
1Simeon Mogote Oeta, 2Richard Kiai, 3Joseph Muchiri

1School of Business, Department of Business and Economics, Karatina University, P.O Box 1957-10101, Karatina, Kenya
2 School of Business, Department of Business and Economics, Karatina University P.O Box 1957-10101, Karatina, Kenya
3 School of Business, Department of Business and Economics, Karatina University, P.O Box 1957-10101, Karatina, Kenya

Corresponding Authors Email:oetasimon@gmail.com

Abstract
Fixed assets form a significant portion of a company’s expenses and instrumental in shaping probable returns for organizations. Capital intensity for manufacturing companies is vital in informing cost management and investment decisions. Companies are given tax allowances on fixed assets in the form of wear and tear, investment and industrial building deduction which provide tax credits with consequential effects of increasing organizational after-tax returns. Manufacturing sector is key to economic growth and Kenya is experiencing stagnate contribution of this sector to economic growth. Little literature is available that establishes the association between capital intensity and financial performance of the manufacturing sector. Therefore, this study sought to find out the relationship between capital intensity and financial performance for manufacturing companies listed in the Nairobi Securities Exchange during the period 2010-2017. The study was anchored on tax planning theory, trade-off theory, agency cost theory and political power theory. The study adopted a positivism research philosophy and an explanatory research design. The target population of the study was all the nine listed manufacturing companies in NSE. Descriptive and inferential statistics was done using panel data and SPSS version 23 software for data analysis. The findings indicated that capital intensity has a positive insignificant association with financial performance. It concluded that capital intensity does not affect financial performance of manufacturing firms listed in Nairobi Securities Exchange. The study recommended that the companies should investment more in non- current assets so as to reap capital allowances tax benefits in order to improve their financial performance. The study will be beneficial to the management as it provides insights on how firms can increase their financial performance while leveraging on capital intensity.

Key Words: Capital Intensity, Financial performance, Return on Assets (ROA) and Return on Equity (ROE).

1.0 INTRODUCTION
Capital intensity refers extent a firm has invested its financial resources in property, plants and equipment. A more capital intense firm has more investment in these non-current assets (Shahean & Malik, 2012). Capital intensity is the quotient of non–current assets and total assets. Investment in non–current assets qualifies a firm for Investment Deductions (ID), Industrial Building Deductions (IBD) and wear and tear allowances (ITA, 2015).

Shahean and Malik (2012) reported a positive association between capital intensity and firm value. They argued that capital allowances result to tax savings which increases after tax returns of a firm. More investment in capital assets also increases production quality and saves on time which are key determinants to financial performance of an entity.

Mwangi (2016), defined financial performance as a monetary measure of the financial health of an organization. It enables organizations identify its weaknesses and strengths established through the relationship between the elements of the statement of financial position and the income statement which can be compared to the industry parameters. Despite modern stakeholders focusing on wealth creation as opposed to profit maximization, profitability remains a critical measure of financial performance (Kajiriwa, 2015). Capital intensity has a significant impact on the financial performance of these firms as it directly affects liquidity and profitability which are measures of performance (Almazari, 2013.). Firm’s performance can be measured quantitatively by use of accounting ratio such as Return on Assets (ROA), Return on Investment (ROI), Return on Equity (ROE), Earning per share (EPS), Price earnings Ratio and Net margin among other ratios. For purpose of evaluating the managerial performance of a firm accounting ratios ROA and ROE obtainable from financial statements are preferable as they indicate how well a firm uses assets to generate returns (Memb, 2011, Mwangi & Murigu, 2015). Efficiency in management of liquidity is determined on how well planning and control of current assets and current liabilities is done (Nimalathasa, 2013).

In Kenya, despite of the government commitment to promote manufacturing, most companies have recorded declining performance with financial managers focusing on financial restructuring and working capital management to revive their performance (Kibet, Tenei & Mutwol, 2011). The manufacturing sector in 2016 grew by 3.5% which is below the average economic growth of 5.6% reported (KNBS, 2017). The government projects a contribution of 22% of the sector to GDP by 2022 (BPS, 2018). The concern is whether this will be realized given the unstable performance in the sector.

