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Article

The Role of Environmental Cost and Managerial Accounting in Detecting Greenwashing Practices: An Applied Study in Quality Control Department

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Abstract: Aims to explore role of environmental cost and managerial accounting in uncovering the practices of some companies that promote products harmful to the environment, a phenomenon known as "false green marketing," which poses a significant threat to environmental sustainability. Furthermore, it seeks to enhance environmental transparency and disclosure to ensure that economic resources are directed towards sound environmental practices, particularly in companies with a regulatory and technological focus. The Importance is lies in highlighting the role of environmental cost accounting in establishing an analytical and developmental framework to help detect false or so-called green marketing practices. This framework contributes effectively to increasing environmental efficiency, reducing the cost of environmental remediation and proposals for companies, and directing economic resources towards a safe economy and a sustainable environment. The problem stems from the manipulation, deception, and fraud perpetrated by some marketing companies against consumers and customers. They mislead and deceive them by promoting imported or local products as green and environmentally friendly, when in fact the opposite is true. This is evident in promotional and marketing advertisements such as displaying "green gardens," "environmental purity," or "no use of chemicals or hazardous pesticides in agriculture," etc., on product packaging or in their advertisements hypothesis Cost accounting and environmental managerial work to uncover environmental deception practices by identifying, measuring, analyzing and monitoring the cost of the "green marketing" phenomenon. Results Cost accounting and environmental managerial also monitor environmental costs and calculate the cost of mitigating damage by identifying the type of pollutants, the degree of environmental damage, and the mechanism for their removal.

Keywords: Environmental Cost and Managerial Accounting, Greenwashing, Quality Control Department.

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1. Introduction

Customers and consumers are drawn to certain products or services by seeing or hearing promotional advertisements on television, the internet, or even those displayed on public transportation, buildings, or illuminated billboards. This has prompted some companies to resort to deceptive tactics to convince consumers that their products are environmentally friendly by manipulating their emotions. They claim their products are "green" or "greener," a misleading and false claim. These claims stem from the fact that the materials used in the production of truly environmentally friendly products are often very expensive for the company [1]. This has led to the placement of environmental and

greenery-related labels or graphics, such as images of the Amazon rainforest or other green environments, on products to mislead public into believing they are environmentally friendly when, in reality, a harmful. Ultimately, the issue is cost-driven; the costs of environmental repair, maintenance, and remediation increase with the number of products that mislead the public about environmental issues [2]. Even worse, some countries have failed to impose penalties on the misleading green marketing claims on their products, claims designed to make them more appealing, when in reality they are detrimental to the environment. This is despite ongoing efforts of some Institutions, including those within European Union, which impose penalties or fines on companies engaging in environmental deception. These fines are used to remediate pollution in all its forms—solid, gaseous, and liquid—by helping the ecosystem process, recycle, disperse, or convert it into useful raw materials that do not cause harm, increase radiation or noise, or contribute to global warming. Therefore, international organizations concerned with environmental sustainability should impose fines and require ongoing contributions to address the problems resulting from environmental deception [3].

Environmental Cost and Managerial Accounting: is a branch of accounting that focuses on analyzing, measuring, and recording costs associated with environmental impacts of a company's economic activities. Examples include pollution reduction (waste treatment costs, natural resource use, use of environmentally friendly materials, recycling, reuse, and compliance with environmental regulations). The goal of environmental cost accounting is to assist management in making better decisions by highlighting environmental costs that may be hidden or unclear due to traditional accounting practices [4]. It is sometimes defined as an accounting system that measures, analyzes, and identifies the costs associated with an organization's environmental activities to help rationalize management decisions, enhance the role of accounting in this area, and improve economic and environmental performance. More precisely, environmental cost accounting analyzes, measures, and records the costs associated with (waste disposal, recycling, fines, compliance with standards and environmental regulations, wastewater treatment, reuse, the cost of natural resource consumption, and the cost of inefficient energy consumption). Traditional accounting focuses on calculating the cost of a product or service, such as raw materials, wages, and indirect manufacturing costs [5]. Environmental cost accounting, on the other hand, tracks direct costs and allocates indirect costs by collecting cost information and outlining environmental, economic, and even social benefits—in essence, it represents the minimum three-tiered approach to the proposed alternative. Some call it true cost accounting. Since the definition of "true" or "full" is inherently subjective, experts consider both terms problematic. Costs and benefits are typically viewed in terms of environmental, social, and economic impacts. The concept of full cost accounting is referred to as the "triple minimum." Several standards exist in this regard, including environmental labeling, ecological footprint, and UN Council on International and Local Environmental Initiatives (UNIIs). [6]. These standards are approximately three times the minimum based on International Organization for Standardization's (ISO) Environmental Budget. ISO has many useful standards adopted by the FCA and TCA, including ISO 26000 (2010) on corporate social responsibility and greenhouse gas emissions, and ISO 19011 on auditing. The enormous developments in cost accounting have given rise to these terms used in public sector. The term "full cost accounting" is widely used in management accounting, for example, in managing the basic structure of finance (The use of terms like FCA and TCA relates to relatively moderate extensions of current management processes or practices, and recent enhancements and reinforcements to Generally Accepted Accounting Principles (GAAP) for handling waste generated from outgoings or resource inputs. These extensions and enhancements to GAAP for handling waste generated from outgoings or resource inputs have advantage of avoiding often-contentious questions surrounding social cost

Comprehensive cost accounting is embodied in a set of fundamental concepts that distinguish it from standard accounting methods. [7]. These include as follow:

