

**T.C.
ISTANBUL OKAN UNIVERSITY
INSTITUTE OF SOCIAL SCIENCES**

**MEASUREMENT AND DISCLOSURE OF ENVIRONMENTAL COSTS
IN FINANCIAL STATEMENTS OF OIL COMPANIES TO IMPROVE
ENVIRONMENTAL PERFORMANCE:
AN EMPIRICAL STUDY CONDUCTED IN LIBYA**

EMAN ALI EL.DAREWI

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PhD OF BUSINESS ADMINISTRATION
IN ACCOUNTING PROGRAM**

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ABSTRACT

The aim of this the study is to explain the affects of measuring the environmental costs and disclosing them in the financial statements of oil companies to improve the environmental performance. An empirical study is conducted in Libya.

The size of the sample questioned was 270 responders and the data was collected based on the questionnaire . Then data were analyzed using statistical methods in order to test the affect between the research variables.

The results of testing hypotheses in chapter four are as followed:

The first hypothesis: It had been confirmed that the awareness among the officials of the importance of applying accounting measurement and disclosure to the environmental costs affect improving the environmental performance of oil companies in Libya.

The second hypothesis: It had been confirmed that the obstacles that limit application of measurement and disclosure of environmental costs affect improving the environmental performance of oil companies in Libya.

The third hypothesis: It had been confirmed that the application of accounting measurement models of environmental costs increasing the companys' commitment to environmental responsibilities affect improving environmental performance of oil companies in Libya.

The fourth hypothesis: It had been confirmed that the accounting measurement of environmental performance has a positive affect on the quality of the financial reports of the oil companies and improving the environmental performance.

The fifth hypothesis: It had been confirmed that measurment and disclosure the environmental costs affect improving the environmental performance of oil companies in Libya.

Despite the effect of the measurement and the disclosure for environmenatl costs in the financial statements to improve the environmental performance, most of the companies reject its application because of the lack of strict laws either at the national or the international level.

Therefore the study has recommended, necessarily, that the national and international accounting bodies work on fulfilling their required role in terms of

protecting the environment by issuing special accounting standards through obliging the companies, especially the industrial ones on the measurement and the disclosure of environmental costs in their financial reports in order to improve the environmental performance.

Keywords: Environmental Costs, Environmental Accounting, Environmental Costs, Measurement and Disclosure of Environmental Costs, Environmental Performance.



ÖZET

Bu çalışmanın amacı, Petrol şirketlerinde çevresel maliyetlerin muhasebe ölçümünü yapmak ve bunların çevresel performansın iyileştirilmesindeki etkilerini mali tablolarda açıklamaktır. Libya'daki petrol şirketlerinden bir saha çalışması örneği ile doğrulandı.

Sorgulanan örneklemin büyüklüğü 270 katılımcıdır ve veriler anket yöntemi ile elde edilmiştir. Veriler daha sonra, araştırma değişkenleri arasındaki etkiyi test etmek için istatistiksel yöntemler kullanılarak analiz edilmiştir.

Dördüncü bölümde, test edilen hipotezlerin sonuçları şöyledir:

Birinci hipotez: Muhasebe ölçümlerinin uygulanması ve çevresel maliyetlerin açıklanmasının önemi konusunda muhasebe yetkililerin farkındalığının, Libya'daki petrol şirketlerinin çevresel performansının iyileştirilmesini arasında istatistiksel olarak anlamlı bir etki olduğu doğrulanmıştır.

İkinci hipotez: Çevresel maliyetlerin ölçümü ve açıklanmasının benimsenmesini sınırlayan engellerin Libya'daki petrol şirketlerinin finansal performansını etkilediği doğrulanmıştır.

Üçüncü hipotez: Çevresel maliyetlerin hesaplama modellerinin kullanılması ile şirketin çevre sorumluluklarına olan bağlılığını artırmasının, Libya'daki petrol şirketlerinin çevresel performansını geliştirmesini etkilediği doğrulanmıştır.

Dördüncü hipotez: Çevresel performansın muhasebe ölçümünün, petrol şirketlerinin mali raporlarının kalitesinde ve çevresel performansın geliştirilmesinde olumlu bir etkiye sahip olduğu doğrulanmıştır.

Beşinci hipotez: Çevresel maliyetlerin ölçülmesi ve açıklanmasının Libya'daki petrol şirketlerinin çevresel performansının iyileştirilmesinde etkili olduğu doğrulanmıştır.

Çevresel maliyetlerin ölçüm ve açıklamalarının mali tablolarda çevresel performansın iyileştirilmesi üzerindeki etkisine rağmen, şirketlerin çoğu ulusal ya da uluslararası düzeyde katı yasaların olmaması nedeniyle bu uygulamayı kabul benimsememektedir.

Bu nedenle çalışmada, ulusal ve uluslararası düzenleyici kuruluşların, çevrenin korunması açısından gerekli rollerini yerine getirebilmeleri ve çevresel performansın iyileştirilmesi için özel muhasebe standartları çıkarılması gerektiği, özellikle sanayi şirketlerine finansal raporlarında çevresel maliyetlerin ölçülmesi ve açıklanmasını zorunlu kılınması gerektiği önerilmiştir.

Anahtar Kelimeler: Çevresel Maliyetler, Çevre Muhasebesi, Çevresel Maliyetlerin Ölçümü ve Açıklanması, Çevresel Performans.

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LIST OF ABBREVIATIONS

AICPA	: Association of International Certified Professional Accountants
APB	: Accounting Principles Board
EEAA	: Egyptian Agency for Environmental Affairs
EFFAS	: European Federation of Financial Analysts' Societies
ELAs	: Environmental Performance Assessment Indicators
EMS	: Environmental Management System
EPA	: Environmental Protection Agency
FASB	: Financial Accounting Standards Board
FEE	: Federal Organization of European Experts
GAAP	: Generally Accepted Accounting Principles
GDP	: Gross Domestic Product
IASB	: International Accounting Standards Board
IASC	: International Accounting Standard Committee
IAS	: International Accounting Standards
IFAC	: International Federation of Accountants
IFRS	: International Financial Reporting Standards
ISA	: International Standards on Auditing
ISO	: International Organization for Standardization
OECD	: Organization for Economic Co-operation and Development
SAB	: Staff Accounting Bulletin
SEC	: Securities and Exchange Commission
SEEA	: System of Environmental and Economic Accounting
SERIEE	: European System for the Collection of Economic Information on the Environment
SFAS	: Statement of Financial Accounting Standards
SOP	: Standard Operating Procedure
UNSD	: United Nations Division of Sustainable Development
WTO	: World Trade Organization

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CHAPTER 1 : INTRODUCTION

1.1 Introduction

Global concern is growing about the corporate environmental impact. This has resulted in the apprehension of environmental issues the attention of the public and stakeholder Companies. Demand by the concerned parties to obtain reliable and accurate information to reflect the environmental performance of companies is increasing. In response to this need, it increased disclosure of information about the environmental performance in both the private and public sector Companies (Oates and Motlagh ,2016).

The international community interested in the issuance of international human rights instruments which provide for the protection of the environment from damage caused by pollution .