Gumo (2013), did a descriptive study to ascertain the impact of tax incentives on financial performance of manufacturing companies listed on the Nairobi securities Exchange using IBD, ID, farm work deductions and shipping investment allowances. The study reported a significant association between the study variables and financial performance of these companies. Githaiga (2013) studied effect of tax incentives on listed firms in Kenya to attracting Foreign Direct Investments (FDI) between the years 2008-2011. The study variables ID, and IBD revealed no significant relationship to FDI. WTA had a strong relationship with FDI cash inflows. According to (Leung, Meh & Terajima, 2008), smaller firms with capital constraints have negative associations between capital intensity and firm financial performance. This may be due to the fact that smaller companies have capital constraints that may greatly affect production quality and efficiency. In the developing countries, there is inconsistent and few literatures on capital
intensity and firm financial performance hence the motivation for this study. Furthermore, manufacturing being a pillar to economic growth of developing countries, the worrying performance trends in the manufacturing sector compels the study to establish the impact of capital intensity on financial performance of the listed manufacturing companies at the Nairobi Securities Exchange.

2.0 GENERAL OBJECTIVE
The general objective of the study was to find out the relationship between capital intensity and financial performance for manufacturing companies listed at the Nairobi Securities Exchange

3.0 LITERATURE REVIEW
3.1. Theoretical Framework
3.1.1 Tax Planning Theory
The study is guided by Tax planning theory advanced by Hoffman in 1961 which states that, tax planning saves cash to organizations that would otherwise land to the taxman. Desirable tax avoidance practices however should not compromise accounting income. It is founded on the concept that tax obligations are based on the taxable income and not the accounting income. Hoffman found a positive relationship between tax planning and financial performance of entities when firms endeavor and focus their resources on practices that lawfully reduce taxable income but does not negatively influence accounting profit. Organizations should always ensure that that the tax costs do not exceed the tax benefits in pursuit for tax planning (Hoffman, 1961).

This theory is relevant to the extent that capital intensity one among the tax planning strategies that an entity can utilized to increase the after tax returns. The capital allowances accords organizations tax credits which positively affects financial performance.

3.1.2 Political Power theory
The theory was advanced by Salamon and Siegfried in 1977, who argued that big firms have political and economic power than smaller firms which they can utilize to reduce their tax liability through aggressive tax avoidance to enhance after tax returns. The political perspective of tax planning links tax burden to company size. Large firms command influence and political power due to their impact on the economy and thus may be better placed to negotiate their tax burden particularly through trade associations which may lead to lower effective tax rate (Siegfried, 1972)

No doubt that listed companies are big companies in size with adequate financial resources. The political power theory argues that large firms are matured and have adequacy of resources to engage professionals tasked with corporate policy formulation of which tax reduction strategies are inevitable. This implies that the tax planning strategies through capital intensity can be professionally applied by these listed manufacturing firms (large firms) to better their after tax returns and thus should be positively associated with financial performance.

On the contrary, political large and more prosperous firms are subject to greater scrutiny and regulatory actions by the government (Richardson & Lanis, 2007). This visibility subjects the large firms to political costs such as taxes which are part of total political costs incurred by firms. According to Richardson and Lanis, (2007) and Zimmerman, (1983), large firms have higher effective tax rates compared to smaller firms.

The size of the company can be measured using a number of parameters which are not
limited to number of employees, sales turnover and total assets. Total assets the company has will determine its capital intensity whereby a more capital intense company will have more non-current assets to current assets. This informs the relevance of this theory in the study.

4.0 RESEARCH METHODOLOGY

4.1 Research Design
Explanatory research design was adopted for this to give an accurate description of the causal effect relationship between capital intensity and financial performance. Explanatory research design enables data collection and analysis to form a basis for explaining the specific variables in the current state and deduce a relationship between them (Khan, 2008).

4.3. Data Collection and Collection Tools
The study utilized panel data for the manufacturing companies for eight years from the year 2010 to 2017. Secondary data was obtained from the audited financial statement that are submitted by the companies and are available from NSE and CMA. Data collected was limited to total assets, taxes paid, capital allowances and total revenues. The study used a data collection checklist to facilitate collection of data from the financial statements.

