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Green accounting and its role In Improving the Quality and achieving the sustainable in industrial companies

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Abstract

The research aims to identify the role of green accounting in industrial companies and the extent to which they achieve sustainability, test hypotheses and reach results. The researcher used literature and previous studies to obtain theoretical information related to the subject of the research and in order to know the role of green accounting in improving quality, which affects products through exploitation. Optimization of resources, which reduces environmental pollution and environmental risks that are generated as a result of the production of polluting industrial products, and adding information useful in reducing the cost of manufactured products through cost accounting information that helps in reducing the cost and exploiting resources optimally to reach clean, sustainable, environmentally friendly products. The researcher reached results, including that identifying environmental activities in industrial companies contributes to improving the quality of information, and reflects positively on financial reports, achieving product quality, and achieving sustainable economic, social, and environmental development. The researcher recommended conducting a practical application and paying more attention to applying green environmental accounting in industrial companies to contribute. Clearly in the field of protecting the environment and society to achieve sustainability.

Key words: green accounting, improving the quality, and achieving sustainable.

* Introduction

"Environmental pollution is one of the problems facing the world now, due to its health impact on society, nature and the effectiveness

of workers". "The phenomenon of environmental pollution has received attention recently, especially in light of the industrial progress witnessed in the contemporary world and the diversity of sources of pollution, and the attempts of other industrial companies to Its waste is harmful to the environmental and human environment by burning it in the air, land, or burying it in the sea, which has a negative impact on small life"."The application of cost accounting" is limited to counting and calculating the costs that include the company without taking into account the costs of preserving the environment from pollution, which leads to achieving unreal profits, which weakens confidence "in the accounting information provided".

"Most companies face problems related to measuring and analyzing environmental costs and disclosing them in the financial statements, as traditional accounting hides environmental costs within the elements of indirect costs, which results in inaccurate information and wrong decision-making". "The challenge lies in the difficulty of measuring environmental costs", how to address them", "and explaining their role in improving the quality of accounting information and thus in improving the quality of products, which adds a new and advanced dimension to the accounting profession. Several names have emerged in the field of accounting that refer to this aspect, including green accounting and environmental accounting for Sustainable development, environmental and economic accounting". "Whatever the name, environmental {green} accounting" means comprehensiveness and integration of the process of measurement and accounting and economic disclosure of activities and programs "that affect the environment and which companies practice to meet the needs of different parties in society".

"Environmental (green) accounting examines how the environment, in terms of costs and benefits, affects the financial and administrative accounting system, as many factories produce a large amount of pollution, "whether air pollution or water pollution", "as well as producing poor", "environmentally friendly products, which may cost the company or The state allocates a lot of money to protect the environment from the damage of those companies", with the aim of preserving the capabilities of future generations, which can achieve sustainable development and social well-being for all members of

society, which is represented in meeting human needs and achieving social welfare in the long term", while preserving human and natural resources and trying to reduce Environmental degradation". "To achieve this, a balance must be reached "between economic and social" development on the one hand, and resource management and environmental protection on the other hand". The research was divided into three sections":

"The first section was devoted to addressing the concept of green accounting and administrative and environmental systems". "The second section discussed the origins and importance of environmental accounting, the problems of environmental performance, and the role of green accounting in improving the quality of accounting information, which in turn affects the quality of products and the concept of green accounting". "The third section was devoted to the applied aspect and the results that reached. Then the conclusions and the researcher's recommendations were reached".

*** Research problem**

"The research problem" lies in explaining the role of {green accounting} in {improving the quality} of {information and products in industrial companies} to "improve environmental performance" and "prevent pollution" for the purpose of "achieving sustainability for these products, taking into "account environmental requirements".

The research problem can be formulated in the following main question: -

"Is there a role for environmental (green) accounting in improving product quality and achieving sustainability in industrial companies?"

The following sub-questions branch out from the main question: -

1- "Is there a role for green accounting in improving the quality of products in industrial companies"?

2 "Does improving product quality lead to achieving sustainability for products in industrial companies"?

*** Research Aims**

"The main research objective is to identify the role of green accounting in improving the quality of products, which in turn leads to achieving sustainability in industrial companies. This objective may be achieved through the following sub-objectives": -

1- Accurate scientific foundation of the concept of green accounting to clarify its effectiveness in improving the quality of accounting information necessary and appropriate to

rationalize financial decisions that help improve products.

2- Identify the role of green accounting in improving the quality of green products in industrial companies.

*** Research Importance**

"Because of the role that the accounting profession plays in providing useful information to management that helps in making the necessary decisions to green products and improve their quality, the importance of research lies in the following": -

1- Helping industrial companies to activate the environmental, social and economic dimension in a way that helps achieve their goals and the goals of society in producing green, environmentally friendly products.

2- Identify the role of industrial companies in protecting the environment through the good information the system provides that reflects their performance

3- Identify the role of green accounting in improving the quality of accounting information for industrial companies with the aim of helping information users make planning, control and performance evaluation decisions.

4- Increasing the environmental awareness of industrial companies by recognizing the importance of environmental activities and linking them to manufactured products that help prevent pollution and waste of resources and achieve sustainability.

*** Research Assumes**

"The research is based on the main hypothesis that there is a role for green accounting in improving the quality of green products by helping decision makers in industrial companies produce high-quality, environmentally friendly products based on accounting information related to environmental costs that achieve optimal use of resources and achieve sustainability".

The following sub-hypotheses branch out from the main hypothesis:-

1- "The first sub-hypothesis: There is a role for green accounting in improving the quality of products in industrial companies".

2- "The second sub-hypothesis: Improving product quality leads to achieving high-quality, environmentally friendly products, which leads to achieving sustainability of products in industrial companies".

