

ENVIRONMENTAL COST AND MARKET SHARE OF LISTED MANUFACTURING COMPANIES IN NIGERIA

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Abstract

The study examines the impact of environmental cost, controlled by firm size and firm age; on the market share of listed manufacturing companies in Nigeria from 2007 to 2017. The descriptive research design was adopted for the study. Twenty listed manufacturing companies were purposively drawn from the population of sixty manufacturing companies listed on the floor of the Nigerian Stock Exchange as of 31 December 2017. The study's relevant figures were extracted from the annual reports and accounts as well as the stand-alone environmental information of the selected companies over eleven years, from 2007-2017. Panel regression analysis was used to examine the impact of the proxies to independent variable on the dependent variable. Findings from the panel fixed-effect regression analysis showed that environmental cost had a significant impact on market share ($F= 56.20, p < .05$) at 5% level of significance. The study, therefore, concludes that environmental cost has a positive significant effect on the market share of listed manufacturing companies in Nigeria. The study recommends that manufacturing companies should increase their financial commitment to issues of environmental concerns to increase their market share.

Keywords: environmental cost, CSR, market share, listed manufacturing firms, signaling theory

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1. Introduction

The survival and development of organisations now depend on environmental responsibilities for businesses to reach their goal of ongoing growth and not just on financial performances and operational efficiency (Vincent, 2012). This is because business organisations exist in an environment that is both internal and external, with increasing interactions between these environments. In a bid to legitimise their activities, business corporations have taken environmental initiatives as a responsibility (Noah, 2017). Corporate involvement in environmental initiatives and reporting is essential for increasing and sustaining performance in a dynamic and changing environment (Albahussain, 2015). This is because environmental costs are crucial when determining the corporate performance of investing in activities that recuperate, eradicate negative consequences, and improve the environment (Dejan & Marina, 2018).

The need to be globally relevant, as well as the negative consequences arising from the non-reporting of environmental impacts by corporate organisations, has resulted in increased academic debates and initiatives on the subject matter. These negative consequences include pressure on business activities from the society, non-governmental organisations (NGOs), government, consumers, human rights activist, and environmentalists; legitimacy threat; reduced profits due to product boycotts, ecological risks, and reduced market share (Vincent, 2012). These consequences have therefore led to increased interest by business organisations in getting

involved in environmental issues and reporting the same. The choice of a business entity to report its environmental activities and the manner of reporting (monetary, non-monetary, or both) depends mainly on some firm-specific characteristics (Fifka, 2013). These firm-specific characteristics include firm size, firm age, industry type, profitability, leverage, societal pressure, government rules and regulations, consumers' perception and attitude of management (Elsakit & Worthington, 2014). In Nigeria, as with other nations of the world, organisations are being encouraged to embark on activities that are environmentally responsible owing to the increasing interaction between organisations and the various stakeholders since there is no business decision in isolation of stakeholders', the environment inclusive. Also, many companies that engaged in environmental reporting based their actions on the belief that these actions provide or will provide some benefits such as better patronage, right public image, and increased market share to the company (Vincent, 2012).

The universal driver of engaging in environmental initiatives in Nigeria, based on literature, is financial performance measured mainly from the profitability perspective (Ezeagba, John-Akamelu & Umeoduagu, 2017; Worimegbe, 2021). Evidence from research has, however, produced mixed conclusions due to the nature of measurement and methods adopted (Lu & Abeysekera, 2014; Adeneye & Ahmed, 2015). Furthermore, the paradigm shift in the competitive nature of business activities and external forces affecting organisations has required the inclusion of market-oriented performance measures (Adagba & Shakpande, 2017). It has, therefore, become necessary to assess the performance of companies engaging in environmental cost, using non-financial measures such as the market share.

The International Financial Reporting Interpretations Committee (IFRIC) 6 provides that the impact of environmental influence is best measured vis-a-vis the market share. In other climes, market share has been used to measure performance: Kisumu town covering 2006 to 2010 (Munyoki & Benjamin, 2013) and Pakistan (Khan & Majid, 2013). However, they focused on supermarkets and cement companies, respectively, using mainly descriptive design method. Drawing from Munyoki and Benjamin (2013), Khan and Majid (2013), the market share as a metric of performance would reveal how much of the manufacturing firms' market share is affected by their environmental-sensitive activities.

