

**THE RELATIONSHIP BETWEEN ENVIRONMENTAL ACCOUNTING AND
REPORTING PRACTICES AND PROFITABILITY OF MANUFACTURING
FIRMS LISTED ON THE NAIROBI SECURITIES EXCHANGE.**

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**A RESEARCH PROJECT SUBMITTED IN PARTIAL FULFILLMENT OF
THE REQUIREMENTS OF MASTER OF BUSINESS ADMINISTRATION,
SCHOOL OF BUSINESS, UNIVERSITY OF NAIROBI**

NOVEMBER, 2017

DECLARATION.

This research project is my original work and has never been submitted in any other university or college for the award of degree, diploma or certificate.

Signature

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

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ACKNOWLEDGEMENT

First and foremost I would like to thank God for enabling me to finish this project. I sincerely want to thank my supervisor Mr. Mohammed Mwachiti for his guidance, insight and encouragement as I wrote this research project. My appreciation also goes to my fellow students for continued assistance throughout the research period. Thirdly, I would like to acknowledge my siblings; Godfrey, Ruth, Peter and Mary. Your support cannot go unnoticed.

May God bless all of you and reward you abundantly.

DEDICATION

I dedicate this research proposal entirely to my parents, Alfred and Claire Kihamba, for their moral and financial support throughout this period of study.

ABSTRACT

Profit maximization goal has been a preserve for most firms listed on the Nairobi Securities Exchange. There has been a growing interest among various stakeholders to consider preservation of resources that originate from the environment. Environmental degradation has become a challenge that firms need to address even as they aim at achieving profitability. This study aimed at establishing the relationship between environmental accounting and reporting practices and profitability of manufacturing firms listed on the Nairobi Securities Exchange. This study used descriptive research design and the population of the study comprised of 10 manufacturing firms listed at the NSE as at 31st December 2016. Secondary data was used for the study and was collected from published financial reports of the firms under study, NSE handbook and CMA website. The period of study was from 2014 to 2016. Data was analyzed using SPSS and a regression model was used to determine the relationship between profitability and environmental accounting and reporting practices. The study established a positive relationship between profitability measured by ROA and the independent variables of the study (EARI, LQ and LV). The independent variables contribute 27% of the profitability of firms. Firms should therefore include environmental accounting and reporting practice as part of the strategy to attain profit.

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LIST OF ABBREVIATIONS.

ACCA	Association of Chartered Certified Accountants
ANOVA	Analysis of Variance
ICPAK	Institute of Certified public Accountants of Kenya
KASNEB	Kenya Accountants and Secretaries National Examinations Board
NSE	Nairobi Securities Exchange
ROA	Return on Assets
SPSS	Statistical Package for Social Science

CHAPTER ONE

INTRODUCTION

1.1 Background of the study.

Current accounting as opposed to traditional accounting, does not only consider record keeping and reporting of information to the investors, it aspires to fulfill the information needs of a wide range of internal and external stakeholders. (Gupta, 2011). Modern day accounting has experienced rapid changes leading to it being considered a service industry. It is expected to serve the society as a whole instead of serving shareholders and managers only. (Abdullah, 2013).

The increase in public concern on the alarming impact of industrial activities on nature has compelled companies to minimize the negative impacts of their operations on the environment. Environmental accountability has proven to be an important part of life to an extent that the performance of firms is being determined not only on the financial performance through financial results but also on its efforts to preserve and improve its immediate environment. (Gupta, 2011). Stakeholders are currently assessing risks of investing in any firm by considering environmental issues addressed by the companies. In order to remain viable, firms are forced to adapt to their surrounding environment. Including environmental performance in the reports of a company is a certain way to meet the rising need for environmental information. (Kalunda 2007).

The need for environmental accounting information has resulted to the concept of environmental accounting and reporting. Environmental disclosures have become a necessary part of corporate accounting and reporting systems. (Gupta, 2011). Firms are faced with the challenge of preserving the scarce resources and operating at optimum profit levels. Firms listed on the Nairobi Securities Exchange are expected to publish their financial statements.

Environmental reporting remains to be voluntary in the country. Firms are therefore not compelled to disclose their environmental activities and impacts thereof.

1.1.1 Environmental Accounting and Reporting Practices.

Environmental accounting has been defined as the process of identification, compilation, estimation and analysis of environmental cost information for better decision making within the firm. (Gupta, 2011)

Gray et al (1996) defines environmental reporting as the process by which an organization communicates the environmental effects of its economic actions to particular interest groups within the society and to society at large. It is an area of study that is developing and its main objective is to identify, measure and communicate the costs from a company's actual or potential environmental impact. The major objective of environmental accounting is to outline the environmental cost for every process and separating environmental costs from non-environmental costs. (Jepkogei, 2015).

Firms listed on the Nairobi Securities Exchange are required by statute to publish annual reports. These reports are used as a means of communicating both qualitative and quantitative information to the shareholders and other users of financial information. Preparation of annual financial reports is a statutory requirement for all firms listed on the Nairobi Securities Exchange. Firms can disclose additional information on a voluntary basis. (Barako, Hancock and Izan, 2006). Environmental reporting is part of voluntary disclosures by firms.