Also has increased pressure from environmental protection supporters groups to claim the companies to remove or prevent the causes of pollution caused by operational processes and other pollution factors. In particular, following the Rio Conference in 1992, the basic principles agreed on by many nations are ‘sustainable development’ and ‘the protection of the environment’ ,which forced many companies to abide by the laws and environmental legislation (Turk ,2009).

In discussions with the accounting profession, some professionals have led to the conclusion that the diversity in the application of Generally Accepted Accounting Principles (GAAP) to environmental liabilities may have circumvented the magnitude of potential environmental commitments and deviated from relevant disclosures.

In an effort to improve accounting and disclosure of environmental liabilities, among other things, staff issued Staff Accounting Bulletin No. 92, staff interpretation of generally accepted accounting principles in respect of contingent liabilities and are particularly relevant to registrants who may have incurred a physical product or environmental obligations (Roberts & Hohl, 1994).

In order to the accounting treatment for all of the costs and obligations resulting from the company's commitment to environmental laws and regulations environmental accounting has emerged which specializes in measurement and disclosure of the costs and environmental obligations.

As one of the main objectives of accounting is to produce financial information on the company's activity, we find that the application of environmental accounting system that provides financial information related to environmental resources and the consequent of doing the company to practice the activity of environmental damage (Alciatore, 2004).

Environmental accounting is used to identify the benefits of companies gained as a result of the use of the assets already present in nature and the costs occurred as a result of this usage . *"Environmental accounting, which is also defined as "green accounting" in the literature is defined as recording the impacts arise as a result of the manner of use of environmental resources either positively or negatively ,environmental accounting is a general term referring to combination of information and environmental costs in various accounting practices used for the attempt of studying mutual relations between accountants and ecology, awareness of the environmental cost information or settled environmental costs, distribution to the appropriate products and processes"* (Tanc & Gokoglan ,2015, pp 5660).

Therefore, environmental costs are the expenditures made on specific, identifiable projects to reverse some of the damage. It can also be viewed as a method for valuing environmental damage. The value of what is lost can be defined as what it costs to restore it. Total environmental costs included the cost of each environmental degradation , and include such things as contaminated water resources, acid deposits from smokestack emissions, destroyed natural resources and habitats of all types, and so on (Weidman, Welsh & Bonino, 2016).

The recognition that environmental costs are necessary, it can be achieved using current accounting principles and techniques. Precedents in the extractive industries set the stage for this work. Moreover, many of the difficult issues that present themselves in the costs of environmental remediation accounting been dealt with in the field of accounting, post-retirement costs (Weidman, Welsh & Bonino, 2016).

The environmental costs should that are recognize incurred in the accounting records, the fact is environmental damage should be reflected in the financial statements as a cost of production at that time.

The benefits of recognition include: (Weidman, Welsh & Bonino, 2016)

- Financial statements will present a more accurate picture of a company's financial health.
- Explicit recognition of future clean-up costs will provide management with better information about their true total costs of production, enabling better decision making.
- Earlier recognition may result in pollution avoidance, benefitting society as well as the company. Even if a company wants to begin to recognize its environmental costs when incurred, it still faces the issue of valuation.

Environmental issues have found a reflection in the accounts only in the last part of the twentieth century, where financial accounting includes most environmental costs along with other costs, thus environmental costs cannot be identified to reduce pollution.

Entities whose activities pollute should record separately the expenses incurred for the purchase of machinery and equipment used for environmental protection, their depreciation, with the salaries of staff involved in environmental protection, materials used and other environmental costs.

It is likely that the accounting for environmental costs will require eventually prescribed accounting guidelines to address this important region of the costs. In the meantime, should apply existing principles of accrual accounting to recognize these costs in a more timely (Todea , Stanciu & Joldoş ,2010).

Oil is a main source of revenue for many countries such as Libya. Several companies operate in these countries , Libya also is not in isolation from the outside world and environmental problems characterized as cross-border phenomenon which it is a global problem it became necessary to Libya to prepare for the various environmental problems, and with the development and emergence of intensive and diversified manufacturing processes especially oil industry all these developments have led to negative results influenced the process sustainable development in Libya.

The goal of oil operations is to find and sell oil and gas, refined products and related products, these are very complex processes and includes a number of important variables. Thus, the oil industry can have a significant impact on the environment due to their operations, often obliges oil companies to repair any damage

caused. There may also be environmental clean-up obligations of the pollution of land that arise during the period of operation to install.

Accordingly, the costs associated with processing / restoration can be significant ,has identified the accounting treatment for the operations of the oil found in the financial statements at the oil companies, under International Financial Reporting Standards (IFRS) ,it is recognized to provide when there is an obligation to perform cleanup [IAS 37 para 14]. It should be taken in the local legal regulations into account when determining the existence and extent of compliance (Page ,2011).

In 2004, the International Accounting Standards Board (IASB) issued IFRS 6 "Exploration and Evaluation of Mineral Resources" for the petrochemical industry. This standard was introduced for improvements in various accounting practices. And deals with specific activities in the extraction and evaluation processes (Adere, 2011).

1.2 Practical Studies

Since the emergence of environmental accounting, many studies have emerged and had a varied field of focus with respect to the environmental costs of the world between nations, some are focused on how to measure of environmental costs and some focused on the importance of disclosure them, and the other focused on environmental fears.

In the United States, many studies have advocated the need for the general accounting includes environmental costs and measured and disclosed. in a study Roberts & Hohl (1994) concerns with the environment have captured the public's attention, and environmental awareness probably is at an all-time high. This public interest has increased pressure on the commission to ensure that registrants disclose in a fair, full, and timely manner, present and potential environmental costs of a material nature. Moreover with Staff Accounting Bulletin (SAB 92), has issued interpretive guidance designed to improve, among other things, the accounting for and disclosure of environmental liabilities. The accounting and disclosure practices in the environmental liability area are expected to improve as a result. If they do not, commission enforcement cases involving environmental matters are always a possibility. Accountants can increment their efforts to evaluate the current financial situation and environmental disclosure. It is hoped that as the spotlight on

environmental issues becomes more focused, as cleanup technology and equipment improve, as an environmental litigation pattern becomes more definite, as practitioners become more familiar with SAB 92 , and as estimating cleanup costs becomes easier, the accounting for and disclosure of environmental liabilities will improve substantially.

Furthermore, study Peters & Romi (2014) that aimed to investigate whether environmental corporate governance characteristics are associated with voluntary environmental disclosure, this study is of increasing importance attribute of a company's disclosure setting, in the sense of the disclosure of environmental information of greenhouse gases. For this study, had been used data available questionnaire, from 2002 until 2006, and the sample included all US companies in the FT500, composed of 500 of the largest companies in the world based on market capitalization from 2002 until 2004, and the S&P 500 companies from 2005 and 2006, rendering a final sample of 1,238 company. The results of the study indicate that environmental disclosure is positively linked to the environmental board and employees in the sustainability sector in companies.