- **Cost as an Expenditure**: When spending money to make a purchase or use a particular item, the cost is considered the monetary value of the item when we use it. For example, we pay an expense when buying a car, but we bear the cost of this car over its actual lifespan, for example (ten years). Therefore, the cost of this car must be allocated over this period because every year we use the car contributes to decreasing its value [8].
- **External and Hidden costs**: value of a good, product, or service is reflected as a cost even in the absence of cash expenditure. For example, a community might receive a cost from a government, such as purchase of equipment. This equipment has value even though the community itself did not pay for it in cash. In such cases, it must be evaluated in a Financial Analysis (FCA). Government subsidies for energy and food production industries make the true cost appear very low by deliberately pricing inexpensive products. This price manipulation encourages and reinforces unsustainable practices and masks the ongoing negative externalities of modern mechanized agriculture and fossil fuel production [9].
- **Overhead and Indirect Cost**: The complete cost accounting accounts for all costs, both overhead and indirect, are shared by other general agencies. These include costs such as indirect costs, general costs, legal services, data processing, administrative support, billing, and procurement. Environmental costs include indirect costs, as well as the full range of costs throughout the product lifecycle (product lifecycle assessment), some of which are not reflected at the lowest level within the organization. This also includes fixed administrative expenses, fixed general expenses, and so on.
- **Past and future Expenditures**: Recording past and future cash expenditures is often not reflected in the balance sheet of cash accounting systems. Upfront or past costs are initial investments necessary to provide services (such as purchasing equipment, vehicles, or facilities). Back-up or future costs are the costs incurred to complete processes such as equipment removal, facility closures, post-closure care, health benefits, and retirement benefits [10].
- **Costing according to Product Lifecycle**: This is the cost associated with the purpose of costing over the product's lifecycle. This system focuses on collecting and tracking the actual costs and revenues of each product from beginning to end, as much as possible, to determine the product's profitability at the end of its life. Product lifecycle costing provides useful information for control, planning, and decision-making. Alternatively, it can be described as an economic method for evaluating projects, considering all costs incurred in owning, maintaining, operating, and ultimately disposing of the project as potentially relevant to this decision [11].

Cost Measurement: Cost accounting analyzes and measures the cost of products or services and summarizes the results of operations for economic entities to determine their financial position. Cost accounting has expanded to encompass many fields of knowledge compared to the last century, and it has excelled in managing vital facilities, including planning, control, and execution. It can be said that cost accounting was known since ancient times, dating back to the Pharaohs, who followed specific systems and numerous procedures for agricultural, engineering, and architectural activities. Cost accounting measures and reports financial data and information related to the acquisition and consumption of economic resources by entities, in addition to providing important and necessary data and information for managerial and financial accounting [12]. There are several types of environmental costs, which are as follows:

Concept of Environment: It is medium, field, or space in which humans live, are affected by, and affect as a result of their exposure to natural phenomena. **Environmental**

pollution, on the other hand, consists of trees, water, air, salts, and microscopic living organisms. When an imbalance occurs in these components, environmental pollution or environmental destruction arises. Some define pollution as the presence of energy or matter in the wrong place, quantity, or time. And **Environmental accounting** encompasses activities related to measuring and analyzing the socio-ecological performance of a specific accounting unit, and communicating the necessary information and data to relevant groups or stakeholders, with the aim of assisting them in the evaluation and decision-making process. And **Environmental costs**, on the other hand, are a set of cost elements related to identifying, monitoring, and correcting errors resulting from incorrect and potential actions and decisions that are negative to human, plant, and animal life, including factors that pollute water, soil, and air [13].

Environmental Remediation Costs: expenses incurred by organizations to minimize the negative or adverse impacts of their ongoing activities on the environment and to find ways to mitigate them. All financial efforts undertaken are considered costs, encompassing activities aimed at achieving optimal environmental standards, improving environmental performance, and achieving sustainability by reducing pollution from operational processes [14]. Environmental remediation costs are part of a comprehensive and integrated environmental cost system, designed to assess effectiveness of organizations in environmental compliance, both within legal framework and in terms of social responsibility. Environmental remediation costs are a crucial tool for evaluating and understanding environmental performance, revealing its true nature, and avoiding misleading practices such as environmental deception. Some scientists classify environmental costs into a number of categories, which are as follows: **Some categorize environmental costs based on stakeholder involvement**. U.S. Environmental Protection Agency (EPA), federal government agency responsible for protecting human health and environment, has categorized environmental costs as follows [15]:

- **Special or Internal Costs:** these are costs incurred by a company that directly affect its profits or losses.
- **Social or External Costs**: are those arising from environmental impact of an organization's operations, activities, or products. Although these costs stem from the economic practices or activities of companies or factories, the organization itself does not bear them financially; rather, these costs are incurred by external parties. Consequently, these costs do not directly affect the company's profits or losses. Organizations make numerous attempts to consider both social and external costs when making administrative decisions. Undoubtedly, product lifecycle costs significantly enhance the distinction between internal and social costs. **And Joshi, et al., Environmental costs can be categorized into two main types**. as follows [16].
- **Visible or Apparent Costs**: refer to the costs of complying with government regulations or laws, and are classified under corporate accounting systems as environmental costs. Examples include the costs of installing and maintaining equipment and machinery, and pollution monitoring and treatment. and using less polluting resource inputs for production processes and activities to reduce harmful emissions and radiation.
- **Hidden Costs**: which are accounts under the heading "other accounts" that include indirect industrial expenses, affect total costs and may arise from legislation and laws, including emergency environmental obligations. **Others classify environmental costs into four types according to the activities that led to their occurrence,** as follows:
- **Environmental prevention costs**: This type of cost is determined starting from the primary source of pollution and how to avoid, reduce, or mitigate it by improving raw materials and production requirements. Examples include planning and control costs, pollution prevention measurement expenses, and pollution reduction or

treatment costs. Or These are defined as amounts spent to prevent pollution or adverse environmental impacts and to minimize their occurrence in the first place. The goal of these costs is to prevent and control environmental pollutants and reduce environmental risks by designing systems, activities, or processes in a more environmentally friendly and sustainable manner. Examples include developing and improving cleaner production processes, purchasing environmentally friendly equipment or machinery, and training and developing employees and workers in sound environmental practices [17].

