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Effect of Green Accounting on the Performance of Manufacturing Firms in Nigeria

Mgbobi, Ikechukwu Cyriacus [1]; Prof. Chike, Nwoha [2]; Prof. Uche, Ugwuanyi Boniface [3]; Prof. Uche Lucy Onyekwelu [4]

[1] *Department of Accounting, Gregory University Uturu, Abia State, Nigeria.*
[2, 3 & 4] *Department of Accountancy,*
Enugu State University of Science and Technology (ESUT),
Agbani, Enugu State, Nigeria.

[1] *ikechukwu.mgbobi@gmail.com; +234 8037 908 741*
[2] *chike.nwoha@esut.edu.ng +234 8033 326 019*
[3] *boniface.ugwuanyi@esut.edu.ng +234 703 096 8979*
[4] *fidelia.onyekwelu@esut.edu.ng +234 704 298 4055*

Abstract

Research Objectives: The objectives of this study were to ascertain the extent to which environmental cost influences corporate performance in manufacturing Firms in Nigeria and to evaluate the financial results on service delivery of Manufacturing Firms in Nigeria.

Methodology: The study used a secondary source of data collection. Data collected were analyzed and the hypotheses were tested using the Ordinary Least Squares regression technique to determine the impact of the independent variables.

Findings: It was found that environmental cost influences corporate performance in manufacturing firms in Nigeria.

Recommendations: It was concluded that adequate green accounting could enhance the operating environment of the firm as well as the financial performance of Aqua Rapha Limited, Enugu. Also, Green accounting standards should be published locally and internationally and reviewed continually to ensure compliance that will meet environmental situational needs.

Key words: *Green Accounting, Environmental Cost, Service Delivery, Work Quality, Firm Performance.*

1. Introduction

Green accounting is a type of accounting that attempts to factor environmental costs into the financial results of operations. It has been argued that gross domestic product ignores the environment and therefore decision makers need a revised model that incorporates green accounting. Environmental pollution is one of the problems facing the world today, due to its impact on society, nature and performance (Khan & Ghouri, 2016). The phenomenon of

environmental pollution has received increasing attention in recent times, especially in light of the industrial progress in the contemporary world and the diversity of sources of pollution, and the attempt of industrial companies, particularly Manufacturing firms to get rid of its waste is harmful to the environment and people (Chinwe, 2018). As a result of the development of interest in environmental performance as one of the foundations of development in any country, non-use of modern scientific methods that analyse environmental costs and provide detailed information on those costs and the efforts and amounts that companies bear for the purpose of environmental protection will give guaranteed results on the extent of their success or failure (Nas, 2016).

Therefore, new concepts of accounting emerged, such as green accounting, and the names have multiplied across stages of concern for the environment (accounting for a sustainable environment, environmental accounting, environmental impact accounting, social responsibility accounting, etc.), and then the concept of green accounting emerged when it was considered the subject of the system (Moorthy & Yacob, 2020). The environmental protection is one of the foundations of economic development, and that preserving the environment and resources is a right for society, and environmental issues have become a social matter at the local, national and international levels, so the matter needed to develop accounts in line with the environmental problem at the level of the institution and the whole economy (Portney, 2019).

According to Malik & Mittal (2015), Green accounting is important for developing economies, this is because green accounting helps in saving environmental and development problems. Environmental accounting will help countries in addressing the economic problems associated with climate change. For instance, according to the World Bank, the world loses a significant amount of money due to environmental changes. Green accounting would help in solving environmental changes leading to improved performance for companies and firms operating in developing countries. Firms that have adopted green accounting have led to reduced operational costs during environmental changes, (Moorthy & Yacob, 2020).

However, a lot of government enactments, laws and regulations on environmental protection have been made in several nations of the world including Nigeria. In the light of the awakening to environmental protection, various laws and regulations such as the Environmental Impact Assessment Act, 1992 and the Department of Petroleum Resources (DPR) Environmental Guidelines and Standards for the Petroleum Industry in Nigeria (Chiamogu & Okoye, 2020). These require corporate management to consider the environmental implications of all internal decisions of their management. Also, all organizations monitored by environmental policy agencies in Nigeria are expected to demonstrate much consideration in decision making. Environmentalists agree that it could be more cost efficient and beneficial for companies to acquire pollution prevention or clean technology than those of pollution clean-up. It is also observed that in environmental

regulations, there is a shift from the 'command and control' approach to market-driven forms in which pollution prevention alternatives are replacing pollution cleaning approaches. It follows therefore, that determining the appropriate pollution prevention approach may lead to additional decisions to be taken by management. Such decisions may include proper environmental cost and green management accounting to reduce the impact of the firm's operation on the environment (Chiamogu & Okoye, 2020).

However, most Manufacturing firms pay little or no attention to issues of green or environmental accounting, with dire consequences on the environment and host community. Therefore, in the light of the background of increasing environmental attention, and the fact that the Manufacturing sectors have profound production impact on the environment, the study explores the effect of green accounting on the financial performance Manufacturing firms in Nigeria.

The creation of accounting and reporting methods of green accounting is a great problem to the accounting profession. Accountants, as the main controllers and bearers of economic development can no longer close their eyes to the impacts of environmental issues on business management, accounting, audits and disclosure systems. This days, accountants are expected to take a forward-looking role in the environmental protection process with the coming of liberalization, removal of trade barriers makes it reasonable that the costs of environmental degradation caused by industrial activities should be brought into corporate accounts to the extent possible, that is why green accounting and reporting therefore is of great importance today. Accountants are encountering the problems of placing accurate and reliable value on environmental impacts. In the African context, no one has come up with an acceptable, reliable, objective variable measurement technique for green accounting. Therefore, the need for accounting and reporting on the environment has greatly been felt. Hence, accounting of environmental impacts and their disclosure in the annual reports has become an important part of corporate accounting and reporting systems, (Moorthy & Yacob, 2020).

According to Federation des Experts Compatibles Europeans (FEE) (FEE, 2015) Green accounting concerns the treatment of environmental impacts in the financial statement, and environmental evaluation. Environmental reporting is usually not in the same area as financial reporting because it usually takes place in a separate report or in a separate section of the financial statements. Green accounting refers to the accounting for environment which is made up of our natural physical surroundings which includes land, air, water, flora(plants), fauna (animal life) and nonrenewable resources, such as fossil fuel and minerals, (Chiamogu & Okoye, 2020).

Green accounting is a system for assigning, arranging, controlling, managing and delivering data and information on the environment through monetary or physical indicators. It constitutes an indispensable tool for applying the sustainable development concept and now

commands acceptance as a means of ensuring the preservation of the environment. Conventional instruments of economic analysis do not in fact enable political decision makers to measure reliably the effectiveness of the environmental policies implemented or the impact of economic policies on the environment. It is therefore necessary to adopt suitable environmental monitoring and information systems which can serve as a basis for political decisions, (Moorthy & Yacob, 2020).

Green accounting describes the effort of accounting standard setters, professional organizations and governmental agencies to get corporations to participate proactively in cleaning and sustaining the environment and to describe fully, their environmental activities in either their annual reports or stand-alone environmental disclosure. There is an increasing sense among stakeholders that traditional financial reporting, which for most large and listed companies is based on International Financial Reporting Standards (IFRS), is insufficient for the purpose of investing based on the lack of information about future activities. Apart from key areas such as performance and conformance, stakeholders are also interested in the sustainable value creation activities of the organization, (Iliemena, 2020).

