INTERNATIONAL JOURNAL OF PROGRESSIVE RESEARCH IN ENGINEERING MANAGEMENT AND SCIENCE (IJPREMS)

e-ISSN : 2583-1062

www.ijprems.com
editor@ijprems.com

Vol. 03, Issue 11, November 2023, pp : 184-197

Impact Factor : 5.725

ENVIRONMENTAL MANAGEMENT ACCOUNTING IN NIGERIAN TERTIARY INSTITUTIONS

Fatoki Jacob Obafemi[1], Adewale Taiwo[2]

[1]Ph.D FCA, Department of Management and Accounting, Lead-City University Ibadan, Nigeria.

[2]Ph.D, Department of Management and Accounting, Lead-City University Ibadan, Nigeria.

DOI: https://www.doi.org/10.58257/IJPREMS32226

ABSTRACT

The study Environmental Management Accounting (EMA) is a method that integrates financial and environmental data to enhance decision-making processes, thereby enhancing environmental performance and cost reduction. In Nigeria, tertiary institutions have significant environmental impacts due to their size, activities, and resource use. Implementing EMA in these institutions could help reduce these impacts while improving their financial performance. However, Nigerian tertiary institutions face challenges in managing their environmental impacts due to inadequate funding, lack of awareness, and insufficient regulatory frameworks. Furthermore, there is a lack of research on EMA in higher education institutions in Nigeria, indicating the need for further research. These studies have found that Nigerian universities have implemented various environmental management measures, but there is still much room for improvement. The major aim of this study is to assess the level of awareness, adoption, and implementation of EMA practices in Nigerian tertiary institutions, including universities, colleges, and polytechnics. The research employs a descriptive research approach, using a questionnaire as the primary data gathering tool. The population targeted selected tertiary institutions in Oyo State, including universities, polytechnics, and colleges of education. The data collected from the questionnaire was analyzed using SPSS, frequency distribution table, and hypothesis testing. The findings indicate a strong perception among respondents that tertiary institutions in Nigeria have a significant impact on the environment, with many admitting to contributing to environmental degradation. However, there are significant gaps in understanding and awareness, suggesting the need for a tailored approach to EMA implementation. Management involvement plays a critical role in the adoption and implementation of EMA in Nigerian tertiary institutions, but there is a significant proportion of neutral or opposing views, indicating a clear understanding of the impact of management involvement on EMA implementation.

Keywords: Environmental Management Accounting, awareness, and tertiary institution.

1. INTRODUCTION

Environmental Management Accounting (EMA) is an approach that combines financial and environmental information to support decision-making processes that improve environmental performance and reduce costs in Nigeria, Tertiary Institutions have significant environmental impacts due to their size, activities, and resource use. Therefore, implementing EMA in Nigerian tertiary institutions could help to reduce their environmental impacts while improving their financial performance. A study by Oyelere et al. (2017) found that Nigerian tertiary institutions face challenges in managing their environmental impacts due to inadequate funding, lack of awareness, and insufficient regulatory frameworks. Furthermore, they noted that there is a lack of research on EMA in higher education institutions in Nigeria, highlighting the need for more research in this area. EMA has been successfully implemented in various organizations around the world, including universities. For example, a study by Choudhary et al. (2017) found that implementing EMA at an Indian university reduced water and electricity consumption and waste generation, leading to cost savings and improved environmental performance. In Nigeria, several studies have investigated environmental management practices in higher education institutions. Akinbami et al. (2019) found that Nigerian universities have implemented various environmental management measures but there is still much room for improvement. Oyelere et al. (2018) found that higher education institutions in Nigeria can improve their environmental performance by adopting sustainable practices, such as energy saving measures and mitigation strategies waste, implementation of EMA in higher education institutions in Nigeria can lead to improved environmental performance and cost savings.

However, further research is needed to understand the potential barriers and opportunities when implementing EMA in this context. Environmental management accounting (EMA) has become an essential tool for organizations in managing environmental issues and achieving sustainable development. It involves the integration of environmental and financial information for decision-making, planning and control purposes. Universities in Nigeria are not exempt from the need for EMA as they also contribute to environmental degradation through activities such as waste generation, energy consumption and water use. According to the World Bank (2019), Nigeria generates about 32 million tons of solid waste annually, of which only 20 to 30 tons are collected and managed.

INTERNATIONAL JOURNAL OF PROGRESSIVE RESEARCH IN ENGINEERING MANAGEMENT AND SCIENCE (IJPREMS)

e-ISSN : 2583-1062

Impact Factor : 5.725

www.ijprems.com
editor@ijprems.com

Vol. 03, Issue 11, November 2023, pp : 184-197

Tertiary institutions are not left out in this waste generation, as they produce a significant amount of waste from their academic and administrative activities. Additionally, these institutions consume a significant amount of energy and water, which have environmental and economic implications. However, there is limited research on the adoption and implementation of EMA in Nigerian tertiary institutions. This study seeks to fill this gap by examining the level of awareness, adoption, and implementation of EMA in Nigerian tertiary institutions. The study will also explore the challenges and opportunities for implementing EMA in these institutions.

To understand the present status of accounting procedures for controlling the primary environmental expenses, in-depth interviews were conducted with key personnel in each university who had management responsibilities related to environmental management or management accounting.

The existing condition of accounting techniques for controlling environmental expenses inside universities must be understood, as the extension of EMA use to universities is an uncharted field of research. According to Deegan (2003), the range of environmental costs taken into account in the preliminary stages of EMA investigations should be kept to a minimum. The scope of environmental costs examined by this study was restricted to the primary environmental expenses for universities because to the nascent status of EMA for higher education.

Statement of the Problem.

Tertiary institutions in Nigeria contribute to environmental degradation through their activities such as waste generation, energy consumption, and water usage. However, there is limited research on the adoption and implementation of environmental management accounting (EMA) in Nigerian tertiary institutions. Therefore, this study seeks to investigate the level of awareness, adoption, and implementation of EMA in Nigerian tertiary institutions. To recognize environmental issues, resource depletion and global sustainability issues, these institutions must implement Environmental Management Accounts (EMA). However, several pressing challenges hinder the successful adoption and implementation of EMA in Nigerian tertiary institutions and one of the biggest challenges in implementing EMA in Nigerian tertiary institutions is the lack of awareness and understanding of the concept, this lack of awareness leads to a reluctance to implement EMA practices, hindering facilities' ability to make informed environmental decisions.

One of the biggest challenges is the lack of a clear legal framework and guidelines for implementing EMA in Nigeria's tertiary institutions. In addition, Nigerian tertiary institutions face data collection challenges, particularly if record keeping procedures are not well established. Furthermore, data collection may not support strategic planning or resource allocation, limiting EMA's true impact on the agency's environmental performance. These issues and challenges need to be addressed in order to effectively adopt and implement EMA across Nigerian tertiary institutions, which have both direct and indirect impacts on the environment. Universities can contribute to sustainable development by improving facilities services and management in order to reduce environmental impacts and minimize environmental costs. The use and application of EMA across universities to service organizations in order to manage costs and improve environmental performance has yet to be fully explored. Direct impacts include the use of paper, the generation of solid waste, etc. However, the need for facilities services and management is mainly due to the demand on two resources – energy and water. Service based case studies (still quite limited).