Also, study Adere (2011) the purpose of this study is the comparison between the theoretical accounting principles generally accepted the US and IFRS and reveals the disparity between the two countries with respect to an oil and gas. Where the study used the Norwegian oil and gas companies as a sample for the study. Listed oil and gas companies that after following the United States generally accepted accounting principles, however, since the issuance of IFRS 6 .The study concluded that the companies surveyed used the generally accepted accounting principles of the United States to close the gap, which owns IFRS. In addition, they spend the cost of the adoption of this standard when changing the level of Generally Accepted Accounting Principles of the United States to the International Financial Reporting Standards. Thus, it is difficult to make a conclusion on the deployment of accounting method due to transmission. Similarly, despite the fact that previous studies have shown that company size is a critical factor, it is difficult to make a conclusion on the companies surveyed.

Escobar & Vredenburg (2011) the purpose of this study determines the impact of the multinational in the oil and gas industry companies on pressures sustainable

development, such as climate change, biodiversity and renewable energy, social and investment opportunities to increase environmental, social and economic performance. In order to access the results of the study, Luis & Harrie analyzed four major oil and gas companies are subject to similar sustainable development pressure. And the study concluded that the standard symmetry and forced does not occur on a global level because sustainable development is to a large extent social pressure rather than a large-scale push to stakeholders. Based on the analysis reports of major multinational companies of the four annual 2000-2005, the researchers believe that the symmetry simulation may happen, but since it involves the use of complex and intangible resources, and simulations slow, a rare and appreciation, for this study has two limitations. First, the sample consists of only four MNCs; Secondly, the financial information collected on these multinational companies limits the type of statistical analysis used.

Lee & Sweeney,(2015) that aims at studying the capital market research and environmental accounting by taking advantage of the theoretical foundations of legitimacy through impression management, the credibility of the source of bias, perceived trust, and ideological in assessing the impact of discretionary accounts environmental accounting on the jury assess punitive damages award. Questions were conducted online questionnaire and responders from the undergraduate student sample. The results of the study showed that the judiciary, in a case involving environmental violations of companies, assesses lower punitive damage compensation against a company that provides discretionary disclosure of future issues on its website. Results obtained can serve as an important reference to the varied users of corporate online information, ranging from accounting standard-setters, litigation scholars to jurors. The results of the study are subject to many restrictions, the first limitation is that this experimental study is largely exploratory. Thus, additional studies using similar settings may further enhance the validity of our findings. The second limitation concerns the question of jurors conducting independent online research in the study, and the third relates to the geographical representation of the population sample.

Australian studies have focused on environmental accounting and how effective they are in the measurement and disclosure of environmental costs in study Dunk

(2007), its purpose is to study empirically whether there is evidence of environmental management accounting affecting the relationship between product quality and competitive advantage. A random sample of 119 functional area managers from Australian Manufacturing Companies was selected in Kompas Australia. The results of it were the environmental management accounting has a significant role to play in companies. Specifically, the study results suggest that the quality of the product contributes to the company's competitive advantage when relying on environmental management accounting is high. However, it failed to do so when relying on environmental management accounting low. There are a number of restrictions have affected the results of this study. First, as the study is based on cross-sectional data, not a causal statement, especially causal direction, it can be made. Second, the results may not be generalizable. Third, it may be useful to do more work on the evaluation of the reliability and validity of environmental accounting properties.

Also, in study Petcharat & Mula (2012) that aimed to identify an effective management accounting system using sustainability accounting concepts for environmental and social cost measurement to add shareholder value, it used simple random sampling to select 62 Australian manufacturing companies from five sectors (200 from each sector), 15 manufacturing companies that apply MA best practice to measure costs of environmental and social impacts as well as evaluate reductions of these costs and impacts were targeted. The results of the study indicate that companies intend to develop administrative accounting practices as well as ways to improve the measurement of the environment. This study is limited to the Australian Services Industry. As a result of SMAS is a management accounting approach new comprehensive, because it offers companies a way to create economic, environmental and social value both immediately and in the future.

Recently, the study Oates and Motlagh (2016) the purpose of this study is to determine the level of voluntary disclosure of environmental performance of the 76 local governments in Victoria, Australia is examining whether superior environmental performers with high conversion rates gain more information about their environmental performance. The sample used in this study relates to one state in Australia, Victoria, and its local government. The results indicate that the level of environmental disclosure among local governments is very low, averaging about 14

out of 100. Moreover, the results reveal a positive correlation between environmental disclosure and environmental performance. Limitations of this study because that sample size is limited to 76 victorian local governments. In this study also use diversion rate as the only measure of environmental performance due to limited availability of other indicators, these issues can be addressed in future studies by extending the sample size to include the other four Australian states and its two territories.

China studies have focused on the environmental and social problems existing in chinese oil field companies. In study Xuefeng & Song (2011) the aim of this study was to determine to develop methods and environmental costs and countermeasures to move forward in china oilfield companies. How to incorporate environmental costs into the current accounting system. There are several limitations to this study, including. First, most companies recognize actual environmental costs from current expenditures while ignoring probable environmental costs. Second, it is rarely considered contingent environmental obligations that cause the fluctuation of profits. Third, cannot make any comparisons between oilfield companies, where there is no universal method to identify and measure the environmental cost, and other limitations. Results from this study the identification of environmental costs in oil companies is the precondition of the management of it, identifying environment elements needs a complete combination of the reality of the production and management of oil companies, such as crop compensation, the relationship between local government and oil company and reservoir management.

In Turkey has emerged as the growing interest in the use of environmental management systems, and increased studies on it urges, in study Turk (2009), with regard to the use of EMS in the construction sector. Especially the use of ISO 14000 EMS by construction companies did not reach the required level. The purpose of this study is to review the ISO 14000 EMS on contracting companies within Turkey in order to obtain information on whether the companies are using it, questionnaire questions were prepared. This study showed that there is a positive way to ISO 14000 EMS within the construction sector in Turkey, but it has not yet reached the required level globally. There are a number of restrictions have affected the results of this study, this study was confined on the behavior of the top category companies within

the Turkish construction sector, which operates in the international markets regarding the ISO 14000 EMS, is analyzed, ruled out the medium- and small-scale companies.

As well as, study Tanc & Gokoglan (2015) that aimed to investigate the sensitivity of manufacturing companies operating in the organized industrial zone of Diyarbakır to environmental issues within the scope of social responsibility accounting. The research was conducted on 81 out of 196 companies operating in the organized industrial zone of Diyarbakır. This study confirmed that, it is very obvious that environmental accounting data, which is one of the branches of social responsibility accounting that affect both national and international image of a company, and the importance of environmental accounting data is increasing in order to reduce costs, increase the added value of companies and survive in this competitive environment by implementing strategic management accounting techniques.

In Nigeria, attention has been paid to the environmental impact of multinational companies' oil exploitation and production operations in the Niger Delta region. In study Eweje (2006) that focused the issue of cost and environmental responsibilities arising from the exploitation and production of oil in the Niger Delta in Nigeria. It also addresses the implications of the current practice and policies of multinational oil companies with regard to the environmental impact of oil exploitation. The results of the study it has become increasingly clear that the oil companies pay the pollution prevention, as well as the pollution does not, and under pressure from stakeholder groups, and oil companies now routinely incorporate environmental impact assessment in their own company's strategy. Depending on the interviews with stakeholders in these companies.

