APPLICABILITY OF ENVIRONMENTAL MANAGEMENT ACCOUNTING PRACTICES IN NIGERIAN UNIVERSITIES: LESSON FROM LITERATURE

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Abstract

Stakeholders are paying increasing attention to how well organisations respond to environment-related issues and communicate with them. While efforts are being made by companies in the industrial sector by adopting Environmental Management Accounting (EMA), little is known about how service organisations particularly universities in Nigeria embrace the adoption of EMA in their operations. This exploratory study reviews extant literature to make case for Nigerian universities to embrace EMA and report on environmental concerns arising from their activities. The main objective of the study, therefore, is to find out whether or not EMA can be adopted by Nigerian universities. If so, what barriers mitigate its adoption? Based on a literature review about universities in other climes that have embraced EMA and the experience of the lead author as an erstwhile Bursar of a Nigerian university, it is concluded that Nigerian universities have the economic and human potential to adopt EMA. The barriers to its adoption are extrapolated to include lack of awareness of environmental costs, lack of top management support, absence of institutional pressure, environmental policy, and a robust accounting system. The study recommends awareness creation via seminars and workshops for top management staff and other staff of the universities, incorporating environmental accounting courses in the curriculum of universities by the National Universities Commission (NUC), as well as integrating them into current accounting systems of the universities, accounting package such as SAGE 50/100 that can identify and classify the environmental costs and attach them to responsibility centres.

Keywords: Accounting systems, environmental costs, environmental management accounting, Nigerian universities, responsibility centres

1. Introduction

The purpose of accounting is to provide credible financial information to users for economic decision-making. External users rely on accounting information provided by Financial Accounting while Management Accounting provides information to internal users. Unfortunately, these conventional financial and management accounting practices have failed to provide environment-related information that can help in enhancing organisational financial and environmental performance (Chang, 2007). This is because they fail to capture environmental costs and allocate them to responsible processes/products but instead lump them in general overheads leading to costs inefficiency.

To avoid this inefficiency, many companies now embrace Environmental Management Accounting (EMA) which helps them to trace and track environmental costs (pollution, water, and energy consumption) which are on the increase. EMA is an accounting system where in addition to other costs, environmental costs are identified, collected, measured, and analysed and such information is communicated to stakeholders which enhances the environmental responsiveness of the organisation. Universities as service organizations are citadels of learning whose operational activities also impact the environment especially water, paper, and energy consumption and waste treatment. However, little is known about how universities in emerging economies like Nigeria manage these costs using an environmental management accounting system.

Quite a few studies have been conducted in both developed and developing countries on the adoption of EMA in Universities. For instance, Herremans and Allwright (2000) provided evidence on the adoption of EMA by North American Universities; Chang (2007) reported implementation of EMA in Universities in Australia and Taiwan; Chang and Deegan (2008) showed the application of EMA by an Australian University; Ambe, C.M, Ambe, Q.N. and Ganda (2015) also provided evidence of EMA in South African University. The outcry by the Vice-Chancellor of the University of Lagos on increasing monthly electricity tariff during the covid-19 lockdown of 2020 calls for attention to environmental costs borne by Nigerian universities. He said that the university's monthly energy bill was 62 million naira at a time students were home due to the Covid-19 pandemic and lamented that the bill might rise to 90 million naira when students resumed (Edema, 2020).

This can be a serious concern for the management of Nigerian universities and their experience may not be different. Despite this concern, there is little evidence of studies on the application of EMA by Nigerian universities to capture the environment-related costs. This exploratory study, therefore, seeks to determine the possibilities of embracing EMA and integrating it with the current accounting system of Nigerian universities. Secondly, the study seeks to identify the barriers to adopting EMA by universities (lessons drawn from previous studies) and make suggestions to universities to enable them to embrace EMA. This study asks the question, can EMA be adopted in Nigerian universities? The findings have implications for the future regulatory reform agenda by the NUC.

2. Review of Related Literature

Environmental Management Accounting (EMA) is difficult to define as it has no single generally accepted definition. Even in terms of terminology, there is no consensus as it is at times called various names; Environmental Accounting, Full Cost Accounting, Total Cost Accounting and so these can be used interchangeably. In terms of definition, Schaltegger and Burritt (2000) define environmental accounting as that which "deals with activities, methods, and systems, recording, analysing and reporting environmentally induced impact in a defined ecosystem". This definition is holistic and covers both internal and external impacts an organisation has on the environment and is therefore too wide for use in this study.