1.1.2 Firm Profitability.

Profitability is when a firm uses its resources to generate revenues in excess of its expenses. (Scrivastava, 2005). It is when profit is the result of its operations. Most financial statements are assessed and analyzed to determine the level of profitability. Firms set goals and profitability is always part of the goals. Strategies are then incorporated to facilitate

achievement of the goals set. It's the managers that are entrusted with the duty of achieving the goals set. This is made possible by the decisions they make. In some instances, managers are rewarded for achieving the set profitability goals. (Chandra, 2002).

Profitability is a measure of a firm's financial performance. The measures of profitability will be of interest to shareholders and management of the company. Profitability ratios are commonly used to measure overall efficiency of a firm in generating returns. (Khan and Jain, 2003).

1.1.3 Relationship between Environmental Accounting and Reporting and Firm Profitability.

There are various studies carried out to identify the relationship between environmental accounting and reporting and the profitability of firms. Most of these studies have not been conclusive. This is because varying conclusions have been made on the same studies.

Some studies conclude that a positive relationship exists between the two concepts. According to Bowman (1975), shareholders and other users of environmental information consider environmental reporting as a symbol of reputation. A firm's reputation is therefore improved by the activities they involve in to preserve the environment. As a result of the good reputation, a firm's financial performance also improves in the long run.

Other studies concluded that firms engaging in Environmental Accounting and reporting incur costs which lead to competitive disadvantage since the costs reduce profit (Ogolla, 2009).

Other studies have been carried out with profitability as the independent variable while environmental accounting and reporting as the dependent variable. There are also two arguments concerning this perspective. The first one concludes that more profitable firms are likely to disclose more information on their environmental performance when compared to

less profitable firms. (Akerlof, 1970). The rationale behind this argument is that profitable companies have enough financial resources that permit them to engage in environmental accounting and reporting when compared to less profitable companies.

Skinner (1994) gives a contrary view by stating that less profitable firms are likely to disclose more information as compared to profitable firms. This is because the less profitable firms tend to disclose more information as a means to explain the reasons for the poor performance and aim to assure users of the information of future growth prospects.

1.1.4 Manufacturing Firms listed at the Nairobi Securities Exchange.

Nairobi Securities Exchange is an active market for trading both primary and secondary securities. It was formerly known as the Nairobi Stock Exchange. It is the main securities exchange. Founded in 1954, Nairobi Securities Exchange has grown to become a leading African Exchange based in Kenya. It is considered one of the fastest growing in the region of Sub-Saharan Africa. (www.nse.co.ke, 2017)

The NSE plays an important role in the growth of the nation's economy. This is because it encourages savings, investment and by assisting local and international firms to access cost effective capital. Other than providing a platform where securities are exchanged, Nairobi Securities Exchange is also tasked with protecting investors. The investors are to be protected from unscrupulous brokers and ensure a high investor confidence is maintained in the securities market.

There are thirteen classifications of sectors in the Nairobi Securities Exchange. This study focused on the 10 companies listed under the category of manufacturing and allied on the Nairobi Securities Exchange as at 31st December 2016. Firms under this classification are expected to be environmentally responsible because of the emissions that result during manufacturing. Firms in the manufacturing sector have to meet the requirements of

operations as directed by National Environment Management Authority. (www.nse.co.ke, 2017).

1.2 Research Problem

Many firms are operating with the goal of profit maximization. The input resources for these firms originate from the environment. Firms being among the largest users of natural resources are therefore faced with the problem of depleting natural resources arising from their economic activities. As a result, there has been a growing interest for environmentally responsible firms within the society. This has led to the rapid growth in environmental accounting and reporting practices by firms.

The main issue arising with the depleting resources is the ability of firms to improve financial performance without compromising on the environmental protection. Various studies have been carried out in the area of environmental accounting and reporting with the aim of identifying the relationship that exists between environmental accounting and reporting and financial performance.

In their study of the impact of environmental accounting and reporting on the organizational performance of oil industries in Nigeria, Bassey, Sunday and Okon. (2013) concluded that environmental related cost management has a positive influence on firm's profitability and in turn enhances organizational performance. They also concluded that environmentally friendly firms disclose significant environmental related information in financial reports.

Mogaka and Jagongo (2013) while studying the relationship between environmental accounting and profitability in India found a significant negative relationship between environmental accounting and Return on Capital Employed and Earnings Per Share while a significant positive relationship between Environmental Accounting and Net Profit Margin and Dividends Per Share.

Locally, a research conducted by Magara (2015) to find out the effect of environmental accounting on company financial performance in Kisii County, revealed that tracking environmental cost savings together with compliance of environmental laws were significantly positively related to the dependent variable; perceived financial performance. Odhiambo (2015) established that a relationship exists between environmental accounting and reporting and financial performance. He used capital intensity and efficiency as the control independent variable, while financial performance was measured using return on assets.

Rono (2016) found out in his study on drivers of environmental reporting practices that profitability and financial leverage had a negative association with environmental reporting index.