In Egypt, one of the developing countries, there have been studies focused on the disclosure of accounting for environmental costs, in study Elsayed & Hoque (2010) the purpose of this study is to identify a set of perceived international environmental factors and examine how these factors (namely the perceived intensity of global competition, the perceived influence of international socio-political companies, the international accounting standards, and international financial companies) and examine how these factors affect the levels of voluntary disclosure of the company. The results indicate that there is no significant correlation between the level of voluntary disclosure and the perceived severity of global competition. The

results of the study are subject to many restrictions, the first limitation of the study is used to index disclosure to investigate this phenomenon. Current detection literature, a large number of alternatives do not provide for the measurement of the disclosure. Another limit is that it did not specify a model with random. This is due to the difficulty of collecting data in these emerging economies.

1.3 Research Rationales and Motivations

Environmental accounting is considered as the latest stages of the evolution of accounting. This development has arisen as a result of the increase of modern in the size and the decisions of the companies that have the financial and economic effects of social and environmental extensive, which led to interest by companies of accounting and professional associations and academia.

The selection of the subject stems from the importance of the general accounting and environmental accounting in particular oil Industries to reduce the phenomenon of environmental pollution, comes this study entitled " Measurement and Disclosure of Environmental Costs in Financial Statements of Oil Companies to Improve Environmental Performance: An Empirical Study Conducted in Libya". In order to minimize the costs resulting from pollution environmental and improve environmental performance and also causes:

- The need and requirements of the Libyan environment for such studies in field business.
- Importance of environmental accounting in the reduction of environmental pollution.
- Special attention to this field and this is due to the specialization (accounting).
- The newness of the topic in the field of scientific research in Libya.

As the intellectual framework of accounting suffers from deficiencies of its inability to provide specific answers to a number of problems facing the accountant such as measurement and disclosure of environmental costs, and the related accounting problems. Therefore, it was needed to discover the techniques that are used to measure and disclose the environmental cost in the oil companies in Libya, also, the impact of these techniques on their business. Moreover, there was no a previous study

has studied this issue in the oil companies in Libya. In this sense, it can be formulated the main problem of this research in the following main question: How does the measurement and disclosure of environmental costs affect the financial statements to improve environmental performance?

1.4 Importance of the Research

The importance of research in the urgent need for such studies is that it addresses the measurement and disclosure of accounting for environmental costs of the positive side achieved by the company with respect to improving environmental performance, as the companies afford additional financial burdens for the protection of the environment to improve the image of the company to the community, and the users of financial information to evaluate over the companies harmony with society, which is based on the principle that the company is part of society and it preserved, besides interest of accounting bodies and other companies issuing of standards and publications on environmental matters, which added the credibility of the information to be disclosed.

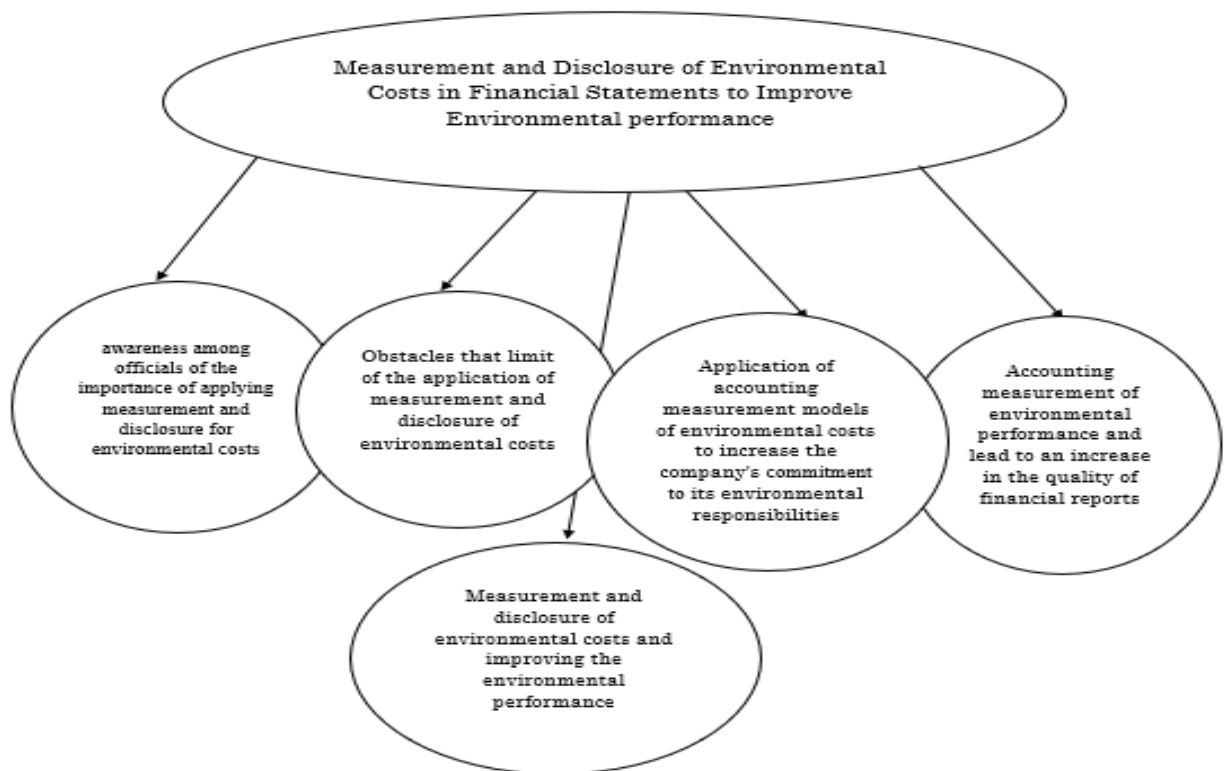
Therefore, it is expected that this study will contribute to the knowledge of several issues regarding the current situation of accounting for environmental costs.

1.5 Research Methodology

To reach the goal of this study, the method of field study was adopted, in order to determine the effect of measurement and disclosure environmental costs in the financial statements in the process of evaluating and improving environmental performance through designing a questionnaire (used Likert scale Quintet) included major research aspects.

The study population consisted of the oil companies operating in Libya, in order to obtain information which can be used to identify the responders' perception of environmental issues and their importance and impact on environmental performance.

Determining the model of the study was based on previous studies (Elobuddy,2015; Hamad, 2014; Hanan, 2014).



1.6 Hypotheses Formulation

To achieve the main objective of this study, the following proposed hypotheses are formulated and to be tested

H₀: There is no effect between measurement and disclosure of environmental costs in financial statements of oil companies to improve environmental performance in Libya.

H₁: There is an effect between measurement and disclosure of environmental costs in financial statements of oil companies to improve environmental performance in Libya.

H_{1a}: Awareness among officials of the importance of applying measurement and disclosure for environmental costs affect improving the environmental performance of oil companies in Libya.

H_{1b}: Obstacles that limit the application of measurement and disclosure of environmental costs affect improving the environmental performance of oil companies in Libya.

H_{1c}: Application of accounting measurement models of environmental costs to

increase the company's commitment to its environmental responsibilities affects improving the environmental performance of oil companies in Libya.

H1a: Accounting measurement of environmental performance affects an increase in the quality of financial statements of oil companies in Libya.

H1e: Measurement and disclosure of environmental costs affect improving the environmental performance of oil companies in Libya.