In general terms, there is a call for more information. This is because advances in information technology (in particular, sophisticated software agents) mean that large quantities of data can be searched and analyzed based on the user's individual specifications. More specifically, however, there is a call for information that is forward-looking and/or non-financial in nature. This information may be quantitative or qualitative and is intended to supplement and not replace the existing set of largely historical, financial information contained in the financial statements. In this background this study examines the Effect of Green Accounting on the Performance of Manufacturing Firms in Nigeria.

1.2 Statement of the Problem

Green accounting involves the identification, measurement and allocation of environmental costs, and the integration of these costs into business and encompasses the way of communicating such information to companies' stakeholders. This is due to the lack of a clear framework such as the green accounting standard that could ensure that firms are accountable for their actions in the environment. Green accounting involves the process of communicating the social and environmental effects of organizations' economic actions to particular interest groups within society and to society at large. As such it involves extending the accountability of organizations (particularly companies) beyond the traditional role of providing a financial account to the shareholders. Such an extension is predicated upon the assumption that companies do have wider responsibilities than simply to make money for the shareholders. In this case it is a comprehensive approach to ensure good corporate governance that includes transparency in its social activities. The problem is that conventional approaches of cost accounting have become inadequate since conventional accounting practices have ignored important environmental costs and activities impacting consequences

on the environment. Corporate neglect and avoidance of environmental costing leave gaps in financial information reporting. There is no completeness and correctness of fair view to users of financial information, such as shareholders, environmental regulatory agencies, environmentalists and potential financial investors.

However, there are currently only limited requirements for any formal identification or reporting with regard to environmental assets, liabilities or contingencies. The key problem is that there are few formalized definitions of what environmental assets or environmental contingencies are, although some progress has been made in this area. There is no clear stipulation of environmental issues in standards as a basic requirement, since no such specific

standard exists, and the present standards include minimal guidelines concerning environmental issues. This implies the problem of such comparison among the reports, inadequate management of environmental costs and different calculating methods among firms. Also, the lack of effective green management accounting, green cost accounting and the absence of clear environmental accounting standards affect green account practice in oil and gas firms and makes comparison between firms not possible because the method of accounting is different.

1.3 Objectives of the Study

The main objective of the study is to find out the Effect of Green Accounting on the Performance of Manufacturing Firms in Nigeria with reference to Aqua Rafer ltd (2012-2021).

The Specific objectives are:

i. To ascertain the extent to which environmental cost influences corporate performance in manufacturing Firms in Nigeria.

ii. To evaluate the financial results on service delivery of Manufacturing Firm in Nigeria

iii. To assess the effect of decision-making of Green Accounting on work quality of manufacturing Firms in Nigeria.

1.4 Research Question

Based on the objectives specified above, the pertinent questions we may ask are:

i. To what extent does environmental cost influence corporate performance in manufacturing Firms?

ii. How effective are financial results on service delivery of Manufacturing Firms in Nigeria?

iii. What is the effect of decision-making of Green Accounting on work quality of manufacturing Firms in Nigeria?

1.5 Research Hypotheses

In order to achieve the set objectives the following hypotheses were formulated:

i) H_{01}: Environmental cost does not influence corporate performance in Manufacturing Firms.

ii) H_{02}: Financial results do not affect service delivery of Manufacturing Firms in Nigeria.

ii) H_{03}: Decision-making of Green Accounting does not affect work quality of manufacturing Firms in Nigeria.

1.6 Scope of the Study

The study covers a period of ten years (2012 – 2021). The research work covers the Effect of Green Accounting on the Performance of Manufacturing Firms in Nigeria using Aqua Rapha production, Enugu as study. Aqua Rapha Limited, Enugu is located at 9th mile corner Ngwo, Enugu State, Nigeria.

2. Review of Related Literature

2.1 Theoretical Framework

2.1.1 Concept of Green Accounting

Green or environmental accounting is a term with a variety of meanings. In many contexts, green accounting is taken to mean the identification and reporting of environment specific costs (Nkwoji, 2021). Green accounting is a method of measuring, in economic terms, the performance of any type of organization in relation to the environment. The goal is to provide information about the company's operational performance based on environmental protection. Conventional accounting only provides economic information that is financial in nature to shareholders and bondholders for decision making. Performance measures need to be increased to improve existing performance measures. Environmental impacts need to be reported as a manifestation of responsibility towards stakeholders (Astuti, 2020). Green accounting or environmental accounting aims at achieving sustainable development, maintaining a favorable relationship with the community, and pursuing effective and efficient environmental conservation activities. The accounting procedures allow a company to identify the cost of environmental conservation during the normal course of business, identify benefits gained from such activities, and provide the best possible means of quantitative measurement, in monetary value or physical units, and support the communication of its results.

Green accounting is a type of accounting that attempts to incorporate environmental costs into the financial results of operations (Rewadikar, 2014). It is accounting for any costs and benefits that arise from change to a firm's products and processes where the change also involves a change in environmental impact. Green accounting is a relatively new concept which aims to include in the traditional measurement of economic development the cost for using the environment as inputs to production and as a sink for wastes. From the point of

view of green accounting, land, water, and other natural resources are treated as inputs and assets in the production of goods and services of an entity (Virola, De Perio & Angeles, 2010). Green accounting or environmental accounting is the practice of incorporating principles of environmental management and conservation into reporting practices and cost/benefit analyses (Rewadikar, 2014). Environmental accounting allows a business to see the impact of economically sustainable practices in everything. It allows accountants to report on the economic impact of those decisions to stakeholders so as to allow for proactive decision making about processes that simultaneously meet environmental regulations while adding to the bottom line.

Green accounting according to Lewis and Chopparapu (2017), mainly focuses on the role in which an enterprise has toward the environment. Environmental change has a bearing change in not only the environment but also in the economy. A suitable environment has a positive impact on the business sector by creating an appropriate environment for enterprising (Hecht, 2018). Green accounting examines how the environment affects the financial accounting system in terms of costs and benefits. It is an approach to measure and communicate information related to environmental activities of economic units with environmental impact to the parties concerned and society in a manner that enables control and evaluation of their environmental performance (Moorthy & Yacob, 2018). Green accounting has led to sustainable development by creating a peaceful environment for the enterprise (Gray & Laughlin, 2018).

2.1.2 Concept of Social Accounting

Social accounting is concerned with the measurement and disclosure of costs and benefits to the society as a result of operating activities of a business enterprise. Thus, social accounting measures social costs and social benefits as a result of business activities for communication to various groups both within and outside the business (Maheshwari, 2013). Wason (2006) defined Social accounting as that part of accounting concerned with the process of identification, measurement and communicating the contribution made by the business enterprise to the society in which the business enterprise is born and thereafter grows. Iheduru (2018) sees social accounting as the "process of communicating the social and environmental effects of organizations' economic actions to particular interest groups within society and to society at large.

According to Crowther (2020) social accounting is an "approach to reporting a firm's activities which stresses the need for the identification of socially and relevant behavior, the determination of those to whom the company is accountable for its social performance and the development of appropriate measures and reporting techniques. Environmental accounting is sometimes referred to as green accounting, resource accounting, integrated economic and environmental accounting refers to modification of the system of National accounts to incorporate the use or depletion of natural resources. It is the practice of

accounting for all contributing factors that result in an impact on the environment (Akpan, 2017). It involves management of environmental costs effectively presenting and disclosing environmental information in a suitable form (Maheshwari, 2015) postulates that environmental accounting, often referred to as green accounting, incorporates environmental assets and their source and sink functions into National and Corporate accounts.

