

DEVELOPMENTS IN ACCOUNTING EDUCATION AND RESEARCH: THE ENVIRONMENTAL ACCOUNTING - AN INSIGHT

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ABSTRACT: *The growing concern of civil society and the general public regarding companies' environmental impacts creates a demand for measuring, monitoring, and screening, comparing and benchmarking the environmental performance of companies. Various approaches to this effect are used by companies; these approaches could be unambiguously regarded as a factor which, in the present conditions, influences prosperity of the company. The paper examined the overall concept of Environmental Accounting and as well identifies the specific companies' approach to it. The study used the exploratory research designed to explain and highlight the importance of the concept of environmental accounting and the various approaches adopted by companies to recognize it. Secondary sources of data were employed; and very recent important literatures on environmental accounting were used to achieve the objective of the study. The research concluded that, Environmental accounting is an important tool for understanding the values and roles played by the natural environment in the economy. It recommended that pragmatic efforts should be taken by individual firms and companies, civil societies and organizations, regulatory bodies, policy makers and professional accounting bodies to ensure that environmental accounting is properly introduced, recognized and included in final accounting and financial statements needed by users of such information, which will go a long way in addressing the resources shortages needed to address the enormous problems and costs imposed by pollution and resources degradation.*

KEYWORDS: Accounting Education, Environmental Accounting,

INTRODUCTIONS

The field of accounting in recent has made significant impact on social, economic and political development in our environment. Of these developments, areas of cost recognitions, recording and interpretation has impacted greatly on the decision-making process of the operation of business and appreciation of the value of the surrounding environmental factors. Environment is a rich heritage handed over to us by previous generations. The present civilization has involved us in varied activities. Many of these activities generated waste with potential constituents (Bassey, Effiok & Eton, 2013). The ultimate disposal of the waste lead to environmental pollution in many parts of the world, the magnitude of pollution of the environment has already reached an alarming level (Pramanil, 2007). This has therefore put organizations under increased pressure to not only reduce the costs impact of this pollution, but also to minimize the environmental impacts on their operations. Unfortunately, a substantial impact on the environment has left many parts of the world with an enormous economic, social, and environmental legacy. This pressure on organisations is coming from a broad group of stakeholders, including regulatory bodies, employees, customers, investors, non-government organization and finance provider (Abiola & Ashamu, 2011)



Organisations by this are to recognise the costs of these pollutions as well as all other costs associated. The process of forcing the organisations to recognize environmental and costs is known as internalizing externalities (Amokaye, 2012). Amokaye further asserts that, cost internalization will only be achieved if there is governmental regulation that forces such polluters to internalize. This as a result has put pressure on organisations to institutes laws and regulations promulgated to promote sustainable development and ensure effective and efficient enforcement and compliance systems. This pressure has generated the need to account for environment. Accounting for environment helps in accurate assessment of costs and benefits of environmental preservation measures of companies (Schaltegger & Burritt, 2000). It provides a common framework for companies to identify and account for past, present and future environmental costs to support managerial decision-making, control and public disclosure (KPMG, 2005). This study considers the Nigerian perspective and examines the concept of Environmental Accounting and as well identifies the various approaches of environmental accounting by companies. On the overall, the concept was first considered to set the ball rolling for educational discourse.

CONCEPTUAL CLARIFICATION

Accounting Education

Accounting field involves the impartation of knowledge in accounting principles and standards to individuals. It could also take the form of contributing to a body of an established knowledge or procedure (Okolie and Amos, 2014). It is thus out to inform, review a set of process and inculcate in the trainee, a high standard of professional education as demanded by his calling (Ibironke, 2003).

Inanga, (2000), Wintoki, (1997), Ogbomo, (1997), as cited in Okolie and Amos, (2014), summarises the following as objectives of accounting education: to ensure that Nigerian accountants are of comparable standard with their counterparts across the world; to guarantee that each qualified accountant is well trained, acquires sufficient skills required of a professional accountant and that the skills are demonstrated in his operations; to maintain and sustain the dignity and respect of the Nigerian accountancy profession; to ensure that each accountant can justify the standard of the certificate awarded; to produce enough manpower to man accounting jobs; to produce professionals with sound training to meet the shortage in the country of competent accountants; to establish and enhance the profession as it relates to the application and developments of accounting disciplines, to develop and upgrade the professional skills, and competence of members; to enable them participate actively in an environment that is business oriented and complex and to catch up with technological advancement in the areas of accounting and financial management, possibly through financial display of statistical information that has relevance to the society. These objectives are achieved through ensuring that accounting data are identified are appropriately recognised, measured and recorded and interpreted to users.