Studies on environmental cost in Nigeria remain a fairly un-researched area (Ezeagba *et al.*, 2017; Mohammed, 2018). This study indeed set the scene for more up-to-date studies in the field of environmental costing for Nigerian manufacturing companies. Therefore, the study seeks to establish the effect of environmental cost on the market share of the listed manufacturing companies in Nigeria.

The objective of this study is to examine the effect of environmental cost on the market share of listed manufacturing companies in Nigeria. On the basis of this objective, the following

hypothesis is hereby formulated in null form for testing:

Ho: Environmental cost does not have a significant effect on the market share of listed manufacturing companies in Nigeria

2. Literature Review

2.1 Environmental cost

Environmental cost is those cost incurred by corporate organisations to eradicate, minimise, or recuperate negative consequences of the entity's activities on the environment, both internal and external (Ezeagbaet *al.*,2017). Environmental cost shows the internal and external financial commitments of companies to issues of environmental concerns. Environmental cost includes the internal cost of training and developing employees on environmental matters, donations and expense incurred in giving back to the society such as medical aids to the community, and financial contributions to the reduction in the value of non-renewable mineral and energy resources, waste and water pollution (Brent, Van-Erck &Labusschagne, 2006).Sief (2014) viewed environmental cost based on how the organisation uses the cost information, such as conventional cost and potentially hidden cost.

Conventional costs include raw material and energy cost. Potentially hidden costs are indirect costs that lose their identity in the accounting system such as, environmental training, research and development expenditure, contingent costs and image and relationship costs. McLaughlin and Elwood (1996) argued that traditional accounting systems fail to consider all potential hidden environmental cost associated with the various activities of the organisation; they identified the cost of training and education of employees on the requirements of the environmental management system. Also, they identified the use of technologies and handling of new chemicals as the potential hidden cost of environmental activities.

Furthermore, Basuki and Irwanda (2018) provided support to the view held by Sief (2014), Brent *et al.*, (2006) and McLaughlin and Elwood (1996) that employee education and training cost incurred by organisations form part of environmental cost usually accounted for under administrative and general expenses. Kumarasinghe and Pallewaththa (2018) opined that human influence is a major driver of environmental changes and due to the move towards a responsive socio-economic business environment; the place of training and education of employees on environment-sensitive business practices becomes more emphasised in matters affecting employees.

Human influence is seen as a significant driver of environmental change due to its ability to influence employees' attitude towards sustainable use of resources within the organisation, the environment and the potential to impact corporate environmental policies and performance. Ji, Huang, Liu, Zhu and Cai (2011) posited that employees training depict a firm's correct environmental attitude capable of influencing its performance.

Islam (2009) viewed environmental cost as a set of organisational activities that deal with assigning values to and evaluation of the social and environmental performance of organisations, and the reporting of such results to interested parties, within and outside an entity. Islam (2009) stated further that environmental reporting, a subset of environmental accounting, entails reporting by an organisation on the goods, consumers and employees' concerns, community engagements and environmental impacts; perceived to be an aspect of the organisation's accountability to its stakeholders' or a reaction to the expectations of stakeholder. Wangombe (2013) viewed environmental cost as the practice of quantifying, disclosing, and reporting to stakeholders' within and outside the organisation, environmental performance geared towards achieving sustainable development as well as to allow stakeholders assess their association with the reporting organisation. Environmental cost information disclosed in annual reports creates transparency, reduces the information gap, and sends stakeholders a signal about business devotion to environmental issues and performance (Bae, Masud & Kim, 2018).

2.1.2 Market Share

Market share is a non-financial measure of business performance which depends on how the internal marketing department of an organisation is organised, coordination of its processes, the quality of information and communication technology, purchasing system, the calibre of human resource capital and their interactions and impact on the cost and differentiation (Ojung'a, 2007). Market share is how much of the market a company has. Market share is a non-financial measure of performance in that; it is a quantitative measure which cannot be expressed in monetary terms (Dorothy, Alila & Omosa, 2007).