1.7 Proposed Structure of Research

Chapter 1: Introduction

Chapter 2: Literature Review

The Part I: The Accounting Approach to Study the Environmental Dimension

2.1 Environmental Accounting

2.2 Environmental Costs

The Part II: Measurement and Disclosure of Environmental Costs

2.3 Measurement of Environmental Costs

2.4 Disclosure of Environmental Costs

The Part III

2.5 Environmental Performance

Chapter 3: Methodology of the Study

Chapter 4: Integrated Findings and Discussion (Analyzing the data).

Chapter 5: Conclusion and Recommendations

CHAPTER 2: LITERATURE REVIEW

The Part I: The Accounting Approach to Study the Environmental Dimension

The issues of environment and development are interrelated with interdependence. The issue of caring for the environment and the resulting costs and benefits are prominent and important because of the relationship to development as well as the close relationship to human well-being, its standard of living and progress and the need for Companies to understand their responsibility for the environment and its consequences for costs and benefits demonstrating the importance of the need to provide the necessary data and information to parties related to these costs and benefits .

Since many companies considered the cost of avoiding environmental pollution to be correct investments, while others considered the interest in environmental costs to be strategically correct in terms of the environment of cultural growth focused on environmental protection. The environment is constantly increasing the value of the total investment in the industrial countries during this century, thus resulting in an increase in environmental costs, which has become the focus of attention of the accountant and auditor, because of the great impact on the prices of the products of the company and thus be competitive. Through this subject, will try to study the accounting approach to study the environmental dimension through the following demands: Environmental Accounting and Accounting for environmental costs.

2.1 Theoretical Framework of Environmental Accounting

Professional organizations and consumer groups have become more stringent and interested in examining the extent to which Companies are committed to environmental regulations and laws to improve environmental performance. To achieve this, the company must integrate environmental issues into accounting in its branches. This led to the emergence of accounting for the environment and will try to identify them through the following points:

2.1.1 The Concept of Environmental Accounting

It has been a long time since researchers and statisticians around the world began serious efforts in resource and environmental accounting. However, these efforts were confined to people whom in academics or research or to those in the environmental movement ,who hope that such accounting will have the main role to play in the preservation and protection of the natural environment, because of being confined to tiny staff efforts in a handful of countries around the world as result of that the official efforts environmental accounting on the part of governments remain quite insignificant, the emergence of environmental accounting is due to the pressure exerted by international organizations on companies to take care of the environmental issues.

As the pressure exerted by large-scale companies on their suppliers to urge them to adhere to the ISO products by their regulations, the pressures exerted by stakeholders on companies for the need to disclose environmental performance in annual financial reports or willing disclosure in the company's environmental performance reports in accordance with global detection initiatives. Also, the pressures generated by the growth of global awareness of the social responsibility of investments and the classification systems of investments in this field (Shah, 2007; Uno & Bartelmus ,1998).

The pressures exerted by professional bodies such as the British Association of Believers and the Association of the Compensation Fund to take environmental risks into account and to emphasize the social and environmental responsibility of companies and companies (Aurelia-Aurora & Sorina-Geanina,2012).

In addition, to the pressures mentioned earlier, there is a number of reasons and justifications that called for the existence of environmental accounting of which, the interest of international organizations, the most important of which is the department of sustainable development of the United Nations general assembly, where this organization has formed the so-called united nations group of experts on the accounting of the environmental management system.

Moreover, studies that proved that expenditure in the field of environmental costs increases the profits of companies and enable their to disclose their achievements in the areas of environmental protection, thus achieving greater

confidence in environmental performance (Jasch, 2009 ; Jones , 2010; zouina , 2011).

The companies' disclosure of their achievements in the field of environmental protection increases the confidence of their customers in achieving the environmental performance of the company and in accordance with the legislation governing the exploitation of environmental resources and improves the image and reputation of the company.

As a result of the above, several names have appeared for accounting interested in the environmental field: (Orbach & Liedtke, 2009 ; Tanc & Gokoglan ,2015)

- Greening: This term has emerged in the past two decades when talking about the environment and its problems. Described as the environmental dimension of sustainable development.
- Green accounting: It is concerned with one area of environmental accounting, accounting for biodiversity components.
- Ecological accounting: refers to the preparation of accounts using physical units at the micro level, thus the term environmental accounting is the most terms expressions of accounting interest in all environmental issues.

There are multiple definitions that define environmental accounting, including. Contingent on the context the expression is used, the United States, EPA (1995) defines environmental accounting as follows:

“Environmental accounting in the context of national income accounting refers to natural resource accounting, which can entail statistics about a nation’s or region’s consumption, extent, quality, and value of natural resources, both renewable and non-renewable. Environmental accounting in the context of financial accounting usually refers to a preparation of financial reports for external audiences using Generally Accepted Accounting Principle” (Yakhou & Dorweiler , 2002 , P24).

In the analysis of this definition, it is clear that environmental accounting has been limited to environmental costs because of their role in making the decision for the parties concerned.

Environmental accounting has also been defined through its role to:

- Financial Accounting: Preparation of financial reports on the environment to external parties using established accounting principles (Namakonzi & Inanga,2014).

- **Management Accounting:** IFAC defines environmental management accounting as economic and environmental performance management by developing and inquiry convenient systems and practices on the environment. Despite this includes reporting and auditing work in some entities, management accounting environment indicate to the lifetime costs to determine total costs and benefits assessment strategic environmental management planning (Hassan, Al-Ghabban & Mashhadani, 2007).
- **Environmental Performance:** as the main tool that directs companies managers to reduce pollution and waste and support management in reducing environmental costs through pollution and waste reduction applications, as it is concerned with identifying environmental costs and including them in the financial reports of the company, the company gets benefits from the disclosure of these costs, the most important of which is the reduction of environmental impacts (Berrone & Gomez-Mejia , 2009).

From the previous definitions can be seen the following:

- These definitions have extended to the true environmental roots of accounting by demonstrating that environmental accounting is the overall scope of accounting for the protection of the environment, including financial and administrative accounting, as well as environmental performance.
- Environmental accounting is concerned with examining the impact of the products, services, and activities of the company on the various parties interested in the company and their impact on them, and measuring these effects in a correct manner that enables rational decisions to help protect the environment.
- Environmental accounting requires the prediction of the companies of the potential environmental impacts of their activities and therefore predicts their obligations and environmental risk reserves, as well as attention to investment assessment decisions to reduce the adverse effects on the environment.

Environmental accounting is also defined as a system and social science that leads to understanding and management of the best environmental aspects and related costs, and identifies and quantifies the value of environmental damage caused by a specific company to the surrounding environment because of activities carried out or because of their production, a product harmful to the environment at or after their

consumption, and then the process of accounting for the value of such damages and reporting them, whether tangible or intangible in the financial reports. The expansion may include environmental reporting and auditing (Epstein, 2001).