- **Assessment (Discovery) costs or Costs of Detecting and Controlling Environmental Pollutants:** These are costs incurred by an organization to determine, monitor, measure, and control its environmental performance in order to prevent industrial or operational facilities from causing pollution or environmental degradation, or to ensure their compliance with regulations, laws, and bylaws. Or as some call it costs of removing environmental impacts caused by factories, for example, the costs of removing liquid, solid, or gaseous waste, including fumes and emissions associated with production processes, are categorized based on the activities to which the environmental cost is directed.
- **Costs of failure:** activities include the costs of activities undertaken by the organization to remedy and remove environmental damage that has already occurred as a result of the organization's failure to prevent, contain, or control it in the past**.** [18].

Environmental Costs and Their Relationship to Administrative Decision-Making Process: The relationship between them is reciprocal in terms of impact. In this regard, environmental costs arising from various administrative decisions include: product type, factory location, production and operation processes, product transportation and shipping methods, packaging materials, product disposal methods after use, and consumer use of the product [19].

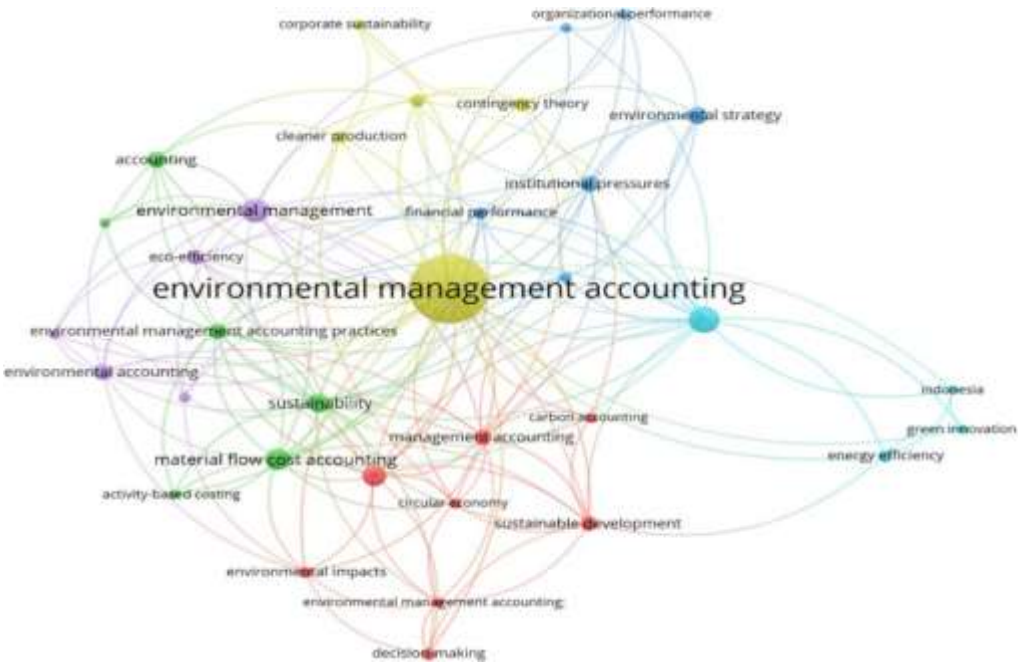


Figure 1. Environmental Managerial Accounting.

Source: [20].

Reasons for Focusing on Environmental Costs: There are several reasons and motivations that have led to increased focus on environmental costs, including:

- **Legal and Regulatory Reasons**: Global commitment to environmental protection is growing due to the need for sustainability, ensuring the rights of future generations.

Furthermore, a range of legislation and regulations have been issued emphasizing the necessity of measuring the negative environmental impacts of facility activities. This aims to monitor and minimize these impacts. Adherence to these regulations leads to the implementation of environmentally responsible activities within facilities, which in turn generate environmental costs [21].

- **Social Reasons**: These are reasons related to societal expectations regarding industrial facilities, stemming from increased environmental awareness and concern, and a deeper understanding of the impacts of economic activities on ecosystem elements. As societies and nations recognize the importance of preserving natural resources, organizations and companies operating in an environmentally friendly manner are compelled to bear the associated environmental costs [16].
- **Consumer-Related Reasons**: Consumers seek to acquire goods or products that satisfy their desires or needs using environmentally friendly products. They currently require products that are easily disposed of and recyclable, leading producers to consider this during the production and marketing process, which in turn results in various environmental costs.
- **Business-Related Reasons**: These relate to the needs, desires, or requirements of management to enable them to carry out planning and control activities [22].

