396	-.102	-.736	.467
Administration cost	.311	.138	.350	2.254	.030

As per the T-test values and p-values in Table 12, the standardised coefficients for Cost of sales and administration cost ratios were significant (p<.05) while that for distribution cost ratio was insignificant (p=.467). The beta values explain the effect of the predictor on dependent variable, ROA. The beta values for

administration cost ratio show a positive effect on ROA while that for cost of sales ratio show a negative effect on ROA.

**Regression analysis of ROE against individual operating cost ratio**

The model used to determine the effect of operating costs on ROE was;

$$y_1 = b_0 + b_1x_1 + b_2x_2 + b_3x_3 + b_4x_4 + \varepsilon_i \dots\dots\dots (2)$$

Where:  $y_1$  = Return on equity (ROE)

$b_0$  = Level of ROE in the absence of operating cost ratio

$b_i$  = Intercepts for Operating costs ratio

$x_1$  = Operating cost ratio

$\varepsilon_i$  = Error term

**Table 13:Model Summary for ROE**

Model	R	R Square	Adj. R Square	Std. Error of the Estimate
1	.561 <sup>a</sup>	.315	.257	.13105

a. Predictors: (Constant), distribution, administration, cost of sales

Results in Table 13 indicate that operating cost ratio explain 56.1% of the variation in ROE. It follows that other factors outside debt experiences explain 43.9 % of variation in ROE.

**Table 14:Anova for ROE**

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	.284	3	.095	5.506	.003 <sup>b</sup>
	Residual	.618	36	.017		
	Total	.902	39			

Results in Table 14 imply the model is valid, F=5.5506, p=.003. The F-ratio was significant (p=.003). This shows that the regression model has zero likelihood of giving wrong predictions.

**Table 15:Regression coefficients for ROE**

	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	.490	.100		4.910	.000
Cost of sales	-.547	.135	-.626	-4.044	.000
Distribution cost	-.322	.680	-.066	-.474	.638
Administration cost	.499	.237	.327	2.107	.042

As per the T-test values and p-values in Table 15, the standardised coefficients for distribution cost was insignificant (p=.638) while cost of sales and administration cost ratios were significant (p<.05). The beta values explain the effect of the predictor on dependent variable, ROE. The beta values for cost of sales show a negative effect on ROE whilst those for administration cost ratio show a positive effect on ROE.

**Regression analysis of ROA against total operating costs ratio**

The model used to measure the effect of total operating cost ratio on return on asset was;

$$y_1 = b_0 + b_1x_1 + \varepsilon_i \dots\dots\dots (1)$$

Where:  $y_1$  = Return on assets (ROA)

$b_0$  = Level of ROA in the absence of operating cost

$b_1$  = Intercept for operating cost ratio

$x_1$  = Operating cost ratio

$\varepsilon_i$  = Error term

**Table 16:Model Summary for ROA**

Model	R	R Square	Adj. R Square	Std. Error of the Estimate
1	.330 <sup>a</sup>	.109	.085	.08489

a. Predictors: (Constant), total operating cost ratio

Results in Table 16 indicate that total operating cost ratio explain 33% of the variation in ROA. It follows that other factors outside debt experiences explain 67 % of variation in ROA.

**Table 17:Anova for ROA**

Model	Sum of Squares	Df	Mean Square	F	Sig.
1 Regression	.033	1	.033	4.644	.038 <sup>b</sup>
Residual	.274	38	.007		
Total	.307	39			

a. Dependent Variable: ROA

b. Predictors: : (Constant) total operating cost ratio

Results in Table 17 imply the model is valid, F=4.644, p=.038. The F-ratio was significant (p=.038). This shows that the regression model has zero likelihood of giving wrong predictions.

**Table 18:Regression coefficients for ROA**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	.094	.018		5.397	.000
Total operating cost	-186.127	86.372	-.330	-2.155	.038

a. Dependent Variable: ROA

b. Predictors: : (Constant) total operating cost ratio

As per the T-test values and p-values in Table 18, the standardised coefficients for total operating cost ratio was significant (p=.038). The beta values explain the effect of the predictor on dependent variable, ROA. The beta values for total operating cost ratio show a negative effect on ROA.

**Regression analysis of ROE against total operating cost ratio**

The model used to determine the effect of total operating costs ratio on ROE was;

$$y_i = b_0 + b_1x_i + \varepsilon_i \dots\dots\dots (2)$$

Where:  $y_i$  = Return on equity (ROE)

$b_0$  = Level of ROE in the absence of total operating cost ratio

$b_1$  = Intercept for total operating cost ratio

$x_i$  = total operating cost ratio

$\varepsilon_i$  = Error term

**Table 19:Model Summary for ROE**

Model	R	R Square	Adj. R Square	Std. Error of the Estimate
1	.254 <sup>a</sup>	.065	.040	.14899

a. Predictors: (Constant), total operating cost ratio

Results in Table 19 indicate that operating cost explain 25.4% of the variation in ROE. It follows that other factors outside debt experiences explain 74.6 % of variation in ROE

**Table 20:Anova for ROE**

Model	Sum of Squares	Df	Mean Square	F	Sig.
1 Regression	.058	1	.058	2.630	.113 <sup>b</sup>
Residual	.844	38	.022		
Total	.902	39			

a. Dependent Variable: ROE

b. Predictors: (Constant), total operating cost ratio

Results in Table 20 imply the model is invalid, F=2.630, p=.113. The F-ratio was insignificant (p=.113) and is likely to give wrong predictions.