Maheshwari (2015) sees social costs as any cost or sacrifice to the society or any of its elements whether economic or non-economic, internal or external. He further, emphasized that social costs can be a sacrifice whether economic or non- economic made by society and is not paid for such as damages to air, soil and water, due to disposal of waste by a business entity and if entity is making any payment for reduction of air, soil and water pollution, can be shown as social benefits.

2.1.3 Green Accounting in Financial Performance

Financial performance is a subjective measure of how well manufacturing firms can use assets from its primary mode of business and generate revenues. It shows the general well-being of a firm and its true financial position (Eze, 2021). Financial performance can be looked at, as the level of performance of an organization at a point in time. This could be measured in terms of overall profits and losses or asset utilization. According to Iliemena and Okolocha (2019) the measures of financial performance of an organization are as varied as the motive for the measurement. Organisational financial performance is measured to give the account of stewardship by the management team to the shareholders. The key aspect of this involves measuring the profitability, return on investment, return on asset and growth prospect of a company. The measurement of the effect of green accounting on performance examines the nature of the relationship between some indicator of environmental reporting or performance with the company's financial performance obtained from the accounting information such as the historical audited financial statements of the respective companies. Financial performance is commonly used as an indicator of a firm's financial health over a given period of time. In this study, financial performance is measured return on equity and return on asset.

When a manufacturing firm applies green accounting and is able to show a good environmental performance, the impact is on good financial performance. This has been proven in both academic and empirical research, which states that financial performance, in this case the market value of the company, is strongly influenced by environmental performance, where the effect is positive. The relationship between environmental performance and financial performance can be observed in terms of income and costs. From the income side, it can be explained that consumer preference for consumer-oriented products allows these companies to enjoy market differentiation, competitive advantages, and consumers have a tendency to be willing to pay higher prices for environmentally-oriented products (premium prices). On the cost side, there are many benefits that companies get as a

result of increasing efficiency, avoiding potential liabilities, being better positioned to meet or exceed standards, and creating entry barriers for potential competitors. Thus, it can be explained through disclosure of environmental costs, that it will reflect the business ethics carried out by the company, as well as responsible management of resources. This will increase the social trust of stakeholders such as the public and consumers, which in turn will be able to improve financial performance, such as achieving maximum company profitability. Dutta et al. (2019) stated that green accounting issues relate to corporate profitability.

2.1.4 Green Accounting Approaches

Physical approach vs. monetary approach two approaches are adopted in Green accounting. Firstly, the physical 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). Depending on this approach the environmental operations are presented in physical terms, the current balance of the resources and the additions and deductions from that resource. No monetary value is assigned according to this approach (Ahmed, 2019). The monetary approach emerged due to the fact that the physical approach does not fulfill the requirements of environmental accounting. The physical approach is very important to get physical information about the resources which enables us to prepare the environmental statistics and is considered the first step in the monetary approach. Despite the difficulties associated with the monetary approach, it gained a lot of interest as such data will enable us to know the profit and loss associated with environmental operations and to get an environmental adjusted economic indicator (Hamid, 2018).

2.1.5 Forms of green accounting

Green accounting involves estimation of environmental expenditures/cost, capitalization of those environmental expenditures, identification of environmental liabilities and measurement of environmental liabilities. There are several forms of green or environmental accounting including:

Green management accounting: Green or environmental management accounting is the identification, prioritization, quantification or qualification, and incorporation of environmental costs into business decisions (Astuti, 2012). Green management accounting uses data about environmental costs and performance for business decisions. It collects cost, production, inventory, and waste cost and performance for business decisions. Environmental management accounting thus represents a combined approach which provides for the transition of data from financial accounting and cost accounting to increase material efficiency, reduce environmental impact and risk, and reduce costs of environmental protection.

Green or environmental cost accounting: The environmental cost accounting deals with environmental costs in order to reach the full cost accounting, i.e. the identification,

evaluation, and allocation of conventional costs, environmental costs, and social costs to processes, products, activities, or budgets. In some organizations, accountants are held responsible to identify and track green costs, oftentimes working with site, research and development, and production managers when planning their budgets. In the past, such costs were buried in overhead, preventing a clear picture of the cost savings and benefits to the product, process, system or facility responsible for the green initiatives. Green accounting helps management recognize that the tax benefits, rebates and lower costs of being environmentally friendly add up to a real bottom-line reward for doing the right thing (Eilola, 2017).

Environmental financial accounting: Environmental cost accounting, environmental management accounting, ecological accounting and natural resource accounting. Environmental financial accounting aims for true disclosure in financial statements at the end of the period. That is including environmental dimension in the published sheets of operations.

Environmental expenditures/costs: These are expenses or costs related to environmental measures including production-related costs and product research and development expenditures which are incurred primarily for ensuring protection of the environment. Total environmental expenditures can be classified into six categories such as capital investment, operating costs, research and development cost, environment administration and planning, expenditures for remedial measures and recovery measures (Eze, 2021).

Ecological accounting: Ecological cost accounting is used to refer to the preparation of accounts according to physical data only. In this respect, ecological accounting is mainly used to prepare asset management plans at local administration level. Such plans provide a tool to evaluate the condition and life cycle of any particular physical asset. Natural resource accounting: Natural resource accounting is called after inclusion of environmental aspects into the system of national accounts. Emphasis is given to natural assets, deterioration in its quality in order to get an environmentally adjusted economic indicator such as environmental gross national income (Rewadikar, 2014).

2.1.6 Exploring the Concept of Environmental Costs

Environmental costs are costs incurred by companies in order to prevent environmental problems and minimize damages to the environment. They are those costs incurred in compliance with, or prevention of breach of environmental laws, regulations and company policies. However, the true environmental costs to a firm can be far broader, including costs of resources both those directly related to production and those involved in general business operations, waste treatment and disposal costs, the cost of poor environmental reputation and the costs of paying an environmental risk premium.

The Environmental Protection Agency (2016) defines environmental costs as those costs that have direct financial impact on company (internal costs), and costs to individuals, society and

the environment (external costs). Any activity conducted by enterprises in their environment leads to the emergence of environmental costs. Some of the environmental costs arise as a result of actions taken to protect the environment and occur as a result of the use of environmental resources. Another part of these costs arises due to environmental pollution caused by these companies. Environmental costs can be divided into three different groups: reduction costs, operating costs and damage costs (Otlu and Kaya, 2014).

2.1.7 Categories of Environmental Costs

Environmental costs can be categorized into costs that directly impact a company's bottom-line, which are referred to as private costs and costs to individuals, society and the environment for which a company is not accountable, which are called societal costs. Private costs can further be classified into, conventional costs, potentially hidden costs, contingent costs and image and relationship costs. This classification creates both a decision-oriented information base for the environmental management system and for the planning, control and supervision of material and energy flows (Iheduru, 2018).

- **Conventional Costs:** The costs of using raw materials, utilities, capital goods and supplies are usually addressed in cost accounting and capital budgeting. However, the environmental portion of these costs into business decisions, whether or not they are seen as environmental costs.

- **Potentially Hidden Costs:** These are environmental costs that may be potentially hidden from managers because of their infrequent nature and /or because of their collection in company overhead accounts (EPA 742 –R-95-003, 1995). Different types of environmental costs that may be potentially hidden from managers are: upfront environmental costs, regulatory and voluntary environmental costs and back –end environmental costs.