4.4 Data Analysis, Presentation and Model Specifications
The study utilized the Statistical Package for social sciences (SPSS version 23) for data analysis. Regression analysis was used to establish any linear relationship between capital intensity and financial performance. Both t-test and Analysis of variance (ANOVA) were used to test the significance of the regression model. The use of t-test is appropriate due to the small size of the population under study. The linear regression models is:

\[ Y = \alpha + \beta_1X_1 + \varepsilon \]

Where:

- \( y \) = Financial performance of manufacturing companies (ROA and ROE)
- \( \alpha \) = Constant (level of financial performance when all variables are zero)
- \( \beta_1 \), regression coefficient
- \( X_1 = N/T \) where \( T \) = total assets & \( N \) = fixed assets
- \( \varepsilon \) = error term

5.0 DATA PRESENTATION, ANALYSIS AND INTERPRETATION

5.1 Components of Capital Intensity
Capital intensity focuses the extent the company has invested in fixed assets. Non-current assets represent a significant part of total assets for the manufacturing companies since without them firms cannot generate current assets. Excessive investment in fixed assets may also diminish the liquidity levels for the firms thus suffocating operating cash flows. The subsequent discussion highlights the non-current assets and total assets for the listed manufacturing companies.

5.2 Non-current Assets
The higher the investment in non-current assets the higher the capital allowance in terms of wear and tear. The income tax Act allows wear and tear as a deductible expense for tax purposes. This implies that the higher the wear and tear allowance, the higher the tax credits and thus the higher the financial performance. Table 1 shows the total average non-current assets to total assets for the eight years under review.

Table 1: Non-current Assets
Company | Average Non-current Assets to Total Assets (%)  
--- | ---  
B.O.C | 48.94  
BAT | 51.41  
CARBACID | 43.11  
EABL | 62.69  
MUMIAS | 80.08  
UNGA | 31.58  
EVEREADY | 10.38  
ORCHARDS | 39.62  
FLAME TREE | 10.87  

Mumias Sugar reported the highest proportion of non-current assets as a percentage of total assets whereby 80.08% of the total assets were represented by fixed assets with only 19.92% being current assets. East African Breweries Ltd had 62.69% of its total assets being non-current assets and 37.31% of current assets. Eveready and Unga recorded the lowest figures of non-current assets in proportion to total assets at 10.38 per cent and 10.87 per cent respectively. This implies that a huge portion of their assets were current assets to a tune of 89.62% and 89.13% respective.

Return on Assets was computed by dividing the average profits by the total company assets. Capital intensity was also computed by dividing total non-current with total assets to get the ratios. Figure 1 compares the return on assets and capital intensity ratios to provide visualization of variable behaviour.

Figure 1: Average ROA and Capital Intensity

The negative ROA on assets indicates an average loss position over the eight year period. Mumias has the largest average capital intensity and the largest negative return on assets over the eight year period. This implies that more investment in capital assets generated more losses to the company. Liquidity is a crucial measure of financial performance and sub optimal expenditure in non-current assets may deny an organization the necessary liquid assets for operational activities and may lead to financial losses.

5.3 Total Assets

Total assets refer to both current and non-current asset totals for an organization at a point in time. Capital intensity compares the non-current assets to total assets and a higher ratio signifies greater employment of non-current assets. Table 2 gives the average total
assets over the eight year period 2010 to 2017.

Table 2: Average Total Assets

<table>
<thead>
<tr>
<th>Company</th>
<th>Total Assets</th>
</tr>
</thead>
<tbody>
<tr>
<td>B.O.C</td>
<td>2,176,209.88</td>
</tr>
<tr>
<td>BAT</td>
<td>16,282,569.50</td>
</tr>
<tr>
<td>CARBACID</td>
<td>2,321,347.63</td>
</tr>
<tr>
<td>EABL</td>
<td>57,928,592.63</td>
</tr>
<tr>
<td>MUMIAs</td>
<td>23,935,870.75</td>
</tr>
<tr>
<td>UNGA</td>
<td>7,677,614.50</td>
</tr>
<tr>
<td>EVEREADY</td>
<td>1,071,900.13</td>
</tr>
<tr>
<td>ORCHARDS</td>
<td>76,356.30</td>
</tr>
<tr>
<td>FLAME TREE</td>
<td>881,735.50</td>
</tr>
</tbody>
</table>

East Africa Breweries Limited has the largest amount of total assets at 57.9billion followed by Mumias Sugar and British American Tobacco at 23.9 billion and 16.3 billion respectively. Kenya Orchards reported the lowest total assets at Ksh. 76.4million.