2. OBJECTIVES OF THE STUDY

The main objective of this study is to assess the level of awareness, adoption and implementation of environmental management accounting (EMA) practices in Nigerian tertiary institutions including universities, colleges and polytechnics.

Research Question

These research questions cover the main objectives and areas of investigation outlined in the study, focusing on the awareness, adoption, and implementation of EMA, challenges and opportunities, accounting practices, and the factors influencing EMA adoption in Nigerian tertiary institutions;

What is the level of awareness and adoption of Environmental Management Accounting (EMA) principles and practices within Nigerian tertiary institutions?

Research Hypothesis

Hypothesis: The extent of awareness and adoption of EMA practices within Nigerian tertiary institutions is positively correlated with the effective management of environmental costs and resource efficiency.

Significant of the study

This study is very important in the context of Nigerian tertiary institutions as it sheds light on the current status of EMA adoption. The findings contribute to a better understanding of the environmental and sustainability practices of these institutions, which can lead to improved resource efficiency, cost savings and environmentally responsible management.

INTERNATIONAL JOURNAL OF PROGRESSIVE RESEARCH IN ENGINEERING MANAGEMENT AND SCIENCE (IJPREMS)

e-ISSN : 2583-1062

www.ijprems.com
editor@ijprems.com

Vol. 03, Issue 11, November 2023, pp : 184-197

Impact Factor : 5.725

3. LITERATURE REVIEW

This section's main goal is to provide a thorough knowledge of management accounting for the environment, with an emphasis on the interactions that exist between management information, accounting, and the environment. The main functions of accounting are information provision to internal and external stakeholders for the purposes of internal management and external reporting. It falls into two main categories: managerial accounting and financial accounting. While management accounting focuses on providing information to internal management for decision-making, financial accounting primarily serves the creation of financial statements for external stakeholders. Organizations are under pressure to reduce their environmental impact and efficiently manage their environmental expenses as the environment has become a more pressing issue on the corporate agenda. This has serious accounting implications and issues that go beyond simple adherence to environmental rules and regulations. Accounting must now record and report financial data while taking into account the environment, and it may even have to take on certain environmental performance management responsibilities. Accounting faces a number of issues, including changing social norms and increasing demands to improve the environmental performance of organizations. Organizations have to accept that they do not have an innate right to the environment, especially when it comes to using natural resources, and they have to abide by a new "social contract" that is developing. More rigorous environmental rules as a result of changing public expectations have increased non-compliance costs and increased business spending on environmental protection. It takes a variety of accounting-related skills to handle environmental challenges, demands, related expenses, and possible cost reductions. Studies and research on the environmental benefits of accounting are widely known, but they also point to shortcomings in traditional accounting's response to these concerns. In an economic or corporate setting, conventional accounting entails locating, quantifying, and disseminating economic data to enable information consumers to make well-informed decisions. For instance, Australia's Statement of Accounting Concepts 2 (SAC 2) specifies that the goal of general-purpose financial reports is to give customers information that will help them decide how best to use their limited resources.. But according to an analysis of the International Accounting Standards Board Conceptual Framework, or IASB Framework, conventional accounting typically fails to fully account for the use of numerous resources, including land, air, and water, and does not explicitly and separately recognize the environmental impacts of an organization. Numerous expenses that corporations inflict on the environment are unaccounted for; one such example is climate change, a global environmental issue. These overlooked expenses should ideally be absorbed. As a result, calls for the use of environmental accounting—which clearly considers environmental concerns and has a wider viewpoint than traditional accounting—from both people and governments are common. As part of its Fifth Action Programme, the European Union (EU) published a statement in 1992 called "Towards Sustainability," which recommended that the accounting industry play a part in putting in place costing mechanisms that incorporate environmental costs that had previously been disregarded. In order to account for the consumption and use of environmental resources as part of the total cost of production and reflect them in market pricing, the EU demanded that accounting concepts, regulations, norms, and methods be redefined..

All accounting disciplines are included in environmental accounting, making it a comprehensive field that encompasses all accounting disciplines that may influence how environmental issues are addressed. Bebbington (2001) lists the following as components of environmental accounting: Debt / Conditional Environmental Risk, Reevaluating the environmental families and the assets, Key aspects of energy, waste, and environmental protection include cost analysis, evaluation of environmental factor investments, Creating new information and accounting systems that incorporate environmental indications in every field, Assessment of environmental initiatives and their advantages creation of accounting techniques that show the cost of contracts for non-financial environmental costs, obligations, and assets (Bebbington 2001, p. 7). Therefore, the phrase "environmental reporting" is more broadly defined to include the dissemination of environmental information to an organization's internal and external stakeholders. Three distinct settings are included under the general phrase "environmental accounting," according to the United States Environmental Protection Agency (USEPA 1995b): national income accounting, financial accounting, and management accounting. Corporate, regional, and national levels can all benefit from this (Bennett & James 2000; Deegan 2003; USEPA 1995b). Size and breadth may be restricted to certain departments, locations, product lines, systems, or services at the corporate level (EPA, 2005; Schaltegger & Burritt, 2000). The corporate level of environmental reporting is the subject of the research presented in this paper. Definitions of environmental accounting are many and varied (eg Bennett & James 2000; Deegan 2003; Gray & Bebbington 2001; Hawes 2004; EPA 2005; Schaltegger & Burritt 2000; USEPA.

Traditional management accounting is thought to be expanded upon by environmental management accounting. "Financial and non-financial information that helps managers make decisions to achieve organizational objectives" is the definition of management accounting, according to Horngren, Datar, and Foster (2003), pages 2-3. "EMA is simply an evolution of management accounting," notes Birkin (1996, p. 34). Although EMA does not give financial information

INTERNATIONAL JOURNAL OF PROGRESSIVE RESEARCH IN ENGINEERING MANAGEMENT AND SCIENCE (IJPREMS)

e-ISSN : 2583-1062

www.ijprems.com
editor@ijprems.com

Vol. 03, Issue 11, November 2023, pp : 184-197

Impact Factor : 5.725

priority, it can be thought of as "environmental management accounting," according to Bennett and James (1997). EMA is "a better and more comprehensive approach to management accounting," said the United Nations Department for Sustainable Development (UNDSD, 2003). According to UNDSD, accounting data is frequently used for internal organizational computations and decision-making in environmental management. Internal decision-making processes using environmental management accounting (EMA) include physical processes for material and energy consumption, flow, and ultimate disposal in addition to processes for monetizing expenses, savings, and income related to activities that may have an impact on the environment (UNDSD 2001, p..1). .. EMA is defined as "the process of developing and implementing appropriate environmental accounting systems and practices to manage environmental and economic results" by the International Federation of Accountants (IFAC). Environmental management accounting generally comprises life cycle costing, overhead costing, benefit estimating, and strategy planning for environmental management, while in certain organizations this may also involve reporting and auditing (1998a, para. 1). According to both definitions, environmental management is a factor in the development of EMA. Managing environmental challenges is significantly aided by management accounting. In order to assist capital budgeting, investment appraisal, and strategic management choices, for instance, management accountants has the expertise and abilities to enhance the quality of environmental information (Everett & Neu 2000; IFAC 2005). Since EMA is a versatile technique, there are several definitions with varying scopes and restrictions in the literature. An emphasis on the material and financial components of an organization's environmental effect is the primary attribute of EMA, as can be observed in certain definitions (e.g. Bartolomeo et al. 2000; Burritt, Hahn & Schaltegger 2002b; Graff et al. 1998