- **Contingent Costs:** These are costs that may or may not be incurred at some point in the future. Examples include the costs of remedying and compensating for future accidental releases of contaminants into the environment (example, oil spills), fines and penalties for future regulatory infractions. Because these costs may not currently need to be recognized for other purposes, they may not receive adequate attention in internal management accounting systems and forward-looking decisions.

- **Image and Relationship Costs:** These costs are incurred to affect subjective (though measurable) perceptions of management, customers, employees, communities and regulators. These costs have also been termed "corporate image" and "relationship" costs. This category can include the costs of annual environmental reports and community relations activities, costs incurred voluntarily for environmental activities

(example, tree planting), and costs incurred for recognition programs. These costs themselves are not intangible, but the direct benefits that result from relationship or corporate image expenses often are.

- **Societal Costs or External Costs:** These are the costs a business impacts on the environment and society for which business is not legally accountable. They include environmental degradation and adverse impacts on human beings, their property and their welfare which cannot be compensated through the legal system.

At present, valuing societal costs is both difficult and controversial; nevertheless, it is essential for any environmentally friendly organization to determine external impacts and to the extent for any possible, value societal costs in order to integrate them into its planning and decision-making.

2.1.8 Objectives of Green accounting

According to Pramanik, Shil and Das (2017), green 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.

i. Green accounting would aid the discharge of the organization's accountability and increase its environmental transparency, it helps negotiate the concept of environment and determines 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.

ii. Because of the ethical investment movement, ethical investors require the companies to be environmentally friendly. Therefore, by upholding a friendly image, companies may be successful in attracting funds from "green" individuals and groups.

iii. Green accounting consumerism movement launched by the environmental lobby groups encourages the 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.

iv. By making environmental disclosure, companies may show their commitments towards introduction and change and thus appear to be responsive to new factors.

v. Companies engaged in environmentally unfriendly industries aroused strong public emotion. There is a strong environmental lobby against these industries. Green reporting may be used to combat potentially negative public opinions.

vi. By cultivating the enlightened approach of green accounting, companies can increase their image of being enlightened to the outside world and this can be regarded as enlightened companies (Pramank, et al, 2017).

2.1.9 Benefits of Green accounting

The benefits of understanding a green accounting initiative is that the identification and greater awareness of environment related costs often provides the opportunity to find ways to reduce or avoid these costs, whilst also improving environmental performance (William, 2019). Richardson (2019) identified that, more elaborately, green accounting is an effective tool for placing environmental issues firmly on top management agenda, providing useful data to inform environmental and financial manager's decision-making, and concretely demonstrating environmental commitment to stakeholders. The environmental Protection Agency (EPA) adds the following benefits:

(i) Many environmental problems can be significantly reduced or eliminated as a result of effective decisions.

(ii) Environmental cost (and potential savings) may be obscured in overheads or otherwise overlooked

(iii) Environmental cost can be offset by generating revenues through sales of waste or by-products or recycling them

(iv) Understanding of environmental costs can promote more accurate costing and pricing of products.

(v) Competitive advantages with customers can result from processes, products and services which can be demonstrated to be environmentally friendly; and

(vi) Accounting for environmental costs and performance can support a company's development and operation of an overall environmental management system.

2.1.10 Basic Green Accounting Elements

Green accounting is premised upon clarification of the objectives of engaging in green accounting. The objectives must conform to policies for environmental considerations made in the business activities of companies and other organizations, and with their environmental targets and environmental action plans (UNDSD, 2014). The following items regarding execution of green accounting are important.

Target period and score of calculations: In principle, the target period covered should be the same as the period covered by the company's environmental report. Basically, information pertaining to the company's financial accounting, environmental activities and green accounting should all be coordinated to match the said company's business (fiscal) year.

The scope of calculations shall be the same as that for the company's environmental report. Basically, it must cover the business group. Nevertheless, if problems arise as a result of performing calculations for the business group as a whole, calculations shall be performed within a range covering the entire company and its business sites, with sequential calculations to actual operations of the company or other organization being desired (UNAND, 2014) and

Reporting (ISAR). Institute of chartered accountant of England and waste. Accounting Advisory Forum (AAF) etc. But these guidelines are only advisory in nature and not mandatory.

An increasing number of countries impose requirements on companies to report on their environmental performance. Denmark was the first country to adopt legislation on public environmental reporting. In this country, the companies are required to prepare a so-called "Green Account". In the Netherlands, new legislation on mandatory environmental reporting has been adopted. Both Danish and Dutch regulations require reporting to the authorities and to the public. In Norway, the new accounting act requires that all companies include environmental information in the annual report from 1999 onwards. In Sweden, similar legislation has been adopted for mandatory environmental disclosure in annual financial reports. In the U.S.A., the companies are required to submit data on emissions of specific toxic release inventory (TRI) in addition; the Securities and Exchange Commission (SEC) requires disclosures on legislative compliance, judicial proceedings and liabilities in relation to the environment. In Canada, the securities commission requires public companies to report the current and future financial or operational effects on environmental protected requirements in an annual information form. Australian companies are now expected to give information on performance with regard to environmental regulations that apply to them. In addition a national pollutant inventory (NPI) is being created

2.1.11 Green accounting reporting in manufacturing firms

Green accounting is a subset of sustainability reporting. In research and accounting literature, green accounting is often and variously used as sustainability report, corporate social and environmental disclosure, corporate environmental report among others (Ogoun & Ekpulu, 2020). Despite the differences in taxonomy, green accounting is viewed from the prism of all inclusive or full costing as the practice of providing accurate information in organisations' annual reports and accounts for the probable social costs arising from neighbourhood effect upon the environment. According to Makori and Jagongo (2021), this is a deliberate intervention cost incurred in order to bridge the gap between marginal social cost and private costs. It is a method by which information covering the degree of environmental activities of firms is reported to different stakeholders including employees, shareholders, consumers, local communities, government and environmental groups or concerned NGOs (GRI, 2017). Green accounting reporting is all encompassing and forms an integral part of sustainable development goals set to be achieved by members of the United Nations in 2030.

Return on Equity

This ratio measures the overall performance of an entity; it shows the earning power of investors' book value, often used in comparing two or more entities in an industry. A high return on equity is an indication that an entity accepts strong investment opportunities and employs effective expense management. Return on equity is net profit after tax and preference

dividend scaled by the number of shares. Studies have shown that green accounting practices increased earnings of firms. Uadiale and Fagbemi (2019) in their study revealed that corporate social spending improves the return on equity of firms. Yusoff and Adamu (2016) reported a positive relationship existing between corporate responsibility and return on equity. However, the empirical review shows varying results on the relationship between environmental accounting and firm performance.

Return on Assets

As one of the traditional accounting and profitability measures employed to measure financial performance, return on assets shows whether a company is able to generate an adequate return on the assets employed. In a study on environmental disclosure and financial performance of food and beverage companies in Nigeria by Ezeagba, John-Akamelu and Umeoduagu (2017), it was revealed that there is a significant relationship between environmental accounting disclosure and return on assets.