United Nations Department for Sustainable Development UNDSD (2001) defines EMA as a combined approach that provides for the transition of data from financial accounting and cost accounting to increase material efficiency, reduce environmental impact and risk, and reduce costs of environmental protection. Jasch (2003) defines EMA as a system that combines cost and management accounting with financial accounting which enables the "transition of data from financial accounting, cost accounting, and material flow balances to increase material efficiency, reduce environmental impact and risk and reduce costs of environmental protection". This definition combines both the financial and physical components and is at the firm level, not the national or global level. The emphasis seems to be placed more on the industrial sector than on service organisations.

IFAC (2005) in its International Guidance Document on Environmental Management Accounting defines EMA as "the management of environmental and economic performance through the development and implementation of environment-related accounting systems and practices. While this may include reporting and auditing in some companies, environmental management accounting typically involves Life Cycle Costing, Full Cost Accounting, benefits assessment and strategic planning for environmental management". This definition encompasses both monetary and physical information and emphasis is placed on the physical information relating to the flow of energy, water, materials, and waste. It however applies to both manufacturing industries and service organisations.

Chang and Deegan (2008) see EMA as the process of identifying, measuring, and allocating environmental costs and integrating these costs into business, identifying liabilities as part of general-purpose financial statements. While this definition has some elements of the other definitions, it is more appropriate for this study. This is because universities are service-oriented entities and should be able to report on their environmental costs and liabilities and communicate with their stakeholders which promotes their sustainable development.

Environmental costs have no standard definition as costs are classified depending on the various interests (Jasch, 2003). Costs can be classified as environmental protection expenditure (waste disposal and emission treatment, environmental management, and pollution prevention), costs of waste materials (materials input not turned into marketable outputs), and cost of wasted capital and labour. The addition of all these gives total environmental cost. IFAC (2005) categorises environmental costs into; material costs of product outputs; material cost of non-product outputs; cost of wastes and emission control costs; prevention and other environmental management costs; research and development costs; less tangible costs; non-monetary includes materials flow, water, energy, wastes, and emissions

Environmental Costs associated with Universities

Most of the environmental management accounting practices have focused more on the industrial sector which is thought to account for a more serious impact on the environment (land, water, air, and energy). While this may be true, Ditz, Ranganathan and Banks (1995) argued that every organisation including service industries has an impact on the environment.

Chang (2007) identifies the following costs in respect of universities. Energy, water, paper, and waste and had documented that these environmental costs account for 2% of the universities operating expenditure in Australia. Universities also account for the high consumption of water, energy, paper, and waste (solid wastes emanating from canteens, hostels, and offices).

University activities impact negatively the environment. For instance, universities by their operations contribute to the consumption of water, energy, paper, and other waste generation which costs are classified as environmental costs (IFAC, 2005). It has been found that a university is the greatest consumer of water, energy, and paper in any community that it is found (Chang, 2007). Despite this, little is known about how the universities accounting system captures and reports these environment-related costs, and whether or not EMA is adopted. It is known from the very few studies available on universities in developed countries that the use and application of EMA help to reduce environmental impact and minimise environmental costs (Chang, 2007).

Universities and Current Accounting System in Nigeria

To the National Universities Commission (NUC) website, there are 170 universities in Nigeria, comprising federal universities (43), state universities (48), and private universities

(79) with a total student population of 1.7 million undergraduates and 0.23 million postgraduates while academic staff population is 61,000 (www.statista.2020). Even as the number of non-academic staff remained elusive from the statistics, one can imagine from this population, the quantity of water, paper, energy consumed, and wastes generated by the university system which suggests that a robust accounting system can capture these costs is necessary.

