

THE USE OF ECO-ACCOUNTING SYSTEMS AND PERFORMANCE OF SMALL AND MEDIUM SCALE ENTERPRISES IN NIGERIA

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Abstract

The study examined utilization of eco-accounting systems and performance of small and medium scale enterprises in Bayelsa State. Two research questions and two hypotheses guided the study. The study adopted a correlational research design. The population consisted 341 registered small and medium scale enterprises in Bayelsa State. A sample size of 324 Proprietors were used for data analysis. The instrument was a self-developed questionnaire, titled utilisation of eco-accounting systems and performance of small and medium scale enterprises in Bayelsa State. The instrument was rated on four-point scale of Strongly Agree-4 points, Agree-3 points, Disagree-2 points and Strongly Disagree-1 point. The instrument was validated by the researcher's supervisor and two other experts in measurement and evaluation. Cronbach's alpha was used to determine the reliability of the instrument. This was done by administering the instrument on 50 small and medium scale enterprises proprietors in Rivers State who was outside the study area to obtain the reliability coefficient value of 0.94. Data was analyzed with simple linear regression. The results revealed a significant interplay between eco-accounting systems and utilization of environmental and economic costs. The study concluded that the utilization of eco-accounting systems positively associates with small and medium scale enterprises performance. The study therefore recommends among others that proprietors of small and medium scale enterprises should endeavor to utilize eco-accounting systems in order to enhance enterprise performance and avert business cessations in Bayelsa State.

Keywords: Utilization, Eco-accounting Systems, Performance, Small and Medium Scale Enterprises

Introduction

Eco-accounting systems is a combining form of representing environmental and green accounting systems which is a method of measuring in economic terms the performance of any type of organization in relation to the environment. Eco-accounting systems is the proper careful costing and assessment of intended usage of enterprises' resources, their benefits, liabilities and utilizing them positively to improve the performance of businesses economically and the physical business environment. Eco-accounting system is the identification of resources usage, measurement and communication of environmental costs, economic costs, environmental liabilities, environmental benefits, effects of the natural environment on a company in monetary terms and measurement of the influence a company has on the environment in physical terms (Frank, 2003; Lei et al., 2014; Igbodo et al., 2017).

Whereas, the term "performance" refers to superior results achieved by small and medium scale

enterprises at a specific moment in time compared to the previous period (Antonio et al., 2011). On the other hand, organizational performance is the ability of an organization to utilize its resources efficiently and generate outputs that are consistent with its goals and objectives and relevant for its clients and stakeholders (Charity, 2011). Performance of small and medium scale enterprises has been defined as the resultant of efforts in form of activities of the business enterprise which includes its strategy and operational activities, management of all segments of business enterprise such as the human resources, finance, production, marketing etcetera.

Business performance is the effort expended by an enterprise to achieve its stated objectives which include its employee's satisfaction, its customer's satisfaction, the societal satisfaction, its survival, sales growth, and return on investment, employment, and ultimately profitability. Small and medium scale enterprises on the other hand, are the basis for many nations' economic growth and development all over the world. The concept of small and medium scale enterprises has no universally accepted definition. Its definition varies from country to country, agency to agency, body to body, and even within sectors in countries based on employees, revenues or fixed assets.

Small and Medium Enterprises Development Agency of Nigeria (2017) defined small and medium enterprise on the following criteria: Small scale enterprises are business with ten to forty-nine people with an annual turnover of five to forty-nine million naira, while a medium scale enterprise has fifty to one hundred and ninety-nine employees with a year turnover of fifty to four hundred and ninety-nine million naira. Igbongidi (2015) defined it based on their roles as economic catalysts as: businesses owned, managed and controlled by one or a few persons influencing decision-making, possessing a relatively small share of the market, having low capital requirements, creating jobs to reduce poverty, and promoting economic development.

European Union Commission (2005) defined small enterprises as businesses with employment of fifty (50) people and asset and capital turnover of seven (7) to ten (10) million Naira only. While medium enterprises are businesses with employment of two hundred and fifty (250) persons with asset and capital turnover of forty (40) to fifty (50) million Naira only. Small and medium scale enterprises are life-wires and wheels of progress of economic growth of nations over the world. Global estimates have shown that 95% of the businesses are small and medium scale enterprises that contributes up to 60% of employment generation in private sector of the economy (Ayagari et al, 2011). The contribution of Small and medium scale enterprises to Gross Domestic Product (GDP) in Nigeria is low at 46.54%, to employment at 25% and export earnings at 2.7% compared to other countries like Singapore at 70% employment, 50% to GDP, Germany 79% to employment and 49% to GDP, China 75% to employment and 60% to GDP etc. Aminu and Shariff (2015) reported that in Singapore, 99% of companies are small and medium scale enterprises making contribution of 70% of the total employment and over 50% of GDP in the economy. In Germany, 99.7% of the total enterprises establishment are small and medium scale enterprises contributing 79% to employment and 49% to GDP. Similarly, in China, 99% of companies are small and medium scale enterprises contributing 75% to employment and 60% to GDP, etcetera (Rogo et al., 2017).