As a measure of performance, market share provides leading indicators of future financial performance and can also provide an understanding of an organisation's impact on stakeholders' and the society (Durnev *et al.*, 2015). Adeneye and Ahmed (2015) opined that organisation contributing to environmental growth and development in which they operate experience increased purchasing power by the consumers, right brand image (enhancing their reputation) before the society and ultimately improved performance. Reputation, a component of market share, is one of a company's most vital assets when designing social responsibility programs or guidelines (Vincent, 2012). Vincent (2012) went further to state that solid reputation enhances an organisation's public reputation and, in the end, can ultimately attain the desired bottom line.

Durnev, Li and Magnan (2015) attested to the view that organisations who were early adopters of environmental accounting in their industry had increased market share than companies that began later. Under most circumstances, businesses that have accomplished a high share of the markets they serve are much more profitable than their smaller-share counterparts (Durnev *et al.*, 2015). Market share is computed as the proportion of an industry or market's total sales that is earned by a particular company over a specified period. Market share is calculated dividing a company's sales by the entire industry sales over the same period (Dorothy *et al.*, 2007).

2.1.3 Environmental cost and firm-specific factors

Environmental cost accounting considers integrated environmental factors, which enhance improved disclosure by organisations, from an all-embracing view in relation to their performance (Hao, 2014). The degree and quantum of environmental reporting are largely affected by firm-specific factors such as firm size, industry type, firm age, leverage, profitability and attitude of management (Fifka, 2013). Larger organisations are seen as essential economic entities (Nurhayati, 2014) and as such, are expected to provide information to their stakeholders' owing to the considerable interaction between them and the environment in which they operate. Toukabri, Ben and Jilani (2014), stated that large companies tend to receive considerable criticism from the public; as a result, they tend to sway the public's perception of their legitimacy through voluntary environmental disclosures. Bhattacharyya (2014) examined the effect of firm size, external auditor size, organisation's age and profitability on the level of social and environmental reporting among Australian firms.

The results indicated that the rate of social and environmental disclosure for large organisations was significantly higher; companies with negative profitability reported significantly higher social information, while the level disclosure was not related to organisations' ages and size. Wachira (2014) argued that as a company matures, its prestige, voluntary involvement in environmental protection activities, and reporting environmental information, become valuable assets. Akbas (2014) observed a non-significant association between age and environmental disclosure practices of listed companies in Turkey. In contrast, Nguyen, Tran, Nguyen and Le (2017) found that company age influences the level of environmental accounting information based on their examination of the impact of company age on disclosure level of environmental accounting information in Vietnam. Worimegbe and Oyewole (2020) observed a significant effect of firm age and firm size on environmental disclosure practice of manufacturing companies in Nigeria. Accordingly, this study considered two firm-specific characteristics; firm size and firm age to possess a potential influence on the environmental cost incurred by listed manufacturing companies in Nigeria.

2.2 Theoretical review: Signaling theory

The signaling theory focuses on the purpose of management to exchange information and collect signals from stakeholders, market, and society (Baeet *al.*, 2018). Market signaling captures an economic view of organisational reputation because a signal is used to communicate information to change the beliefs of other actors in the market (Spence, 1974). Thus, a signaling device such as environmental accounting (EA) represents a differentiating characteristic through which the reporting company may gain a competitive advantage over others (Utama, 2013).

Environmental accounting can signal an organisation's commitment to corporate citizenship through the disclosure of information on environmental initiatives, costs and investments; which in turn has the potential to affect an organisation's performance (Wong & Millington, 2014). The assumption in signaling theory is that managers will be encouraged to maximise the reputational returns of environmental accounting information net of its associated signaling costs. These

signaling costs include financial and non-financial expenditures associated with the collection and dissemination of environmental accounting information (Lars, 2018).

The signaling theory justifies business involvement in environmental cost and performance (Khlif, Guidara & Souissi, 2015). In that, where done effectively, stakeholders could perceive cost information disclosed as reputational and competitive advantage tool if such information is well and appropriately viewed (that is, the intended signal is well-conceived and understood by stakeholders, particularly, consumers). Signaling theory assists firms in striking a balance between environmental cost and the opportunity cost of engaging in environmental initiatives. Therefore, the researcher proposed that environmental cost sends the right signal to stakeholders who possess the capability to enhance the market share of quoted manufacturing companies when not misconstrued by the consumers (Lars, 2018).