Concepts of Greenwashing Phenomenon: term "greenwashing" was coined in 1986 by environmental activist Westerfield in a published article. He cited hotel industry's practice of placing signs in every room encouraging reuse of towels "to save environment." Ostensibly, these establishments made little to no effort to reduce energy waste, and the cost savings were evident only in the hotels' actions. Westerfield argued that this "green campaign," launched by many hotel owners, was actually a profit-driven tactic. [23]. He categorized these actions, which appeared to reflect environmental responsibility and awareness, as environmental misrepresentation, with the primary goal being profit maximization. Greenwashing has many definitions, including dissemination of false or misleading information to public—a form of distortion of facts—to portray a company or factory as environmentally and socially responsible to its target audience. Some view greenwashing as a form of selective corporate disclosure, concealing negative information or facts related to corporate social responsibility [24]. Greenwashing involves changing name of a brand, service, or product to create an impression of "naturalness," for example, placing a picture of a forest on a chemical bottle. These companies promote a false and unrealistic environmental image to mislead customers through exaggerated advertising campaigns, environmental campaigns, slogans, and the use of words like "organic," "sustainable," and "natural," without any real evidence or commitment. It is a term used to describe deceptive methods and means employed by some industrial, commercial, and even service companies to present themselves as environmentally friendly, when in reality, they do not engage in any genuine or sustainable environmental practices. This leads to consumer delusion and misinformation regarding company's environmental practices, environmental benefits of its products, or the provision of a particular service. Some describe it as a phenomenon used by companies, and its most important feature is the focus on disclosing information. It is a deliberate strategy to benefit organizations and harm society, as it is linked to social and environmental issues. [25]. highlighted the challenges of effective corporate communication, using Starbucks as an example. He argues that accusing a company of "green marketing" has negative repercussions for the company, regardless of the validity of the claims. The accusation against the company's owners must be "fair" in its assessment of their actual and undeniable misconduct. Other examples of this perception include the environmental misinformation disseminated by NGOs, such as Greenpeace in European Union, regarding labeling of energy production (nuclear and gas) as "green." Environmental deception involves several elements, including misleading the product

through words about its environmental description, or through graphics depicting its environmental characteristics, or through vague and unsubstantiated environmental claims; exaggerating the product's description or inflating its environmental features and functions; as well as concealing important and necessary information that improves its image compared to its true nature.

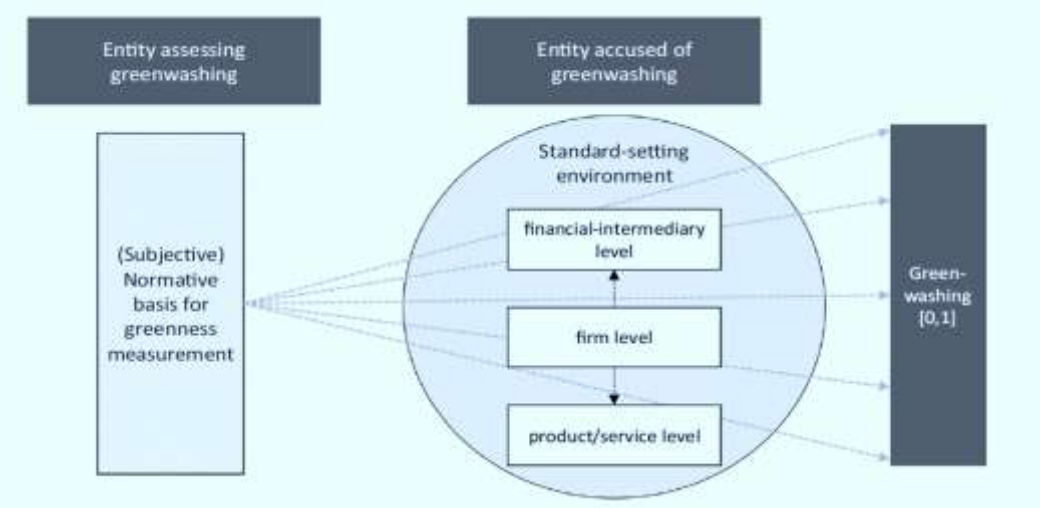


Figure 2. Four levels of Environmental Greenwashing and for Assessing Environmental Greenwashing.

Source: [26].

Corporate Practices for Greenwashing:as follow

- **Marketing-based:** This occurs through the use of slogans, advertisements, images, posters, and environmentally friendly colors to create a false impression of sustainability. An example is a picture of green leaves on a package without any real commitment to the environment**.**
- **Symbolic or legal-based:** This behavior appears when an organization implements very limited or ineffective environmental measures, or adheres to bare minimum of actual environmental regulations, and then proclaims this adherence as a major environmental achievement to improve its environmental image without making any substantial or real change. Examples include clinging to very minimal legal standards under the guise of compliance and presenting them as an environmental accomplishment, as well as providing very weak and unrecognized environmental certifications.
- **Comparative**: This occurs when an organization or company compares its products, services, or goods in general with other products that are highly harmful to the environment, presenting itself as the ideal, "more environmentally friendly," or "green" option. In reality, the company's products are not actually environmentally friendly, though they may be less harmful. This leads to the product being presented as better for the environment than others, similar to marketing fuel as "cleaner" despite its environmental pollution.
- **Partial**: This occurs when organization or Institutions highlights only one aspect of its operations, showcasing its environmental commitment (such as reducing energy consumption or recycling), while deliberately concealing or ignoring other, more damaging aspects of its environment. This presents an unclear, unbalanced, and misleading picture of environmental sustainability. This indicates a weak display of positive environmental aspects while concealing fundamental negative ones. For example, a company might recycle some of its products while simultaneously polluting water sources.

❖ **Educational**: This refers to the use of advertising and promotional campaigns by institutions and companies that, at first glance, appear environmentally friendly and aim to raise awareness and are educational. In reality, the primary goal is to polish their image with the public to market their products, goods, and services, depending on the activity of each company or educational institution, without implementing basic environmental protection practices.