Despite the numerous and broad research done on effects of environmental accounting, conclusive findings have not been realized. This area of study is therefore inexhaustible and attracts the attention of researchers. Most of the researchers have recommended that further studies be done in this area.

1.3 Research Objective.

To establish the relationship between environmental accounting and reporting practices and profitability of manufacturing firms listed on the Nairobi Securities Exchange.

1.4 Value of Study

This study will be of keen interest to the accounting body in Kenya: Institute of Certified Public Accountants of Kenya (ICPAK); which is the body that governs the conduct of accountants and also stipulates the standards for financial reporting in the country. From this study, ICPAK will be able to find reasons for regulating environmental accounting and reporting practices among the accounting professionals.

This study will be beneficial to accounting examining bodies like Kenya Accountants and Secretaries National Examinations Board (KASNEB) and Association of Chartered Certified Accountants (ACCA). They will find relevant areas to be included in the syllabus for training accountants. It will be proper to modify the syllabus to include the changes arising in the accounting field.

The study will be very relevant to scholars and researchers since it will add to existing body of knowledge. The findings and conclusions will add information to the research field.

The findings of this study will assist manufacturing companies in decision making as they strategize to attain profits in their business.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction.

In this chapter the analysis of the existing knowledge in the area of environmental accounting and reporting and profitability will be carried out. This chapter will make a summary of the information obtained from existing literature and from related research studies. This will include theoretical and empirical literature relevant to this study.

2.2 Theoretical Review

This review will focus on theoretical frameworks previously researched to prove the relationship between environmental accounting and reporting practices and a firm's profitability.

2.2.1 Stakeholder Theory

This theory bases on communication with different stakeholders. Companies have various stakeholders who have different influence and authority on the activities of an organization. These stakeholders also have an interest in the environmental performance of the organization. (Roberts, 1992). Stakeholders include; creditors, managers, suppliers, customers, employees, government, the local community and the public as a whole. This theory suggests that an organization will respond to the expectations of influential stakeholders through disclosures. This theory brings out clearly the factors that influence managers' behavior in relation to environmental reporting practices of organizations. The going concern concept for an organization is only possible if the stakeholders support the activities of the organization. For this to materialize, corporate activities must be channeled towards meeting their needs. (Gray et al., 1995). Stakeholders are deemed important to an organization since they have direct control over resources that are required for carrying out the business. (Ulmann, 1985). Environmental reporting is therefore one way of motivating stakeholders so that they discharge their duty towards the organization. Their duty is to

release resources that are in their control by investing in the organization. In respect to this study, stakeholder theory holds that organizations meet their stakeholders' demands by providing several elaborate environmental reports. When stakeholders receive detailed reports they are motivated to release the resources that they control and invest in the corporation. This in turn leads to increased profitability. The corporations will engage more in environmental reporting practices to justify the profits.

2.2.2 Legitimacy Theory

This theory of environmental accounting and reporting indicates that the level of environmental reporting depends on the environmental pressure that the company faces with regard to its environmental performance (Cho & Patten, 2007). Firms respond to the pressure arising from the society by providing environmental reports. Firms strive to strike balance between their own values and the societal values. This leads to a social contract between the firm and the society. Corporations are deemed to exist to the extent that the society considers them legitimate. Firms can use disclosures to influence the society's perception about their organizations. When society observes that the firm's values are not matching the society's environmental values, it is considered a breach of societal contract and as a result the firm's going concern will be threatened (Milne and Patten, 2002). Firms that breach societal contract try to repair it by providing positive environmental reports. Firms that are not in breach of societal contract are required to disclose their environmental practices on a regular basis to ensure good legitimacy. The more profitable companies are expected to be more environmentally responsive. This theory is also in line with the argument that firms that are profitable are in a position to cater for environmental disclosure costs.

2.2.3 Accountability Theory

This theory is basically concerned with the relationships that exist between groups, individuals, organizations and the resulting right to information. Accountability involves being responsible for one's actions and decisions with the intent of explaining them when need arises. The environment where the relationship takes place determines the nature of relationship that will exist and the information right that the parties to the relationship will have. The information that flows through the relationship will be determined by the power of the parties in demanding for it and the organization's willingness to provide it. The parties derive their power from the possibility to litigate and from the provision of funds. Firms are therefore forced to be accountable to the parties to the relationship depending on the power exerted by the parties. This theory is applicable to this study since to establish the determinants of environmental reporting, we have to study the power that pushes firms to report on their environmental practices.

2.3 Determinants of profitability of manufacturing firms.

These are the factors that determine profitability of firms other than environmental accounting and reporting.

2.3.1 Environmental Accounting and Reporting.

Conclusive findings have not been attained when it comes to studying the relationship between profitability and environmental accounting and reporting practices. There are some studies that advocate for a positive relationship while others give a negative relationship. Others indicate a neutral resulting relationship. In the case of a neutral relationship, the researchers found no association between the two variables.

2.3.2 Firm size

Various studies have found a positive relationship between a firm's size and profitability. According to Serrasqueiro & Nures (2008) study, they concluded that there is a positive

relationship between firm size and profitability, after studying firms of varying sizes in Portugal from 1993-2003. This can be due to the economies of scale that large families enjoy in their operations.