*** First topic**

{Theoretical background on green (environmental) accounting}

First: The concept of environmental (green) accounting: -

"Green environmental accounting appeared at the beginning of the nineties as a result of the efforts made by those interested in this field, after the negative aspects of its exploitation appeared". "Several names have appeared in the field of accounting that refer to this aspect, including green accounting, environmental accounting for sustainable development, environmental and economic accounting". "Whatever" the name, means including and integrating the process of measurement and accounting and economic disclosure of activities" and "programs that affect the environment and practiced by economic units", "identifying and measuring the costs of environmental activities" and "using that information in making environmental management decisions" with "the aim of reducing and "eliminating the negative environmental impacts of environmental activities and systems". "(Al-Takriti et al. 2000, p. 34)".

"Environmental ({green} accounting" is defined as: “a method of measuring" and "communicating information" related to the "environmental activities" of economic units that have an environmental impact to the concerned parties and society in a way that enables monitoring and evaluation of their environmental performance." (Abdel Salam, 1999, p. 5).

"Environmental {green} accounting is defined as accounting that examines how the environment in terms of costs and benefits affects the financial accounting system". (Jaafar 2002, p. 11).

"Environmental costs are the costs associated with the environment and the amount of pollution or damage from misuse of available natural resources". (Al-Dosari 2011, p. 19).

"On the other hand, they are the costs incurred by the company in order to preserve the environment in which the company is located, taking into account the following": (Grice 2001, p. 155).

1- Eliminate environmental pollution resulting from the use of machines by using machines that are less polluting to the environment.

2- Dispose of industrial waste that is harmful to the environment by choosing appropriate methods that do not cause harm to the environment.

3- Maintaining the protection of natural resources and reducing the depletion of their resources.

4- "Providing assistance to social organizations that preserve the environment".

"Environmental management system": "The environmental management system" represents the backbone of "environmental performance" in a business facility and is considered one of the "important concepts" because "green management accounting" is one of the "components of environmental management".

"What is meant by the green management system is a set of policies, concepts, procedures, commitments and action plans that will prevent the occurrence of elements of environmental pollution of all kinds, and the facility's employees understand that system, each within his specialty, in addition to applying these methods and procedures in practical reality and preparing periodic reports on the results of that application". "Environmental management aims to develop, implement, manage, coordinate and control the facility's activities with the aim of reducing the negative impacts on the facility's products during their life cycle". ISO 14000 standards are considered one of the most important attempts to establish acceptable international environmental standards that provide flexibility for the facility to achieve its environmental goals efficiently and effectively". These standards have been of interest to the International Organization for Standardization (ISO).

"It issued Quality Standards No. (9001), which relates to quality and review of environmental management systems for business organizations (ISO 9001, 2002). The organization also issued Standards No. (14001) in 1996 AD, and it was developed in 2004 AD (ISO 14001, 2004), which is considered one of the most important Environmental protection programs due to the principles and standards related to environmental management systems that business organizations must adopt to improve their level of environmental performance and obtain (ISO) certification" (Zieglerand Nogareda, 2004).

"The importance of management systems is due to the fact that it enables work to prevent waste and loss of raw materials and energy, to prevent environmental pollution diseases, in addition to developing operating systems, which leads to an increase in the volume of actually achieved production capacity and continuous improvement in product specifications through developing the product life cycle method. The main elements of green environmental policy are": -

1- Green internal environmental audit
2- Green environmental status record
3- Training employees on green environmental concepts
4- Preparing the environmental performance report
5- Taking corrective environmental measures

"In light of this, the researcher believes that the green management accounting system enables industrial companies to apply the best environmental practices, which have direct repercussions on their environmental and economic performance". Good planning of environmental practices reduces negative environmental impacts on the facility and society through early detection and treatment on the one hand, and enables understanding the sources and causes of environmental costs and then working to rationalize them and its impact on the profitability and growth of the facility on the other hand. "The application of green management accounting within the environmental management system includes several terms, the most important of which are': -

1- Environmental performance
2- Environmental control
3- Environmental efficiency

"We will present the importance of these terms within the scientific framework of green accounting'.

"Despite the increased interest in environmental issues in accounting thought recently, some terms overlap with each other, such as the terms environmental impacts and environmental performance". Environmental performance is often talked about under the term environmental impacts resulting from various environmental problems in the practice of business entities, such as recycling. "Waste recycling, toxic emissions, non-compliance with environmental laws, and other environmental impacts". (AL-Tuwaijri, et.al. 2004, Mobus, 2005).

"While the concept of environmental performance is more general and comprehensive than being limited to environmental impacts only, because using environmental impacts as an alternative to environmental performance restricts consideration of this multi-dimensional concept to one dimension only", but rather expands other dimensions (such as customer satisfaction, productivity, motivation, and innovation), and therefore different efficiency models must be used to define Environmental performance: "These models include the goal model, the system model, the strategic circles model, and the

competitive value model. In light of these models, environmental performance includes several dimensions: results versus processes, internal versus external". (Henri, 2004 internal versus external).

"In order to include these dimensions in environmental performance, Linitch, et al., 1998, suggested that they be represented in two axes: a vertical axis indicating the internal/external dimension", and a horizontal axis indicating the results/processes dimension, so that it highlights the points of intersection of these two axes as a structure for a different organization". Dimensions of environmental performance. The researcher summarizes these dimensions in the following table":

Table (1) Dimensions of Environmental Performance

Dimension	Results	Process
Internal	Financial Impact.	Product and process improvement.
External	Environmental impact and reputation of Firm.	Relationships with other stakeholders.

"It is also worth noting here that environmental performance measures must be characterized by several characteristics - such as the characteristics of management accounting information - such as suitability, timeliness, and consistency".

'In his study on linking performance measurement systems to strategy with application to environmental strategy, Perego and Hartmann (2009) examined the characteristics that must be present in indicators for measuring environmental performance through a field study'.