Environmental Accounting

Environmental protection has become a key issue all over the world these days. Several factors and forces are responsible for destruction of environment. Of these, growing hazardous industrialization is a major culprit. The issue of environmental responsibility and

the sustainable industrial development has given birth to environmental accounting and reporting.

Studies have shown that environmental accounting is relatively a recent entrant in the domain of accounting. It is a process of identification, measurement and communication of information in the environmentally responsible performance of an entity to permit economic decision. In the other words, Environmental accounting forms that part of accounting that deals with environmental concerns.

The concept of environmental accounting has given room for authors to variously define it. This study examines the following views as relates to the meaning of environmental accounting. Uwuigbe (2011) defined environmental accounting as an inclusive field of accounting that provides reports for both internal uses, generating environmental information to help make management decisions on pricing, controlling overhead and capital budgeting, and external use; disclosing environmental information of interest to the public and to the financial community. Steele & Powell (2002) sees environmental accounting as that aspect of accounting which has to do with the identification, allocation and analysis, of material streams and their related money flows by using environmental accounting systems to provide insight in environmental impacts and associated financial effects. Leontief (1970) viewed that, it is an accounting system that can be used to support the National income accounting, Financial accounting, and or internal business managerial accounting. Environmental or green accounting involves measuring the environmental performance of an organization, including government bodies and manufacturers in economic terms. It is a type of cost benefit analysis system, which relates to the monetary assessment of environmental costs associated with the development and operational activities and the economic benefits of good environmental management (United Nations, 2000). Peskin (1989) in his own part viewed environmental accounting as a tool that can be used to determine less tangible and external costs for projects and activities, such as bio-diversity, human health and aesthetic values. It is also aimed at broader issues such as implementing sustainable business practice to conserve natural resources for future generations.

In addition to the above definitions, the International Federation of Accountants (1998) defined environmental accounting as the management of environmental and economic performance through the development and implementation of appropriate environment related accounting systems and practices. While this may include reporting and auditing in some companies, environmental accounting typically involves life cycle costing, full-cost accounting, benefits assessment, and strategic planning for environmental management.

A more distinctive definition was provided by the United Nations Expert Working Group (2000) on environmental accounting, which highlighted both the physical and monetary sides of environmental accounting. This definition was developed by international consensus of the group members, representing 30 nations. According to them, Environmental accounting involves the identification, collection, analysis and the use of two types of information for decision-making: i) Physical information on the use, flow of energy, water and materials (including wastes) and

ii) Monetary information on environment-related costs, earnings and savings.

Objectives of Environmental Accounting

Environmental Accounting is required to fulfill a lot of demands from different stakeholders. However, for academic reasons, the following basic objectives can be identified on the logical ground (Alok, Nikhil & Bhagaban, 2011):

1. To aid in discharging organization's accountability and increase its environmental transparency;
2. To determine the concept of environment and the company's relationship with the society in general and the environmental pressure group in particular. This helps an organization seeking to strategically manage a new and emerging issue with its Stakeholders;
3. To make companies to be environmentally friendly. By upholding friendly image, companies may be successful in attracting fund from 'green' individuals and groups;
4. To encourage consumers to purchase the environmentally friendly products, i.e., green products. Companies, thus producing green products may take competitive marketing advantage by disclosing the same;
5. To encourage companies to show commitments towards introduction and change and thus appear to be responsive to new factors;
6. Green reporting may be used to combat potentially negative public opinions;
7. By cultivating the enlighten approach of environmental accounting, companies can increase their image of being enlightened to the outside world and this, can be regarded as enlightened companies.

Scope/Area of discipline of Environmental Accounting

The scope or areas of discipline as identified by Daferighe (2010) are as follows: (i) National Environmental Accounting, (ii) Global Environmental Accounting and (iii) Corporate Environmental Accounting.