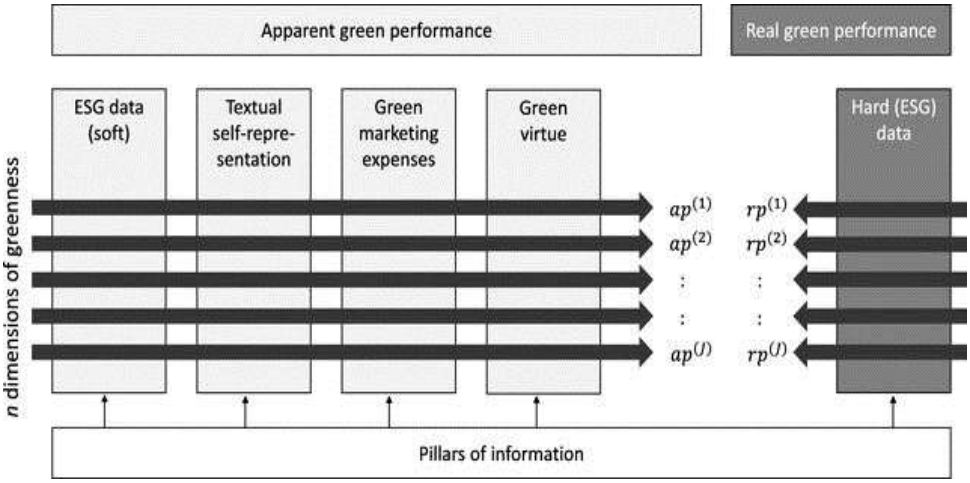


Figure 3. Theoretical Framework to Measure apparent and Real Green Performance on Company level.

Source: [26].

Dimensions of Greenwashing: are outlined below:

- **Environmental Dimension**: This dimension describes negative impacts on nature and the environment that arise when consumers are misled about the true environmental performance of goods and services offered by certain companies. This results in the continuation of their polluting activities without any apparent improvement or genuine oversight. Concealing harmful practices leads to increased environmental pollution. Furthermore, it undermines genuine environmental initiatives by tarnishing image of clean, environmentally friendly products.
- **Economic Dimension**: This describes the negative financial consequences of false environmental claims, both for consumers and for competition between companies and the economy as a whole. This disrupts the market and indicates the inefficient allocation of economic resources to an unfair business environment. Examples include distorting competition between legitimate and deceptive industrial companies, misleading consumers, and raising prices without any real environmental justification.
- **Communication and Media Dimension**: This describes the role of advertising, media outlets, and public relations campaigns in disseminating inaccurate information about environmental performance of factories or companies. The aim is to create a falsely positive public opinion, even in the absence of genuine environmentally sound practices. Examples include misleading claims made through environmental slogans or advertising campaigns, and the manipulation of environmental discourse.
- **legal Dimension**: describes the shortcomings and ambiguities of legislative and legal frameworks regulating environmental claims in products and advertisements. This results in some companies engaging in environmental misinformation without legal accountability, rendering regulatory authority's incapable of protecting consumers and the environment. Examples include weak or nonexistent legislation regulating environmental advertising, and the inability to hold these companies

legally accountable due to a lack of evidence. Therefore, some countries have begun enacting laws that compel companies to adhere to environmental transparency.

- **Cultural and Ethical Dimension:** This dimension describes values or principles that govern behavior of companies and individuals when engaging in environmental deception. This includes their commitment to environmental responsibility and conservation through the use of cleaning and washing methods that reduce excessive water and energy consumption, and the use of cleaning materials that are not harmful to the environment, ecosystems, or human health. This is provided that environmental awareness is not exploited for the purpose of achieving illegal commercial gains or profits.

2. Research Methodology

Descriptive Analysis: Quality Control Department: (QCD) is part of the directorates affiliated with Central Organization for Standardization and Quality Control. It was established in 1979, the year the organization assumed its administrative and inspection duties. these industries include: construction, chemical, engineering, textile, and food industries. The Directorate's responsibilities include inspecting and examining imported and locally produced goods and products in the market to protect consumers. This is achieved through inspections and field visits to factories and production units, sampling, analysis, and the issuance of certificates of conformity to standard specifications and their environmental impact. In cases of non-compliance, the Directorate compels the relevant parties to adhere to legal procedures and regulations. Failure to comply by parties, companies, or factories results in the seizure of the products and goods, prohibiting their consumption or distribution in the market. Furthermore, the Directorate issues or renews Iraqi conformity certificates for companies and institutions that produce or provide services in accordance with international standards for conformity management and assessment. It also monitors and implements pre-import inspection programs for goods and products before they are imported from their country of origin or exported.

Table1. Tests That Non- Conform to Standard Specifications and Environmental Standards for Quality Control Department of year 2025.

Class	Testing that Non- Conform to Standard Specifications	Environmentally Non-Compliant Testing
Imported goods of all kinds	57,326	**87,326**
Textiles	15,400	10,400
Food	34,000	24,022
Construction	12,980	12,980
Engineering	16,869	17,868
Chemicals	13,425	14,425
Total Tests for year 2025	**150,000**	**167,021**

Source: based on Reports of (QCD) 2025

From the table above, we observe that total tests for goods Non-conforming to Iraqi environmental standards which amounted to [**167,021**].is greater than those for goods Non-conforming to standard specifications, which amounted to [**150,000].** especially for materials or goods imported from outside Iraq. which amounted to [**87,326**]. It should be noted that some tests are conducted within the Quality Control Department, while others are conducted by companies contracted by Directorate outside the Directorate building, specifically at Iraqi borders with neighboring countries—that is, for all goods entering Iraq.

3. Results and Discussion

We will calculate quality costs for non-conforming tests detected by Quality Control Department. which amounted to [**150,000].** From following table.

Table 2. Quality Costs Incurred by Quality Control Department for year 2025.