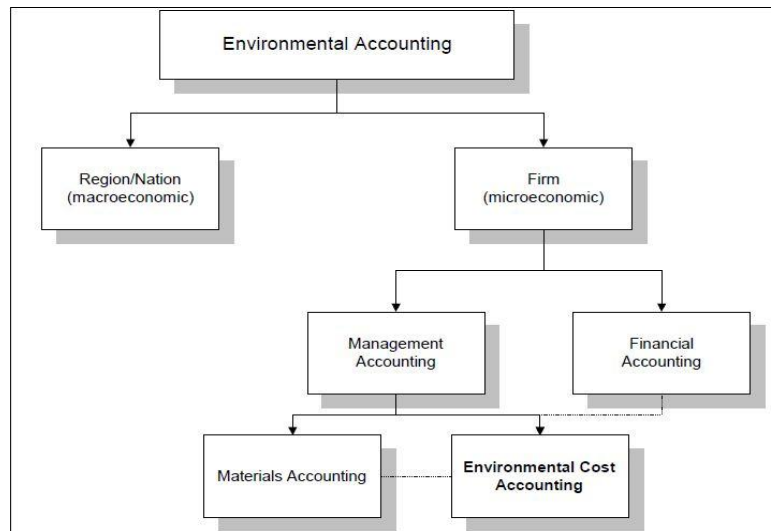
The analysis of this definition shows that environmental accounting has been classified into social sciences because the impact on the environment is reflected not only on the company but also outside the company and therefore the social responsibility of the company must identify and measure the environmental damage as a result of activities carried out and reported in lists financial and environmental reports that assist the company in auditing and making decisions to protect the environment.

Environmental accounting has been defined as the development of financial and non-financial information and reporting in the financial statements provided by the company to interested third parties, focusing on the costs of other important environmental obligations and reporting thereon, namely the traditional costs of the company and the hidden costs resulting from the activities required to comply with environmental legislation and laws.

As well as the potential costs of treatment or compensation for potential environmental pollution, and finally the costs of the company's relationship with society, which are the costs associated with the direction of the company towards improving its image to society, customers, suppliers, investors and lenders (Jankovic ,Peršić and Zanini-Gavranic ,2011).

2.1.2 Levels of Environmental Accounting Practice

From **Figure (2.1)** and through previous definitions of environmental accounting has concluded that it can be practiced on two levels that : (Epstein, 2001; Boyd, 1998)



Source: (Graff et al ,1998, p3).

The level of the national economy: The definition and measurement of the consumption of natural resources (renewable and non-renewable) of the State as well as the assessment of its reserves at the end of each period for planning, control and decision-making at the national level.

The level of the company: The practice of environmental accounting at the level of the company has two directions, the first practice of environmental accounting for rationalizing the decisions of external parties (environmental financial accounting), whereby a company reports its economic activity to an external audience, has requirements for disclosure of environmental liabilities and certain environmental costs ,and the second practice of environmental accounting to rationalize the decisions of the management of the company (accounting of environmental management systems).

Companies-level environmental accounting can be defined as follows: A system for the production and delivery of information that reflects both environmental dimensions and impacts, both direct and indirect, in order to serve both external parties and rationalize the management decisions of the company (Baldarelli, Baldo & Nesheva-Kiosseva , 2017).

Because of the above it should be noted that the science of accounting and its applications have been subject to economic development, social and even political, which led to the development of accounting functions and developed with the work of the accountant, who was responsible for the preparation and presentation of accounting information that helps to make decisions, which leads to the statement that

the pressures mentioned above were not alone, which led to the emergence of environmental accounting, but there are a range of reasons and justifications that led to its existence as well.

2.1.3 Obstacles to The Application of Environmental Accounting

The main obstacles and problems of implementing environmental accounting are lack of environmental awareness and there are no accounting standards or laws that are required to assume or recognize (Ditillo & Lisi, 2014; Parker,1997), environmental responsibilities (Masanet-Llodra, 2006), also the problem of accounting measurement, which is how to convert quality pollution data into quantitative data measured in monetary units, to achieve the requirements of recognition, measurement, registration, and disclosure in accounting.

The problems of unforeseen adverse environmental impacts, which may not appear at present and may appear in the near or distant future, where they can't be predicted or the extent of damage resulting from them, for example, the health damage caused by cellular communication systems, and the problem of environmental damage, in some industries cannot limit the environmental damage caused by them, some industries can cause major environmental disasters and not only limited damage, for example, the production of products may several cases cause pollution such as chronic human health problems or the extinction of a particular species of animals or plants, making it difficult to quantify damage in monetary units (Ditillo & Lisi, 2014; Parker,1997).

The cost problem, the cost of the environment will be affected by the cost of the product because it is linked to the current competitiveness. This raises the costs of the products and consequently, their prices, which may weaken the competitiveness of the international exchange at this rate more trade wars may emerge (Masanet-Llodra, 2006).

2.1.4 Types of Environmental Accounting Systems

Intellectuals, owners, and owners of companies make a great effort to develop environmental protection methods, convinced that the responsibility to protect the environment both inside and outside the company lies with them. The continued

depletion and pollution of environmental resources will threaten their future existence.

The environment is the main source of all their resources, and damage to them is not only harmful to society but will extend to the economic damage of their companies and interests, which led to the need for accounting systems that are concerned with environmental issues. Accordingly, the environmental accounting system can be broadly classified as follows: (Maran & Bracci ,2013 ; Bainbridge , 2006).

- **Environmental Financial Accounting:** The area of interest of this section is the understanding, recognition, and translation of impacts on the company's traditional accounting system with the aim of preparing the financial reports of external parties to assist them in making economic decisions and evaluating the environmental performance of the company. These reports are prepared in accordance with accounting standards. They are comparable, objective and other characteristics of accounting information. The system of environmental financial accounting is based on three main components: (Elobuddy,2015)

First, set of hypotheses, concepts, and principles that form the theoretical framework of environmental financial accounting as a science that seeks to measure and report on the environmental effects of the activities of the company. Second, processes and activities that cause environmental impacts or benefits, which are the basis for the identification and classification of environmental expenditures and revenues resulting from such activities; third, the environmental accountant shall be familiar with the concepts, assumptions, and principles related to environmental accounting.

The accounting treatments related to measurement processes are based on the analysis of processes that have environmental effects and recording them in the concepts of environmental and non-environmental, and thus opening accounts for environmental and non-environmental expenses and revenues of the ledger, the costs of economic activity, and those related to the environmental impact of the activities of the company.

- **Environmental Management Accounting:** The field of interest is the inventory,

measurement and analysis of the environmental costs and revenues resulting from the activities of the company with the aim of providing the necessary data to rationalize the administrative decisions related to planning, with respect to the environmental dimension both at the company level and at the level of internal divisions, processes and activities (Ebrahim , 2015).

- **Accounting for Natural Resources:** The area of their concern is the accounting of natural environment resources in preparation for their incorporation into national accounting. Their outputs are reports on natural resource-related flows with quantitative and financial values, and hence the size of these resources and their obligations, others for national accounting purposes (De Beer & Friend, 2006).
- **Sustainable Accounting:** Its area of interest is the study of financial and physical information related to the environment in the context of the broad concept of accountability for sustainable well-being, or as some writers call it, in which they are often exposed in the context of environmental management accounting (Radermacher,1999).