Descriptive Statistics

Table 3 provides the descriptive statistics of the for the manufacturing companies listed at the Nairobi Securities Exchange.

Table 3: Descriptive Statistics

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Minimun</th>
<th>Maximum</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROA</td>
<td>9</td>
<td>-.32</td>
<td>.69</td>
<td>.145</td>
<td>.33940</td>
</tr>
<tr>
<td>ROE</td>
<td>9</td>
<td>-.12</td>
<td>.21</td>
<td>.063</td>
<td>.10543</td>
</tr>
<tr>
<td>ROA</td>
<td>9</td>
<td>.10</td>
<td>.80</td>
<td>.420</td>
<td>.22636</td>
</tr>
<tr>
<td>ROE</td>
<td>9</td>
<td>.80</td>
<td>.420</td>
<td>.22636</td>
<td></td>
</tr>
<tr>
<td>Valid N (listwise)</td>
<td>9</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

ROA reported a standard deviation of 0.3394 with a mean 0.1455. Capital intensity recorded a mean of 0.4208 with a standard deviation of 0.22636. On average this implies that approximately 42.08% of assets is non-current assets.

5.4 Correlation Analysis

The study employed correlation analysis to find out the link between financial performance and capital intensity for the manufacturing companies listed at the Nairobi Securities Exchange. It establishes the dependence of ROA and ROE capital intensity. The results are explained by table 4.

Table 4: Correlations

<table>
<thead>
<tr>
<th></th>
<th>ROA</th>
<th>ROE</th>
<th>CAPInt</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROA</td>
<td>Pearson Correlation</td>
<td>1</td>
<td>.905**</td>
</tr>
<tr>
<td>ROE</td>
<td>Pearson Correlation</td>
<td>.905**</td>
<td>1</td>
</tr>
<tr>
<td>CAPInt</td>
<td>Pearson Correlation</td>
<td>.026</td>
<td>-.050</td>
</tr>
</tbody>
</table>

Sig. (2-tailed) .001 .747 .001 .698 .947 .898
N 9 9 9 9 9 9

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

The findings indicate a positive relationship between capital intensity and return on assets.
with the correlation coefficient of 0.26 and p-value of 0.747. The p-value 0.747 > 0.05 meaning that the correlation is not significant. The findings indicate a negative correlation between capital intensity and return on equity at -0.050 which is statistically insignificant.

5.4 Regression Analysis

4.7 Regression Analysis
The study sought to find out the relationship between financial performance and the independent variable of capital intensity. Table 5 shows the results of the findings.

Table 5: Model Summary

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.26</td>
<td>0.068</td>
<td>0.142</td>
<td>0.36271</td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), CApINT

The coefficient of determination (R²) indicates that 6.8 per cent of the predictor capital intensity explain the financial performance measure (ROA). This means that 93.2% of the return on assets is explained by other parameters other than capital intensity.

The study also conducted regression of return on equity (ROE) against the independent variable of capital intensity and provided the results as shown in table 6.

Table 6: Model Summary

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.050a</td>
<td>0.03</td>
<td>-.140</td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), CApINT

The findings report a significance value of 0.747 which is more than 0.05 implying that statistically the model was insignificant in predicting how Capital intensity affect financial performance of listed manufacturing companies in Kenya. The study further conducted the analysis of variance with ROE as the dependent variable and the outcome was reported in table 8.

Table 8: ANOVAa

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of d f</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Residual</td>
<td>0.089</td>
<td>7</td>
<td>0.01</td>
</tr>
<tr>
<td>Total</td>
<td>8</td>
<td>0.089</td>
<td>7</td>
<td>.69</td>
</tr>
</tbody>
</table>

a. Dependent Variable: ROE
b. Predictors: (Constant) CApINT,
Total 0.089 8

a. Dependent Variable: ROE

The p-value for the ANOVA model was 0.698 implying that statistically it cannot significantly predict the influence of capital intensity on financial performance of the listed manufacturing firms in Kenya. This is because the computed p-value is greater than 5% significance level.