Small and Medium Enterprises Development Agency of Nigeria (2017) pointed out that just 15% of the newly established small and medium scale enterprises hardly survives the first five years of business operations in Nigeria. This poor improvement situation has led to some small and medium scale enterprises loosing businesses, business proprietors, increase in unemployment rate, low contribution to Gross domestic product (GDP) and export earnings for the country.

Statement of the Problem

Small and medium scale enterprises started well, enjoyed high patronage, increase sales volume and improved performance over the years. These entities include fast foods enterprises, boutiques, bakery production enterprises, transportation enterprises, supermarkets, information communication technology outfits, etcetera. However, recently, small and medium scale enterprises in Bayelsa State

are faced with the problems of continuous low patronage and gradual decline of quantity of sales volume that has led to business cessations. Perhaps this is as a result of lack of knowledge of good accounting systems utilization of proprietors of enterprises. If this ugly trend is not averted soon, no one can tell how the future and economy of the Bayelsa State will become soonest. It is against this background that the study seeks to investigate the utilisation of eco-accounting systems and performance of small and medium scale enterprises in Bayelsa State in terms of environmental costs and economic costs.

Purpose of the Study

The central purpose of the study was to examine the use of eco-accounting systems and performance of small and medium scale enterprises in Bayelsa State. Specifically, the study examine:

1. The extent to which the use of environmental costs enhances performance of small and medium scale enterprises in Bayelsa State.
2. The extent to which the use of economic costs enhances performance of small and medium scale enterprises in Bayelsa State.

Research Questions

The following research questions guided the study:

Research Question 1: To what extent does the use of environmental costs enhances performance of small and medium scale enterprises in Bayelsa State?

Research Question 2: To what extent does the use of economic costs enhances performance of small and medium scale enterprises in Bayelsa State?

Research Hypotheses

The following null hypotheses were formulated to guide the study:

Research Hypothesis 1: The use of environmental costs does not significantly enhance performance of small and medium scale enterprises in Bayelsa State.

Research Hypothesis 2: The use of economic costs does not significantly enhance performance of small and medium scale enterprises in Bayelsa State.

Literature Review

Costs are those things that are used as factors of production to produce goods and services (Samuel et al, 2005). The authors stated that costs are classified into short run and long run. Short run cost is defined as costs incurred in a very short period of the production process where some factors are fixed. While Long run cost is defined as costs incurred in the production process where all factors of production vary. Costs accounting system refers to a set of procedures, methods or techniques designed to achieve specified objectives in enterprises (Umeaka, 2010). Environmental costs refer to those investments and environmental maintenance expenses which are made in order to minimize the impact that businesses will have upon the environment (Mirela, 2012). Environmental costs are provided to achieve sustainable development, maintaining a favourable relationship with the community and pursuing effective and efficient environment conservation activities.

Economic costs are all those costs incurred by enterprises for production of goods and services employed which includes costs for payment of salaries and wages to labourers employed, prices for the raw materials, fuel and power used, rent for building hired for the production work, rate of interest on borrowed capital for doing business and the money rewards for other factors owned by the owner and employed in the business (World Bank Group2025). The entrepreneur pays salaries and wages to labourers employed, prices for the raw materials, fuel and power used, rent for building hired for the production work, and rate of interest on borrowed capital for doing business, the money rewards for other factors owned by the owner and employed in the business are all considered as part of costs

(World Bank Group 2025). The accounting costs which are contractual cash payments which the firm makes to other factors owners for purchasing or hiring the various factors are called explicit costs, while the normal returns on capital employed by the owner of business, salaries and wages paid for services, money rewards for other factors which business owners owns and employed in his own business are called implicit costs (Samuel et al, 2005).