2.3 The link between environmental cost and market share

Jones (2010) described the equal benefit of environmental responsibility activities for businesses and their stakeholders', in particular for the stakeholders', since firms display responsibility by their involvement; they are seen as reliable and thus as safe market transaction partners. One can take this approach a step further to posit that companies not involved in environmental responsibility will not be attractive to customers, employees, suppliers and other stakeholders' because there is a lack of trust. Scholtens (2008) opined that being green and social is positioned as a relevant product and firm characteristic. Khlif *et al.* (2015) stated that companies who engaged in environmental disclosures enhance demand for their products through customers' acceptance of environmental products. This implies that their customers and investors reward companies that fully commit themselves to environmental issues in terms of increased potential valuation and substantial stakeholders' relationship. At the same time, those that are insincere do not benefit from it or lose market share.

Many companies that engage in environmental reporting based their actions on the belief that these actions provide or will provide some benefits such as improved market share to the company (Vincent, 2012). However, the choice of a business entity to incur environmental costs depends largely on certain firm-specific characteristics (Fifka, 2013). These firm-specific characteristics include firm size, firm age, industry type, profitability, leverage, societal pressure, government rules and regulations, consumers' perception and attitude of management (Elsakit & Worthington, 2014).

Munyoki and Benjamin (2013) examined the relationship between CSR practices and the market share of supermarkets in Kisumu town for the period 2006-2010. The study used a descriptive design approach with questionnaires soliciting opinions from all the managers of the supermarket in Kisumu town as the primary source of data. Data gathered were analysed using the descriptive analysis and the regression analysis. Findings from their study provide evidence that there exists a positive relationship between CSR practices measured by education, water and sanitation, health, orphanage, and the market shares of the supermarket. The study also explored the motivation for CSR practice by the supermarkets and found out that excess revenue, among other

factors such as government regulation, technology, and competition, motivates supermarkets in the region in CSR initiatives.

Khan and Majid (2013) explored the effect of CSR on profitability and market share of the Pakistan cement industry. The study employed the survey design method with the questionnaire as the instrument for data collection. CSR was examined in four dimensions: environment-oriented responsibilities, customer-oriented responsibilities, community-oriented responsibilities, and legal responsibilities. The relationship of each of these dimensions was checked with profitability and market share. The findings of the study indicated that there is a significant relationship between CSR and profitability and market share. The study employed the use of primary data, with focus on the cement industry only.

The conceptual framework in figure 1 depicts the perceived relationship between the study variables as formulated in the hypothesis. It is assumed that a positive relationship exists between environmental cost, the control variables (firm size and firm age), and the market share of the selected listed manufacturing companies in Nigeria.

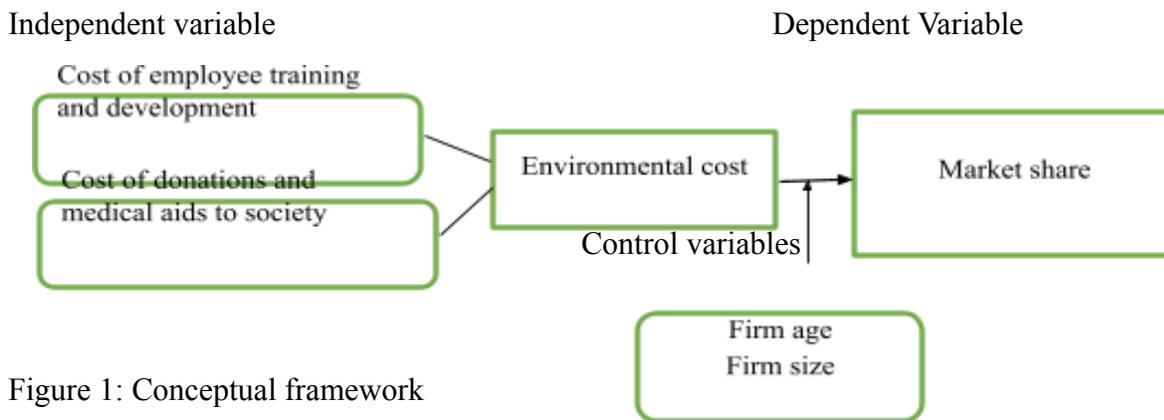


Figure 1: Conceptual framework

3.0 Methodology

The study depended on the empirical quantitative approach in achieving its objectives. The descriptive research design was adopted because the study intends to find out how environmental cost affects the market share of listed manufacturing companies in Nigeria. Also, the ex-post facto research design was used in the study. The choice of ex-post facto design was informed by the nature of the research. Ex-post facto research design is appropriate for studies focusing on events that have already occurred and whose outcome cannot be controlled by the researcher. The events to be studied had taken place in the past and the researcher had no influence on the data. Twenty manufacturing companies were purposively selected from the population of sixty listed manufacturing companies on the floor of the Nigerian Stock Exchange as at 31 December 2017 having met specific predetermined criteria. These criteria include:

- i. the companies must have been listed and still in operation throughout study
- ii. the companies must possess the required information in their annual report available on their websites

Listed manufacturing companies were chosen because of the volume and nature of their

activities as well as their impact on the environment. The period 2007 to 2017 was selected to allow sufficient time in observing changes in the study variables and their influence over some time. The study employed the use of secondary data contained in the annual reports and stand-alone environmental reports sourced from the corporate websites of the sampled companies. This study elected to use mode of reporting that was consistent throughout the analysis. The study selected eleven years from 2007 to 2017 because the requirement of International Financial Reporting Standards (IFRS) on disclosure and treatment of environmental cost (IFRIC 6) became effective for financial periods from 1 December 2005.

Also, the period is chosen to assess the applicability of Brent *et al.* (2006) recommended variables for environmental cost adapted by this study. The cost approach which involves assessing actual cost of the environmental impacts of listed manufacturing companies' activities was adopted as proxies for environmental cost. This includes cost of donations and expenditure on medical aids to the host community as well as cost of training and development of employees. Market share, the proportion of individual company sales to industry total sales was used as dependent variable. This study measured firm size using the natural logarithm of total assets. Firm age was measured by the years of existence of the sampled firms as of 31 December, 2017. These two firm-specific variables represented the control variables of the study owing to their potential influence on environmental cost and market share.

The study employed the use of descriptive analyses for the data collected. The panel ordinary least square (panel OLS) analysis was employed to estimate the effect of the independent variables on the dependent variable because of the study's interest in examining the effect of one or more independent variable(s) on the dependent variable and the fact that the data involved times series and cross-sections. The standard for the rejection of the null hypothesis for a determination of statistical significance was the F statistic value at 5% level of significance. Before carrying out the regression analysis, the Hausman test was carried out to know the type of panel regression effect required for the analysis.

The model that expresses the cause-effect relationship between the variables is based on the conceptual framework of the study.

$$MS = f(MEDON, TRAED, FS, FA) \tag{i}$$

$$MS_{it} = \beta_0 + \beta_1 MEDON_{it} + \beta_2 TRAED_{it} + \beta_3 FS_{it} + \beta_4 FA_{it} + \varepsilon \tag{ii}$$

Where:

MS represents Market Share

MEDON represents cost of donations and medical aids to community/society

TRAED represents cost of training and education of employees on environmental issues.

FS represents firm size measured by logarithm of total assets

FA represents firm age measured by years of existence

For the subscript index it

i stands for the cross-sectional unit, $i = 1, \dots, 20$

t stands for the period, $t = 1, \dots, 11$

β_0 = Constant parameter/intercept

β_1 - β_2 = Regression coefficients of independent variables

β_3 - β_4 = Regression coefficients of control variables

ε stands for the error term

4.0 Analysis and findings

The total number of observations was two hundred and twenty (220) given eleven(11)years and twenty(20)cross-sections. The independent variables donations and medical aids to the society (MEDON) and training and employee development (TRAED) for the selected sample over the period 2007-2017, have average values of ₦43,722.45 and ₦1,341,686 respectively. Their standard deviations were ₦131,550.30 and ₦2,058,487, respectively. It can be inferred from their mean values that; the cost of training and employee development with a higher mean implies that environmental commitment is more on training and developing employees than engaging in other social initiatives. The voluntary nature of environmental initiative could account for this.

The average firm size of the sample is 7.00 with a standard deviation of 1.30; average firm age is 47 years with a standard deviation of 19 years. The average market share of the listed manufacturing companies from 2007 to 2017 is 0.074 with a standard deviation of 0.1028. This implies that 7.3% of the Nigerian market is controlled by listed manufacturing companies sampled in the study. This value was higher than the 5.6% average posited by Trading economics (2019). The standard deviation values depicted the extent to which the values of the variables can deviate from the mean values to both sides.