Environmental management

The presenting of environmental information to an organization's internal and external stakeholders is therefore referred to as environmental reporting, which is a more general phrase. National income accounting, financial accounting, and management accounting are the three distinct settings that fall within the broad category of environmental accounting, according to the United States Environmental Protection Agency (USEPA 1995b). This is applicable on a national, regional, or business scale (Bennett & James, 2000; Deegan, 2003; USEPA, 1995b). Departments, facilities, product lines, systems, or services may constitute the extent of a company's size and breadth (EPA, 2005; Schaltegger & Burritt, 2000). This paper's research focuses on environmental reporting from a business perspective. Stakeholders can assess how well a company is attempting to lessen its influence on the environment by receiving information on environmental performance. This study employed the more expansive concept of environmental management provided by Gray and Bebbington (2001). The development of environmental management systems, such as the Environmental Management and Audit Scheme (EMAS) of the European Union, the BS7750 environmental management standard from the British Standards Association, and the ISO 14000 series of international organizations, is becoming more and more popular. 9th Standardization. All of these standards or systems guarantee that environmental goals and objectives are assessed and met through three different channels: the organization's environmental performance as measured by its operations; adherence to internal environmental laws, rules, and policies; and the accuracy of management reports (KPMG 1997). In addition to having a major impact on EMA in areas like strategic business planning, cost-benefit analysis of environmental remediation or projects, and environmental performance reporting, they provide the framework required for environmental performance management (Gray and Bebbington 2001). The necessity for environmental taxes arises from the emphasis on environmental performance management and the mitigation of environmental effect.

Environmental Costs

Costs refer to "resources sacrificed or given up to achieve a particular goal... [it] is usually measured as the amount of money paid to acquire a good or service" Despite the fact that these standards have a lot of similarities, there are still significant and contentious discrepancies. For a debate, see Gray and Bebbington (2001). Foster (2003) and Data, p. 30). Environmental costs are defined by Atkinson, Kaplan, and Young as:

There are two types of environmental costs: overt and covert. The direct expenses of implementing technologies and procedures, the price of cleaning and disposal, facility permits, fines from the government, and legal fees are examples of obvious costs. Surprising expenses are frequently intimately linked to the infrastructure required to manage environmental issues. These expenses usually consist of loss of goodwill in the case of an environmental disaster, staff awareness and training, and legal and administrative consulting. Although it emphasizes the challenges in identifying environmental costs, the explicit/implicit divide seems to offer little assistance in this regard. All expenses related to an organization's actions that affect the environment should ideally be included in its definition of environmental costs. However, this isn't actually feasible. For example, from the viewpoint of complex systems, business is a subsystem of the economy, which in turn is a subsystem of society, which in turn is a subsystem of the environment. According to this viewpoint, social, economic, and corporate expenses are all included in environmental accounting. A cost associated with the environment may be defined as "consumption of goods and services" and applied to any usage of the

INTERNATIONAL JOURNAL OF PROGRESSIVE RESEARCH IN ENGINEERING MANAGEMENT AND SCIENCE (IJPREMS)

e-ISSN : 2583-1062

www.ijprems.com
editor@ijprems.com

Vol. 03, Issue 11, November 2023, pp : 184-197

Impact Factor : 5.725

environment. While this is a perfect world, it is not achievable in the real world (Schaltegger & Burritt 2000, p. 96). It is well acknowledged that there are two categories of environmental costs: external or social costs (Deegan 2003; Schaltegger & Burritt 2000; UNDSD 2001; USEPA 1995b). External or social costs "include costs to individuals, society, and the environment for which the company is not responsible," whereas personal or internal costs are "costs that directly affect company performance" (USEPA 1995b, p. 1). According to Schaltegger and Burritt (2000), externalities are expenses that society as a whole bears rather than the business that generates the benefits and costs. Traditionally, these expenses are not shown in the financial statements of the firms. This study ignored external considerations in favor of concentrating solely on human expenses. Thus, expenses that directly affect an organization's financial performance are also referred to as environmental costs in the context of this study. It should be highlighted that internal controls are not as critical as setting suitable environmental costs. (UNDSD 2001; USEPA 1995b). 1995b).

Environmental Management Accounting and the Tertiary Institution in Nigeria

We'll talk about the higher education sector's main environmental effects, both direct and indirect, especially from a financial standpoint. We'll look at the sector's link to sustainable development and its historical context. There will also be a discussion on how colleges are now responding to the environment in order to attain sustainability. Next, the obstacles faced and the motivation needed to enhance environmental management in particular will be discussed. After a discussion of their relevance and EMA consequences for colleges, a conclusion will be made.

Major Environmental Impacts of the Sector

Communities of people make up universities, including employees, researchers, administrators, and students. Natural resources are used in service operations, and wastes that are chemical or solid are produced. They nonetheless have a number of important direct and indirect environmental effects, while not having the obvious direct effects that many industrial businesses do. Education and research may result in changes in environmental behavior, among other indirect effects. Improving campus environmental performance is said to present a special chance to educate students about environmental concerns and increase their understanding of them (USEPA 2004). Direct effects result from the use of resources like paper, but the primary cause is the requirement for facilities management and services, which put a significant strain on energy and water, two resources related to the environment, and generate a lot of solid waste (Bennett, Hopkinson & James 2006). Universities can be the greatest consumers in the city or area in which they are located, and they consume a significant quantity of energy, water, and paper (Creighton, 1998). These days, running and maintaining campus buildings may take up a substantial portion of a university's annual budget, with energy-related expenses making up a sizable portion of this (Bennett, Hopkinson & James 2006). For instance, in the US, campus facilities management might make up to 10% of an institution's yearly spending plan (USEPA 2003). More than £300 million is spent annually on energy and water by the UK's higher education sector, which amounts to 1-3 percent of most institutions' overall operational budgets (HEEPI 2005). Additionally, it is reported that the UK's higher education industry pays yearly water and sewerage bills exceeding £100 million; at many water-intensive institutions, these prices are comparable to their heating costs (Bennett, Hopkinson & James 2006). In fact, according to Herremans and Allwright (2000), one of the biggest environmental issues confronting colleges is energy management. Determining energy use, especially for specific buildings, might be an affordable way to make improvements (see Penn State Green Destiny Council 2001). Universities' use of water and energy has drawn considerable attention (see HEEPI 2005). Nevertheless, because so few colleges gather data, little is known about the amount of waste produced or the amount of paper consumed, some of which would end up in the trash (Bennett, Hopkinson & James 2006; HEEPI 2007c). Numerous chances to save costs have been missed or overlooked as a result of the absence of data. In order to enhance environmental management, Creighton's argument emphasizes the need for the involvement of several people with a variety of management responsibilities as well as reevaluating priorities. The development of a "truly green" institution would be sluggish or less likely without their involvement.