"Environmental Control: Environmental control represents the stages or processes through which managers ensure that environmental and economic resources are obtained and used efficiently and effectively to achieve the organization's goals".

"The main uses of environmental control are to review compliance with environmental policies and laws, stimulate the continuous development of environmental performance, provide the necessary data to internal decision makers, and provide the necessary data for preparing external reports". "Environmental control enables quantitative estimation of environmental events on the one hand, and the inclusion of the environmental concept within the facility's routine organization on the other hand". "Quantitative and organizational estimates of environmental issues improve the link between business strategy, environmental strategy, and value drivers" (Value Driver Henri, 2006).

"Environmental control enables managers to be provided with feedback information through comparison between results and targets".

Environmental Costs: "Studying and analyzing the behavior of environmental performance cost elements in a proper manner enables increasing the efficiency of use of operating input elements and improving the level of environmental performance". There are different classifications for environmental costs (Hussein Issa, 1999, UNDSD, 2001, IFAC, 2005, USEPA, 1995, Amr Hussein Abdel-Barr 2002, Tariq Fathi Abdel Khaleq 2004, Khaled Abdel Aziz Attia 2007, Suleiman Sanad Al-Sabou 2009).

This report classified environmental costs into four groups as follows: -

1- "Treatment of waste and radiation: It includes several main elements: the cost of machine depreciation, inspection and maintenance costs to maintain materials and services, relevant employee salaries, fees, taxes, environmental license expenses, insurance against exposure to environmental hazards, and cleaning and treatment allocations".

2- "Prevention and environmental management: These are the costs associated with preventing or avoiding environmental impacts and the costs of managing environmental programs in the facility. They include several elements: the costs of external services for environmental management such as training and consultations, the salaries of workers in environmental management activities, the costs of research and development related to environmental projects, and additional expenses in modern technology. For environmental protection", and other environmental management costs such as printers, communications, etc.

3- "The value of purchasing materials that do not have product outputs or the cost of materials that are not related to products": "This is the value of materials that are wasted by the facility - during the purchase, operation or disposal phase - and in light of this it becomes clear to the researcher the extent of the importance of environmental control in supporting and activating environmental performance through what it provides". "From feedback information, directing management's attention towards critical areas (strong and weak points in environmental performance), and other information necessary to make decisions related to environmental performance, which helps

establishments avoid harm to the environment as an alternative to the reaction method that depends on how to deal with damage and accidents". Environmental.

4- "Operating costs that do not have product outputs or operating costs that are not related to products: This means labor costs, wasted capital, any materials that were not classified within the cost of materials purchased in the previous group, and other costs resulting from inefficiency in production". It should be noted here that the report presented these groups of costs (as well as environmental revenues) within a table. "These groups and their various elements represent the rows in this table and express the classification of environmental costs from the point of view of the Financial Director Controller, while the columns include the classification from the point of view of the Director of the Environmental Department, where they are classified as: Costs depend on their environmental nature, including air, water, water waste, waste, soil or groundwater, noise/vibration, nature and radiation, and various others".

Environmental Efficiency: "Efficiency generally means the relationship between outputs and inputs. In general, a distinction can be made between two types of environmental efficiency": Product environmental efficiency, which expresses a measure of the ratio between the processing of a product unit and the resulting environmental impact at the level of the product's life cycle or part of it. "Efficiency Environmental functionality means measuring the amount of environmental impact associated with providing a specific function or the ratio between providing a function and the environmental impact associated with it" (Burritt and Saka, 2006).

"Environmental efficiency is defined as the facility's ability to produce goods and services of high quality and at the same time be able to reduce the environmental impacts associated with the production process. That is, environmental efficiency means that reducing costs can be achieved by increasing environmental performance".

"Environmental efficiency in both its forms (optional and indicative) is one of the important applications of environmental management accounting, environmental reports, and environmental accounting in general. To support the environmental efficiency model, it is necessary to provide material and financial

environmental management accounting information'.

"It represents the burdens that society bears as a result of being affected by various elements of environmental pollution resulting from the establishment's practice of its activity or the irrational depletion of non-renewable natural resources". This type of external costs is usually taken into account mainly when evaluating investment projects, and these costs are taken into account in the comprehensive environmental cost accounting approach, which includes all elements of internal and external environmental costs, in addition to external savings as well, such as the facility's use and production of environmentally friendly products (UNDSD, 2001).

"Also, the environmental costs mentioned in the UNDSD classification express the internal environmental costs that the establishment bears, whether compulsory or voluntarily, as a result of developing programs to protect the environment from the environmental impacts resulting from its activities (perhaps this is due", from the researcher's point of view, to the management accounting system that the goal of this The report to be developed tends to address real raw material loss and environmental efficiency for internal decision-making purposes rather than focusing on external impacts".

"However, the report indicated that there is a second type of costs (which was not included in the previous environmental costs tab), which is external environmental costs". After the researcher addressed the scientific environmental and accounting concepts related to environmental accounting, which the aim of presenting at the beginning of the research was to make these concepts clear in the mind. "When it is mentioned in the rest of the research, the researcher presents the following point of the research to the accounting approach to studying the environmental dimension in general".

*** Second topic**

{The origins and importance of green environmental accounting}

"Consumer organizations and groups have Consumers to become more professional and interested in examining the extent to which business organizations adhere to minority regulations and laws. In this context, IFAC (2005) studied the reasons for the interest of organizations (or accountants) in social issues. The study indicated that multiple pressures are being exerted on many organizations and their environmental performance". The

most prominent examples of this participation at the international level are the following: -

1- "Value chain pressures: These are the pressures exerted by large companies on their suppliers to urge them to adhere to environmental management systems issued by the Organization for Standardization (ISO) for products".