The standard deviation values depict the extent to which the values of the variables can deviate from the mean values to both sides.

Furthermore, all the variables are leptokurtic given that their kurtosis values were greater than 3 except cost of donations and medical aids to the community which is platykurtic due to its kurtosis value of less than 3. The dependent variable was positively skewed. This implies is not fluctuating but increasing at a high rate with long tails while all the independent and control variable were negatively skewed. This implies that they are fluctuating and increasing at a very slow rate and they have long left tails. The results of the Jarque Bera with probability values of less than 0.05 for all the variables imply the non-normality distribution of the study variables at 5% level of significance.

Table 1 Descriptive Statistics of the environmental cost and market share of selected listed manufacturing companies in Nigeria

Variables	Obs.	Mean	Std Dev.	Min.	Max.	Kurtosis	Skewness	Jarque Bera	Prob.
TRAED (₦)	220	1,341,686	2,058,487	0	7.07	3.48	-1.39	72.387	0.00
MEDON (₦)	220	43,722.45	131,550.30	0	6.11	1.37	-0.25	234.82	0.00
MS	220	0.07	0.10	0	0.58	6.41	1.87	26.558	0.00
FA (yr)	220	47	19	0.30	1.97	9.43	-2.26	566.59	0.00
FS	220	7.00	1.30	0	8.54	19.49	-3.62	2972.32	0.00

The Pearson Moment correlation co-efficient shows that firm age (FA) a control variable has positive relationship with the study variables except market share with a negative 0.0991. The probability values showed significant relationship of firm age with cost of training and employee development while non-significant relationship was maintained with the other variables. Firm size (FS) possesses positive significant relationships with the variables of the study except firm age with positive non-significant relationship. A positive significant relationship was seen to exist between market share (MS) and cost of training and employee development (TREAD) while a positive non-significant relationship with firm size. Furthermore, positive non-significant relationship exists between market share and cost of donations and medical aids to community (MEDON) and firm age (FA). Cost of training and employee development on environmental issues (TREAD) had positive significant relationship with firm age, firm size, cost of donations and medical aids to the community (MEDON) and market share (MS).

Table 2: Correlation matrix of environmental accounting and market share of selected listed manufacturing companies in Nigeria 2007-2017

Correlation	FA	FS	MEDON	MS	TRAED
t-Statistic					
Probability					
FA	1				

FS	0.12443	1			
	1.85155	-----			
	0.0654	-----			
MEDON	0.09033	0.1876	1		
	1.33913	2.81991	-----		
	0.1819	0.0052	-----		
MS	0.04474	0.42258	0.1138	1	
	0.66131	6.88416	1.69127	-----	
	0.5091	0	0.0922	-----	
TRAED	0.17322	0.35728	0.22621	0.56338	1
	2.59689	5.64795	3.42881	10.068	-----
	0.01	0	0.0007	0	-----

Result of the fixed-effect regression for Market Share

The Hausman test was carried out in order to know the appropriate panel regression technique to use in achieving the study objective and to ascertain whether there would be the need for a fixed-effect model. The outcome showed a P-value of 0.0000, which is less than 0.05. Therefore, the fixed-effect model was adopted for the study.

The fixed effect regression equation can be rewritten as:

$$MS = 0.399377 - 0.005954MEDON + 0.004297TRAED - 0.210695FA + 0.001501FS$$

The result obtained shows that only TRAED and firm size are in line with the a priori expectation of the study by showing a positive effect on market share. The equation further indicates that market share (MS) is negatively influenced by cost of donations and medical aids to the community (MEDON) and the firm-specific variable, firm age (FA), for the period of study. Using the Coefficient of variation from the model presented in Table 3, it was observed that autonomous variable market share (MS) is a positive 0.399377 when all other variables are held constant.

Consequently, a unit change in the independent variables MEDON and TRAED will lead to a negative change of about 0.005954 and a positive change of 0.004297 respectively in market share (MS) less the autonomous component with all other variables being held constant. Also, unit change in firm age and firm size will lead to a negative change of about 0.210695 and a positive change of about 0.001501 respectively in the market share less the autonomous component provided all other variables are held constant.