Igbongidi (2015), Buba, et al (2018) and Pac (2015) stated that poor Small and Medium scale Enterprise performance has led to closure of businesses, losing of business, increase in the level of unemployment rate, low contribution to GDP and export earnings for the Country. The authors stated further that factors affecting small and medium scale enterprises performance are poor accounting systems, multiple taxation, epileptic electricity supply, lack of planning of entrepreneurs, improper assessment of the external business environment, low investment culture of customers, market failure, lack of management skills of entrepreneurs, poor transportation systems, unstable government policies, insincerity of some employees, entrepreneurs hoarding of information, lack of enabling infrastructural facilities, lack of effective coordinating agencies of Small and Medium scale Enterprise, political ambitions of entrepreneurs etcetera hinders SMEs performances among others. Kushnir et al (2010) also stated that only 2% of newly start-up small and medium scale enterprises continue to survive up to 5 years.

Theoretical Framework

Barney (2011) propounded the Resource-Based View (RBV) of a firm. The theorist used a model made up of strategic intelligence, competitive intelligence, artificial intelligence, business intelligence, knowledge management and business process management as independent variables, Small and Medium scale Enterprises performance as dependent variable, while environmental turbulence as moderating variable to explain that a firm's sustained competitive advantage stems from its unique and valuable resources and capabilities. Barney et al (2011), Barney et al (2001) and Chien (2014) stated that for a firm to achieve competitive advantage and performance, it depended on the bundles of resources at the disposal of the firm. In other words, the firm's resources/competencies/capabilities help the firm to attain competitive advantage and also superior performance. The firm's resources/competencies/ capabilities of firms hold some qualities that make them have value, rare, imperfectly imitable and not substitutable resources. These resources of a firm are divided into two; these are intangible resources (VRIN) and tangible resources (non-VRIN).

Method

Research Design

The study adopted correlational survey design, which is a form of research design that finds out the extent of relationship between two or more variables, and data from such variables that are in ratio or interval scale scores to create the possibility for the scores to be correlated (Nwankwo, 2016).

Population and Sample Procedure

The population consisted of three hundred and forty-one registered small and medium scale enterprises operating in Bayelsa State (Bayelsa State Ministry of Trade, Industry and Investment, 2024). A census sample size of three hundred and forty one (341) proprietors of the whole registered small and medium enterprises in Bayelsa State were used. Since the census sample size was manageable there was no sampling technique used.

Data Collection Instrument

The data collection instrument was a self-developed questionnaire titled "Utilisation of Eco-Accounting Systems and Performance of Small and Medium Scale Enterprises Questionnaire (UESPSMSEQ) in Bayelsa State". Each of the items were measured on four-point rating scale of

Strongly Agree (SA)-4 point, Agree (A)-3 point, Disagree (D)-2 point and Strongly Disagree (SD)-1 point. The instrument was divided into two separate sections A and B. Section “A” of the instrument dealt with demographic data respondents, while Section “B” of the instrument contains thirty (15) questionnaire items that sought for useful information on Utilization of Eco-Accounting Systems and Performance of Small and Medium scale Enterprises in Bayelsa State. Section B was further sub-divided into three containing five items each respectively for the independent and dependent variables. The items are distributed as follows: 1-5, 6-10, 11-15 for eco-accounting system, environmental costs, and economic costs respectively.

Instrument Validation

The validity of the instrument on the face, content and construct was done by the researchers’ supervisor and two other experts who are from the Department of Business Education and Measurement and Evaluation Unit of the Department of Counselling and Educational Psychology in the Faculty of Education in Niger Delta University. The comments, observations, corrections and suggestions of the supervisor and the other two experts during the process of validation of the instrument were used to draft and modify the final copy of the questionnaire to enhance the face, content and construct validity of the instrument. The outcome of the validation process from the supervisor and the other two experts gave birth to 15 items.

Instrument Reliability

The instrument was administered once to 50 proprietors of small and medium scale enterprises in Rivers State who were not part of the original population of the study. The scores obtained were subjected to Cronbach alpha analysis to obtain the reliability coefficient values for environmental costs 0.991, economic costs 0.889 and the entire instrument 0.94 respectively.

Data Collection Procedure

A total of 341 questionnaires were distributed to the respondents. A total of 324 Questionnaire were retrieved for data analysis, yielding 95% successful retrieval. While 17 copies were not retrieved for the analysis yielding 5% unsuccessful retrieval. The questionnaire was retrieved after one-day interval.

Data Analysis

The IBM-Statistical Package for Social Sciences (SPSS) was used for data analysis. Simple Linear Regression statistical tool was used to answer research questions and test hypotheses.

Result

Research Question 1: To what extent does the use of environmental costs enhances performance of small and medium scale enterprises in Bayelsa State?