The main advantages of applying the environmental accounting system are the following: (Jankovic, Peršić & Zanini-Gavranic, 2011; You, 2013)

- Better environmental costs, which may be hidden in additional expense accounts, and then cost and pricing of the product more accurately.
- Assisting managers in making cost-cutting decisions and improving environmental quality so that some environmental costs can be avoided.
- Motivate employees to seek innovative ways to reduce environmental costs while increasing their awareness of occupational security issues.
- Supporting and developing the process of preparing a comprehensive environmental management system that has become necessary for companies.
- The company has a competitive advantage because of the satisfaction of customers, products, and services that are offered to become environmentally distinct.
- **Environmental Auditing:** The environmental audit system aims at assessing the compatibility of the environmental performance of the company with the environmental standards, legislative requirements and obligations, what are the expected improvement opportunities for the environmental performance of the company and the validity of environmental accounts and compliance with the rules

of measurement and proper disclosure of environmental information in light of the standards environmental and accounting (Tucker & Kasper,1998; Sen, Mukherjee & Pattanayak, 2011).

Environmental auditing program is one of ISO14000 programs it is used in conducting environmental affairs for companies as a comprehensive system for companies' environmental policy establishment, it supplies, them with frameworks, and environmental obligations and goals identification after that observe if the implemented procedure and evaluate the progression to meet these goals and obligations (Tucker & Kasper,1998).

An environmental audit is divided into environmental management audits and environmental audits (including internal audit and external review). The objective of the environmental audit is to ensure compliance with the company's environmental policies, program implementation and compliance procedures governing good environmental practices in the view of the specific authorities and responsibilities of those responsible for improving current and future environmental performance (Thompson & Wilson,1994).

An external auditor auditing environmental data to ensure that the company's environmental performance conforms to national and international legal standards and requirements. In addition to ensuring the validity and integrity of the environmental information contained in the annual reports of the company, and their conformity with the accounting books and records, and preparing them in the view of the accepted accounting principles and standards.

For the auditor to make an opinion about the right and fair view of the financial statements the consideration should be taken in all material affairs. ISA 1010, consideration of environmental issues in the audit of financial reports, explained the sequential steps to achieve such an outcome (IFAC 2004; De Beelde & De Moor ,2005).

2.1.5 The International Publications Supporting Environmental Accounting

International organizations for the protection and preservation of the environment have developed many regulations and legislation. They have also sought environmental accounting through publications, publications, and recommendations

that dealt with environmental accounting directly or indirectly, and through this demand, the focus will be on supporting issues for an environmental accounting by exposure to the following points:

First, Role of International Professional and Scientific Organizations and Associations in Support of Environmental Accounting

Many professional and scientific associations have conducted many research and publications in the field of environmental accounting application and support:

1) American Accounting Organizations and Associations:

Many US accounting standards have been issued that relate to the environmental performance of companies, but have not been directly addressed in the form of an independent standard. The Standards Board does not deal with accounting measurement and disclosure of environmental items independently but rather deals with FASB.

Probability items within criterion (5) to indicate the probability of a potential loss should be available when the company is notified of its position as a potential party. However, it is difficult to assess obligation in an acceptable manner. For interpreting standard 5, FASB has issued several interpretations, including Interpretation No.14 on Accountability of Emergency Circumstances, and Interpretation No. 39 regarding settlement of the amount associated with certain contracts, the FASB has resulted in several issues, including issues 90-8 on the capitalization of environmental pollution treatment costs, and 93-5 of the Accounting Guidelines for Environmental Elements (Roberts & Hohl,1994).

The Securities and Exchange Commission (SEC) has set circular No. 92 on accounting and disclosure of contingencies, the opinion of the Board of Special Accounting Principles (APB) on accounting changes and the statement of the American Institute of Chartered Accountants (AICPA) No. 1-96 Disclosure of significant risks and uncertainties, Statement No. 1-96 on environmental obligations, and publications 143,144 in 2002 on environmental accounting (Abdolmohammadi et al, 2012; Statement of Position 96-1 ,1996).

There are differences between the environmental disclosure requirements of the

Financial Accounting Standards Board and the Securities Regulatory Commission when comparing them. In accordance with Standard 5 of the Financial Accounting Standards Board, if the loss is not probable and can not be reliably estimated, it is disclosed only in the notes to the financial reports.

In other words, they are disclosed in the context of conditional obligations resulting from environmental pollution. These obligations are often the result of departing from the laws regulating the environment with respect to air, water or soil pollution and hazardous waste, the requirements of the Securities Regulatory Authority, include the need for disclosure if the management decides that the obligation may not occur. If the administration is not in a position to do so, the disclosure is required. The management should assess the effects objectively on the assumption that an event or obligation is uncertain. (Abdolmohammadi et al, 2012).

This shows that this discrepancy on environmental disclosures required is due to the probability level of occurrence loss, as the Financial Accounting Standards Board (FASB) the possibility that the occurrence of the event would be highly probable was adopted, while the Securities Exchange Commission (SEC) probability of the event.

2) International Accounting Standards Board:

Issued a set of international accounting standards (IFRS), including International Financial Reporting Standards (IFRS), including IAS No.(1) Presentation of Financial Statements, which is contained in its fourteenth paragraph which was issued by several companies outside the financial statements such as environmental reporting and value-added data, particularly in industries where environmental factors are important, companies provide additional information if the administration believes that it will assist users of the financial statements in making their decisions (IAS 1 Presentation of Financial Statements).

International Accounting Standard No. (16) IAS requires consolidation of the costs of dismantling and ceasing to operate in the future in the value of fixed assets. These costs are predestined at the asset's useful beginning life and are ingested to a provision in compliance with IAS 37. The future expenditure with dismantling and position restoration may also be as a consequence of the persistence usage of an asset whose environmental effect is not trivial (Barbu et al, 2014).

Access to property, plant, and equipment is eligible to be recognized as the asset

of the entity being able to obtain future economic benefits from the associated assets rather than if it is owned. For example, a chemical plant may require the installation of new chemical handling devices to comply with environmental requirements for production and storage hazardous chemicals, so "handling means" are treated as an asset to the recoverable amount, without which the project is unable to produce and sell chemicals (Barbu et al, 2014).

Environmental expenses and liabilities IAS 37.37. Environmental expenditures which are connected to future or present incomes are expensed or capitalised as convenient. Expenditures which are connected to a present situation caused by previous processes and not participating into future or current earnings are expensed.

Responsibility for environmental costs is acknowledged when a clean-up is potential and the related prices can be dependably predestined. In general, the timing of admission of these provisions synchronize with the obligation to an official plan of action or, if previously on divestment or on the closure of passive sites. The amount known is the best assessment of the expenditure in demand. If the amount specified in the present value of future expenses, the impact of the time value of money is necessary (Good Group International Limited, 2014).

3) International Federation of Accountants: (IAPS 1010, 2004)

The International Federation of Accountants (IFAC) issued the International Standard for Auditing No. 1010, entitled environmental considerations in the audit of financial statements, which includes a set of key environmental considerations and guidelines, some of which may be referred to as:

The first paragraph: Environmental issues have become increasingly important to a growing number of companies and may have a material impact on their financial statements and are increasingly of interest to users of the financial statements. Therefore, the responsibility for these matters is measured and disclosed by the department.

Second paragraph: It states that when environmental matters are important to an company, there may be risks material misstatements in the financial statements arise from such matters. Hence, the auditor needs to consider environmental matters when reviewing financial statements.