2.3.3 Leverage

Leverage is the debt equity ratio of a firm. The source of funds will determine the profitability of a firm. Obtaining funds from internal sources increases the equity of the firm. Firms with good credit ratings might consider sourcing funds from debt. The use of debt capital gives firms a tax relief since the interest payments are tax allowable. This results in increased profits. This tax relief does not apply to equity capital. This is because the cost of equity capital, dividends, is not tax allowable. Use of excessive debt can lead to reduced profits.

2.3.4 Liquidity

This is the ability of a firm to purchase more assets and to meet obligations as they become due without incurring losses. It is also the ability to quickly convert assets into cash when need arises. A firm that has sufficient liquidity will meet the obligations as they fall due and by so doing, increase loyalty of customers and suppliers. This leads to increased sales which increases profitability in the short and long run.

2.3.5 Market share.

According to studies carried out previously, market share has been found to have a positive association with profitability. The larger the market share, the more profitable a firm is expected to be. With a large market share, a firm is able to enjoy economies of scale, market dominance and favorable financing conditions.

2.4 Empirical Research

This part of research involves analyzing past studies which are similar to the study being conducted to obtain knowledge and information relevant for the study at hand.

Mogaka and Jagongo (2013) did a study to determine whether a relationship exists between environmental accounting and profitability of firms listed in India. Data was collected from annual financial reports and accounts of 14 companies quoted in Bombay Stock Exchange. The 14 companies were randomly selected. Multiple regression model was used to analyze data and the key findings revealed a significant negative relationship between Environmental Accounting and Earnings per Share and Return on Capital Employed. A significant positive relationship resulted between Environmental Accounting and Net Profit Margin and Dividend per Share. The study further revealed that different firms considered different factors into environmental costs. This led to diversity of reporting practice. The study concluded that there is a significant relationship between the variables under study.

Rakiv, Fakhrol and Rahman (2016) did a study to find out the relationship between Environmental Accounting Reporting Disclosure and company profitability, a case study on the listed manufacturing firms of Bangladesh. This study was an exploratory research that utilized secondary data sources obtained from annual reports. A disclosure Index was developed using 21 major environmental accounting disclosures while Return on Asset was used as the proxy variable for profitability. Content analysis was used to obtain the disclosure index while statistical techniques like mean, frequency, standard deviation, ANNOVA and Bi variate regression model analysis was used to analyze the data. The findings of the study revealed that a significant positive relationship exists between environmental accounting reporting disclosure and company profitability.

Dion and Rui (2014) studied to identify variables that affect environmental reporting index. The study that was carried out on Dutch listed firms in Netherlands considered environmental

reports for the year 2008. The variables for the study were firm size, industry type and firm profitability. Environmental reporting index was tested using content analysis scorecard. The findings revealed that firm size and industry type had a significant positive relationship with environmental reporting index. Firm profitability resulted to a negative statistical significance with environmental reporting index.

According to a study done by Echave and Bhati (2010) to determine the level of CSR practices of Spanish companies, profitability had no positive significant relationship with environmental reporting index. The study utilized 41 companies listed at Spanish Stock Market as at 2010 as the sample for the research. Social and environmental disclosures were analyzed using a content analysis scorecard based on GRI framework

Magara et al (2015) did a study focusing on the impact of environmental accounting on the financial performance of firms in Kisii County. The independent variable was Environmental Accounting application while the dependent variable was perceived performance of firms. Using descriptive research design, the study was carried out with a target population of 144 accountants and auditors in 16 corporate organizations. Stratified sampling was used and both qualitative and quantitative data were collected by means of administering questionnaire. Data was analysed using descriptive statistics. The findings revealed that the constructs of Environmental Accounting application used for the study; environmental evaluation, environmental information, tracking of environmental costs and compliance of environmental laws have a significant positive relationship to perceived financial performance of the firm.

Nkaiwatei (2011) studied the relationship between social accounting practices and profitability in the oil industries in Kenya. Using descriptive survey design he carried out the study with 33 oil companies in Kenya. Both qualitative and quantitative data was collected using questionnaires. Profitability was considered the dependent variable while the