The universities are supposed to have all migrated to International Public Sector Accounting Standards (IPSAS) accounting system to generate their reports however; the environmental costs of energy, water, and waste are treated and written off in "administrative expenses" as IPSAS does not provide for separation of these environmental costs. There is therefore the need to embrace EMA and integrate it into universities' current financial accounting system. Under the current financial accounting system of the universities, environment-related costs are hidden in "*overheads*" and are not allocated to the responsibility centres. If EMA is adopted, these costs will be allocated to responsibility centres (Faculties, Departments, and Academic Offices) which makes it easier to monitor and control.

There is an almost complete lack of knowledge about the environmental costs arising from the university activities at the moment. This stems from the fact that the current accounting system does not provide that focus. EMA practice will disaggregate the costs and top management attention can be drawn to it especially now that environmental costs are on the rise across the globe and international best practice demands that organisations be responsive to their environment. Embracing EMA is an indication that the university is an organisation whose service is environmentally-friendly. This may increase the student population (potential students are stakeholders who may demand that they go to environmentally sensitive universities).

Under the present legal system, there is no compulsion in providing environmental reports. In the future, pressures from stakeholders including regulatory authorities may force universities to provide environmental reports in their annual reports and accounts. Embracing EMA when the environmental report is voluntary makes it easier to migrate when it is made compulsory by law or other regulatory bodies. Universities are citadels of learning. It imparts knowledge that results in changes in environmental behaviour of both staff and students through learning and research. Some universities have included environmental accounting in their school curriculum and others in environmental sciences. Adopting EMA leads to the provision of environmental information which can signify that the university "practices what it preaches"- the theory is married to practice.

Review of Prior Studies

Herremans and Allwright (2000) examined the extent of environmental responsiveness of a random sample of 50 universities across North America. Using a survey research design, the study identified energy management, dry and hazardous waste treatment, and a lack of centralized reporting function as the major challenges which made it difficult to identify the salient attributes of an effective EMA. The study recommended that for an effective EMA to exist, a centralized body must be established with the authority to coordinate the various disparate activities namely: recycling departments, facility services, and plant maintenance. The study showed that EMA had been adopted by several universities across America. However, over 20 years after, empirical evidence on the adoption of EMA by Nigerian universities is limited indicating not only a knowledge gap but also a lackadaisical approach to issues of eco-efficiency and environmental sustainability.

Chang (2007) also sampled five universities comprising four from Australia and one from Taiwan to determine the extent to which those universities adopt EMA or the reasons

for non-adoption. Questionnaires and interviews were used to collect data from the universities. The results show that one of the largest universities in Australia (RMIT University), has an environmental policy in place since 1994, issues environmental sustainability information in its annual report since 2000, and uses a standard SAP accounting information system where the general ledger allows for automatic generation of total costs for electricity and water but used combined stationery and printing to account for paper costs. The cost of waste is captured under the service contract. The accounting system records only the monetary aspect of the environmental costs (Electricity, water, and waste). Furthermore, the costs of electricity, water, and waste removal are combined and recorded as facility expenses overheads for the whole university. The overhead is allocated to responsibility centres at a single occupancy charge on basis of floor space occupied. Also, RMIT pays invoices for papers separately as ordered by academic schools and the costs of the papers are allocated to academic schools. The results also indicate that a General Manager in charge of properties is held responsible and accountable for electricity, water, and waste disposal costs. The University spends over 6 million Australian Dollars on energy and water which accounts for 2% of its total annual operating expenditure.

Similar findings apply to the other four universities except that it is only electricity for which the managers are held responsible. Nobody is held responsible for water and waste disposal costs. The universities charge their various faculties and administrative divisions for their electricity through allocation in their annual budgets. The study results also identified five major barriers to the full application of EMA in universities. These include the low priority of accounting for environmental costs; low physical environmental uncertainty and difficulties in collecting and allocating environmental costs; lack of institutional pressure to force the university to report on environmental matters; lack of incentives from leaders to manage environmental costs and lack of advocacy from university leadership; financial constraints as to whether the benefits from EMA application outweigh the costs and whether the necessary human resources are available to implement EMA. Again, while efforts are being made in this Ph.D. thesis to seek methods of improving existing EMA practices in Australia and Taiwan, the present study is making a case for Nigerian universities to embrace EMA.