National Environmental Accounting

National Environmental Accounting is an accounting approach that deals with economics on a national level. It is a macroeconomic measure that looks at the use of natural resources and the impacts of national policies on the environment. (US EPA, 1996; Jasch, 2006)

Referred to as green accounting or integrated economic and environmental accounting is a modification of the System of National Accounts to incorporate the use of depletion of natural resources. The System of National Accounts (SNA) is the set of accounts which national governments compile routinely to track the activity of their economies. SNA data are used to determine Gross Domestic Product (GDP), Gross National Product (GDP) etc. These indicators are used for policy analysis and economic monitoring purposes. The economic accounts are calculated across countries using a standard format developed by the United Nations Statistical Division (UNSTAT) for easy of comparison. However, there have been calls for reform of SNA as they do not include the full economic value of environmental

resources or the role they play in productive activity. Daferighe (2010) indeed identified some of these missing elements as follows:

Environmental Expenditures: Expenditures to protect the environment from harm, or to mitigate that harm, cannot be identified from the data in the accounts. Such expenditures include costs incurred to prevent environmental harm such as pollution control equipment purchased by factories. They also include the costs of remedying that harm; medical expenses or replacement of property destroyed in landslides caused by deforestation. These expenditures are already included in the income accounts along with all other intermediate or final consumption. However, they cannot be disaggregated to highlight the costs incurred to prevent or mitigate environmental degradation.

Consumption of Natural Capital. The SNA treats the gradual depletion of physical capital machine and other equipment as depletion rather than income, in accordance with conventional business accounting principles. However, the depletion of natural capital forests, in particular is accounted for as income. Thus, the accounts of a country which harvests trees very quickly will show quite high income for a few years, but nothing will show the destruction of a productive asset, in the forest. Those of us with interest in the environmental accounting are of the view that the depletion of natural capital should be accounted for in the same way as other productive assets. Integration of sustainability and ecosystem valuation into economic growth has increasingly focused on 'greening' the national income accounts. Sustainable development serves as the stated objective of many development initiatives, most recently the Millennium Development Goals (MDG), but ecosystems are still deteriorating worldwide, and with them, the capacity to support human wellbeing. One of the primary motivations for environmental accounting efforts was the concern that rapid economic growth in some countries was achieved through liquidation of natural capital a temporary strategy that creates no basis for sustained advances in wealth and human wellbeing.

Global Environmental Accounting

Global Environmental Accounting is an accounting methodology that deals with energetic, ecology and economics at a global scale. The earth is the system of interest with the input, sequestration and dissipation of solar energy, which constitutes the energy budget (Odum, 1996; Tennenbaum, 1988).

The SNA is a complex system which follows a number of widely-accepted accounting conventions. These conventions ensure logical consistency across the different components of the accounts, guaranteeing that a given type of entry has the same meaning in all contexts and in all countries. This standardization is essential for the accounts to be a reliable source of comparable data about the economies of many different countries.

Unfortunately, this standardization has made it difficult to change the SNA in order to introduce a quite different issue like the goods and services provided by the environment. The difficulty arises primarily because most environmental goods and services are not traded in conventional markets; thus, it is hard both to define discrete products and to put a monetary value on them. Some of the most important debates concern the following issues:

Physical Verse Monetary Accounts: Physical accounts only include information about natural characteristic of the environment and its use; the size of forests or mineral reserves,

the quality of water or air, the depth of topsoil etc. In contrast, monetary accounts place an economic value on those characteristics or their use, so as to understand the role they play in the economy. Given the difficulty of estimating the monetary value of certain aspects of the environment, some individuals and countries advocate development of only physical accounts (Daferighe, 2010).

Integrated Accounts Verse Satellite Accounts: Integrated accounts change the calculation of GDP, GNP and other key national indicators. Satellite accounts are linked to the SNA, but do not change either the calculation of key indicators or the central framework of the accounts. The advantage of satellite accounts is that they allow the accountants to violate some of the conventions of the SNA in ways quite useful for environmental data, without threatening the consistency of the information in the conventional accounts. However, because they do not change GDP or GNP, they do not correct the distortions inherent in those indicators.