2- "Disclosure pressures: These are the pressures exerted by stakeholders on a business establishment for the necessity of disclosing environmental performance in annual financial reports or optional disclosure in the company's environmental performance reports in accordance with what is known as global disclosure initiatives".

3- "Financial pressures: These are pressures generated by the growth of global awareness of the social responsibility of investments and investment classification systems in this case, such as the Dow Jones Sustainable Index'.

4- "Legal and regulatory pressures: These are the pressures exerted by regulatory and legal authorities in different countries to reduce the rates of business establishments' production of hazardous, toxic or environmentally polluting materials, as well as reduce the emission rates of toxic gases".

5- "Tax pressures: This is the amount of taxes imposed by governments on the use of materials harmful to the environment, such as the carbon tax and other similar taxes that aim to reduce damage to the environment".

6- "Trade pressures and international agreements to reduce environmental pollution, such as the Keto Protocol".

"Many writings have addressed the importance of environmental accounting since its inception. The researcher mentions, for example, what was stated in the report issued by (USEPA, 1995) entitled "Environmental Accounting as a Management Tool". "Environmental costs are one of the costs that occur in the production of products and services, and environmental performance" is one of the most important measures of business success". 'Therefore, environmental costs and environmental performance deserve management's attention for the following reasons': -

1- 'Many environmental costs can be reduced or mitigated as a result of management decisions (spanning from operations management to asset management) such as investing in green technology processes and process/product redesign. In many environmental costs may not add

value to systems, processes and products".

2- 'Current environmental costs (and those costs that are likely to be saved) may be hidden in additional cost accounts or in other accounts that may be overlooked".

3- "Many companies have discovered that environmental costs can be offset by generating benefits from selling waste as by-products or licensing clean technology".

4- "Good management of environmental costs can produce an improvement in environmental performance and tangible benefits in the health of individuals and thus the success of businesses".

5- 'Understanding environmental costs and the performance of processes and products increases the accuracy of product costs and prices, which helps management in better designing the environment for processes, products and services in the future'.

6- "Improving environmental performance enables us to obtain competitive advantages from customers for products and services that contribute to achieving a better environment".

7- "Accounting for environmental costs and environmental performance supports the application of environmental management systems, which is the system that companies must apply to enter into international trade".

"The USEPA report (1995) presented three branches of environmental accounting: national accounting, which is prepared at the state level and reports to external parties; financial accounting, which is prepared at the facility level and reports to external parties; administrative accounting, which is prepared at the facility, department, production line, center, or center level". The system and reports to internal parties.

"Bartolomeo (et.al, 2000) also examined the relationship between environmental management and accounting functions in companies and businesses, and they identified four broad but distinct approaches to environmental accounting writings: external financial reports, social accounting reports, raw materials and energy accounting, and environmental management accounting". This study linked these approaches according to internal and external points of view on the one hand, and financial and non-financial points of view on the other hand. Environmental management accounting, from the point of view of this relationship, provides a common approach that enables the

transformation of data from financial accounting, cost accounting, and budgets for the flow of raw materials and energy towards increasing material and energy efficiency, reducing environmental impacts and risks, and reducing the costs of environmental protection.

"Raw materials and energy accounting means determining the products or services (final output), determining the production inputs, which consist of raw materials and energy, then preparing a raw materials and energy budget to verify that the quantity of inputs is equal to the quantity of outputs after running a quantity of those raw materials and energy (meaning that the quantity of inputs From the raw material = the amount of output from the raw material = the amount disbursed from the warehouses from the raw material to the production line = the amount of production + the amount of raw material lost)". The loss of raw materials should be analyzed according to responsibility (natural loss and unnatural loss) on the one hand, and according to its nature.

* Problems when measuring environmental performance

A- The problem of identifying and counting the environmental activities to be measured.

B- The problem of determining the measurement range.

T- Determine objective standards for accounting measurement of environmental activities.

D- Finally, the problem of the difficulty of linking environmental costs to environmental benefits.

"Environment: In its broad sense, it does not only include natural elements such as water, air, minerals, energy sources, plants and animals, and the human being who invests and exploits natural resources to satisfy his needs and satisfy his desires. Rather, the environment means monitoring the material and social resources available at a given time to satisfy human needs and aspirations" (Al-Marayati, 2001, p. 15).

Recent interest in the environment is due to several reasons, including: (Mahmoud, 2001, p. 4).

1- The emergence of pollution, its noticeable increase, and the depletion of natural environmental resources.

2- The limited ability of the structure to absorb and assimilate pollution elements.

3- Increasing environmental crises resulting from the rapid growth of production and the subsequent population growth and increased spending on goods and services.

4- Exacerbating environmental problems as a result of throwing waste.
5- Pressures from individuals and organizations with environmental concerns.
6- Increasing media interest in environmental problems and increasing numbers of environmental supporters day after day.

"Types of environmental costs: Environmental costs are divided into two types of costs":

A- "Environmental pollution prevention costs. This type of cost starts from the beginning of the first source of pollution, and can be avoided or reduced by improving raw materials and improving production requirements". "Among this type of costs, are those related to reducing pollution, such as planning and control costs, expenses for measuring pollution prevention, as well as expenses for reducing or treating it"?

B- "Costs of removing the environmental effects caused by these factories, such as the costs of removing solid or liquid waste and the fumes emitted from the factory". The previous division was based on the activity to which the environmental cost was directed.

*** Environmental Activities to be measured**

"It is common knowledge that before the accounting measurement process for the costs of environmental pollution, the environmental activities to be measured must be identified, which are": -

1- "Determining the environmental impacts of production processes. This stage includes the qualitative and quantitative determination of the environmental impacts of production processes, and classifying and evaluating the environmental impact of industrial treatments in the production cycle".

2- "Counting and determining environmental costs and revenues".