Chang and Deegan (2008) used a case study approach to investigate the challenges of implementing EMA in an Australian university. This study shows that perceived institutional pressures and a low profile of accounting for the environment, and management's attitudes influence the adoption of EMA within the university. This study demonstrates that there is a general lack of consideration given to the management of environmental costs and related cost savings, due partly to a perceived lack of appreciation by top management of the extent of environmental costs being incurred. Furthermore, in the absence of relevant environmental cost information, although environmental sustainability itself is promoted as important, an effort to improve internal environmental accountability from an accounting perspective is lacking.

Ambe, Ambe and Ganda (2015) examined how Tshwane University of Technology, South Africa manages, account and reports her environmental costs. The study adopted exploratory research techniques and obtained data via documentary and interviews using a semi-structured questionnaire. The results indicate that the implementation of EMA and general governance for environmental responsibility and accountability is extremely weak and identified institutional pressures, a low profile of accounting for the environment, and management's attitudes as barriers to the adoption of EMA in the University. The study suggested a general ledger model using activity-based costing and an action plan for the implementation of EMA.

These studies are based on experience in Australia, Taiwan, North America, and South Africa where universities have made attempts at embracing EMA. However, there is a

dearth of such studies in Nigeria. Based on the review of prior studies and the experience of the lead author, having managed university finances at top-level management (as Bursar) for over 5 years, the following barriers are extrapolated as militating against the adoption of EMA by Nigerian universities;

i. Lack of awareness about environmental management accounting
ii. Inability to monitor environmental costs - electricity, water, and wastes
iii. No clear-cut policy on environmental sustainability
iv. Absence of external pressure on the university to be environmentally responsive
v. Current accounting practice of lumping environmental costs (energy, water, and waste costs) as administrative overheads.

3. Methodology

The study adopted archival research methodology and gathered information from secondary sources such as journal articles, textbooks, and websites of relevant organizations. This research strategy is appropriate for the current study as a review of extant literature to draw inferences on the applicability of EMA in Nigerian universities.

4. Discussion of Findings

Universities in Nigeria are not aware of their environmental costs of water, energy, paper consumption, and solid waste treatment costs. This is probably because they are taken as routine. Now that attention is being given to issues of climate change and ecological costs are becoming increasingly prohibitive, university leadership should pay more attention to these costs so that they can be monitored and controlled. No university in Nigeria may probably know which one of its faculty buildings consumes more water or light. As these costs have not been brought to management's attention, there is no environmental policy put in place. This is unlike what obtains in universities in Australia as documented by Chang (2007) where RMIT University, for instance, has an environmental policy and records environmental costs and allocates them to responsibility centres. Furthermore, no specific officer in Nigerian universities is tasked with the responsibility of monitoring energy, water, and waste costs. These costs have not been segregated to highlight their impacts so enough attention has not been drawn to them. This is inconsistent with Chang (2007) who documents that RMIT University in Australia assigns this responsibility to the General Manager in charge of the property.

There are also no pressures on the part of universities in Nigeria to report on their environmental performance nor is there an accounting system to capture these costs. While this is so for now, regulatory pressures may come in the future if the awareness of these costs is heightened. For instance, the Nigerian Universities Commission (NUC) might pressure universities to include their environmental responsiveness as part of university ranking.

5. Conclusion and Recommendations

From the review of extant literature, it is concluded that Nigerian universities have yet adopted EMA to identify, capture, trace, and track environmental costs relating to energy, water, and waste even though they have the economic and human capabilities to do so. Adopting EMA in Nigerian universities has the prospect of improving efficiency in energy and water consumption if the identified barriers to the adoption of EMA are addressed. It is therefore recommended that:

a. University councils should embrace the use of EMA by first developing an environmental policy
b. University regulatory authorities like NUC should include the environmental performance of universities in the ranking of universities. This forms a good source of external pressure on the university to be environmentally responsive.

c. Universities should assign a specific officer in the registry department to monitor electricity, water, and waste costs, in the short run, while in the long run establish a department of the environment whose head should take responsibility for these costs.
d. Universities should create awareness about the impact their operations have on the environment e.g., including environmental accounting in the school curriculum or organising seminars/workshops for staff.
e. Existing universities' accounting systems should be developed such that the cost of electricity, water, stationery, and printing costs are allocated to faculties and administrative departments for ease of monitoring. SAGE 50/100 might be very useful in this area.

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