NO	**Cost**	**Ratio to Type**	**Ratio to Gross Quality Costs**	**Ratio to Revenue**	**Ratio to Total Costs**
Prevention Costs					
Inspection cost	538,498,919	0.339	0.239	2.270	0.042
Telephone and Communication	43,815,001	0.028	0.019	0.185	0.003
Organizational costs	88,681,617	0.056	0.039	0.374	0.007
Development and Statistics	916,138,517	0.577	0.406	3.861	0.072
Gross Prevention Costs	**1,587,134,054**	1.000	0.704	6.689	**0.125**
Evaluation Costs					
Depreciation of Equipment	10,177,012	0.017	0.005	0.043	0.001
Maintenance	40,708,055	0.069	0.018	0.172	0.003
Evaluation and follow-up	538,498,917	0.914	0.239	2.270	0.042
Gross Evaluation Costs	**589,383,984**	1.000	0.261	2.484	**0.046**
Internal Failure Costs					
Maintenance Costs for Equipment and Remedial	39,708,053	0.603	0.018	0.167	0.003
Costs of not Disposing of hazardous waste	26124736	0.397	0.012	0.110	0.002
Gross Internal Failure Costs	**65,832,789**	1.000	0.029	0.277	**0.005**
External Failure Costs					
Compensation and Fines	12,710,751	1.000	0.006	0.054	0.001
Gross External Failure Costs	**12,710,751**	1.000	0.006	0.054	**0.001**
Gross Quality Costs	**2,255,061,578**	0.000	1.000	0.000	0.178
Revenue	**237,259,122**	0.000	0.000	1.000	0.019
Total Cost for year 2025	**12,684,794,807**	0.000	0.000	0.000	1.000

Source: based on Reports of (QCD) 2025

From table1., we see that prevention costs are the highest among the total costs for the year, amounting to [**0.125**], compared to other quality costs. This is because the department incurs these costs to avoid conformity or non-conformity tests to the approved standards,

the purpose of which is to grant quality certification to products, goods, or services accurately. As illustrated in figure and as follows:

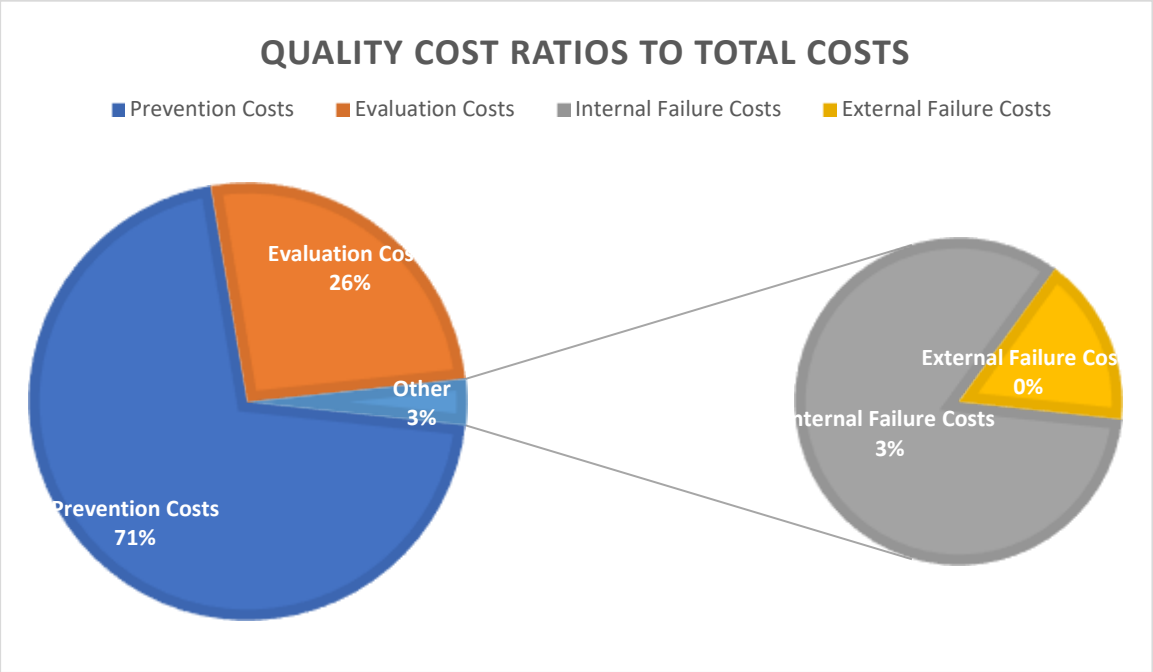


Figure 4. Quality Cost Ratios to Total Costs for Quality Control Department of year 2025

Source: Researchers based on Tables [1+2]

From previous figure, we observe that percentage of prevention cost [71%] is the highest, considering rounding the ranks in the Excel tables, followed by prevention costs, and then internal and external failure costs, which we note are closest to zero.

Through our field visits to the Quality Control Department, and after research, investigation, and interviews with technicians and inspectors, we found that some products or goods, if used, Non-conform to specifications and are unsuitable for use, and some are Non- Environmentally friendly, which amounted to [**167,021**], as shown in the following table.

Table 3. Number of Products and Goods Causing Environmental Deception Detected by Quality Control Department for year 2025.

Greenwashed Products and Goods						
	Degree of Environmental Harmful			**Possibility of Disposal**		
	Harmful	**Moderately**	**High**	**Short Term**	**Medium Term**	**Long Term**
Imported goods of all kinds	56,071	1,091	432	55,101	740	230
Textiles	3450	234	34	3448	35	235
Food	71125	2345	278	71122	279	2347
Construction	3,791	1230	98	3,791	1230	98
Engineering	2032	345	213	2032	343	215
Chemicals	23028	456	768	23018	466	768
Total Tests for year 2025	**159,497**	**5,701**	**1,823**	**158,512**	**3093**	**3893**
				167,021		

Source: based on Reports of (QCD) 2025

Based on test results provided by Quality Control Department, these environmentally harmful products or goods must be disposed of. experts working there advised us to issue an order banning their circulation within Iraq, as well as prohibiting their future importation unless they conform to Iraqi and environmental standards. We will calculate environmental remediation costs resulting from disposal of these samples, numbering [**167,021**], of materials and goods, as shown in following table.