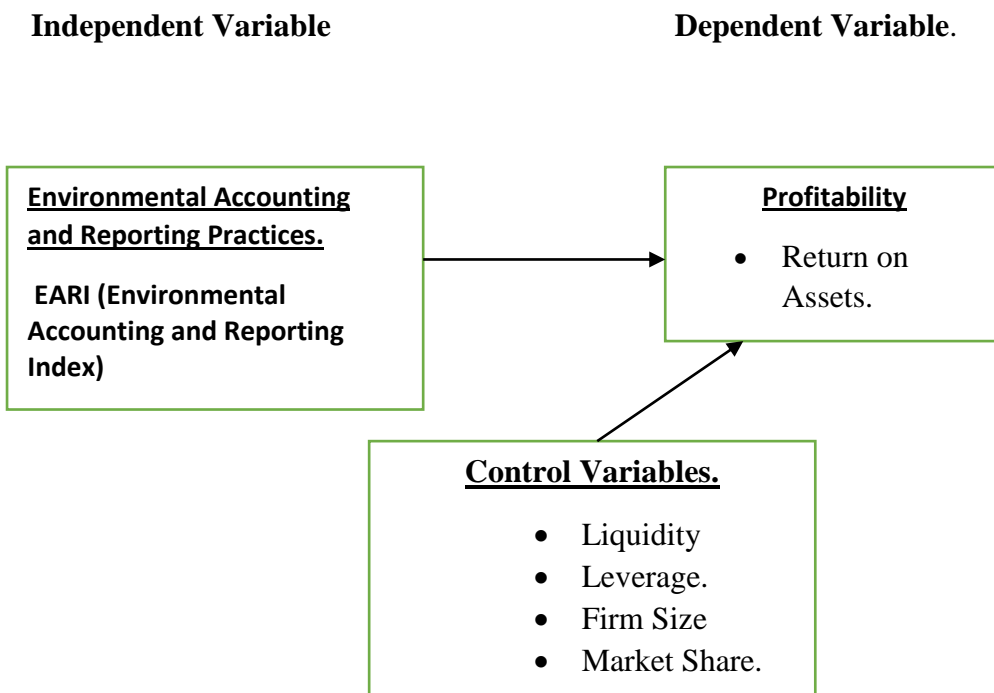
independent variables represented by consistency of behaviour, proper allocation of resources and social aspects versus strategic issues. The findings indicated that the factors that determined the social accounting practices adopted by firms were financial performance, level of competition and regulations imposed by the state.

Rono (2016) studied the drivers of environmental reporting practices by listed firms at the Nairobi Securities Exchange. The study aimed at establishing the relationship that exists between drivers of environmental reporting practices and financial performance. The dependent variable was environmental reporting index while the independent variables were financial leverage, firm size, profitability, industry type and ownership structure. Secondary data was collected from annual reports and the data obtained was analysed by the use of Statistical Package for Social Sciences tool. Results revealed that the environmental reporting index had a negative association with profitability and financial leverage. Industry type, firm size and ownership structure had a weak positive relationship with environmental reporting index.

2.5 Conceptual framework

This is a diagrammatic presentation of the relationship between variables in the study being carried out. This framework enables the reader to visualize at a glance the relationship proposed. The variables under study are represented in a diagrammatic way. This study will have profitability as the dependent variable and Return on Assets will be used as the proxy for profitability. The independent variable will be Environmental Accounting and Reporting Practices measured as an Index. The index will be obtained through content analysis. A check list will be used to analyze the information reported by the firms under study. A score will then be awarded to the individual firms. The control variables for this study will be liquidity and leverage.

Figure 2.1 Conceptual Framework.



2.6 Summary of literature review.

The chapter looked at the relevant theories that will form a basis for the study. The Stakeholder theory concludes that when firms motivate their stakeholders by providing environmental information and reports, the stakeholders find confidence in the firm resulting to massive investment or purchase of the firm's goods and products. The Legitimacy theory on the other hand indicates that when firms avail the necessary information to the society, the perception that the society has about the firm becomes positive. This results in good working relations between the society and the firm. Financial performance is deemed to improve when there is a good perception of the firm in the society. The accountability theory discussed is relevant to this study. Firms will be obliged to account for their activities that affect the environment. Failure to give the necessary information may lead to a breach of the relationship that exists between the firm and the related parties. Once the relationship is affected, the operations of the firm will be compromised leading to a poor financial performance.

Previous studies have provided mixed conclusions on the relationship between profitability or financial performance and environmental reporting practices. Studies like the one done by Dion and Rui (2012) concluded no significant relationship between the variables; profitability and environmental index. Other studies like the one done by Rakiv, Fakhrol and Rahman (2016) found a significant positive relationship between environmental accounting reporting disclosure and company profitability. It is evident that researchers have not been conclusive as regards the relationship between environmental accounting and reporting and profitability of firms listed on the Nairobi Securities Exchange. From the literature review it is evident that a research gap exists in this field of study. There is opportunity for further research for a conclusive relationship to be established. This study therefore seeks to contribute towards the research gap.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter highlights the methods and procedures to be used in carrying out the study. It includes the following aspects: the research design, which will guide the study, the target population, the sampling design and the sample size, the data collection methods as well as the data analysis techniques that will be used to analyze the data.

3.2 Research design

A research design is necessary since it provides the researcher with the framework for collecting and analyzing data. (Newing, 2001). Descriptive research design was used for this study. This research design was selected since it allows for a higher level of analysis for example correlation and regression. From the analysis, it was possible to establish the association between variables.

3.3 Population

A population is defined as all the elements of a group of events, objects or individuals that have a common observable characteristic. (Mugenda et al., 2003). The target population for this study constituted manufacturing and allied firms listed as at December 2016 at the Nairobi Securities Exchange. There were 10 companies listed on the Nairobi Securities Exchange under the category of manufacturing and allied firms. A census approach was employed whereby all the 10 firms formed units of study. The study narrowed on the firms which had financial data available for the 3 years under consideration. 9 firms were therefore studied since 1 firm did not have financial performance information for the 3 year period under study.