Table 1: Model Summary of the extent to which the use of environmental costs enhances performance of small and medium scale enterprises in Bayelsa State.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.998 ^a	.997	.995	7.02386

a. Predictors: (Constant), ECO-ACCOUNTING

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	29669.331	1	29669.331	601.390	.002 ^b
	Residual	98.669	2	49.335		
	Total	29768.000	3			

a. Dependent Variable: ENVIRONMENTAL COST

b. Predictors: (Constant), ECO-ACCOUNTING

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-11.105	5.142		-2.160	.163
	ECO-ACCOUNTING	1.137	.046	.998	24.523	.002

a. Dependent Variable: ENVIRONMENTAL COST

Table 1 reveals that 324 respondents' responses were analyzed to obtain a correlation coefficient (r) of .998, implying a positive strong relationship between eco-accounting system and environmental cost of small and medium scale enterprises in Bayelsa State. The positive relationship implies that an increase in eco-accounting system will result to an increase in environmental cost of small and medium scale enterprises. The r^2 is .997, therefore the variation in environmental cost of small and medium scale enterprises that can be accounted for by eco-accounting system in Bayelsa State is $.997 \times 100$ which is 99.7%. This means the influence of eco-accounting system on the environmental cost of small and medium scale enterprises in Bayelsa State is 99.7%.

Research Question 2: To what extent does the use of economic costs enhance performance of small and medium scale enterprises in Bayelsa State?

Table 2: Model Summary of the extent to which the use of economic costs enhances performance of small and medium scale enterprises in Bayelsa State.

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	1.000 ^a	.999	.999	2.83537

a. Predictors: (Constant), ECO-ACCOUNTING

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	30373.921	1	30373.921	3778.175	.000 ^b
	Residual	16.079	2	8.039		
	Total	30390.000	3			

a. Dependent Variable: ECONOMIC COST

b. Predictors: (Constant), ECO-ACCOUNTING

Coefficients ^a							
	B	Std. Error	Standardized Coefficients Beta	T	Sig.		
(Constant)		-12.193		2.076		-5.874	.028
ECO-ACCOUNTING		1.151		.019	1.000	61.467	.000

a. Dependent Variable: ECONOMIC COST

Table 2 reveals that 324 respondents' responses were analyzed to a obtained correlation coefficient (r) of 1.000, implying a positive perfect relationship between eco-accounting system and environmental cost of small and medium scale enterprises in Bayelsa State. The positive perfect relationship implies that an increase in eco-accounting system will result to an increase economic cost of small and medium scale enterprises. The r^2 is .999, therefore the variation in economic cost of small and medium scale enterprises that can be accounted for by eco-accounting system in Bayelsa state is .999 x100 which is 99.9%. This means the influence of eco-accounting system on the economic cost of small and medium scale enterprises in Bayelsa State is 99.9%

Research Hypothesis 1: The use of environmental costs does not significantly enhance performance of small and medium scale enterprises in Bayelsa State.

Table 3: Test of Significance of Simple Linear Regression on relationship between the use of economic costs and performance of small and medium scale enterprises in Bayelsa State.

Variable	N	df	R	p-value or sig	Alpha level	Decision
Eco-accounting and Environmental cost	324	322	.998	.002	0.05	Sig p<0.05

Table 3 reveals the test of significance of simple linear regression correlation of the relationship between eco-accounting system and environmental cost among small and medium scale enterprises in Bayelsa State with observed probability value (p-value) or sig of .002 at 0.05 level of significance with

322 degrees of freedom, which is less than the chosen alpha level, r at $322 = .998$, $p < 0.05$). Since the p -value is less than the chosen alpha level, the null hypothesis of “There is no significant relationship between eco-accounting and environmental cost among small and medium scale enterprises in Bayelsa State is rejected. Hence the alternative hypothesis is upheld. Thus, there is a significant relationship between eco-accounting and environmental cost among small and medium scale enterprises in Bayelsa State

Research Hypothesis 2: The use of economic costs does not significantly enhance performance of small and medium scale enterprises in Bayelsa State.

Table 4. Test of Significance of Simple Linear Regression on relationship between the use of environmental costs and performance of small and medium scale enterprises in Bayelsa State.