Inclusion of Maintenance Costs: Maintenance costs are the expenditures that a country would have to make in order for its use of the environment to be sustainable. Some experts on environmental accounting believe that these should be deducted from the accounts to arrive at a correct level of 'green' economic activity. Others argue that estimation of such costs is highly subjective and subtracting them from indicators like GDP is misleading.

Valuation of Non-Marketed Environmental Services: Most approaches to environmental accounting do not include this item because the valuation required is difficult and subjective. However, it is of interest to environmentalists in many countries, so its inclusion still warrants strong consideration. The way these issues are resolved determines how environmental accounts are used to support policy making. Moreover, if the international community can come to consensus; irrespective of the methods they choose; their agreement on one set of standard accounting principles will encourage many hesitant governments to move into this relative new arena.

Corporate Environmental Accounting

In contrast to national environmental accounting, corporate environmental accounting focuses on the cost structure and environmental performance of a company (Odum, 1996). Corporate environmental accounting can be further sub divided into Environmental Management Accounting and Environmental Financial Accounting.

Environmental Management Accounting: Xiaomei (2004) defines Environmental Management Accounting (EMA) as the identification, collection, estimation, analysis, internal reporting, and use of materials and information relating to energy flow and environmental and other costs for both conventional and environmental decision making within an organization.

On their part, Bartolomeo, Bennett, Bouma, Heykamp, James and Wolters, (2000) define EMA as the generation, analysis and use of financial and related nonfinancial information, to support management within a company or business. Environmental management accounting integrates corporate environmental and business policies, and thereby provides guidance on building a sustainable business. It analyses environmentally relates to financial costs and benefits, contributing to recognition of the high and increasing levels of capital and operating expenses, for pollution control equipment and environmental taxes.

Also, possible environmental initiatives, such as incentive-based regulation, are incorporated in analysis and reporting (Fryxell & Vryza, 1999). Companies in making internal business strategy decisions use environmental management accounting. The information gathering in the process according to Tennenbaum (1988) may be physical information on the use, flows and fates of energy, water and materials including waste or monetary information on environmental related costs, earning and savings. The main problems of EMA relate to the specification of environmental accounting information, the allocation of environmental costs, legislation issues and the lack of environmental accounting standards.

Environmental Financial Accounting: Environmental Financial Accounting is used to provide information needed by external stakeholders on a company financial status. This type of accounting allows companies to prepare financial reports for investors, lenders and other interested parties but focuses on environmental financial and non-financial data, such as, that given in environmental reports.

Needs for Environmental Accounting

Environmental accounts are critical for managers and policy makers at all level of governance. At the macroeconomic level, the Ministry of Finance needs to know whether the development strategy is laying the basis for long-term economic growth or not. A country like Nigeria which is dependent mainly on petroleum can only be economically sustainable if revenue from petroleum exploration is transformed into alternative assets. With environmental accounts, Nigeria can monitor this process, providing a sound basis for policy interventions consistent with sustainable development at each stage. Environmental accounts provide the basis for answering questions such as: How much resources rent are being generated, and would different policies increase rent? How much resources rent is recovered through taxes and non-tax instrument? How much of the received rent is invested in other assets, providing the basis for sustainable long-term growth?

In Nigeria, the stated objective of the adopted Poverty Reduction Strategy Programme (PRSP) is to promote sustainable economic growth and poverty reduction. However, PRSP uses GDP as a primary macroeconomic indicator in their monitoring framework; consequently, policy makers receive information about only half of the objective, short-term economic growth, but not sustainability of that growth. The long-term cost of environmental degradation; for example, soil erosion, which is enormous undermine any short-term gains in GDP.

Environmental accounts provide macroeconomic indicators of sustainability, such as changes in Total Wealth or Adjusted Net Savings, which are complementary to GDP. The Ministry of Finance often makes budgetary allocations based on information from national accounts that underestimates the true contribution to the economy from the environment and natural resource sectors, resulting in misguided government policies and poor investment decisions.

Environmental Agency, UK (2006) states several reasons why business may consider adopting environmental accounting as part of their accounting system. These include:

- (i) Possible significant reduction or elimination of environmental costs.
- (ii) Environmental costs and benefits may be over looked or hidden in overhead accounts.