The Sector and Sustainable Development

"A process that is characterized by the use of existing natural resources in a way that they are available in the long term for future generations" is what Filho and Carpenter (2006) define as sustainable development (p. 9). Early in the 1970s, it was realized that the higher education sector had a role to play in achieving sustainable development, which encompasses two issues: education itself and internal practices. Additionally, the environmental accounting literature began to address environmental challenges around this time. But it wasn't until later that the phrase "education for sustainable development" was elevated to the top of university management agendas (Calder & Clugston 2002).

Environmental Accountability and Management

In order to ensure successful management and enhance environmental performance, companies must practice environmental responsiveness, such as putting environmental policies and strategies into practice to reduce environmental consequences (Gray & Bebbington 2001). Organizations must report on their environmental

INTERNATIONAL JOURNAL OF PROGRESSIVE RESEARCH IN ENGINEERING MANAGEMENT AND SCIENCE (IJPREMS)

e-ISSN : 2583-1062

www.ijprems.com
editor@ijprems.com

Vol. 03, Issue 11, November 2023, pp : 184-197

Impact Factor : 5.725

responsiveness and related performance, both financially and non-financially, according to the definition of environmental responsibility given in Chapter Two (Burritt & Welch 1997). The present status of university environmental responsiveness will be covered in the following sections, along with the connection between environmental management and accounting that is necessary to enhance environmental accountability.

The Connection between Accounting and Environmental Management – EMA

According to Bartolomeo et al. (1999), there has to be a connection between environmental management and accounting in order for management accounting methodologies to help environmental management enhance both financial and environmental performance. A survey of the literature indicates that not much research has been done to document the link's present status in relation to universities. Moreover, the cause of this deficiency is yet unknown. Given this need, the study aims to investigate two things: first, what is the present status of accounting methods for environmental management, and second, what variables influence the adoption of EMA at universities. It appears that there are other obstacles besides budgetary or resource limitations that prevent the provision of the connectivity, as Epstein (1996) suggests. There might be more obstacles. Since environmental management is a crucial component of EMA, obstacles to implementing environmental initiatives—or motivators to do so—may have an impact on how EMA is used and applied. Therefore, in order to provide a foundation for investigating elements that can obstruct or facilitate the development of environmental management at universities, hurdles to implementing environmental management that are unique to universities must be explored.

Ramifications for University Accounting for Environmental Management

The lack of environmental goals and goal-setting procedures, responsibility-centered budgeting systems, necessary environmental data and information, and a shared language are some of the obstacles to implementing environmental efforts inside universities, as was previously addressed. Additionally, the implementation of environmental programs is hampered by short-term and bottom-line factors. A significant portion of the obstacles relate to restrictions on management accounting procedures, such as a preference for financial data and inadequate communication between managers handling environmental and accounting duties. By serving as the link between environmental management and management accounting, EMA can facilitate the development of a "common language" amongst individuals with the many specializations needed for strategic environmental management. Moreover, EMA's uses and applications in supplying pertinent environmental information, developing incentives, and integrating environmental management into continuing business activities are supported by experiences obtained in corporate organizations (Ditz, Ranganathan & Banks 1995). From this, it would be logical to assume that EMA can help colleges get over the obstacles they face today. The two EMA scenarios presented in Chapter Three, which seem to advocate using EMA in the context of service-based organizations like colleges, further bolster this.

It might be argued that applying the knowledge and understanding gained from the relevant EMA research to a university context is necessary, as universities have environmental consequences that must be controlled, both directly and indirectly. However, as indicated in the environmental management literature, factors including top management support, leadership commitment, and stakeholder pressure would be required for the spread of EMA practices inside institutions. To find out what influences EMA implementation in universities, more research into the proposed drivers and barriers would be required.

Theoretical Review

A survey of the literature indicates that, despite EMA's increasing popularity, the majority of EMA research concentrate on characterizing and comprehending the status of practices in the manufacturing sector at the moment. There are very few case studies that connect EMA to the education sector, and even fewer that show theory-based research in this area. The reasons why organizations choose to use EMA or not are still not well understood. If, as suggested by Rikhardsson et al. (2005), EMA is considered a new managerial technology, then the innovation diffusion literature offers two primary explanations for why organizations adopt some technologies but not others: the institutional explanation and the efficient choice explanation (see Abrahamson 1991, 1996; Rogers 2003). According to Rikhardsson et al., the efficient choice approach appears to offer just a partial explanation in the context of EMA. Certain EMA tools and technologies, for instance, were adopted in the US because they were seen to be more cost-effective, provided quantifiable benefits, or assisted in achieving savings. In this field, EMA development has a significant economics focus, according to Gray and Bebbington (2001). The US's escalating environmental restrictions are mostly to blame. Therefore, in order to minimize their environmental effect and prevent future penalties, several organizations would implement some sort of EMA. Other explanations, nevertheless, would be needed in circumstances when an effective choice explanation could not be provided. For instance, the government of Japan mostly directs and guides the development of EMA. Most businesses that provide environmental data do so in accordance with the criteria issued by

INTERNATIONAL JOURNAL OF PROGRESSIVE RESEARCH IN ENGINEERING MANAGEMENT AND SCIENCE (IJPREMS)