"Most industrial companies that have activities that have harmful effects on the environment are obligated to disclose environmental performance information in separate reports or attached to the facility's financial statements". Al-Shirazi (1990, p. 16) believes that the areas of corporate social responsibility are determined by the following: -

1- Maintaining environmental quality.
2- Achieving product safety.
3- Preserving natural resources and using them in an optimal manner in order to address: -

a- "The negative results of the company's activities, which are represented by damages to others without the company paying compensation for them".

b- "Inadequacy of government resources in providing public goods and services in a manner consistent with society's expectations".

Methods of accounting measurement for environmental activities: Measurement is carried out at three levels: (Badawi 2012: 158).

1- "The first level: inventorying environmental activities to measure the internal and social processes whose impacts can be measured with a monetary scale".

2- "The second level: Quantitative information to measure environmental and social processes whose effects cannot be measured with a monetary measure and non-monetary quantitative measures must be available to measure them".

3- "The third level: Descriptive information, which is expressed in a constructive manner about its effects on environmental and social processes whose effects cannot be measured with a quantitative scale".

Linking Environmental Costs to Environmental Benefits: (Ali, 2003: 46).

"Indicates that environmental costs arise from companies engaging in an activity that produces waste that can be used by recycling or disposing of it in a way that does not harm the environment". To achieve this goal, the company bears what are called environmental costs, and these costs include the following: -

a- Prevention costs: "These are the costs of activities carried out by the company to prevent the production of pollutants or waste that cause deterioration in environmental quality. These costs include environmental studies, evaluation and selection of suppliers, and evaluation and selection of machines to prevent pollution or reuse and manage waste".

b- "Discovery costs: These are the costs of activities carried out by companies to determine whether the products, processes and systems within the companies are consistent with appropriate environmental standards, such as the costs of examining products, the costs of environmental auditing, monitoring pollution rates, and developing environmental performance measures".

c- Interface failure costs: They are divided into: -

1- "Internal failure costs: These environmental costs occur within the company in the event of failure to avoid and prevent them, and thus

cause the production of pollutants and waste and their release into the environment". "Among the activities of environmental failure are the fines and penalties that are imposed on the company as a result of non-compliance with environmental legislation and the environmental damage that it causes". Talk to him.

2- "External failure costs: These are the environmental costs resulting from the activities performed by the company due to the production of pollutants or waste and the release of these pollutants and waste into the environment". "These costs are divided into perceived failure costs (the costs of activities that the company bears due to the pollutants caused by the production or service)". "Or environmental waste, such as the costs of cleaning up contaminated soil), unaware costs of failure (the costs of activities carried out outside the company and borne by parties outside the facility, such as the costs borne by society because the company is not aware of the real cause of pollution and environmental damage)".

*** Environmental Pollution Costs**

It includes direct and indirect costs as follows: (Al-Dosari 2011: 20).

1- "Measuring the direct burden of environmental damage, which includes counting the cases of diseases resulting from pollution, the costs of treating them, and expenses and compensation for health cases and death. It includes the following":

a- "Expenses spent directly by the company in the field of reducing pollution. This type is determined through the hypothesis of the relationship between these expenses and the activity to which these expenses are allocated. On this basis, the share of each period of the portion benefiting from the economic unit's resources for reducing environmental pollution is directly determined, and all expenses are considered The amount spent on removing waste that is harmful to the environment in a specific accounting period from the expenses and revenues charged to the profit and loss account".

b- "Expenses paid by the economic unit to the official authorities concerned with reducing pollution".

c- "Annual retirement premiums for pollution abatement equipment, which were considered, fixed assets, in addition to pollution abatement expenses, which were considered revenue expenses. The total costs of the facility include all direct costs that represent the cost of production".

2- "Measuring the indirect burdens of environmental damage includes the following": -

a- "Measuring the cost of the decline in the productive and human capacity of the labor component, i.e. the value of lost productivity and dividing it into three types": -

1- The worker returns without his productivity being affected.

2- The worker returns with a decrease in productivity.

3- Referring the worker to retirement as a result of total disability.

b- In addition to the indirect costs charged to the profit and loss account.

The Role of Green Accounting in improving the Quality of Information: -

"Environmental accounting and accounting disclosure of environmental performance have a role in rationalizing and improving the quality of financial reports". "There are some motives that may push some companies to disclose Environmental Information", including:

1- "Providing the facility with the opportunity to improve its image within the community in which it operates".

2- "Providing the opportunity to build better relationships between the facility and various groups of society, such as government agencies, shareholders, facility workers, customers, suppliers, financiers, and pressure groups, which are considered to have a strong influence, especially in Western European countries and the United States".

3- "Prepare to implement environmental regulations and laws that will require disclosure of environmental information and are expected to be binding on all companies".

4- "Use disclosure as a means to inform the community as a whole that the facility is voluntarily disclosing environmental information".

5- "Using disclosure as a means to reach an advanced competitive position in the facility's field of activity".

6- "Disclosure of environmental activities helps information users to make planning and control decisions and evaluate performance as well as develop research and studies in the field of environmental safety".

7- "Gaining consumers' satisfaction and conviction with the goods and services that the organization offers to the market to help fulfill its responsibilities towards society and towards future generations (because the use of resources and environmental pollution can affect future generations)".

Finally, she says that disclosing various environmental information is useful in the following (Badawiya, 2000: 150).

1- Improving production processes.
2- Negotiating and resolving conflicts with institutions.
3- Influencing decision makers.
4- Re-evaluating accounting strategy and management practices.