The study employed t-test in determination of individual significance of each independent variable as a measure of financial performance. At 95 per cent confidence interval, a p-value of more than .05 indicates an insignificant relationship between financial performance and the selected independent variable while a value of less than 0.05 assumed a significant relationship between the variables. The findings are reported in table 9.

Table 9: Coefficients

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>Std. Error</th>
<th>Beta</th>
<th>t</th>
<th>g</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>(Constant)</td>
<td></td>
<td>.12</td>
<td>.267</td>
<td>.48</td>
<td>.64</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>9</td>
<td></td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>CAPIn</td>
<td></td>
<td>.03</td>
<td>.567</td>
<td>.06</td>
<td>.74</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>9</td>
<td></td>
<td>9</td>
<td>7</td>
</tr>
</tbody>
</table>

a. Dependent Variable: ROA

As indicated by table 5, capital intensity has a positive association with Return on Assets with a beta value of 0.039. The p-value of 0.747 is greater than 0.5 significant level meaning that the positive association is statistically insignificant.

Table 10 presents the findings of the model coefficients when ROE was regressed against the independent variable of Debt to Equity, capital intensity Research and Development and company size.

Table 10: Coefficients

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>Std. Error</th>
<th>Beta</th>
<th>t</th>
<th>g</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>(Constant)</td>
<td></td>
<td>.07</td>
<td>.083</td>
<td>.88</td>
<td>.40</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3</td>
<td></td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>CAPIn</td>
<td></td>
<td>- .176</td>
<td>-.050</td>
<td>-.69</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>.02</td>
<td>.13</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3</td>
<td></td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

a. Dependent Variable: ROE

Capital intensity reported a significance value of 0.698 and a beta value of -0.023. This suggests that there is a negative insignificant association between capital intensity and return on equity as a measure of financial performance. It implies that a unit increase in capital intensity decrease financial performance by 2.3%.

6.0 DISCUSSION OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

6.1 Capital Intensity and Financial Performance

Capital intensity was measured as a ratio of non-current assets to total assets while financial performance was measured by the return on assets and return on equity. The Pearson correlation coefficient revealed a weak positive correlation between capital intensity and financial performance implying that the higher the investment in capital assets the higher the financial performance of the manufacturing firms. However, the association is statistically insignificant.

The findings were similar with Shaheen and Malik (2012) who reported a positive association between capital intensity and firm value only differing on the statistical significance of the findings. Liu and Cao (2007) found that capital intensity had no significant relationship with tax planning agreeing with the study findings.
The study was consistent with the findings of Githaiga (2013) conducted a study on the investigating effect of tax planning using capital allowances on foreign direct investment. The study found no significant association between tax planning and foreign direct investment for companies listed in the Nairobi securities Exchange. Hsieh (2012) also used capital intensity as an independent variable while studying companies listed on Shanghai securities exchange and found out that capital intensity insignificantly affected tax rates.

They were inconsistent with the findings of Vinny and Lina (2017) who found a significant negative association between capital intensity and tax avoidance for Indonesia Exchange listed firms. In addition, Dharma and Ardiana (2014) established that capital intensity is significantly and positively related to effective tax rates. This is interpreted to mean that companies with more capital assets have a higher ETR and thus contrary to the tax planning

6.2 CONCLUSIONS
The above study findings lead to a conclusion that financial performance of listed manufacturing companies in Kenya is not significantly affected capital intensity. The study thus accepts the null a hypothesis that there is no significant relationship between tax planning and financial performance of the manufacturing companies listed at the Nairobi Securities Exchange.

6.3 RECOMMENDATIONS
The research findings found out that capital intensity is insignificantly affects financial performance positively for the manufacturing companies listed at the Nairobi Securities Exchange. Capital intensity has a positive relationship with Return on Assets (ROA) and Return on Equity (ROE) which were used as proxies in measuring financial performance. Increase investment in fixed assets may contribute to significant contribution to after tax returns for the companies. The study therefore recommends that companies increase investment in capital assets as they can create efficiency in the production process translating to increased financial performance. However, a trade-off should be made between capital allowances and liquidity needs of the organization to avoid financial distress.

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