3.4 Data collection

This study employed secondary data sources. Data on the profitability of firms as well as the total number of current assets, current liabilities, debt, equity and content analysis data from environmental reports was collected from environmental reports, published annual financial

reports of the listed manufacturing companies available on the company's websites, and from Nairobi Securities Exchange handbooks available on their website and the information collected from Capital Markets Authority website. The period under review was a three year period; 2014 to 2016. The data collected was organized, tabulated and summarized in readiness for analysis.

3.5 Data analysis.

In this study data was analyzed using Statistical Package for Social Science (SPSS). All the qualitative data was coded to make data entry easy. Inferential data analysis was done using Pearson correlation coefficient, regression analysis and multiple regression analysis. The test of significance for the model was done using R square measure. It measured the goodness of fit, which is the percentage variance in the dependent variable that is explained by the independent variable. The higher the R square, the better the model. The individual significance of predictor variables was tested using P-Value and t-test. The following multiple regression model was used.

ROA= $\beta_0 + \beta_1\text{EARI} + \beta_2\text{LQ} + \beta_3\text{LV} + e$. Where,

ROA = the value of the dependent variable

{ $\beta_i, i = 1, 2, 3, 4, 5$ } = the co-efficient representing the various independent variables

{EARI, LQ, LV} = values of the various independent (covariates) variables

ROA= Return on Assets. (Net Income/Total Assets)

EARI= Environmental Accounting and Reporting Index.

This index will be an aggregate of the score awarded to a company for every environmental item observed as per the checklist. The maximum score will be 15 points. The score attained will then be measured by dividing by the maximum score of 15 points to convert it to a ratio.

LQ= Liquidity (Current Assets/Current Liabilities)

LV= Leverage (Debt/Equity) while **e**= Error term.

CHAPTER FOUR

DATA ANALYSIS, RESULTS AND DISCUSSION OF FINDINGS.

4.1 Introduction

The main objective for this study was to establish the relationship between environmental accounting and reporting practices and the profitability of firms under the manufacturing sector listed on the Nairobi Securities Exchange as at December 2016. In this chapter analysis and findings in relation to the objective is presented and discussed. The data was analyzed using correlation and multiple regressions. The findings are presented by use of descriptive statistics, coefficients, mean and standard deviation.

4.2 Descriptive Statistics

The 9 manufacturing firms that were studied were analyzed and the descriptive statistics for the analysis was tabulated in Table 4.1. The analysis enables the researcher to get a general overview of the data that was analyzed using SPSS. The mean value for the index used to measure environmental accounting and reporting practices of the firms was 0.58 with a standard deviation of 0.15. This means that by 31st December 2016, manufacturing firms listed on NSE were giving environmental disclosures at 58%. The minimum index was 0.33 while the maximum value for the index was at 0.8. Profitability was measured using ROA as a proxy. The mean value was 3.78 with a maximum of 27.39 and a minimum value of -41.9. The liquidity of the firms was used as a control variable in the study and was measured as the ratio of current assets to current liabilities. The mean value for the ratio was 1.95 while the standard deviation value was 0.33. The maximum value for the liquidity ratio was 6.39 with a minimum of 0.19. The leverage of the firms was measured using debt to equity ratio which had the following descriptive analysis results. The mean value for leverage was 0.08. This

means that more equity than debt was employed by firms listed on the NSE. The standard deviation was 0.23. The maximum value was 5.78 while the minimum value was 0.08.

Table 4.1 Descriptive Statistics for Listed Manufacturing Firms.

Descriptive statistics of manufacturing firms.					
	N	Minimum	Maximum	MEAN	Std Deviation
EARI	27	0.33	0.8	0.58	0.15
ROA	27	-41.9	27.39	3.78	2.98
LQ	27	0.19	6.39	1.95	0.33
LV	27	0.08	5.78	0.08	0.23

Source: Research findings.

4.3 Regression Analysis.

The table below; Table 4.2 shows the summary of the results from the model. Correlation coefficient (r) was used to determine the direction and magnitude of the relationship between the dependent and independent variable. P-Value was used to assess overall significance of the model. The correlation coefficient of 0.519 indicates a moderately positive correlation between the dependent and independent variables. Coefficient of determination (R Squared) is at 0.27. This indicates that 27% of the variation in the firm profitability as measured by ROA is explained by the independent variables of the study; LQ, LV and EARI.

Table 4.2 Linearity of the model

Model	R	R Square	Adjusted R square	Std Error of the estimate
1	0.519	0.270	0.174	0.141

4.4 Analysis of Variance (ANOVA)

Table 4.3 ANOVA

ANOVA					
<i>Model</i>	<i>df</i>	<i>Sum of Squares</i>	<i>Mean Square</i>	<i>F</i>	<i>Significance F</i>
Regression	3	0.16845	0.05615	2.82976	0.06084
Residual	23	0.45638	0.01984		
Total	26	0.62483			

The table above, Table 4.3, shows that the sum of squares due to regression analysis is 0.168 with 3 degrees of freedom. The sum of squares residual due to 23 degrees of freedom is 0.456. The deviation from the mean value for the variables in the study is 0.056 at 3 degrees of freedom at 0.061 significance. The P-value is 0.061 which indicates that ROA is predicted with 99.93% probability by LQ, LV and EARI.