"Here, the role of green management accounting is highlighted in exploiting accounting information for the purpose of making good decisions in improving the quality of manufactured products so that they meet the needs of society and are less harmful and at a lower cost. It also represents the optimal exploitation of resources through industrial companies offering products and goods that help reduce environmental pollution as well as optimal exploitation". "For the organization's resources to provide its products to the market and society and preserve the environment from pollution and damage that will be generated due to poor products and unclean or non-green production produced by some companies". "Therefore, the trend has become at the present time, and through green administrative accounting for companies, to produce green, environmentally friendly products that meet the needs of society at the lowest cost, taking into account the calculation of the necessary environmental costs for valuable environmental activities and the exclusion of unnecessary activities that do not add value to the company and cause environmental damage that affects society, with the optimal exploitation of available resources, which is in keeping with the saying (do the right thing the first time)".

The concept of environmental (green) accounting: -

*** Definition of environmental (green) accounting**

"First: The use of raw materials, energy, water, and other waste and emissions are linked to many of the effects that business organizations have on the environment".

"Second: The costs of purchased raw materials represent one of the main cost drivers in business organizations "(IFAC, 2005).

"The definitions of environmental accounting include both financial and quantitative aspects as follows":

"Definition of scientific organizations and bodies, including: The United Nations Department for Sustainable Development (UNDSD) definition of environmental accounting (which is the definition that was reached by international agreement for members of the group that represents (30 countries) as

identifying, compiling, analyzing and using two types of information to make internal administrative decisions: in-kind information. (Physical or material) information about the flows and use of raw materials, water, energy, waste, and financial information (monetary) related to savings, profits, and environmental costs".

"The International Institute of Accountants (IFAC, 2005) defines environmental accounting as a tool for managing the environmental and economic performance of business organizations through developing the application of current accounting systems that are related to environmental practice. Environmental management accounting mainly includes: (product life cycle costs, comprehensive costs, expected benefits, Strategic planning for environmental management)".

"Some definitions of environmental accounting are identifying and reporting costs related to the environment, such as waste disposal costs. In other cases, it is defined as more than just accounting for environmental costs and benefits. It represents accounting for any costs and benefits that arise from changes in a unit's products or operations. Economic, where change also includes a change in environmental impacts". "It is a branch of accounting that focuses on the cost structure and environmental performance of the economic unit, and preparing, presenting and communicating information related to the interaction of the economic unit with the environment. Sometimes called green accounting, resource accounting, or integrated economic and environmental accounting, this term refers to amending the system of national accounts to include the use or depletion of natural resources. It is a broad term related to providing information regarding environmental performance to stakeholders inside and outside the economic unit".

"Environmental accounting is a broad term used in a number of various contexts, including evaluating and reporting financial information related to the environment in the context of financial accounting and reporting and evaluating and using physical and monetary information related to the environment in the context of environmental management accounting". "Environmental accounting (or green accounting) is an environmental analysis tool (measuring and communicating the costs and benefits of comprehensive economic impacts), and it includes collecting information about the

volume of materials and costs and determining the costs incurred by economic units, as a result of pollution emissions, waste treatment and environmental protection".

"Environmental accounting has become an important part of environmental accounting, and it is extremely important not only for environmental management decisions, but for all types of management activities, as the scope of decisions that are affected by the environment has begun to increase", "and environmental pollution has become a global problem, and business activities have raised Which has negative effects on the environment has received increasing attention, and this leads to a significant increase in environmental costs, due to environmental laws and regulations and the social needs for sustainable development. "Researchers have presented different definitions of environmental management accounting, some definitions of environmental management accounting". "The United Nations Working Group of Experts defined environmental management accounting as the process of identifying, collecting, and using information to make internal decisions. A tool for measuring environmental costs, through measuring information".

"A common entrance provides for the transfer of data from financial accounting and cost accounting to increasing the efficiency of using materials, reducing environmental impacts and risks, and reducing the costs of environmental protection. It is also the management of environmental and economic performance through developing and implementing accounting systems and practices suitable for the environment". "Environmental management accounting is one of the tools of environmental management, as it provides a wide range of principles and inputs required for the success of many other environmental management functions, and since the group of decisions affected by environmental issues is gradually increasing, (EMA) has become more important not only for management decisions Environmental, but for all types of administrative jobs with a special focus on environmental efficiency". "It is the process of collecting and analyzing information related to environmental costs to make internal decisions. Examples of such decisions include product design, process design, product pricing, environmental efficiency, environmental quality, and

improving environmental performance".

"Benefits and uses of environmental accounting: Environmental accounting helps economic units monitor and manage their monetary and material resources, and the resources associated with them more effectively. It also allows the economic unit to identify opportunities to achieve cost savings and improve efficiency, and make better decisions based on reliable information, thus giving the economic unit advantages. Strategic, and among the benefits of environmental management accounting are the following": -

1- Providing appropriate information to support the establishment of cost-effective programs to improve the environmental performance of the economic unit.

2- The ability to monitor and manage the consumption and flow of energy and materials more accurately.

3- Providing appropriate information to measure and report environmental performance, thus improving the image of the economic unit with stakeholders.

4- The ability to more accurately identify, estimate, allocate, and manage the reduction of types of environmental costs.

5- Implementation of EMA by industry enhances the effectiveness of existing government policies/regulations, by revealing to economic units the real environmental costs and benefits resulting from those policies/regulations.

6- Industry-specific EMA data can be used to inform government about program / policy design.

7- Industry-specific EMA data can be used by government to develop matrices to report on the financial and environmental benefits of voluntary industry partnership programs, innovative approaches to environmental protection, and other programs and government policies.

The non-accounting reasons that necessitated the emergence of (green) environmental accounting are: -

First: Increased pressure from stakeholders interested in environmental issues.

Second: The increasing demand for an integrated view of the financial and material aspects of environmental management.

Third: The concepts of sustainable development and social responsibility require economic units to jointly consider financial, environmental and social aspects

Fourth: Increasing the importance of costs associated with the environment. Limitations in management accounting methods lead to the loss of many opportunities to reduce environmental costs and improve the environmental process.