Table 4. Greenwashing Costs Incurred by Quality Control Department for year 2025.

NO	Cost	Ratio to Type	Ratio to Gross Quality Costs	Ratio to Revenue	Ratio to Total Costs
❖ **Apparent Costs**					
Environmental Prevention Cost					
Environmental Practices Training Courses	438,538,919	0.336	0.211	1.848	0.035
Purchasing Environmentally Friendly Testing Materials	78,681,618	0.060	0.038	0.332	0.006
Purchasing pollution Control Equipment	21,815,001	0.017	0.010	0.092	0.002
Improving Environmental Management Systems	766,138,507	0.587	0.368	3.229	0.060
Total Environmental Prevention Cost	**1,305,174,045**	**1.000**	**0.627**	**5.501**	**0.103**
Environmental Assessment Costs					
Periodic Environmental Inspection Procedures	30,548,052	0.052	0.015	0.129	0.002
Reaction and Emission Testing	9,177,022	0.016	0.004	0.039	0.001
Laboratory Waste Treatment	538,498,916	0.915	0.259	2.270	0.042
Waste Treatment Processes	10,177,012	0.017	0.005	0.043	0.001
Total Environmental Assessment Costs	**588,401,002**	**1.000**	**0.283**	**2.480**	**0.046**
❖ **Hidden Costs**					
Costs of Internal Environmental Failure					
Reprocessing of Laboratory Waste	29,708,022	0.217	0.014	0.125	0.002
Suspension of Testing Operations due to Environmental Defects	58124731	0.425	0.028	0.245	0.005
Chemical Reactions and Leaks within Laboratories	23,708,053	0.174	0.011	0.100	0.002
Unsafe Disposal of All Types of Waste	25104732	0.184	0.012	0.106	0.002

Source: based on Reports of (QCD) 2025

From Table3, we observe that prevention costs are the highest among the total annual costs, amounting to [**0.103**], compared to other environmental costs. This is because the department incurs these costs to avoid pollutants and environmental emissions in accordance with Iraqi environmental protection standards, as illustrated in the figure and below.

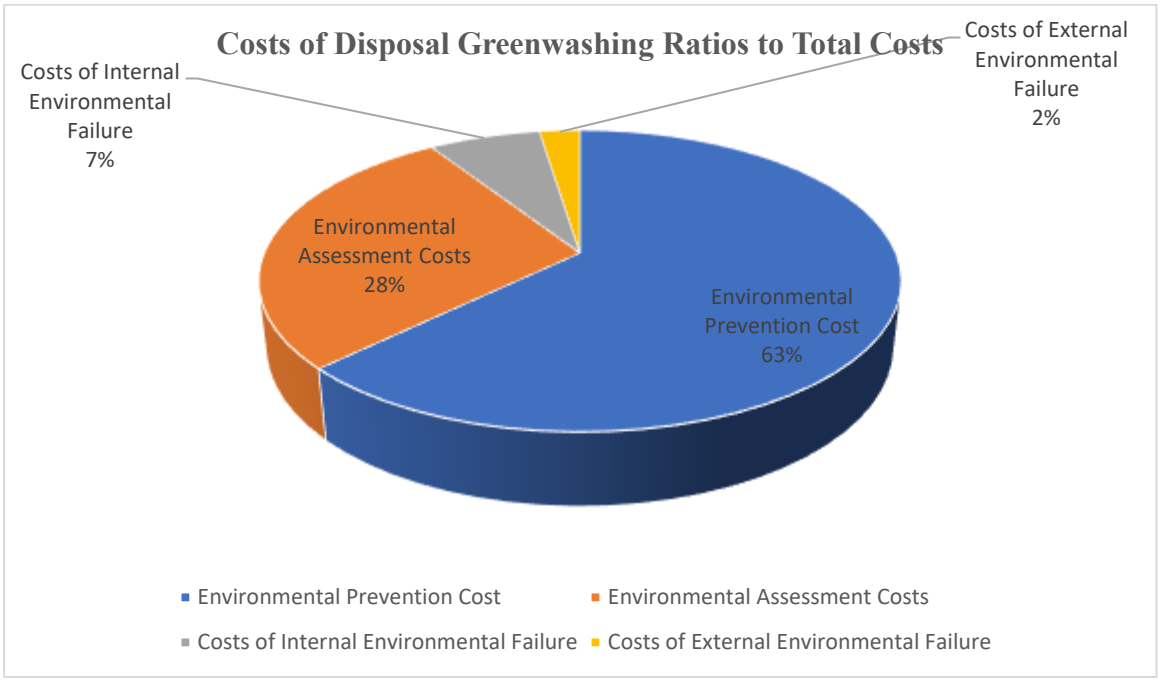


Figure 5. Environmental Cost Ratios to Total Costs for Quality Control Department year 2025.

Source: Researchers based on Tables [3+4]

From the previous figure, we note that the prevention cost ratio [63%] is highest, considering rounding the ranks in Excel tables, followed by prevention costs, then internal and external failure costs, which we note are closest to Two. The following table illustrates the role of environmental cost accounting in the mechanism for disposing of and treating waste, emissions, and environmental pollutants within the quality control department.