4.5 Correlation coefficient analysis.

Table 4.4 Pearson's Correlation Coefficient Analysis.

Pearson's Correlation Coefficient				
	<i>EARI</i>	<i>LQ</i>	<i>LV</i>	<i>ROA</i>
EARI	1.000	-0.564	-0.024	0.241
LQ	-0.564	1.000	-0.193	0.195
LV	-0.024	-0.193	1.000	0.114
ROA	0.241	0.195	0.114	1.000

This analysis was done to find out the relationship between ROA and the independent variables of the study; EARI, LQ, and LV. From the above table 4.4, ROA has a positive relationship with all the independent variables. This means that 1 unit increase in EARI increases ROA by 0.241 units if LQ and LV are held constant. One unit increase in LQ

results in 0.195 unit increase in ROA and 1 unit increase in LV leads to 0.114 unit increase in ROA.

4.6 Multiple regression analysis.

Table 4.5 Multiple Regression Analysis Results.

Coefficients							
Model	Unstandardized coefficients		Standardized coefficients <i>Beta</i>	<i>T</i>	<i>Sig</i>	95%confidence for B	
	<i>B</i>	<i>Std Error</i>				<i>Lower Bound</i>	<i>Upper bound</i>
1							
Constant	-0.42708	0.16685		2.55971	0.01752	-0.77223	-0.08193
EARI	0.59062	0.23081	0.02973	2.55888	0.01755	0.11315	1.06809
LQ	0.05072	0.02035	0.00562	2.49175	0.02036	0.00861	0.09282
LV	0.03073	0.02415	0.00237	1.27265	0.21586	-0.01922	0.08068

From table 4.5 above the model was rewritten as below,

$$ROA = -.427 + 0.591EARI + 0.051LQ + 0.031LV + 0.141$$

4.7 Interpretation and discussion of research findings.

This study found out that the independent variables have a significant positive relationship with the dependent variable ROA. The three independent variables had positive correlation coefficients. EARI had 0.241, LQ 0.195 while LV had 0.114. The relationship between the variables LQ and EARI is significant since the P-Value for the variables is less than 0.05. The relationship with LEV is not statistically significant due to a P-Value that is higher than 0.05. The independent variables under study in the model (EARI, LQ and LV) explain a small portion, 27% of profitability of manufacturing firms listed in the NSE as indicated by R

squared 0.27. This means that the variables studied contribute to 26.7% of profitability, while 73% of profitability is contributed by other factors.

The study further found out that the EARI by listed manufacturing firms in Kenya as at December 2016 was at 0.58 representing 58%. This is slightly above average. This is in line with the findings of the study done by Rakiv (2016) that revealed a significant positive relationship between environmental accounting reporting disclosure and company profitability. This therefore means that firms that disclose their environmental activities have a high chance of increasing profitability. An increase in disclosure increases profitability. 1 unit increase in EARI increases ROA by 0.241 units. The P-Value for the model is at 0.601. This therefore indicates that it is not statistically significant.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS.

5.1 Introduction

This section of the study gives the summary of findings, conclusions and recommendations for further research.

5.2 Summary of Findings.

Descriptive research design employed in this study allowed for quantitative data to be collected. The data was analyzed through correlation and regression analysis to find out the nature and extent of relationship. Majority of the manufacturing firms listed on the NSE disclosed environmental activities of their firms. This is because the mean disclosure index was at 58%. The practice of environmental accounting and reporting is positively correlated with profitability. Firms that practice this aspect of accounting and reporting expect more profitability levels. The other independent variables; liquidity and leverage also have a positive relationship with profitability. 27% of the variation in the firm profitability as measured by ROA is explained by the independent variables of the study; LQ, LV and EARI.

5.3 Conclusions

This study has shown that Environmental Accounting and Reporting practices has a positive relationship with profitability of manufacturing firms listed on NSE. Manufacturing firms listed on the NSE should manage their impact on the environment and engage in public disclosure of their impacts and activities on the environment. The variables considered only contribute 27% of the overall profitability of manufacturing firms. The firms should therefore use environmental reporting and accounting practices as part of their strategy for profitability. Other factors that affect profitability should be used together with environmental accounting

and reporting practices to enhance profitability since the other factors affecting profitability contribute 73% of the variation of profitability as measured by ROA.

5.4 Limitation of the Study.

The study used secondary data. This is historical data and may not reflect the current situation in the market or operation of the firms studied. This may have compromised the reliability of the data used. Some firms did not have complete data for the period being studied. As a result, the study was subjected to 9 firms instead of the projected number of 10 manufacturing firms listed on NSE as at 31st December 2017.

The measurement of Environmental Accounting and Reporting Index was done by use of content analysis. Content analysis is subjective and its accuracy totally depends on the researcher's skills and the researcher's ability to extract information from the reports. The index was obtained by the use of a scale that was determined for this study. There is no standard measure of EARI. This therefore limits comparability of results for similar studies.