"The United Nations Sustainable Development Division also points out the role of environmental accounting by changing the focus of traditional accounting from providing financial information to reducing Consume resources and increase the efficiency of resource use".

1- "Many environmental costs are hidden indirect industrial costs".

2- ""The process of allocating environmental costs from indirect industrial cost accounts to processes and products was carried out incorrectly"".

3- "Some environmental costs are classified into fixed costs rather than variable costs."

4- "Incorrectly calculating the volume of damaged raw materials and their cost".

5- "Some important and relevant environmental costs were excluded from accounting records, which led to their underestimation during the investment evaluation process".

"Fifth: He tried to clarify several shortcomings in management accounting practices, including that they do not pay any significant attention to environmental costs". "This is due to the mistaken belief that environmental costs are somewhat unimportant because of the bias or tendency of traditional management accounting to neglect the importance of material information in managing environmental impacts". "On the difficulty of collecting and evaluating environmental costs effectively, which leads to underestimating them because part of this reason is poor communication between managers with accounting departments and environmental management functions. As a result, environmental management accounting has emerged to fill the gap of unavailability of information about the environmental performance of economic units".

"Sixth: From the above, it is clear that there are several justifications for the emergence of environmental" "management accounting, some of which have a direct impact on its emergence as a deficiency in management accounting systems to include environmental aspects, activity", and economic units within environmental management accounting reports, while others have an indirect impact, such as the interest of all members of

society in the environment and its consequences". "Economic units have a responsibility to measure and improve environmental performance, as well as the direction of the entire world towards achieving sustainable development and providing its requirements". "Therefore, it is necessary to know its historical development, and this is what will be discussed in the next paragraph".

"From the above it becomes clear that environmental accounting has emerged as a new tool for environmental management and is valuable in creating a culture of pollution prevention and waste reduction in an attempt to highlight the resources used and the costs imposed on the ecosystem through the activities of the economic unit. It can also be considered a comprehensive means for integrating environmental considerations". "With finance in the decision-making process, it has become increasingly important to provide material and monetary information about the unit's performance through several techniques, the most important of which are life cycle assessment, material flow cost accounting, multiple criteria assessment, environmental risk and uncertainty assessment, and the sustainable balanced score card. It will be clarified these techniques are researched. Accordingly, an analytical study of investment decisions must be conducted in order to demonstrate the impact of these techniques on them, so that this will form the focus of discussion in the next section".

*** Green Accounting Techniques**

"Strategic cost management techniques have responded to the changes taking place in the environment, including rising rates of environmental pollution, the worsening phenomenon of global warming, and the spread of malignant and incurable diseases". These techniques include: -

1- "Total environmental quality management: This technology aims to achieve environmental sustainability, improve product quality, focus on long-term goals, maintain the achievements achieved, and manufacture products with zero defects, taking into account environmental specifications and requirements". "The integration between environmental total quality management and environmental management systems is the basis of the concept of the technology. ((TQEM) In addition to the above objectives, the use of this technology leads to achieving many benefits, such as reducing waste, preventing

pollution, increasing productivity, reducing costs, and developing traditional working methods with customers and suppliers".

2- "The green product life cycle: The green product life cycle is one of the strategic tools used by the economic unit to improve production, enhance market share, and achieve competitive advantage. The stages of the green product life cycle are similar to traditional products, with the exception of the first stage (the introduction stage), as it is characterized by the presence of radical changes and efforts. Considerable research and development activity, as well as promotional expenditures to introduce the product and its characteristics. The remaining stages of the green product life cycle are growth, maturity, and decline".

3- "Activity-based environmental cost management: This technique aims to measure and determine indirect environmental costs using activity-based costing (ABC). The focus is on the environment as a main vector of cost, and general environmental costs are allocated to products and services by specifying resources, activities and quantities. Used in production, the use of this technology leads to reducing environmental costs such as pollution control, energy and raw materials, as well as hidden costs and intangible costs such as gas and emissions monitoring equipment. Other benefits of this technology include a fair distribution of environmental costs, reducing the number of activities that do not add value by eliminating them and providing accurate information about the cost of the product".

4- "Green target costing: The green target costing technique is known as the process of integrating traditional target costing mechanisms with environmental requirements. This technique is based on six steps, which are identifying and evaluating the specifications of the green product and its functions, evaluating both the target-selling price and the green price premium, and determining the profit margin for the product. Green, allocating costs to cost vectors, implementing cost management measures, conducting continuous green product improvement".

5- "Green value chain: It is a broader extension of the traditional value chain technology that aims to create safer and cleaner activities in the various stages of product manufacturing or service provision that lead to reducing the use of hazardous materials and increasing the potential of economic units in the

field of recycling products and recovering production waste to achieve a sustainable competitive advantage".

*** Initiatives supporting greening products and achieving sustainability**

"The strategy of greening products and making them environmentally friendly for the purpose of achieving sustainability is linked to several means, including the following": -

1- Repair or restoration: It is possible to determine the age of the product through the possibility of repairing parts of it.

2- Remanufacturing: This means reusing parts or materials of the old product when manufacturing the new product.

3- Reuse: That is, the engineering team designs a product that can be used many times.

4- Recycling: That is, it is possible to reprocess the product and turn it into raw materials that can be used in the manufacture of another product or in the same product.

5- Reduction: That is, when carrying out production, fewer raw materials are used in the product, or the waste generated from it can be disposed of.

"In conclusion: Green accounting is one of the contemporary branches of accounting, and as mentioned in this study, directing various accounting specializations towards environmental problems to enhance the role of this science in combating the phenomenon of environmental pollution, which has increased in recent years, and among these specializations is cost and administrative accounting by correcting strategic cost management techniques". Towards enhancing environmental protection.