Share Price

Share price is the value attached to a unit of a share which can be nominal or market value. It is on this share price movement that the investors expect their returns in the form of dividend representing the proportion of residual income attributable to investors as returns on their investment. Studies have shown that dividend payment influences the value of firms (Akinkoye & Akinadewo, 2018). In line with the VDT theory, it has been argued that firms would make higher and more objective environmental or green accounting and social disclosures, in order to benefit from higher share prices despite the associated proprietary costs. However, in another study by Adediran and Alade (2019) to ascertain if there is any significant relationship between environmental accounting disclosure and financial performance in Nigeria using earnings per share as proxy for performance, the result showed a significant negative relationship between environmental accounting disclosures and earnings per share.

2.1.12 Impact of Environmental Issues on Financial Statement

2.1.12.1 Cash Accounting

Environmental issues can impact financial statements prepared on a cash basis of accounting. However, the effects on the financial statements are more limited than that under financial statements prepared under an accrual basis. According to Bela (2014), environmental issues can impact on the cash flows of an entity during the reporting period. He further posts that; in addition, there could be an impact where compliance reporting is included in a government financial report. For example, where the entity is required to demonstrate compliance with environmental laws and regulations.

2.1.12.2 Accrual Accounting

Environmental issues can have an impact on financial statements prepared on an accrual basis in many ways. There are international accounting standards, which address the general principles for the recognition, measurement and disclosure of environmental matters in a financial report (IAS-37). The introduction of environmental laws and regulations may involve an obligation to recognize impairment of assets and consequently a need to write down the carrying value. A failure to comply with legal requirements concerning environmental matters such as emission or waste disposal may require accrual of remediation works, compensation or legal costs (Rahman, 2019). He identified that if a firm fails to comply with the legal requirements regarding pollution control, the firm may risk a fine or penalty. He went ahead to opine that some annual operating costs are environmental in nature. For example, energy costs can be considered an environmental cost as the use of fossil fuels is a source of carbon dioxide and air pollution.

Some entities may need to recognize environmental obligations as liabilities in the financial statements. For example, obligations associated with solid waste landfill closure and after care and restoration obligations, associated with mining operation. An entity may need to disclosure a potential environmental obligation as a contingent liability where:

(i) The possible obligation depends on the possible occurrence of a future event; or

(ii) The amount of the present obligation cannot be reasonably estimated; or

(iii) An outflow of resources to settle the obligation is not probable (Thomas, 2019).

In the course of meeting the relevant accounting standard requirements, some additional disclosures in the note to the financial statements may be required. Examples might include:

(i) The industry in which the entity operates and the associated environmental issues.

(ii) The accounting treatment adopted for environmental costs, i.e. what is included, when items are expensed or capitalized, how they are amortized to income etc.

(iii) Environmental restoration have been incurred under environmental legislation; and

(iv) Environmental restoration liabilities, including measurement uncertainties, nature and timing (Prickard and Wendy, 2020).

2.2 Theoretical Framework

2.2.1 Legitimacy Theory

Legitimacy is a generated perception or assumption that the actions of an entity are desirable, proper, or appropriate within some socially constructed system of norms, values and definitions (suchman, 1995). This theory states that organizations seek to operate within what is considered acceptable in the society. What is considered acceptable behavior changes overtime and the firm must be prepared for variations in the environment taking ethical aspects into account (Islam and Deegan, 2007). Legitimacy may also be seen as a generalized perception or assumption that the action of an entity is desirable, proper or appropriate within

some society constructed system of norms, values, beliefs and definitions (Gotherstrom, 2012)

According to Tilling (2004), legitimacy theory offers a powerful mechanism for understanding voluntary social and environmental disclosure made by corporations, and that this understanding would provide a vehicle for engaging in critical public debate.

2.2.2. Stakeholders Theory

The basic proposition of the stakeholder's theory is that the firm's success is dependent upon the successful management of all the relationships that a firm has with its stakeholders –a term originally introduced by Stanford research institute (SRI) to refer to those groups without whose support the organization would cease to exist (Freeman 1983). Freeman's stakeholders' theory asserts that managers must satisfy a variety of constituents (example, employees, customers, suppliers, local community and so on) who can influence the firm's outcomes. According to this view, it is not sufficient for managers to focus exclusively on the needs of stakeholders, or the owners of the business. This implies that it can be beneficial for the firm to engage in certain environmental activities that non-financial stakeholders perceive important, because without this, these groups might withdraw their support from the business.

In developing the stakeholder theory, Freeman, (1983) incorporates the stakeholders' concept into categories: A business planning and policy model, and A corporate social responsibility model of stakeholder management.

In the first model, the stakeholder analysis focuses on developing and evaluating the approval of corporate strategy decisions by groups whose support is required for the firm's continued existence. The stakeholders identified in the model include the owners, customers, public groups and suppliers. Although these groups are not adversarial in nature, their possibly conflicting behavior is considered a constant on the strategy developed by management to best match their firm's resources with the environment (Degan and Gordon, 2016). In the second model, the corporate planning and analysis extends to include external influences which may be adversarial to the firm. These adversarial groups may include the regulatory environmentalist and /or special interest groups concerned with social issues (Guthrie and parker, 2011).

The second model enables managers and accountants to consider a strategic plan that is adaptable to change in the social demands of non-traditional stakeholders' groups. The stakeholders' theory proposed an increased level of environmental awareness which creates the need for companies to extend their corporate planning to include the non-traditional stakeholders like the regulatory adversarial groups in order to adapt to changing social demands (Trotman, 2019). The main concern of the stakeholders' theory in environmental accounting is to address the environmental cost elements and valuation and its inclusion in the financial statements.

2.2.3 Positive Accounting Theory

This theory suggests and explains why firms make voluntary social disclosures. Based on the original work of Watts and Zimmerman (2016), the positive accounting theory has directly sought to establish evidence for the political cost hypothesis as an explanation for the firm's social disclosures.

Along with numerous others, Gray et al (2015) dismiss the positive accounting arguments on the grounds of the underlying assumptions of the theoretical framework. As they suggest, positive theories are not about what (social) reporting should be, but rather about what it is on the face of it, and on the basis for explaining why firms are making social disclosures, positive accounting explanations are less easily dismissed. Casual observations, for example, reveals that positive accounting explanations rely on empirical evidence largely identical to that used in support of other explanations (most notably, legitimacy theory) of social disclosure, explanations which, incidentally Gray et al (2015) seem to find more acceptable. As Gray et al (2015) note, a number of empirical studies have shown strong associations between disclosure and firm size, and between disclosure and type of industry. In fact, the size disclosure and type of industry. In fact, the size disclosure relationship appears empirically the most robust. Such results are claimed in support of legitimacy theory, as well as in favour of positive accounting theory.

2.3 Empirical Review

Bassey, Sunday, & Okon, (2021) empirically studied the impact of green accounting on organizational performance with the case study being oil and gas companies operating in the Niger Delta Region of Nigeria. Data gathered were shown using tables and the data were analyzed using Pearson's product moment correlation analysis method of data analysis. It was discovered with the help of inferential statistics that environmental cost has a good correlation with a firm's profitability. It was concluded that environmentally conscious firms will significantly disclose environmental related information in financial statements and reports. The study suggested that companies should adopt the same method of reporting and disclosing environmental issues for the purpose of control and measurement of performance and that accounting standards should be published locally and internationally and reviewed continuously to ensure compliance and to meet environmental and situational needs.