Using the t-statistic values to test their statistical significance, all variables except cost of training and employee development were statistically non-significant as shown in Table 3 because their observed t-statistic value were far below the “rule of thumb of 2”. Only cost of training and employee development had a value higher than the “rule of thumb of 2” ($t = 2.559871$, $p = .0112$). The R-squared of 0.8683, the regression coefficient indicates that about 86.83% of the variations in the dependent variable are explained by the changes in the independent variables and the control variables. The remaining 13.17% are explained by some other variables not considered in this study.

The Durbin Watson statistic of 1.98 indicates the absence of auto-correlation since it is within the tolerable range of 1.5 to 2.5 though has a value less than the “rule of thumb of 2”. The F-value of 56.20 indicates that the parameter estimates cannot be dismissed at 5% level of significance owing to the fact that the probability of the F-statistic is .0000 which by implication indicates a statistical significance of the F-statistic.

The tool of F-statistic helps in determining the overall joint significant of the explanatory (independent) variables on the dependent variable. At 5% level of significance, the null

hypothesis is not accepted for the study since the probability of the F-statistic, .0000 is less than 0.05. It indicates that the donations and medical aids to the community, cost of training and educating staff on environmental issues, firm size and firm age are jointly significant at causing much variation in the dependent variable (market share-MS).

Discussion of findings

The non-acceptance of the null hypothesis means that, environmental cost, controlled by firm age and firm size, has significant effect on market share. It is also necessary to note that this effect of the variables of environmental cost on market share is either positive or negative. When considered individually, only firm size does not have a significant effect on market share, which implies that the size of the manufacturing companies is not a significant influencer of the relationship between environmental cost and market share of the sampled companies. The fact that firm age has a considerable influence implies that the age of the sampled manufacturing companies affects the effect of environmental cost on market share. In line with Nguyen *et al.*, (2017) and Wachira (2014), the maturity of manufacturing companies makes involvement in environmental protection activities a valuable asset to the companies.

The outcome of the analysis is in line with the study of Khan and Majid (2013), Muryoki and Benjamin (2013) and Durnevet *et al.*, (2015). They also observed a significant positive effect of environmental accounting on market share. The findings also give support to the signaling theory adopted by the study; in that involvement in environmental concerns and reporting same, sends a positive signal to the consumers of the selected manufacturing companies thus increasing their market share.

Table 3: Regression result for dependent variable market share

Variable		Market share		
		Pooled	Fe	Re
TRAED	Coeff.	0.01	0.00	0.00
	Prob.	0.04*	0.01*	0.01*
	T	2.09	2.56	2.47
	SE	0.00	0.00	0.00
MEDON	Coeff.	0.00	-0.01	-0.01
	Prob.	0.05	0.00*	0.00*
	T	0.68	-3.10	-3.14
	S.E	0.00	0.00	0.00
FS	Coeff.	0.03	0.00	0.00
	Prob.	0.00*	0.61	0.43
	T	4.80	0.51	0.79
	SE	0.01	0.00	0.00
FA	Coeff.	-0.05	-0.21	-0.16
	Prob.	0.04*	0.00*	0.00*

	T	-2.06	-4.49	-3.99
	SE	0.02	0.05	0.04
Constant	Coeff.	-0.07	0.40	0.31
	Prob.	0.18	0.00*	0.00*
	T	-1.35	5.42	4.69
	SE	0.05	0.07	0.06
	R-squared		0.87	
	F-stat		56.20	
	prob. >F		0.01*	
	Durbin Watson		1.99	
Hausman	Prob.		0.00*	

p < 0.00 (s)

*denotes rejection of the null hypothesis at 5% level of significance

5. Conclusion

Environmental cost is purported to be a signaling tool through which manufacturing companies share quality information on their involvement in preserving the environment through training of their employees on sustainable ways of production and by giving back through donations to the community. Based on the significant positive effect of environmental cost on market share, the study concludes that environmental cost controlled by firm size and firm age significantly affects the market share of the selected manufacturing companies throughout the study. The study contributes to the literature by examining performance from a long-term market-based approach and an emerging market perspective. It also assists business managers by providing them with information on the effect that the cost of engaging in environmental initiatives has on their market share since a positive significant effect has been established by the study. As such, monetary commitments to environmental initiatives possess the possibility of increasing their share of the market in their industry.

The study recommends that listed manufacturing companies should improve on their financial involvement in environmental activities in order to increase their market share owing to the observed positive significant influence from this study.

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