- (iii) Possible revenue generation may offset environmental costs (e.g. transfer of pollution allowances).
- (iv) Improved environmental performance which may have a positive impact on human health and business success.
- (v) May result in more accurate costing or pricing of products and more environmentally desired processes.
- (vi) Possible competitive advantages as customers may prefer environmentally friendly products and services.
- (vii) Can support the development and running of an overall environmental management system, which may be required by regulation for some types of businesses.

US EPA (1995) highlights seven benefits from adopting environmental accounting by a company as follows:

- (i) Provides better estimates of the true cost to the firm of producing a product. This improves pricing and hence profitability.
- (ii) Allocates costs to the appropriate product, process, system or facility and thus reveals costs to the responsible managers.
- (iii) Assists managers in targeting cost reduction, improving environmental quality and in reinforcing quality principles.
- (iv) Motivates staff to search for creative ways to reduce environmental costs;
- (v) Encourages changes in processes to reduce waste, reduce resources use, recycle waste or identify markets for waste;
- (vi) Increase employee awareness of occupational health and safety issues; and
- (vii) Increases the likelihood of the company having a competitive advantage and greater customer acceptance of the firm's product or service.

Environmental Costs

According to Marsh and Grossa (1996), the real and intangible costs associated with air and water pollution and land ecosystem degradation and destruction, is borne by the society. Environmental costs, as described by Graff, Ferskin, White & Bodroell, (1998), are impacts incurred by society, an organization or individual resulting from entities that affect environmental quality.

Environmental costs are generally defined narrowly. Environmental costs are those costs incurred in compliance with, or prevention of breach of, environmental law regulation and company policy. However, White, Becker and Savage (1993) categorize environmental costs into two major dimensions.

Private Costs: These refer to those costs that directly impact on an organization. These they classified as Conventional costs, potentially Hidden costs; Contingent costs; and Image and Relationship costs.

Societal Costs: These are cost to individuals, society and the environment for which the organization is not legally accountable. Societal costs also referred to externalities or external costs include environmental degradation for which organizations are not legally liable and also have adverse impacts on human beings, their property, and their welfare that cannot be compensated for through the legal system. They include damage caused to a river because of polluted wastewater discharges or to ecosystems from solid waste disposal or to asthmatics because of air pollutant emissions. Valuing these societal costs is both difficult and controversial.

In relation to environmental degradation, environmental cost could be said to include cost of preventing degradation, cost of bringing the environment to its former state, cost of making persons prevent degradation or cost of making them bring depleted environment to normal state or a combination of the above. Therefore, accounting for environmental costs needs an integrative approach which examines the interrelationship between accounting; the environment and management information; decision making and accountability.

Identification of Environmental Costs

When an environmental accounting system is implemented, two main processes are executed; (1) the identification of the environmental costs, which represents the environmental part of the process; and (2) the allocation of the detected costs, which requires accounting and bookkeeping knowledge, both activities are the main functions performed by environmental managerial accounting (EMA). To be able to measure environmental issues, environmental costs must be uncovered and recognized. But it must be stressed that there is no universally accepted definition or a generally accepted standard of “environmental costs”. Therefore, how a company defines an environmental cost depends on the company and its specific purposes and how the information will be used (Bouma, 1998). The United Nations Division for Sustainable Development has identified the lack a standard definition of environmental costs as a main problem of identifying environmental cost (UN CSD 2001). Consequently, recognizing and uncovering environmental costs is one of the most important processes in environmental accounting.

Types of environmental costs

In fact, environmental costs include the cost of environmental measures and environmental losses where:

- Environmental measures are “steps taken by an entity or on its behalf by others to prevent, abate or remedy damage to the environment or to deal with the conservation of renewable and non-renewable resources” (CICA 1993).
- Environmental losses are “costs that have been incurred by an entity with respect to the environment for which there is no return or benefit, for example, fines or penalties for non-compliance with environmental regulations, damages paid to others for environmental damage done, or assets of the entity that have to be written off because their costs cannot be recovered due to environmental concerns” (CICA 1993).