Mohammad, Sutrisno, Prihat, A. & Rosidi, (2020), investigated the effect of green accounting implementation and environmental performance and environmental disclosure as a mediation on company value. 59 companies were selected using a purposive sampling technique. Technique used to analyze the data obtained was the Partial Least Square (PLS). Outcome indicates that environmental accounting implementation is able to affect company value, green accounting implementation has an effect on environmental information disclosure, environmental information disclosure affects the company value, environmental performance also affects the company value, environmental performance has an effect on environmental

information disclosure. However, green accounting implementation has not been able to affect company value via environmental information disclosure, as well as environmental performance has not been able to affect company value through environmental information disclosure.

Ogoun and Ekpulu (2020) conducted an investigation on how environmental reporting by firms operating within the manufacturing sector in Nigeria affects their operational performance. The study employed the panel research design and the Hausman test to select the appropriate model for the ten years' study, covering 2009 to 2018. The result showed the existence of a positive effect between environmental reporting and firms' operational or financial performance.

Yang and Yi Li (2020) carried out a study on the impact of environmental information disclosure on the firm value of listed manufacturing firms in China between 2006 and 2016. The dataset was analyzed using the difference- in–differences (DID) model and the propensity score matching method (PSM) and the result showed that Environmental Information Disclosure Measure for Trial Implementation (EIDMT) exerts a significant impact on the listed manufacturing firms' value

Okafor (2018) conducted a study on oil and gas companies quoted in Nigerian stock Exchange to ascertain the effect of environmental cost on firm performance from 2006 to 2015. Return on asset was used as a measure of performance and regression analysis was used with the aid of a special package for social sciences (SPSS) to carry out the statistical analysis. The result showed that better environmental performance influences organizations positively.

Egbunike and Okoro (2018) carried out an investigation on whether green accounting matters to the profitability of Nigerian firms or not. Secondary data were extracted from the annual reports and accounts of non-consumer goods firms listed on the Nigeria Stock Exchange from 2012 to 2016. The data were analyzed using canonical correlation and the result revealed green accounting has a significant effect on profitability among non-consumer goods firms.

Nnamani, Onyekwelu and Ugwu (2017), used the brewery sector to conduct a study on the effect of sustainability accounting on the financial performance of listed manufacturing firms in Nigeria. Secondary data for the study were obtained from the annual reports and accounts of three brewery firms quoted on the Nigerian Stock Exchange for the total asset, return on equity, the total personnel cost to turnover and return on assets. The data set obtained was analyzed by using the ordinary least square estimation technique. The result showed that green accounting disclosure or environmental disclosure has a positive and significant effect on the firms' financial performance.

Jero and Okoro (2016) evaluated the effect of environmental and dismantling costs on a firm's performance among selected firms in the oil and gas companies. The result of the application of the ordinary least squares in the data analysis showed that environmental and dismantling

costs show a positive influence on the financial performance of the firm. The control variable and the firm's size were found to have a negative and significant effect on the performance of the firm.

Ijeoma (2015) investigated the function of environmental cost accounting in ensuring Nigeria's environmental sustainability. This study's data comes from a main source of data gathering via a questionnaire. The survey instrument was distributed at random to 200 Nigerian respondents from the following industries: Agricultural/Agro-Allied, Breweries, Chemicals and Paints, Health Care/Pharmaceutical, and Oil Marketing. The majority of respondents felt that business organizations in Nigeria are unaware of environmental policies, according to the study's findings. It was also discovered that there is no substantial difference in the number of Nigerian business groups that are unaware of environmental policies.

2.4 Summary of Related Literature Reviewed

Green accounting is a quantitative assessment of the cost and effectiveness of enterprises in environmental protection activities. Enterprises are required to have systematic records and reports and are guided to maintain a positive relationship with the ecological environment to implement effective and efficient environmental activities. The final goal is to accomplish sustainable development. Green accounting is said to ensure weak sustainability which should be considered as a step towards ultimately a strong sustainability. The major purpose of green accounting is to help businesses understand and manage the potential relationship between traditional economic goals and environmental goals. It also increases the important information available for analyzing policy issues especially when those vital pieces of information are often overlooked.

However, previous studies failed to investigate the effect of green accounting and how it affects corporate performance of companies. The present debate in this study is performance that is green accounting and effect on corporate performance. The first time environmental reporting was a public relations exercise which showed proof that companies are committed to their environment. However, such standalone environmental reports are never a substitute for clear disclosure of environmental matters like; cost in the financial statements. A company cannot be regarded as successful if it earns its profits by misusing natural resources and does not disclose the cost of these activities by its practices and performance. As such there is a debate that requirements to disclose environmental cost (on waste, pollution) would encourage and hold companies accountable and responsible for misconduct.

3. Research Design and Methodology

This chapter will discuss the methodology adopted in the study, Specifically, it explains the research design, population of the study, sample and sampling techniques, sources of data collection, method of data analysis, model specifications.

3.1 Research Design

Odo (2014), It is a fact that the research design requires the specification of procedures. This procedure involves decision on information to generate the data collection method, the measurement approach, the object to be measured and model in which the data are to be analyzed. In order to do justice in this research work, the researcher employed Survey Method to elicit the required information.

3.2 Area of Study

The area of the study covers Aqua Rapha product production. In focus on the Effect of Green Accounting on the Performance of Manufacturing Firms in Nigeria Aqua Rapha Limited, Enugu is located at 9th mile corner Ngwo, Enugu.

3.3 Nature and sources of Data

The sources of data explain where the necessary information about this study was obtained. They include primary and secondary data.

Primary Data

These are raw, original and authentic data assembled specially for this work. It can be obtained through the following; personal interview, questionnaire (self-administered).

Secondary Data

These are external data gotten specifically for the problem understudy. It is an already-made material. Examples include websites, newspapers, magazines, journals, publications of government agencies etc.

3.4 Population of the Study

Research population according to Osundu (2015) refers to the whole object for which a sample is drawn. The researcher of this project work used the management and staff of Nigeria Aqua Rapha Limited, Enugu. Nigeria Aqua Rapha Limited, Enugu stood at one hundred and fifty (150).

3.5 Sampling Techniques

According to Odo (2014), the search for an ideal sample size is an inconclusive pursuit. This is so because there does not exist yet one size-fits-all solution to the problem. At best the researcher is called upon to balance a community of interests or factors that weigh on the problem even as he searches for a size that best fits into a particular situation. Since the population is small, it was considered manageable by the researchers so the population was used as the sample.

To determine the sample size of the fir the study Taro Yamane's formula was used thus:

$$n = \frac{N}{1 + N(e)^2}$$

ISSN: 2251-032X Volume 7, Issue 1, Pages 128 - 160: 2024

Where,

N = population

e = margin error at 5%

Therefore $n = \frac{150}{1 + 150(0.05)^2}$

$= \frac{150}{1 + 150(0.0025)}$

$= \frac{150}{1.375}$

$n = 109$

Therefore, the sample size for the study is 109 respondents

In order to get a good representation of the population, the researcher used the stratified random sampling techniques to make a sample a true representation of the parent population. The researcher first divided the entire population into homogeneous groups called strata. By applying the random sampling, the items were selected from each stratum into the sampling. Using this method, researchers selected items out of a population of the respondent.

3.6 Method of Data Collection

The method data collection used were

Interview method: this method is employed to obtain certain information that is not possible through the questionnaire method. Unstructured interview is conducted with management and staff of Aqua Rapha Limited

Questionnaire method: this is the instrument used in collecting primary data, it was randomly administered to a statistically determined sample size (109) drawn from a population.