Variable	N	df	r	p-value	Alpha level	Decision
Eco-accounting and Economic cost	324	322	1.000	.000	0.05	Sig $p < 0.05$

Table 4 reveals the test of significance of simple linear regression correlation of the relationship between eco-accounting system and economic cost among small and medium scale enterprises in Bayelsa State with observed probability value (p -value) or sig of .000 at 0.05 level of significance with 322 degrees of freedom, which is less than the chosen alpha level, r at $322 = 1.000$, $p < 0.05$). Since the p -value is less than the chosen alpha level, the null hypothesis of “There is no significant relationship between eco-accounting and economic cost among small and medium scale enterprises in Bayelsa State is rejected. Hence the alternative hypothesis is upheld. Thus, there is a significant relationship between eco-accounting and economic cost among small and medium scale enterprises in Bayelsa State

Discussion

The findings of the study showed that there is a significant relationships eco-accounting systems and environmental cost, economic cost respectively on the performance of small and medium scale enterprises in Bayelsa State.

Research Question One Investigated how does the utilisation of environmental costs enhance the performance of small and medium scale enterprises in Bayelsa State? The results revealed a correlation coefficient (r) of .998, implying a positive strong relationship between eco-accounting system and environmental cost of small and medium scale enterprises in Bayelsa State. The positive relationship implies that an increase in eco-accounting system will result to an increase environmental cost of small and medium scale enterprises. The r^2 is .997, therefore the variation in environmental cost of small and medium scale enterprises that can be accounted for by eco-accounting system in Bayelsa state is $.997 \times 100$ which is 99.7%. This means the influence of eco-accounting system on the environmental cost of small and medium scale enterprises in Bayelsa State is 99.7%. The findings corroborated the findings of (Mirela 2012) that environmental costs is a method of measuring in economic terms the performance of any type of organization in relation to the environment. The result from Hypothesis one test of significance of simple linear regression correlation analysis of the relationship between eco-accounting and environmental cost among small and medium scale enterprises in Bayelsa State was significant at probability value (p -value) or sig of .002 at 0.05 level of significance with 322 degrees of freedom, which is less than the chosen alpha level, r at $322 = .998$, $p < 0.05$). Since the p -value is less than the chosen alpha level, the null hypothesis of “There is no significant relationship between eco-accounting and environmental cost among small and medium scale enterprises in Bayelsa State is rejected. Hence the alternative hypothesis is upheld. Thus, there is

a significant relationship between eco-accounting system and environmental cost among small and medium scale enterprises in Bayelsa State

Research Question Two Investigated how does the utilisation of economic costs enhance the performance of small and medium scale enterprises in Bayelsa State? The results revealed a correlation coefficient (r) of 1.000, implying a positive perfect relationship between eco-accounting system and economic cost of small and medium scale enterprises in Bayelsa State. The positive perfect relationship implies that an increase in eco-accounting system will result to an increase economic cost of small and medium scale enterprises. The r^2 is .999, therefore the variation in economic cost of small and medium scale enterprises that can be accounted for by eco-accounting system in Bayelsa state is $.999 \times 100$ which is 99.9%. This means the influence of eco-accounting system on the economic cost of small and medium scale enterprises in Bayelsa State is 99.9%. The findings corroborated the findings of World Bank Group (2025) that economic costs are all those costs incurred by enterprises for production of goods and services employed which includes costs for payment of salaries and wages to labourers employed, prices for the raw materials, fuel and power used, rent for building hired for the production work, rate of interest on borrowed capital for doing business and the money rewards for other factors owned by the owner and employed in the business. The results from Hypothesis Two test of significance of simple linear regression correlation analysis of the relationship between eco-accounting and economic cost among small and medium scale enterprises in Bayelsa State was significant at probability value (p-value) or sig of .000 at 0.05 level of significance with 322 degrees of freedom, which is less than the chosen alpha level, r at $322 = 1.000$, $p < 0.05$). Since the p-value is less than the chosen alpha level, the null hypothesis of "There is no significant relationship between eco-accounting and economic cost among small and medium scale enterprises in Bayelsa State is rejected. Hence the alternative hypothesis is upheld. Thus, there is a significant relationship between eco-accounting system and economic cost among small and medium scale enterprises in Bayelsa State.

Conclusion

Based on the findings of the study, the study concluded that utilization of environmental cost, and economic cost positively enhances performance of small and medium scale enterprises in Bayelsa State.

Recommendations

- Based on the findings and conclusion of the study, the study recommended the following:
1. Proprietors of small and medium scale enterprises should utilise various types of costs to enhance performance of enterprises in Bayelsa State.
 2. Entrepreneurs should utilise eco-accounting systems to avert business cessations in Bayelsa State.
 3. Bayelsa State Government should unifying taxation policies to reduce excessive multiple taxes paid by enterprises to strengthen their financial growth.
 4. Further research works be carried out on the performance of small and medium scale enterprises.

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