Techniques to Identify Environmental Costs

Environmental accounting, as expressed throughout this work, is a tool to record, organize and present environmental cost information, but Steele and Powell (2002) gave the following outline as other tools to identify environmental costs within a company:

1. To examine existing facilities an EMS (Environmental Management System) can be used.
2. To examine proposed facilities an environmental impact assessment (EIA) is generally used.
3. Cumulative impact assessment is a technique used to examine impacts over larger spatial area (e.g. region).
4. Strategic environmental assessment is a technique used to examine impacts of strategies, plans, policies or programmes.
5. Life cycle assessment (LCA) or cycle inventory analysis can be used for many of the above. Life cycle assessment involves reviewing a process, both upstream and downstream, to evaluate issues in product design, product sourcing, product use, and product disposal, to reduce environmental costs and impacts (Adams 2002). The basic idea of life cycle costing is to consider the costs caused over the whole life cycle of a product (Schaltegger, Muller & Hendrickson, 1996).
6. To the determination of social costs, externalities, contingent costs and environmental costs, environmental economic valuation techniques can be used. (Steele & Powell, 2002; ACCA. 2001).

Company Approach to Environmental Accounting

Jasch (2006) has identified two (2) basic Approaches for companies in adopting environmental accounting. These includes: Physical and Monetary Approach

Physical Approach: According to Jasch, this approach was suggested by the United Nations where a complete guide to be prepared indicating the available resources within a country classified according to its state and uses (for instance, agriculture, desert land etc). In order to assess cost correctly, an organization must collect not only monetary data, but also non-monetary data on materials use, personnel hours, and other cost drivers. Environmental management accounting places particular emphasis on the material related cost drivers, because (a) material purchase costs are a major cost driver in many organizations (Strobel, 2001) and (b) the use of energy, water, and materials, as well as the generation of waste and emissions, is directly related to many of the environmental impacts of organizations.

Depending on this approach the environmental operations are presented in a physical term, the current balance of the resource and the additions and deductions from that resource. No monetary value is assigned according to this approach. The physical approach is very important to get physical information about the resources which enables company to prepare the environmental statistics which is considered the first step in the Monetary Approach.



Monetary Approach: The monetary approach emerged due to the fact that the physical approach does not fulfill the requirements of the Environmental Accounting. The Monetary approach addresses the environmental aspects of corporate activities expressed in the monetary units; it generates monetary information for both the internal management and the external stakeholders, it uses such payment as fines for breaking environmental laws and investment in capital projects that improve the environment (Marinova, Annandale & Philmore, 2006).

Companies also adopt the monetary approach to environmental accounting for management concern. The monetary approach to environmental management accounting contributes to strategic and operational planning, acts as a control and accountability device and provides the main systematic source of information for decisions about how to achieve desired corporate goals (Schaltegger & Burritt, 2000). Bierma, Waterstraat and Ostrosky (2000) address the issue of life-cycle costing with a particular emphasis on the supply and use of chemicals. They note that there are substantial environmental related costs associated with this, e.g. wastage in process and cost disposal. However, those costs are often hidden by poor material tracking data and inaccurate overhead allocations, and/or are not allocated to the budgets of those responsible for causing them. One means of reducing costs is to replace a conventional hands-off supplier-customers relationship.

Although the monetary approach is difficult, despite the difficulties, it gained a lot of interest as such data will enable to know the profit and loss associated with environmental operations and to get an environmentally adjusted economic indicator (Hamid, 2002).

METHODOLOGY

The main objective of this work is to bring into light the concept of Environmental accounting which is a new entrant in the accounting literature. The study adopts the exploratory research designed to explain and highlight the importance of the concept of environmental accounting and the various approaches adopted by companies to recognize it as a recent entrant into the accounting profession and education. The researchers used secondary sources of data on very recent important literatures on environmental accounting to achieve the objective of the study.