3.7 Validity of Instrument

According to Asika (2015), Validity of measuring instrument refers to the degree to which an instrument (test) measures what it is supposed to measure. The relevant questionnaire in terms of context and structure validity was checked by my supervisor and validated. This helps to ensure that the clarity of the items is in terms with the topic of the study.

3.8 Reliability of Instrument

In these regards, the instruments are reliable because the researchers ensured that questions were not ambiguously put to the respondents to communicate different meanings, that could generate inaccurate answers when the instrument is repeatedly used, that is test-retest. Also,

the internal record of the organization, which is a secondary data instrument, is highly reliable because it helps to provide more facts about the Nigeria Aqua Rapha Limited, Enugu.

3.9 Method of Data Analysis

The method of data analysis employed by the researcher is the simple regression analysis. In regression analysis, the variable whose value is being estimated is called the dependent variable and is denoted by the symbol y. The variable on which the estimate is to be based are referred to as the independent or explanatory variable and when a regression relationship contains only one independent variable generally denoted by x as the case of this research work, it is referred to as two variable or simple regression, but the relationship contain two or more independent variables, it is referred to as a multiple regression.

Model Specification

Generally, the model is specified as:

Total Amount of financial fraud = f (No of fraud cases)

Where:

Rate of employment – Dependent Variable

Federal government expenditure – Independent Variable

The mathematical form of this model is thus:

$Y = a + b X$

Where:

Y = Rate of employment = the dependent variable

X = Federal government expenditure = the independent or explanatory variable

a and b is constant indicating the intercept and the slope respectively.

The values of a and b are estimated as follows:

$$b = \frac{\sum (X - X) (y - y)}{\sum (x - x)^2} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 1$$

$$a = Y - b x \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 2$$

Where

$$Y = \frac{\sum Y}{n}$$

$$X = \frac{\sum X}{n}$$

Where n = no of years under study.

$`r^2 = b^2 \Sigma (X – X)^2$

$\Sigma (y – y)^2$ Source: Ezeja, (2007)

For the purpose of determining the relationship that exist between Federal government expenditure and Rate of employment, the researcher adopted the formula below

$r = \Sigma (X – X)^2 (y – y)$

Years	Rate of corporate performance in manufacturing Firms %	Environmental cost influences (million)	$\Sigma (x – x)^2$ $\Sigma(y-y)^2$
2012	41.87	5.12	
2013	35.00	41.86	
2014	43.58	36.68	
2015	51.37	43.48	
2016	41.34	45.15	
2017	32.34	46.72	
2018	44.67	50.13	
2019	50.49	49.68	
2020	4.73	35. 91	
2021	4.92	37.84	

……..……3

The value varies between -1 and + 1. To determine whether the relationship is indeed significant, t- test was used since the observation is less than 30.

The formula for t – test

$t = r \sqrt{n-2}$

$\sqrt{1- r^2}$ ……..……4

Decision rule:

Reject Ho if F-computed > F-tabulated and also reject Ho if P-value is less than 0.05. With n-2 digress of freedom and 0.05 (5%) level of significance

4. Data Presentation and Analysis

4.1 DATA PRESENTATION

Table 4.1: Showing the figures of Rate of corporate performance in manufacturing Firms and Environmental cost influences in Nigeria from 2012 – 2021

Source: CBN Annual Report 2022

4.2 Data Analysis

The main objective of this study is to examine the Effect of Green Accounting on the Performance of Manufacturing Firms in Nigeria. In this regard, this chapter therefore presents data for subsequent analysis using the research method explicitly explained in chapter three. Test of research hypotheses are performed with the aim of empirically providing evidence to answer the research questions earlier raised in chapter one of this study and the findings are also discussed

4.3 Test of Hypothesis

Hypotheses one

H_0: Environmental cost does not influences corporate performance in Manufacturing Firms

Test statistics: Linear regression model by Ekwume (2012): y = bo + bix +u

Y (TIDO) = bo + biB_{KC} + U

Where:

Y = dependent hummable (total industrial output)

X = independent + variable (Bank Credit)

b_o: Constant

μ = error term

b_1 = parameter estimate

$b_o = \bar{Y} - þ_1\ddot{X}$

$b_1 = \underline{\sum(y - \bar{Y})(x - \ddot{X})} = \underline{\sum xy}$

$\sum(x-\ddot{X})^2 \qquad \sum x^2$

Level: significance = 5% (0.05)

$r^2 = \beta_1 \underline{(\sum xy)}$

$\sum y^2$

$T - Test\, r^{2\frac{n-2}{1-r^2}}$

Decision Rule: If Tical < Ttab, accept Ho and reject Hi if Tcal > Ttab accept Hi and reject Ho

Year	X	Y	XY	X^2	Y^2
2012	41.87	5.12	214.34	1753.10	26.21
2013	35.00	41.86	1465.10	1225.00	1752.26
2014	43.58	36.68	1598.51	1899.22	1345.42

2015	51.37	43.48	2233.57	2638.88	1809.51
2016	41.34	45.15	1866.50	1709.00	2038.52
2017	32.34	46.72	1510.92	1045.88	2182.76
2018	44.67	50.13	2239.31	1995.41	2513.02
2019	50.49	49.68	2508.34	2549.24	2468.10
2020	4.73	35. 91	169.85	22.37	1289.53
2021	4.92	37.84	186.17	24.21	1431.87
n=14	Σx=350.31	Σy=356.66	Σxy=13992.61	Σx^2=14862.31	Σy^2=16857.2

Source: researcher ‘s computation (2022)

Compute the mean q x as:

$\bar{x} = \frac{350.31}{10} = 35.031$

$\bar{x} = 35.03$

Compute the mean q y as:

$\bar{Y} = \frac{\Sigma y}{n}$

$\bar{Y} = \frac{356.66}{10}$

$\bar{Y} = 35.61$

Compute the parameter estimate (þ1)

$b1 = \frac{13992.61}{14862.31} = 0.9411$

$b_1 = 0.94$

Compute the constant term (b_o):

$Bo = y - b_{i\bar{x}}$

$= 35.61 - (0.94)(35.03)$

$= 35.61 - 32.93$

bo = 2.69

Fitting in the regression model

$y = b_o + b_1x + \mu$

ISSN: 2251-032X Volume 7, Issue 1, Pages 128 - 160: 2024

$= 2.69 + (0.94)\ B_{KC} + \mu$

Compute the correlation coefficient (r^2)

$r^2 = \beta_1 \frac{(\Sigma xy)}{\Sigma y^2}$

$0.94\ \frac{(13992.61)}{16857.2}$

$= \ 0.8300$

$r^2 = 0.83$

Interpretation: The estimated value of the correlation coefficient (0.83) shows that environmental cost influences corporate performance of Manufacturing Firms at 65%. It also implies that about 65% changes in the expendable variable (independent variable) influence the same percentage change in total industrial output.

$$r^2 \sqrt{\frac{n-2}{1-r^2}}$$

$$T - test = 0.83 \sqrt{\frac{10-2}{1-0.83}}$$

$$T - test = 0.83 \sqrt{\frac{8}{0.17}}$$

$$= \frac{0.83 \times 2.83}{0.35}$$

T – test (**//) = 6.711

T – distribution table value = 6.711

T-ral > T-tab

6.711 > 2.363

Decision Rule: since the T cal (6.711) is greater than T tab (2.363), the alternative hypothesis (Hi) is accepted, thus concluding that environmental cost influences corporate performance of Manufacturing Firms in Nigeria from 2012 – 2021.