In light of this, the researcher believes: -

1- Those who follow the growth and development of green environmental accounting will notice that it is moving in a direction largely similar to the stages of management accounting growth.

2- Green environmental accounting is based in most of its components on recognized management accounting concepts, tools and methods, but with an orientation towards in-kind information (in addition to cost-financial information) and information useful for environmental planning and control, in addition to information useful in making all other areas of decision-making.

3- The green environmental accounting system is an integral and overlapping part of the management accounting system and not a system

parallel to it. Rather, the development of an integrated system for strategic management accounting performs all the functions of the recognized green accounting system, but from an environmental perspective.

4- Or rather, a comprehensive perspective of all financial, economic, environmental, social and environmental aspects becomes what is required, and it is preferable that the approach to building a scientific framework for green accounting in general go in this direction.

*** Third Topic: Applied Aspect**

First: "General information, which represents general information about the study sample. Through analyzing the results, it was found that the academic qualifications were 16 individuals for the doctorate degree, at a rate of 21%, 22 individuals for the master's degree, at a rate of 30%, 25 individuals for a bachelor's degree, at a rate of 33%, and 12 individuals for the other categories, at a rate of 16%. . In terms of job, the number of individuals in the position of teaching staff was 38 individuals, representing 51%, in the position of chief accountant, 15 individuals, representing 20%, in the position of accounting clerk, 3 individuals, representing 17%, and in other positions, 9 individuals, representing 12%. It is clear from the information contained in Table No. (1) that the study has good characteristics that can be relied upon in building the targeted results of this study".

Table No. (1) General Information

Qualification	Number	Ratio	Age	Number	Ratio	Job	Number	Ratio
PhD	16	٢١	20 - 30	30	40 %	lecturer	38	51%
Master	22	30 %	31 – 45	20	27 %	Chief Accountant	15	20%
BA	25	33 %	46 – 50	15	20 %	Bookkeeper	20	17%
Other	12	16 %	51 above	10	13 %	Other	10	12%
Total	75	100 %	Total	75	100 %	Total	75	100%

"As for the hypothesis of the role of green accounting in improving the quality of products in industrial companies, through the questionnaire it was found that the general arithmetic mean of the axis is 3.65 and the standard deviation is 0.850, with a relative weight of 75.70". "This indicates a positive degree of agreement that there is a role for green accounting in improving the quality of products". "The highest arithmetic mean was obtained in paragraph (5), which represents: "Identifying environmental activities helps improve the quality of products and this is then reflected in the company's financial reports." (4.30) with a standard deviation of (0.805) and a percentage of (65%). While paragraph (1) obtained the lowest mean (3.15), standard deviation (1.215), and percentage (70%), which is, "Companies apply environmental guidelines and regulations to preserve the environment and its resources"."

"The questionnaire on the hypothesis of improving the quality of products leads to achieving sustainability shows that the general arithmetic mean for the axis is (4.10), the standard deviation (0.977), and the relative weight (75%), and these indicate a positive degree of agreement that there is an impact of improving quality on the quality of products in companies. industrial and sustainable development. The highest arithmetic average was obtained in paragraph (8), which states": "The Company's commitment to improving quality leads to ensuring high-quality reports that work to achieve sustainability." (4.50) with a standard deviation of (0.750) and a percentage of (65%). While paragraph (1) obtained the lowest arithmetic mean (3.20), standard deviation (1.110), and percentage (66%), represented by "The Company is working to find appropriate solutions to reduce the problem of environmental pollution in order to contribute to solving the problem of environmental pollution when producing green products"

*** Conclusions and recommendations**

*** First: Conclusions**

1- "It was concluded that there is a major role for green accounting in improving both the quality of information and the quality of products, since green management accounting is linked to economic, social and environmental concepts".

2- "The increasing environmental awareness and the efforts of international environmental agencies and organizations in many countries of the world have had an impact on the increasing interest in accounting for the environment and its issues", and with the rise in environmental sensitivity among many establishments at the present time (as a result of industrial introduction), the importance and need for applying environmental management accounting has emerged".

3- "Management's commitment to environmental issues enables these issues to be supported by taking the environmental dimension into account within the facility's strategy".

4- "The green accounting system works to extend bridges of cooperation between environmental management (environmental management system) and financial management (other accounting systems) in the facility, in order to achieve the objectives of economic, social and environmental management accounting, including separating environmental costs from other production costs, and achieving

compatibility between the facility's activities and the environment". "This has positive repercussions on the environmental and economic performance of business establishments".

5- "Green management accounting is a fusion between financial accounting systems, traditional management accounting and environmental information systems, as it relies mainly on information from the financial accounting system in general and environmental financial accounting in particular. It uses traditional management accounting tools, methods and rules, but from an environmental perspective and represents one of the basic pillars. For the environmental management system, green management accounting is considered a broader concept than environmental accounting".

*** Second: {Recommendations}**

In light of the above, the researcher recommends the following: -

1- "Green accounting must be given attention because of its importance in improving the quality of information and products in order to create cleaner, environmentally friendly production through optimal exploitation of resources, preventing pollution, toxins, and waste that affect the environment and society, and achieving sustainability".

2- "All industrial companies must apply green accounting techniques, which help management in making appropriate decisions that lead to improving product quality, achieving sustainability, and helping to reduce costs".

3- "Educating all workers in the industrial and production sector about the advantages of environmentally friendly green products and enrolling them in intensive courses to provide them with sufficient information about green (environmental) accounting".

4- "Financial reports prepared by industrial companies must include information about environmental costs, which can be used to determine the costs of environmentally friendly products and to reduce the costs of polluting products that do not achieve sustainability".

5- "Optimal exploitation of the resources of economic units in a manner consistent with the requirements of the environment and society, the desires of customers, and achieving economic benefits in the future".

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