CONCLUSIONS

The objective of the paper is to bring to the knowledge of the general public, the business world and fellow accountants in academics and in professional practices, that accounting profession, education and literatures, has gone beyond the traditional teaching of theories, concepts, principles and techniques needed to prepare and present financial statement, to show and facilitate the taken of informed decisions that lead to effective and efficient performance and reasonable profitability in various firms, companies, businesses and organizations, but has gone behavioural, environmental and other fields of human endeavor, all aimed at improving and providing solution to the endless problems and challenges facing the human race in this modern era. In view of the various highlights in the sections and subsections of this study, it was therefore concluded that; Environmental accounting is an

important tool for understanding the roles played by the natural environment in the economy. Environmental accounting provide data which highlight both the contribution of natural resources to economic well-being and the costs imposed by pollution or resource degradation. Environment is a precious gift of the nature, it therefore means that in everything that surrounds us, environmental matter is an essential factor that needed to be considered for the survival of human beings, hence environmental accounting should be embrace by all.

RECOMMENDATIONS

The study recommends that pragmatic efforts should be taken by individual firms and companies, civil societies and organizations, regulatory bodies, policy makers and professional accounting bodies to ensure that environmental accounting is properly introduced, recognized and included in final accounting and financial statements needed by users of such information. This if done, will go a long way in addressing the resources shortages needed to address the enormous problems and costs imposed by pollution and resources degradation and as well appreciate the value in identifying, recognizing, measuring and recording environmental cost.

REFERENCES

- Abiola, J.O. & Ashamu, S.O. (2011). Environmental Management Accounting practice in Nigeria National Petroleum Corporation (NNPC). *European Scientific Journal*, 8(9).
- ACCA. (2001). *Advances in Environmental Accounting*. London: UK Accountant.
- Adams R. (2002). *Management Accounting and the Environment*. UK: Student.
- Alok, K. P., Nikhil, C. S. & Bhagaban, D. (2008). Environmental accounting and reporting with special reference to India. *Munich Personal RePEc Archive (MPRA) Paper NO. 7712*. Retrieved in August from <http://mpra.ub.uni-muenchen.de/7712/>.
- Amokaye, G. O. (2012). Environmental Pollution and Challenges of Environmental Governance in Nigeria. *British Journal of Arts and Social Sciences*, 10(1).
- Bartolomeo, M., Bennett, M., Bouma, J.J., Heykamp, P., James, P. & Wolters, T. (2000). Environmental Management Accounting in Europe: Current Practice and Future Potential. *European Accounting Review*.
- Bassey, E. B., Sunday, O. E. & Okon, E. E. (2013). The Impact of Environmental Accounting and Reporting on Organizational Performance of Selected Oil and Gas Companies in Niger Delta Region of Nigeria. *Research Journal of Finance and Accounting*, 4 (3).
- Bierma, T. J., Waterstraat, F.L. and Ostrosky, J. (2000). *Shared Savings and Environmental Management Accounting: Innovative Chemical Supply Strategies*. Sheffield: Greenleaf Publishing Limited.
- Bouma, J.J. (1998). *Environmental Management Accounting in the Netherlands*. UK: Greenleaf Publishing.
- CICA. (1993). *Environmental Costs and Liabilities: Accounting and Financial Reporting Issues*. Ontario: The Canadian Institute of Chartered Accountants Pp 9.
- Daferighe, E. E. and Aje, S. O. (2005). "Management of Environmental Accounting System". *International Journal of Economic and Development Issues* Vol.5, No 1&2, pp.204-213.