Lastly, this study is limited to manufacturing firms in Kenya. The findings of this research cannot be applied to other case studies outside Kenya.

5.5 Recommendation for further study

This study only considered manufacturing firms listed on the NSE. Further research could be done factoring all the categories of firms listed on the NSE. Studies could also be carried out that incorporate manufacturing firms not listed on the NSE.

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APPENDICES

Appendix 1 Manufacturing and Allied Firms listed at the Nairobi Securities Exchange as at 31st December 2016.

1	B.O.C Kenya Ltd Ord 5.00
2	British American Tobacco Kenya Ltd Ord 10.00
3	Carbacid Investments Ltd Ord 5.00
4	East African Breweries Ord 2.00
5	Mumias Sugar Company Ltd Ord 2.00
6	Unga Group Ltd Ord 5.00
7	Eveready East Africa Ltd Ord 1.00
8	Kenya Orchards Ltd Ord 5.00
9	A.Baumann Co Ltd Ord 5
10	Flame Tree Group Holdings Ltd Ord 0.825

Source www.nse.co.ke

Appendix 2 Environmental Reporting Checklist.

Number	Environmental Accounting Reporting Checklist
1	Existence of Environment Policy
2	Management Concern for Environment
3	Environment Management System
4	Environmental Compliance
5	Environmental Cost Identification and Recording
6	Waste management- recycling, reduction and reuse.
7	Environmental budget/ spending and activities
8	Environmental impact assessment and risk management
9	Presence of an environmental audit program
10	Environmental research and development
11	Innovation and ways to reduce environmental degradation
12	Energy policy
13	Carbon emission reports
14	Spills, noises and Odor
15	Other environmental issues

Source: International Journal of Ethics in Social Sciences, Vol 4 No 2 Dec 2016.

Appendix 3 Research findings

FIRM	NET INCOME	TOTAL ASSETS	CURRENT ASSETS	CURRENT LIABILITIES	DEBT	EQUITY
BOC Kenya ltd						
2014						
2015						
2016						
BAT						
2014	1446433	12080481	8703127	6918380	2943683	8126922
2015	1416219	12080481	8891236	5910678	3227303	8853178
2016	1423433	12153840	8784453	6166412	3357051	8796789
Carbacid INV						
2014	178424	2533163	980688	155757	220523	2156883
2015	85610	1627888	891857	139608	230981	1564299
2016	79825	1486845	780964	127400	234729	1543297
EABL						
2014	7032179	33362861	17933759	19832996	21181702	12181159
2015	7962702	40263838	11228333	13901360	24469236	15794602
2016	10137589	37016748	9785634	21096609	20969236	16047512
Mumias Sugar						
2014	-2706595	12927937	4353304	10635149	2286132	10641805
2015	-464480	6762973	2543549	13640591	830929	5932044
2016	-2920147	26704439	2737642	12495648	9377360	4831431
Unga group						
2014	474494	8026578	4934209	2172393	987381	4687243
2015	621866	8635129	5452719	2302165	1014344	5318620
2016	508816	9199783	5819762	2531888	971166	5696729
Eveready EA						
2014	-162767	942129	768688	591670	118278	232181
2015	-201509	723455	593338	641700	327410	483908
2016	-206505	492755	263371	585341	443274	714608
Kenya Orchids						
2014	5261547	53741500	29197374	16460677	56271926	22835096
2015	4328873	62297478	34111879	16433745	56271926	56271926
2016	5295028	66005586	46969847	23236041	56271926	9733660
Flame tree GH						
2014	179047608	1009568368	805722217	518494707	128985792	362087869
2015	178848086	1326531265	1053504227	641999959	102609427	581921879
2016	144980485	1521194765	1140414966	745102050	56925913	719166802

Appendix 3 Research findings continued.

FIRM	EARI	ROA %	LQ	LV
BOC Kenya ltd				
2014	0.60	10	2.1	0.32
2015		6.4	2.1	0.35
2016		5.9	2.3	0.31
BAT				
2014	0.73	12.0	1.3	0.4
2015		11.7	1.5	0.4
2016		11.7	1.4	0.4
Carbacid INV				
2014	0.33	7.0	6.3	0.1
2015		5.3	6.4	0.1
2016		5.4	6.1	0.2
EABL				
2014	0.80	21.1	0.9	1.7
2015		19.8	0.8	1.5
2016		27.4	0.5	1.3
Mumias Sugar				
2014	0.40	-20.9	0.4	0.2
2015		-6.9	0.2	0.1
2016		-10.9	0.2	1.9
Unga group				
2014	0.60	5.9	2.3	0.2
2015		7.2	2.4	0.2
2016		5.5	2.3	0.2
Eveready EA				
2014	0.67	-17.3	1.3	0.5
2015		-27.9	0.9	0.7
2016		-41.9	0.4	0.6
Kenya Orchids				
2014	0.47	9.8	1.8	2.5
2015		6.9	2.1	1.0
2016		8.0	2.0	5.8
Flame tree GH				
2014	0.60	17.7	1.6	0.4
2015		13.5	1.6	0.2
2016		9.5	1.5	0.1