Hypotheses Two

H_0: Financial results does not affect service delivery of Manufacturing Firms in Nigeria

Table 4.2: Showing the figures of Growth rate of service delivery of Manufacturing Firms in Nigeria and Financial results from 2012 – 2021

Source: CBN Annual Report vol. 23, 24, NBS, World Bank data and www.academic journal of interdisciplinary study.

Decision Rule: If Tical < Ttab, accept Ho and reject Hi if Tcal > Ttab accept Hi and reject Ho

Years	Rate of service delivery of Manufacturing Firm %			Financial results of Green Accounting (million)		
2012	4.5			4.8		
2013	4.5			2.3		
2014	21.5			4.3		
2015	23.9			6.4		
2016	24.8			7.4		
2017	28.5			9.4		
2018	30.0			4.1		
2019	31.4			9.4		
2020	22. 91			6.8		
2021	12.5			3.4		

Year	X	Y	XY	X^2	Y^2
2012	4.5	4.8	21.6	20.25	23.04
2013	4.5	2.3	103.5	20.25	5.29
2014	21.5	4.3	92.45	462.25	18.49
2015	23.9	6.4	152.96	571.21	40.96
2016	24.8	7.4	210.9	615.04	54.76
2017	28.5	9.4	267.9	812.25	88.36
2018	30.0	4.1	123	900	16.81
2019	31.4	9.4	294.16	985.96	88.36
2020	22. 91	6.8	155.788	524.8681	46.24
2021	12.5	3.4	55	156.25	207.36
n=14	∑x=181.6	∑y=59.3	∑xy= 1422.258	$\sum x^2$= 5068.3281	$\sum y^2$=401.61

Source: researcher ‘s computation (2022)

Compute the mean q x as:

$\bar{x} = \frac{181.6}{10}$

$\bar{x} = 18.16$

Compute the mean q y as:

$\bar{Y} = \frac{\Sigma y}{n}$

$\bar{Y} = \frac{59.3}{10}$

$\bar{Y} = 5.93$

Compute the parameter estimate (þ1)

$b1 = \frac{1422.258}{5068.3281}$

$b_1 = 0.28$

Compute the constant term (b_o):

$Bo = y - b_{i\bar{x}}$

$= 18.16 - (0.28)(5.93)$

$= 18.16 - 1.6604$

bo = 16.50

Fitting in the regression model

$y = b_o + b_1x + \mu$

$= 16.50 + (0.28) B_{KC} + \mu$

Compute the correlation coefficient (r^2)

$r^2 = \beta_1 \frac{(\Sigma xy)}{\Sigma y^2}$

$0.28 \frac{1422.258}{401.61}$

$= 0.8853$

$r^2 = 0.88$

Interpretation: The estimated value of the correlation coefficient (0.88) shows that Financial results affect service delivery of Manufacturing Firms in Nigeria at 24%. It also implies that

ISSN: 2251-032X Volume 7, Issue 1, Pages 128 - 160: 2024

about 65% changes in the expendable variable (independent variable) influence the same percentage change in total industrial output.

$$r^2\sqrt{\frac{n-2}{1-r^2}}$$

$$T - test = 0.88\sqrt{\frac{10-2}{1-0.88}}$$

$$T - test = 0.88\sqrt{\frac{8}{0.12}}$$

$$= \frac{0.88 \text{ x } 2.82}{0.12}$$

T – test (**//) = 20.68

T – distribution table value = 2.363

T-ral > T-tab

20.68 > 2.363

Decision Rule: since the T cal (20.68) is greater than T tab (2.363), the alternative hypothesis (Hi) is accepted, thus concluding that Financial results affect service delivery of Manufacturing Firms in Nigeria in Nigeria from 2012 – 2021.

5. Summary of Findings, Conclusion and Recommendations

5.1 Summary of Finding

The findings of this research work include the following:

1. The analysis has shown that environmental cost influences corporate performance in manufacturing firms in Nigeria. Environmental Cost has a significant relationship with the various variables used in measuring firm profitability.
2. It was observed that financial results improve service delivery of manufacturing firms in Nigeria. It shows that companies with better financial performance prove green accounting disclosure in their annual reports or corporate social responsibility
3. It showed that decision-making influences green accounting on work quality of manufacturing Firms in Nigeria. The results also show that the disclosure of decision-making on green accounting and work quality has brought about an improved company's relationship.
4. It revealed that appraisal costs enhance green accounting on the performance of manufacturing firms in Nigeria. Green accounting measures the impact of human activity on resources and not just the financial effects of such activity on the

performance of manufacturing firms. The goal of green accounting is to reduce the cost of environmental impact

5.2 Conclusion

Allocation of environmental costs in green accounting through the implementation of the Corporate Sustainability Management System (CSMS) is one of the strategic policies for manufacturing firms in Nigeria, so that it can improve financial performance, because it is related to for manufacturing firms policies in allocating costs to environmental activities, investment, and funding. Therefore, the company's decision to allocate environmental costs must be in line with consumer needs and consider the company's capabilities.

Green accounting is an emerging aspect of accounting science that will influence, in the near future. The adoption of basic elements of green accounting will portray the role of environment cost in the corporate performance as well as render easier the analysis of macroeconomic questions with the help of green accounting measures and thus, will lead the corporate performance to a viable path. However, the study explored the effect of green accounting on the corporate performance of Aqua Rapha product production, Enugu. Specifically, the study concluded that environmental cost accounting, financial results on service delivery, decision-making of green accounting on work quality and appraisal costs of green accounting has a significant effect on performance of manufacturing firms in Nigeria of Aqua Rapha product, Enugu. Similarly, green accounting has a significant effect on the financial performance of Aqua Rapha Limited, Enugu. Based on the findings of the study, it is concluded that adequate green accountant could enhance the operating environment of the firm as well as the financial performance of Aqua Rapha Limited, Enugu

In conclusion, the application of green accounting affects increasing profits. Another advantage of reducing insurance costs and capital costs can reduce total production costs, potentially increasing profits. A company with a good corporate social responsibility will certainly create a positive image and reputation among investors. It makes investors focus on the company's financial performance in considering investment decisions and corporate social activities. So many investors are interested in investing their capital to increase the company's profitability. High profitability reflects the company's ability to get high profits for shareholders. The greater the profit obtained, the greater its ability to pay its dividends, which impacts firm value.

5.3 Recommendations

Based on the findings of this study the following recommendations are made:

1. Accountants should be trained on green accounting and reporting.
2. Green accounting standards should be published locally and internationally and reviewed continually to ensure dynamism compliance and meet environmental situational needs.

3. Government should make green accounting Reporting in annual reports compulsory since most organization hardly report their environmental activities in their report;
4. Government agencies should give tax credit to organizations that comply with its green accounting laws of the land which will encourage environmental reporting.
5. Corporate organizations on their part should ensure that they comply with the green accounting laws of the nation as it will go a long way in enhancing their performance.
6. Firms should formulate and implement environmentally friendly policies to enhance their competitiveness.
7. Firms should adopt uniform reporting and disclosure of green accounting issues for the purpose of control and measurements of performance.

5.4 Proposal for Further Studies

Study to be for the results of this study to be used as a generalization the researcher suggested that further research should be contributed on the following:

i. Green accounting reporting and financial Performance of manufacturing firms in Nigeria
ii. Effect of Green Accounting On Financial Performance of Oil and Gas Companies in Nigeria
iii. The Effect of Green Accounting on Corporate Sustainability and Financial Performance

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