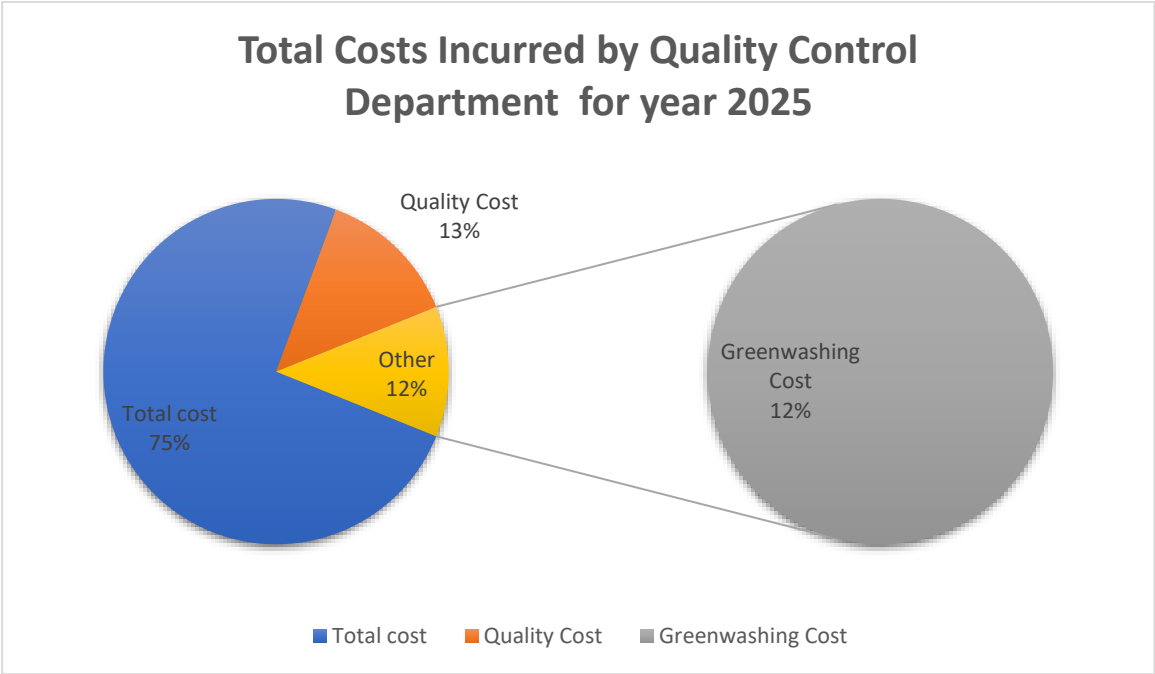


Figure 6. Quality and Greenwashing Costs Compared to Total Costs Incurred by Quality Control Department for year 2025.

Source: Researchers based on Tables [2+4]

From previous figure, we see that total cost reached a certain percentage [**75%**] and quality costs reached a certain percentage [**13%**], Greenwashing costs reached a certain percentage [**12%**] for Quality Control Department for year 2025. We note close relationship between the percentage of quality costs and the cost of the greenwashing phenomenon, which means that the department is concerned with and spends money on addressing pollution and damage to the Iraqi environment.

Table 5. Role of Environmental Cost and Managerial Accounting in Detecting Greenwashing Practices for Quality Control Department year 2025.

Type		Disposable	Difficulty to Disposable	Types of Disposal Costs			Degree of Environmental Harmful			Possibility of Disposal		
				Low	Medium	High	Harmful	Moderately Harmful	Severely Harmful	Short Term	Medium Term	Long Term
FOOD	Vegetable and fruit	✓		✓			✓			✓		
	Meat and bone	✓		✓			✓			✓		
	Eggshell and dairy	✓		✓			✓			✓		
	Grain and bread	✓		✓			✓			✓		
	Coffee grounds and tea leaves	✓		✓			✓			✓		
Textiles	Fibers and threads	✓		✓			✓			✓		
	Fabric scraps and remnants	✓		✓			✓			✓		
Chemicals	Organic	✓		✓			✓					
	Inorganic		✓			✓			✓			✓
	Toxic		✓			✓			✓			✓
	Flammable and Reactive	✓			✓			✓			✓	
	Sand	✓		✓			✓			✓		
	Cement	✓		✓			✓			✓		
	Rocks	✓		✓			✓			✓		

Building Materials	Wood	✓		✓		✓		✓	
	Bricks	✓		✓		✓		✓	
	Concrete	✓		✓		✓		✓	
	Gravel	✓		✓		✓		✓	
	Metals	✓		✓		✓		✓	
Engineering	Electrical and Electronic		✓		✓		✓		✓

Source: based on Reports of (QCD) 2025

Based on all the above, we observe that the role of cost accounting and environmental management in uncovering environmental deception practices lies in calculating quality costs in general, and specifically in measuring, analyzing, monitoring, and quantifying the cost of the "greenwashing" phenomenon. This also includes calculating and monitoring environmental costs and addressing damage by identifying the type of pollutants, the degree of environmental damage, and the mechanism for their removal. This is based on the Quality Control Department reports for 2025, which serve as both the research population and sample.

4. Conclusions

- Role of cost accounting and environmental managerial lies in uncovering environmental deception practices by measuring, analyzing, monitoring and determining the cost of the "green marketing" phenomenon.
- Cost accounting and environmental managerial also monitor environmental costs and calculate the cost of mitigating damage by identifying the type of pollutants, the degree of environmental damage, and the mechanism for their removal.
- Quality Control Department incurs quality costs of 13% and environmental misinformation costs of 12% of the total costs. This means the department is concerned with addressing pollution and damage to the Iraqi environment, and spends money on it.

Recommendations:

- necessity of adopting cost accounting and environmental management to uncover environmental deception practices by measuring, analyzing, monitoring, and determining the cost of the "green marketing" phenomenon.
- necessity of relying on cost accounting and environmental management to calculate cost of reducing damage caused by pollutants, degree of environmental damage, and mechanism for its removal.
- Quality Control Department bears the costs of quality and the costs of misleading environmental information as part of the total costs. It needs more training and qualification courses for staff working in the field of addressing environmental practices. Furthermore, companies and institutions concerned with addressing pollution and damage to the Iraqi environment need to adopt the Quality Control Department as a model for addressing greenwashing practices.

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