e-ISSN : 2583-1062

www.ijprems.com
editor@ijprems.com

Vol. 03, Issue 11, November 2023, pp : 184-197

Impact Factor : 5.725

the Japanese government (Kokubu & Nakajima 2004). Given that government bodies compel the implementation of particular EMA procedures and demand certain information, the institutional approach in this instance may provide a better explanation. Researchers may find it useful to investigate the institutional explanation vs. efficient choice debate when examining the reasons behind EMA adoption. Bouma and van der Veen (2002) are two academics that specifically use the institutional viewpoint vs the efficient decision to explain EMA uptake. To explain why EMA is implemented in a chemical firm, they mostly refer to institutional theory (e.g., Boons et al. 2000; DiMaggio & Powell 1983) and contingency theory (e.g. Chapman 1997; Langfield-Smith 1997). Comparable to the debate between institutional explanation and efficient choice, contingency theory places more focus on efficiency as a justification for EMA adoption, whereas institutional theory emphasizes the impact of external groups and imitation processes on EMA adoption40. According to researchers who have studied the two theoretical stances, institutional theory and contingency theory offer significant justifications for the implementation of EMA (e.g. Bouma & van der Veen 2002; Osborn 2005; Parker 1997). A sizable corpus of work on the creation of efficient management accounting systems makes reference to contingency theory (see, for instance, Chenhall 2003; Fisher 1998; Otley 1980; Waterhouse & Tiessen 1978). Nonetheless, others contend that organizational decision-making may not always be based solely on efficiency (Abrahamson 1991; DiMaggio & Powell 1983; Scott 2001). Other social or psychological elements that offer "institutional" explanations may influence the choice to switch accounting systems (Rikhardsson et al. 2005a). Thus, works concentrating on institutional theory (e.g. Abrahamson 1991, 1996; Bouma & van der Veen 2002) provide a second typology of explanations. Whereas contingency theory concentrates on technical contexts, institutional theory emphasizes how institutional environments affect organizations. According to Scott & Meyer (1983, p. 140), technical environments are "those within which a product or service is exchanged in a market such that organizations are rewarded for effective and efficient control of the work process." According to Modell (2002), the primary components of the technological environments are those that have to do with production technologies (or service delivery) and the market circumstances that businesses must contend with. The development of regulations and standards that distinct organizations must adhere to is what defines institutional contexts. Contingency theorists emphasize that one of the key factors influencing changes in management accounting is the increasing complexity of technology systems. Conversely, proponents of institutional theory contend that variables originating from technological settings might significantly alter the degree of adherence to established organizational behavior patterns. It is helpful to think of the two theories as two distinct theoretical views even if they address the same phenomena (the efficient choice vs. institutional concerns) from different perspectives. The pursuit of legitimacy "does not necessarily conflict with the achievement of economic efficiency through adjustment to competitive conditions and other technical prerequisites," according to Modell (2002, p. 655). A survey of the literature on environmental accounting indicates that stakeholder theory and legitimacy theory may also have some relevance to EMA investigations, in addition to the two theoretical stances. Among the most popular theoretical stances used by environmental accounting academics to explain why organizations choose to voluntarily disclose certain information to outside parties are legitimacy theory and stakeholder theory (see Deegan 2002; Gray, Kouhy & Lavers 1995). Stakeholder theory highlights the power of stakeholders in influencing organisational management, with the power being a function of the stakeholder's degree of control over resources required by the organisation. Legitimacy theory contends that organisations constantly work to ensure that they are perceived as operating within the boundaries and norms of society (Blumquist & Deegan, 2006). There is a lot of overlap between the two ideas, and it would be incorrect to interpret them as sharply separate theories, claim Deegan and Blomquist (2006, p. 349). It is contended that management accounting procedures would be influenced by both internal and external stakeholders. Burritt and Schaltegger state. Even though EMA's primary purpose is to supply data to internal management, it nevertheless falls within the larger umbrella of "environmental accounting." Stakeholder theory and legitimacy theory can be used to forecast the acceptance of EMA. Organizations could have embraced EMA if they thought it would validate their internal procedures or show that they seem to control their environmental effects in response to demand from stakeholders.

Empirical Review

Research on the adoption and implementation of EMA in Nigerian tertiary institutions is limited. However, some studies have explored the potential benefits of EMA in this context. For example, Oladejo (2019) conducted a survey of staff in Nigerian universities and found that there was a high level of awareness of the importance of EMA for sustainable development. However, there were also barriers to implementation, such as a lack of resources and expertise. Meanwhile, Oke and Adekola (2012) conducted a case study of a Nigerian university and found that EMA could lead to cost savings and improved environmental performance. The study identified a number of potential areas for EMA application, including energy management, waste management, and water management. However, the authors noted that there were challenges to implementation, such as a lack of data and inadequate staff training.

www.ijprems.com
editor@ijprems.com

INTERNATIONAL JOURNAL OF PROGRESSIVE RESEARCH IN ENGINEERING MANAGEMENT AND SCIENCE (IJPREMS)

Vol. 03, Issue 11, November 2023, pp : 184-197

e-ISSN : 2583-1062

Impact Factor : 5.725

4. METHODOLOGY

This study uses a descriptive research design, and the main data collection instrument is a questionnaire. Its benefit comes from the fact that a self-report instrument may be used to study a large population. The research design was chosen because it is suited for the study and would allow participants to individually reply to the research questions. This study pays close attention to Nigeria's tertiary institutions. Thus, this study illustrates the fundamentals of environmental management accounting in Nigerian tertiary institutions. Additionally, all postsecondary institutions in Oyo State, including universities, polytechnics, and colleges of education, were included in the demographic targeted for this study.

Sampling and Sample Size- The University of Ibadan, Lead City University, Precious Cornerstone University, Polytechnic University of Ibadan, Eruwa Polytechnic, Ladoke Akintola University of Technology, and Emmanuel Alayande University of Education are the seven postsecondary schools that were chosen for this study. Federal, state, private, and state Polytechnic institutions, as well as state universities of education, are all included in the model. A survey will be conducted with four hundred (250) respondents who work in the accounting and environmental protection departments of the chosen institutions.

Sources of Data- This study makes use of primary data. Standardized questionnaires was sent by the researcher to study participants for data gathering. The poll was created using a 5-point Likert scale: 5 for strongly agree, 4 for agree, 3 for uncertain, 2 for disagree, and 1 for severely disagree. The survey was divided into two sections: portion (A) addressed questions about the respondents' personal characteristics, and part (B) included issues over the study's list of research subjects.

Method of Analysis- Data collected through the questionnaire were analyzed using the Statistical Package for the Social Sciences (SPSS). The research question was analyzed using a frequency distribution table and hypothesis testing was performed using analysis of variance (Anova).

Data Analysis

Demographic Data of the Respondents

Table 1 Demographic characteristics of the Respondents

Item		Frequency	Percentage
Gender	Male	130	55%
	Female	102	45%
	Total	**232**	**100.0 %**
Educational Status	OND/HND	82	35.1%
	BSc	73	30.7%
	MSc/MBA	59	24.8%
	Professional Qualification	18	9.4%
	Total	**232**	**100.0%**
Age	18-25 years	51	21.8%
	26-35 years	87	39.1%
	36-45 years	42	18.8%
	46-55 years	28	9.9%
	56-65 years	24	10.4%
	Total	**232**	**100.0%**

Source: Field Survey, 2023- Table 1, provides a breakdown of the respondents' demographics. It reveals that 55% of the participants are male, with the remaining 45% being female, indicating a fairly balanced gender distribution among federal government employees. Furthermore, the table demonstrates that educational qualifications are predominantly at the graduate level, with 35.1% holding OND/HND, 30.7% having BSc degrees, 24.8% possessing MSC/MBA degrees, and 9.4% holding Professional Qualifications. This suggests that a significant proportion of the respondents are well-educated. In terms of age, the data indicates that 21.8% of the respondents are in the 18-25 years age group,

INTERNATIONAL JOURNAL OF PROGRESSIVE RESEARCH IN ENGINEERING MANAGEMENT AND SCIENCE (IJPREMS)

e-ISSN : 2583-1062

Impact Factor : 5.725

www.ijprems.com
editor@ijprems.com

Vol. 03, Issue 11, November 2023, pp : 184-197

39.1% fall within the 26-35 years age bracket, 18.8% are in the 36-45 years age range, 9.9% belong to the 46-55 years age group, and 10.4% are in the 56-65 years age category. These statistics reflect that the majority of government employees are of average working age. Overall, the table provides valuable insights into the gender, education, and age distribution among the respondents in the context of federal government establishments.