**Table 21:Regression coefficients for ROE**

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
1	(Constant)	.157	.031	5.101	.000
	OPCE	-245.827	151.588	-.254	-.113

a. Dependent Variable: ROE

b. Predictors: : (Constant) total operating cost ratio

As per the T-test values and p-values in Table 21, the standardised coefficients for total operating cost ratio were insignificant ( $p=.113$ ). The beta values explain the effect of the predictor on dependent variable, ROE. The beta value for total operating cost ratio show insignificant effect on ROE.

### IX. Conclusions of the study

EAP had the least operation efficiency among the cement companies. Cost of sales and total operating cost ratios have significant, moderate and negative relationship with both measure of financial performance. Administration cost ratio had a positive effect on both measure of financial performance while Cost of sales has a negative effect on both measure of financial performance. Finally, total operating cost ratio has a negative effect on ROA.

### X. Recommendations of the study

Since cost of sales and total operating cost, individually and the indicators of financial performance had a negative relationship, the management of these cement firms should focus on reducing these costs relative to the level of sales. This may be done by analyzing the components of these costs and identifying where cost reduction efforts are likely to be most effective. East Africa Portland suffers from operational inefficiencies common with state corporations; it may need reforms such as privatization.

### Limitations of the Study

The study used data recorded in the financial statements. The financial statements are not infallible and the analysis generated therefrom is as good as the financial statements. The reliability of the financial statements is affect by the application of subjective application of accounting assumptions and estimates.

### Suggestions for Further Research

Further research may seek to determine the why administration cost ratio had a positive effect on financial performance taking the industry in perspective. Private cement firms in the industry may also need to be studied, separately or together with public listed cement firms; such a research will be of wider scope than the current study

### References

- [1]. Pandey, I. M. (2007). Financial management (9th Ed.). New Delhi: Visas Publishing House Ltd.
- [2]. Damodaran, A. (2010). Research and development: Implications for profitability measurement and valuation. *European Economic Review*, 7, 187–206.
- [3]. Dooley, M. (1950). Theory of cost behaviour. *Journal of Economics*, 58 (5), 75–85.
- [4]. Devi, M. & Sabarinathan, C. (2015). A study on financial performance of cement industries in Tamilnadu with reference to select cement companies. *International Journal of Research in Management & Technology*, 5(1), 224-229.
- [5]. Dhillon, V. S. (2012). Impact of operational efficiency on overall profitability- A case study of GIPCL. Working Paper No.136/2012
- [6]. Peel, A. & Wilson, F. F. (1996). The Variability of profitability with size of firm. *Journal of American Statistical Association*. 59, 1183–1193.
- [7]. Venkatraman, N. & Ramanujam, V. (1986). Measurement of business performance in strategy research: A comparison of approaches. *Academy of Management Review*. 1(4), 801-814.
- [8]. Collomb, B., Brenneisen, B., Groom, C., & Hillenmeyer, J.C. (2004). Bamburi Cement: Memories of the past, challenges for the future. Bamburi Cement Limited, Nairobi/Kenya.
- [9]. Myers, S. T. (1998). Changes in life insurer operating expenses during Inflation. *The Journal of Risk and Insurance* , 346-357.
- [10]. Ahmed, M. M., Ali, R. & Imran, H. (2014). Impact of operating expense on net profit margin in cement sector of Pakistan. *Interdisciplinary Journal of Contemporary Research in Business*. 5, (11), 284-293.
- [11]. Ghosh, P. K. (1973). Cost-profit relation in industry. *Indian Journal of Industrial Relations*. 27-37.
- [12]. Narasimhan, R., Swink, M. & Kim, S. W. (2005). An exploratory study of manufacturing practice and performance interrelationships: implication for capability progression. *International Journal of Operations and Production Management*. 25(10), 1013-1033.
- [13]. Shin, H. & Soenen, L. (1998). Efficiency of working capital management and corporate profitability. *Financial Practice & Education*, 8 (2), 37-45.
- [14]. Molonket, L. Ombuki, C. & Wawire, N. (2014). Effects of competition on the profitability of cement manufacturers in Kenya. *European Journal of Business and Social Sciences*. 3 (7), 40- 48.
- [15]. Mwangi, L. (2016). The effect of inventory management on firm profitability and operating cash flows of Kenya breweries limited, beer distribution firms in Nairobi County. Unpublished MBA Project, University of Nairobi.

- [16]. Okopti,C., Gatsi, J. & Anipa, C. (2016). Determinants of market and book based performance of manufacturing companies in Ghana: An empirical study. *International Journal of Economics, Commerce and Management*. 1(1), 392-411.
- [17]. Goldrat, E. & Cox, J. (1992). *The goal: A process of ongoing improvement*. Great Barrington, MA: North River Press.
- [18]. Ani, W., Okwo, I & Ugwunta, D. (2012). Effects of working capital management on profitability: Evidence from the top five beer brewery firms in the world. *Asian Economic and Financial Review*. 2(8), 966-982
- [19]. Mithas, S., Taffi, A. Bardhan, I. & Goh, J.M. (2012). Information technology and firm profitability: Mechanisms and empirical evidence. *MIS Quarterly*., 36 (1), 205-224.
- [20]. Kothari, C. (2009). *Research methodology:Methods and techniques* (2nd ed.). New Delhi: New age international (P) Limited.
- [21]. Field, A. (2013). *Discovering statistics using IBM SPSS statistics* (4th ed.). US: Washington DC.

Morris Irungu Kariuki, PhD. "Effect of Operational efficiency on Financial Performance of Cement Firms Listed at the Nairobi Securities Exchange, Kenya." *IOSR Journal of Economics and Finance (IOSR-JEF)*, 12(4), 2021, pp. 32-41.