- Environmental Agency UK (2006). Glossary of Terminology and Definitions.
- Fryxell, G. E. & Vryza, M. (1999). Managing environmental issues across multiple functions: an empirical study of corporate environmental departments and functional co-ordination. *Journal of environmental management*, 1(5).
- Graff, P.G. Ferskin, E.D., White, A.C. & Bodroell, K. (1998). Snapshots of environmental cost accounting. United States Environmental Protection Agency, Environmental Accounting Project.
- Hamid, M. A. (2002). Theoretical framework for environmental accounting - application on the Egyptian Petroleum Sector, *Conference paper* available at <http://www.og.eg/9th annual conf./9th conference-man.php>, Retrieved 20.08.2014.
- Ibironke, A. (2003). The Collapse of Enron Corporation: Challenges to the Accounting Profession A Paper Presented at the ICAN Mandatory Continuing Professional Education Lagos.
- Inanga, E. J. (2000). A Review of Empirical Research in Accounting Education: 1990-1998. *Journal of Accounting Education* 9(3), 167-231.
- International Federation of Accountants (IFAC) (1998). Environmental Management in Organizations. The Role of Management Accounting New York, Financial and Management Committee, International Federation of Accountants, Study 6, March.
- Jasch, C. (2006). How to Perform an Environmental Cost Assessment in one day. *Journal of Cleaner Production*, 14.
- KPMG (2005). *KPMG International Survey of Corporate Sustainability Reporting*, Retrieved June 2014, from <http://www.kpmg.pt/index.th.html>.
- Leontief, W. (1970). Environmental Repercussions and the Economic Structure: An Input/output Approach, *Review of Economics and Statistics* II, August.
- Marinova, D., Annandale, D. & Phillimore, J. (2006). *The International Handbook on Environmental Technology Management*. School of Environmental Science, Murdoch University.
- Marsh, W.M. & Grossa, J.M. Jr. (1996). *Environmental Geography, Science, Land use and Earth Systems*. New York: John Wiley and Son Inc.
- Odum, H.T. (1996). *Environmental Accounting, Emergy and Environmental Decision Making*, New York: John Wiley & Sons Ltd.
- Ogbomo, O. O. (1997). *Research into Accounting Education in Nigeria: Challenges and Prospects* (Ed, E. O. Adegite) Lagos: University of Lagos.
- Okolie, O. R., & Amos, A. (2014). The challenges of accounting education: the Nigerian experience. *Accounting and Finance Research*, 3(2), 129-137
- Peskin, H. M. (1989). *A Proposed Environmental Accounts Framework*. Washington, DC the World Bank
- Pramanil, A. K., Shil, O. H. & Das, A. B. (2007). *Environmental accounting and reporting*. New Delhi: Deep publication PVT. Ltd.
- Schaltegger, S. & Burritt, R.L. (2000). *Contemporary Environmental Accounting Issues, Concepts and Practice*. Sheffield: Greenleaf Publishing Limited.
- Schaltegger, S., Muller, K. & Hendrickson, H. (1996). *Corporate environmental accounting*. New York: Chichester.
- Steele, A. P. & Powell, J. R. (2002). *Environmental Accounting: Applications for Local Authorities to Quantify Internal and External Costs of Alternative Waste Management Strategies*. Environmental Management Accounting Network Europe, Fifth Annual Conference, Gloucestershire Business School, 11/12 February



- Strobel, M. (2001). *Flow Cost Accounting Approach Based on the Actual Flows of Materials in Environmental Management Accounting: Informational Institutional Developments*. Netherlands: Kluwer Academic Publishers.
- Tennenbaum, S. E. (1988). Network Energy Expenditures for Subsystems Production, M.Sc. Thesis. Gainesville, Florida University, Florida.
- Todd, R. (1994). *Zero Loss Environmental Accounting Systems*. Washington D.C: National Academy Press.
- UN CSD. (2001). *Environmental management accounting: procedures and principles*. New York: United Nations Division for Sustainable Development. P.4.
- United Nations Expert working Group (UNEWG) (2000). *Environmental Management Accounting: Procedures and Principles*, Retrieved April 2014 from http://www.unep.ch/etb/areas/VRC_category.php?
- United States Environmental Protection Agency (USEPA) (1996). *Valuing Potential Environmental Liabilities for Managerial Decision Making: A Review of Available Techniques*. Washington, D.C: United States Environmental Protection Agency, Office of Pollution Prevention and Toxics.
- Uwuigbe, U. (2011). Corporate environmental reporting practices: a comparative study of Nigerian and South African firms. Ph.D Accounting Thesis, Covenant University, Ota, Ogun State.
- White, A., Becker, M. & Savage, D. S. (1993). Environmental Smart Accounting Using Total Cost Assessment to advance Pollution Prevention. *Pollution Prevention Reviews*.
- Wintoki, M. B. (1997). *Research into Accounting Education in Nigeria: Challenges and Prospects*. (Ed, E. O. Adegite) Lagos: University of Lagos Press.
- Xiaomei, L. (2004). Theory and practice of environmental management accounting: Experience of implementation in China. *International Journal of Technology Management and Sustainable Development*. 3(1).