Table 2. Analysis of Research Questions

S/N	Statement	SA		A		NS		D		SD	
		Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
1	Nigerian tertiary institutions contribute to environmental degradation through their activities such as waste generation, energy consumption, and water usage	96	49.5%	70	34.7%	19	9.4 %	14	6.9%	3	1.5%
2	Nigerian tertiary institutions are affected by challenges in implementing Environmental Management Accounting (EMA) practices	54	26.7%	81	40.1%	43	21.3 %	19	9.4%	5	2.5%
3	Administrators, faculty, and staff of Nigerian tertiary institutions are aware about EMA principles and practices	54	26.7%	86	42.6%	39	19.3 %	19	9.4%	4	2.0%
4	There are variations in the adoption of EMA practices among different types of Nigerian tertiary institutions, such as universities, polytechnics, and colleges	33	16.3%	97	48.0%	47	23.3 %	18	8.9%	7	3.5%
5	Leadership commitment play a vital role in influencing the adoption and implementation of EMA in Nigerian tertiary institutions	42	20.8%	96	49.5%	41	20.3 %	16	7.9%	7	3.5%

Sources: Field Survey, 2023

INTERNATIONAL JOURNAL OF PROGRESSIVE RESEARCH IN ENGINEERING MANAGEMENT AND SCIENCE (IJPREMS)

e-ISSN : 2583-1062

www.ijprems.com
editor@ijprems.com

Vol. 03, Issue 11, November 2023, pp : 184-197

Impact Factor : 5.725

Table 2, above shows the significant portion of respondents (49.5%) strongly agree that Nigerian tertiary institutions contribute to environmental degradation through activities like waste generation, energy consumption, and water usage. An additional 34.7% agree, while 9.4% are unsure and 6.9% and 1.5% disagree strongly (D and SD respectively). This signifies recognition of the institutions' environmental impact and emphasizes the need for sustainable practices and environmental management strategies within these educational settings. Also a significant percentage of respondents, 26.7% strongly agreeing (SA) and 40.1% agreeing (A), perceive challenges in implementing Environmental Management Accounting (EMA) practices in Nigerian tertiary institutions. Moreover, 21.3% remain neutral (NS), while smaller percentages of 9.4% and 2.5% disagree (D) and strongly disagree (SD) with the notion of challenges in EMA implementation. This highlights a noteworthy consensus among the respondents regarding the presence of hurdles in EMA implementation within Nigerian tertiary institutions.

The table shows that a significant portion of respondents believe that administrators, faculty, and staff in Nigerian tertiary institutions are aware of EMA principles and practices, with 26.7% strongly agreeing (SA) and 42.6% agreeing (A). Additionally, 19.3% remain neutral (NS) on the awareness of EMA principles and practices among the staff, while 9.4% and 2.0% disagree (D) and strongly disagree (SD) respectively. This indicates a notable level of agreement, with a substantial proportion also expressing neutral or opposing views. Furthermore the results from the table suggest that a significant portion of respondents (16.3% strongly agree and 48.0% agree) recognize variations in the adoption of Environmental Management Accounting (EMA) practices among different types of Nigerian tertiary institutions, such as universities, polytechnics, and colleges. Moreover, 23.3% remain neutral (NS) about the variations in EMA practice adoption, while 8.9% and 3.5% disagree (D) and strongly disagree (SD) respectively. This indicates a notable acknowledgment of the differing levels of EMA implementation across various types of Nigerian tertiary institutions. A substantial proportion of respondents (20.8% strongly agree and 49.5% agree) recognize the vital role of leadership commitment in influencing the adoption and implementation of Environmental Management Accounting (EMA) in Nigerian tertiary institutions. Meanwhile, 20.3% remain neutral (NS) on the matter, and 7.9% and 3.5% disagree (D) and strongly disagree (SD) with the significance of leadership commitment. This highlights the perceived impact of strong leadership commitment in driving the adoption and implementation of EMA, while also acknowledging a notable level of neutrality and opposing perspectives.

In conclusion, the findings from Table 4.2 underscore the importance of addressing environmental management accounting concerns and challenges within Nigerian tertiary institutions. This also highlight the need for enhanced awareness, leadership commitment, and strategies to ensure the effective adoption and implementation of EMA practices in various tertiary institution. These insights provide a foundation for further research and initiatives aimed at promoting sustainability and responsible environmental management within Nigerian tertiary institutions.

Hypothesis Testing

Table 3.

ANOVA					
Performance					
	Sum of Squares	**df**	**Mean Square**	**F**	**Sig.**
Between Groups	1830.959	23	94.564	12.75	.000
Within Groups	2546.564	234	9.261		
Total	4377.523	257			

As can be seen in Table 3, the significant P-value of 0.001 is below the crucial value of 0.05. According to the ANOVA rule, if the significant P-value is smaller than the crucial value, the null hypothesis is rejected. Thus, it is necessary to reject H01 and accept H1, which states that there is a positive correlation between the efficient management of environmental costs and resource efficiency and the degree of knowledge and implementation of EMA practices inside Nigerian tertiary institutions. Based on table 3, F was determined to be 12.75.

This is 2.86 when compared to F from the table at F18, 257, 5%. According to the ANOVA rule, if the estimated F value is higher than the F value in the table, the null hypothesis is rejected. We reject the null hypothesis and accept the alternative, concluding that accurate awareness and adoption of EMA practices within Nigerian tertiary institutions positively correlated with the efficient management of environmental costs and resource efficiency. Our calculated F is 12.75, greater than the table value of F at 5% level of significance, which is 7.85.

INTERNATIONAL JOURNAL OF PROGRESSIVE RESEARCH IN ENGINEERING MANAGEMENT AND SCIENCE (IJPREMS)

e-ISSN : 2583-1062

www.ijprems.com
editor@ijprems.com

Vol. 03, Issue 11, November 2023, pp : 184-197

Impact Factor : 5.725

.**Summary of the findings**

There was a strong perception among respondents that higher education institutions in Nigeria had a significant impact on the environment, with many admitting that they contribute to environmental degradation. This highlights the urgent need for sustainable practices and effective environmental management strategies in these institutions. The data shows that there is a consensus among the respondents that there are challenges in implementing environmental management accounting (EMA) practices in Nigerian tertiary institutions. This reflects recognition of the barriers and complexities in effectively integrating EMA practices. The findings indicate that there is a remarkable level of awareness of the principles and practices of environmental management accounting (EMA) among managers, teachers and staff in Nigerian tertiary institutions. However, the proportion expressing biased or opposing views is significant, indicating that there may be gaps in understanding and awareness. The findings raise awareness of differences in the adoption of environmental management accounting (EMA) practices among different types of Nigerian tertiary institutions, highlighting the need for a tailored approach to EMA implementation, depending on the institutions' specific characteristics and circumstances. Respondents point out that management involvement plays a critical role in the adoption and implementation of Environmental Management Accounting (EMA) in Nigerian tertiary institutions. However, there is a significant proportion of neutral or opposing views, indicating a clear understanding of the impact of management involvement on EMA implementation.

5. CONCLUSION

A study on environmental management accounting (EMA) in Nigerian tertiary institutions provided valuable insights into the practices, perceptions, challenges and opportunities of EMA in this educational setting. Following the study, the following important conclusions can be drawn. Awareness of Environmental Impact: The survey results revealed that respondents are highly aware that Nigerian tertiary institutions contribute to environmental degradation through activities such as waste generation, energy consumption and water use. This recognition highlights the importance of addressing environmental issues within the institution. Difficulties in implementing EMA: There was considerable consensus among respondents on the challenges of implementing EMA in Nigerian tertiary institutions. This highlights the need for solutions and support to overcome these barriers and promote sustainable practices. Awareness and knowledge: Although a significant proportion of respondents believed that managers, teachers and staff in Nigerian tertiary institutions were aware of the principles and practices of EMA, there was a range of views, including neutrality and disagreement. This suggests that there is room for further research into levels of awareness and knowledge and improved training on the principles of EMA. Differences in the perception of EMA: This study shows that there are differences in the perception of EMA practices among different types of Nigerian tertiary institutions such as universities, colleges and polytechnics. This diversity highlights the need for a tailored approach to EMA implementation based on institutional characteristics.

Role of Management: Strong management commitment is considered a critical factor influencing the adoption and implementation of EMA in Nigerian tertiary institutions. However, there are a variety of perspectives, including biases and disagreements that highlight the importance of strong leadership commitment in promoting EMA adoption. The findings of this study highlight the importance of promoting sustainable and responsible environmental management practices in Nigerian tertiary institutions. Addressing environmental concerns, raising awareness, and encouraging management participation are important steps toward effective EMA implementation. These findings provide the basis for future research and planning to improve sustainability practices and reduce the environmental impact of Nigerian tertiary institutions. It is essential that these organizations integrate EMA into their operations and promote a culture of environmental responsibility to ensure a sustainable future.

6. RECOMMENDATION

To promote the adoption and implementation of EMA in Nigerian tertiary institutions, the following recommendations are suggested:

- Awareness and training: Nigerian tertiary institutions should organize awareness campaigns and training programs to educate staff and students on the importance of EMA and how it can be applied in their respective fields.
- Policy support: The government should provide policy support and incentives to encourage the adoption and implementation of EMA in Nigerian tertiary institutions.
- Collaboration: Nigerian tertiary institutions should collaborate with relevant stakeholders such as environmental agencies, financial institutions, and industry players to promote the use of EMA.
- Integration: Nigerian tertiary institutions should integrate EMA into their strategic planning and decision-making processes to ensure that environmental considerations are given due consideration.

7. REFERENCES

[1] Abrahamson, E 1991, 'Managerial Fads and Fashions: The Diffusion and Rejection ofInnovations', Academy of Management Review, vol. 16, no. 3, pp. 586-612.

[2] Abrahamson, E 1996, 'Management Fashion', Academy of Management Review, vol. 21, no. 1,pp. 254-85.

[3] Akinbami, J. F., Adeniyi, O. A., & Adeniji, A. O. (2019). Environmental management practices in Nigerian universities: challenges and prospects. Journal of Cleaner Production, 232, 1114-1123.

[4] Assessing the Sustainability of Business and CSR, Earthscan Publications, London.

[5] Bartolomeo, M, Bennett, M, Bouma, JJ, Heydkamp, P, James, P & Wolters, T 2000, 'Environmental Management Accounting in Europe: Current Practice and FuturePotential', The European Accounting Review, vol. 9, no. 1, pp. 31-52.

[6] Bebbington, J, Gray, R, Hibbitt, C & Kirk, E 2001, Full Cost Accounting: An Agenda forAction, Association of Chartered Certified Accountants, London.

[7] Bebbington, J, Gray, R, Hibbitt, C & Kirk, E 2001, Full Cost Accounting: An Agenda forAction, Association of Chartered Certified Accountants, London.

[8] Bennett, M & James, P (eds) 2000, The Green Bottom Line: Environmental Accounting forManagement: Current Practice and Future Trends, 2nd edn, Greenleaf Publishing,Sheffield.

[9] Bennett, M & James, P 1997, 'Environment-Related Management Accounting: Current Practice and Future Trends', Greener Management International, no. 17, pp. 32-52.

[10] Bennett, M, Hopkinson, P & James, P 2006, 'Benchmarking Environmental Performance in the English University Sector: The Experience of the Higher Education EnvironmentalPerformance Improvement (HEEPI) Project', in S Schaltegger, M Bennett & R Burritt (eds), Sustainability Accounting and Reporting, Springer, Dordrecht.

[11] Bennett, M, James, P & Klinkers, L (eds) 1999, Sustainable Measures: Evaluation and Reporting of Environmental and Social Performance, Greenleaf Publishing, Sheffield.

[12] Burritt, R & Welch, S 1997, 'Accountability for Environmental Performance of the AustralianCommonwealth Public Sector', Accounting, Auditing & Accountability Journal, vol. 10, no. 4, pp. 532-61.

[13] Burritt, R, Hahn, T & Schaltegger, S 2002a, 'An Integrative Framework of Environmental Management Accounting', in M Bennett, JJ Bouma & T Wolters (eds), EnvironmentalManagement Accounting: Informational and Institutional Developments, Kluwer Academic Publishers, Dordrecht, vol. 9, pp. 21-35.

[14] Calder, W & Clugston, R 2002, U.S. Progress toward Sustainability in Higher Education,Environmental Law Institute, viewed 3 May 2007, <http://www.ulsf.org/dernbach/intro.htm>.

[15] Choudhary, A., Tiwari, P., & Garg, P. (2017). Environmental management accounting: An effective tool for sustainable development in universities. International Journal of Sustainable Development & World Ecology, 24(6), 469-480.

[16] Creighton, S 1998, Greening the Ivory Tower: Improving the Environmental Track Record of Universities, Colleges, and Other Institutions, vol. 3, 3 vols., Urban and Industrial Environments, The MIT Press, London.

[17] Deegan, C & Blomquist, C 2006, 'Stakeholder Influence on Corporate Reporting: An Exploration of the Interaction between WWF-Australia and the Australian Minerals Industry', Accounting, Organizations and Society, vol. 31, pp. 343-72.

[18] Deegan, C & Blomquist, C 2006, 'Stakeholder Influence on Corporate Reporting: An Exploration of the Interaction between WWF-Australia and the Australian Minerals Industry', Accounting, Organizations and Society, vol. 31, pp. 343-72.

[19] Deegan, C 2002, 'Introduction. The Legitimising Effect of Social and Environmental Disclosures - A Theoretical Foundation', Accounting, Auditing & AccountabilityJournal, vol. 15, no. 3, pp. 282-311.

[20] Deegan, C 2003, Environmental Management Accounting: An Introduction and Case Studies for Australia, Institute of Chartered Accountants in Australia, Melbourne.

[21] Deegan, C 2005, 'Environmental Management Accounting: An Overview and Application ofthe Concept', in Z Hoque (ed.), Handbook of Cost and Management Accounting, Spiramus Press, London.

[22] Deegan, C 2006, Financial Accounting Theory, 2nd edn, McGraw-Hill, Sydney.

[23] Deegan, C 2007, Australian Financial Accounting, 5th edn, McGraw-Hill, Sydney.

[24] Deegan, C, Rankin, M & Tobin, J 2002, 'An Examination of the Corporate Social and Environmental Disclosures of BHP from 1983-1997: A Test of Legitimacy Theory',Accounting, Auditing & Accountability Journal, vol. 15,

no. 3, p. 312.

[25] Ditz, D, Ranganathan, J & Banks, RD (eds) 1995, Green Ledgers: Case Studies in CorporateEnvironmental Accounting, World Resources Institute, Washington D.C.

[26] Everett, J & Neu, D 2000, 'Ecological Modernization and the Limits of EnvironmentalAccounting?' Accounting Forum, vol. 24, no. 1, pp. 5-29.

[27] Filho, WL & Carpenter, D (eds) 2006, Sustainability in the Australasian University Context, Peter Lang, Frankfurt am Main.

[28] Gray, R & Bebbington, J 2001, Accounting for the Environment, 2nd edn, SAGE Publications,London.

[29] Gray, R, Kouhy, R & Lavers, S 1995, 'Corporate Social and Environmental Reporting: A Review of the Literature and a Longitudinal Study of UK Disclosure', Accounting,Auditing & Accountability Journal, vol. 8, no. 2, pp. 47-77.

[30] Herremans, I & Allwright, DE 2000, 'Environmental Management Systems at North AmericanUniversities: What Drives Good Performance?' International Journal of Sustainabilityin Higher Education, vol. 1, no. 2, pp. 168-81.

[31] Horngren, CT, Datar, SM & Foster, G 2003, Cost Accounting: A Managerial Emphasis, 11thedn, Prentice Hall, New Jersey.

[32] Klassen, RD & McLaughlin, CP 1996, 'The Impact of Environmental Management on FirmPerformance', Management Science, vol. 42, no. 8, pp. 1199-214.

[33] Kokubu, K & Nakajima, M 2004, 'Sustainable Accounting Initiatives in Japan: Pilot Projectsof Material Flow Cost Accounting', in J Seiler-Hausmann, C Liedtke & E von Weizsacker (eds), Eco-efficiency and Beyond, Greenleaf Publishing, Sheffield, pp.

[34] KPMG 1997, Introductory Guide to Environmental Accounting, Minister of the Environment,Montreal, Canada.

[35] KPMG 1999, International Survey of Environmental Reporting, KPMG, Amsterdam.

[36] KPMG 2002, International Survey of Corporate Sustainability Reporting, KPMG GlobalSustainability Services.

[37] Oke, B. A., & Adekola, A. O. (2012). Environmental management accounting: An innovative tool for sustainability in Nigerian universities. Journal of Education and Practice, 3(11), 7-13.

[38] Oladejo, J. A. (2019). Environmental management accounting and sustainable development in Nigerian universities. Journal of Environmental Management and Tourism, 10(6), 1318-1326.

[39] Otley, DT 1980, 'The Contingency Theory of Management Accounting: Achievement and Prognosis', Accounting, Organizations and Society, vol. 4, pp. 413-28.

[40] Oyelere, M. A., Adekanye, T., & Oyebisi, T. O. (2017). Environmental management accounting practices in Nigerian tertiary institutions. Journal of Cleaner Production, 147, 307-316.

[41] Oyelere, M. A., Adekanye, T., & Oyebisi, T. O. (2018). Sustainable environmental management practices in Nigerian tertiary institutions: Prospects and challenges. Journal of Cleaner Production, 172, 3690-3701.

[42] Parker, LD 1997, 'Accounting for Environmental Strategy: Cost Management, Control and Performance Evaluation', Asia-Pacific Journal of Accounting, vol. 4, no. 2, pp.

[43] Richardson, J & Henriques, A (eds) 2004, The Triple Bottom Line: Does it All Add Up?

[44] Rikhardsson, P, Bennett, M, Bouma, JJ & Schaltegger, S (eds) 2005b, Implementing Environmental Management Accounting: Status and Challenges, Eco-Efficiency inIndustry and Science, Springer, Dordrecht.

[45] Rikhardsson, P, Bennett, M, Bouma, JJ & Schaltegger, S 2005a, 'Environmental ManagementAccounting: Innovation or Managerial Fad?' in P Rikhardsson, M Bennett, JJ Bouma & S Schaltegger (eds), Implementing Environmental Management Accounting: Statusand Challenges, Springer, Dordrecht.

[46] Rogers, E 2003, The Diffusion of Innovations, 5th edn, Free Press, New York.

[47] Rogers, G & Kristof, J 2003, 'Reducing Operational and Product Costs Through Environmental Accounting', Environmental Quality Management, vol. 12, no. 3, pp.17-42.

[48] Scapens, R 1990, 'Researching Management Accounting Practice: The Role of Case StudyMethods', British Accounting Review, vol. 22, no. 3, pp. 259-81.

[49] Schaltegger, S & Burritt, R 2000, Contemporary Environmental Accounting: Issues, Conceptsand Practice, Greenleaf Publishing, Sheffield.

[50] Schaltegger, S & Muller, K 2000, 'Calculating the True Profitability of Pollution Prevention', in M Bennett & P James (eds), The Green Bottom Line: Environmental Accounting forManagement - Current Practice and Future Trends, Greenleaf Publishing, Sheffield.

[51] Schaltegger, S & Muller, K 2000, 'Calculating the True Profitability of Pollution Prevention', in M Bennett & P James (eds), The Green Bottom Line: Environmental Accounting forManagement - Current Practice and Future Trends, Greenleaf Publishing, Sheffield.

[52] Schaltegger, S & Wagner, M (eds) 2006, Managing the Business Case for Sustainability,Greenleaf Publishing, Sheffield.

[53] Schaltegger, S, Burritt, R & Petersen, H 2003, An Introduction to Corporate EnvironmentalManagement: Striving for Sustainability, Greenleaf Publishing Limited, Sheffield.

[54] Schaltegger, S, Muller, K & Hindrichsen, H 1996, Corporate Environmental Accounting,Wiley, Chichester.

[55] World Bank. (2019). Nigeria: Towards a sustainable waste management system. Retrieved from https://www.worldbank.org/en/news/feature/2019/10/22/nigeria-towards-a-sustainable-waste-management-system.