Third paragraph: The paragraph states that the environmental issues shall be

determined by the initiative to prevent, eliminate or remedy environmental damage or deal with the conservation of renewable and irrevocable sources, the consequences of violations of environmental laws and regulations, and the consequences of environmental damage to others.

Paragraph 49: stipulates that, when reviewing financial reports, the auditor should consider environmental issues if they are adequately addressed and disclosed in accordance with the appropriate disclosure.

It also addressed environmental issues affecting financial statements such as the issuance of environmental laws and regulations requiring the modification of certain assets, non-compliance with the environmental law, waste disposal or retroactive change of law, requiring remedial, compensatory or legal costs.

4) The International Standards Organization (ISO):

The ISO 14000 standard is considered one of the most important attempts to establish acceptable international environmental standards to achieve the flexibility of companies to achieve their environmental objectives efficiently and effectively, these standards were the focus of ISO, where it issued quality standard No. 9001, which relates to quality and review of the environmental management system of companies (ISO 14000, 2009).

The organization also issued standard No. 14001 in 1992 to define the nature and functions of the EMS, the most important of which are the following:(Whitelaw , 2004)

To determine the environmental policies of the company, as part of its general policies, which must include its commitment to environmental legislation and the emphasis on commitment to continuous environmental improvement; To promote environmental awareness among the employees of the company by clarifying the environmental policies and mechanisms of their implementation and their role in improving the quality of environmental performance.

Focus on all environmental aspects of all the activities of the company within the framework of a comprehensive overview of inputs, processes, and outputs, whether related to current or future operations. Also, studying and analyzing all legislation related to environmental performance to assist the management of the company in developing environmental protection plans, reducing or avoiding the

harmful environmental impacts generated by its activities, and assisting in the evaluation of the environmental performance of the company (Deegan, 2017).

Supporting communications with different levels of management and workplaces, enabling employees to learn about environmental responsibilities and objectives, and how to contribute to their achievement, and planning for periodic and comprehensive review of the environmental management system to ensure its effectiveness and that the environmental performance of the company is carried out within the framework of both the standards and legislative obligations (Nagel, 2001).

Supervise the provision of the necessary information to assist management in making decisions related to improving environmental performance.

This standard is considered one of the most important environmental protection programs because of the principles and standards related to the Environmental Management Systems (EMS) that must be adopted by the companies to improve their environmental performance and to obtain the ISO 14001 certificate. It was developed in 2004 (ISO14001, 2015), and has also issued several other standards in this field, standard 14004, which deals with the specifications and guidelines of EMS principles, standard 14020, which addresses the environmental mark, and standard 14040, which deals with the life cycle of the product (ISO 14000, 2009).

5) The European System for the Collection of Economic Information on the Environment (SERIEE):(Oviir, 2010)

Which is follower accounts which include data about environmental security disbursement and economic data on administration and usage of natural resources? in 1994 Eurostat release (SERIEE) booklet as a response to EU's Fifth Action Program on the environment to support the EU movement toward the sustainable development this programmed summons for improvement of environmental data. (SERIEE) consists of two follower accounts: Management Account and Resource Usage, and Environmental Protection Expenditure Account.

SERIEE main goals are: 1) Calculate indexes 2) Follow the financial flows attached to environmental protection.3) distinguish the effect of environmental protection on the european economic system. Because it's the most global system for enrolled environmental protection expenditures. to those whose concerned involving into more details in this area should consult the SERIEE as the SEEA-2003 advises.

6) Federal Organization of European Experts FEE: (Collison & Slomp, 2000)

Representing the representative body of the accounting profession in Europe, environment one of the main problems facing the company, and in 1993 formed an environmental task force. The activities of this group are in three areas: Environmental Accounting; Environmental Assessment; Environmental Auditing.

The organization has set up a workshop called Leadership and Environmental Management: Position of the Accounting Profession Copenhagen November 1994, to determine the position that the accounting profession should take in the direction of environmental problems. The resulting document was the defining of the company's environmental strategy.

In 1998, this strategy addressed the need for the accounting profession to consider developments in the field of environment. This requires the pursuit of changes in the education and training systems for accounting, especially in the field of addressing environmental costs and risks in the financial statements.

FEE, 1999c discussion paper admits and depends on new developments in environmental reporting. Appendices to the report contain concise scanning of present environmental reporting practice and a lengthy, if not detailed, list of extant guidelines on the subject. Remarkably the sheet depends on the action done in formalizing and developing a conceptual framework for financial reporting. The preparation and proffer of financial reports (IASB) 1989 depending on its feasibly being the most 'generally accepted' conceptual framework. Especially the International Accounting Standard Committee (IASB) framework has been using it as a model for that.

However, the sheet appeals that the role of all conceptual frameworks is to calibrate and support external company reporting, consequent of that the reporting process will be done in more confident by users than before, it also affirms different reasons for desiring to obtain the conceptual foundations of this modern discipline' it is declared that an increasing request for environmental external investigation reports could be met if a supporting framework is founded, besides as environmental reporting feasibly be a move towards social reporting, sustainability reporting, and triple-bottom-line reporting without this structure such improvement may defeat to obtain considerable credibility and uphold (Collison & Slomp, 2000).

As result of the above, it is clear that professional organizations and scientific

societies have given great importance to environmental issues, especially in recent times, but their disclosure in financial statements and reports in practice has not reached the required level.

Second, Legal legislations in Some Countries in The Field of Environmental Protection and Support of Environmental Accounting

Many countries have made considerable efforts in the field of environmental protection and support environmental accounting and explained in the following:

1) The Most Prominent Legal Legislation in Western Countries:

The United States is one of the first countries in the world to adopt the necessary environmental impact assessment legislation in its major projects and to include it in their national environmental policies in January 1970, when the US National Environmental Policy Act was enacted five years later the law has increased the number of data, documents and writings on environmental impact in all libraries in addition to research, articles and scientific curricula.

The United States issued the Air Pollution Free Act 1990, and under this law, an asset called "the right to issue emissions to industrial establishments" was issued. This right is a grant from the US Environmental Protection Agency (EPA) the emissions of this act shall not exceed what is specified in this authorization and is usually within the permissible limits (Lohmann, 2009).

The United Nations Statistical Office proposes a new System of Environmental and Economic Accounting (SEEA). In relating to features, relating to features, of the founded economic accounting system which is a particular connection to environmental sides and which will have to be partially categorized to recognize and assets monetary flows which are connected to the natural environment usage is to improve complete accounting systems that merge the environment natural and resources into the classical accounting framework (Muller & Schuster,1993).

2) The Most Prominent Legal Legislation in The Arab Countries:

Environmental awareness in arab countries has increased over the past two decades, with many legislations aimed at preserving the environment. A royal decree was issued in Saudi Arabia in 1985 clarifying the necessary procedures .The UAE Federal Law No. (24) for the year 1994 concerning the protection and development of the environment was issued in Yemen. In 1995, a law was passed to protect and

preserve the environment in Yemen (El Taher , 2011).

Many laws and regulations governing environmental issues have been issued in Jordan, such as the Environmental Protection Act No. 2 of 2006, which is the main legislation regulating environmental issues in Jordan, and other regulations governing specific areas such as water and air protection, nature protection and environmental impact. The legislative framework is essential for the preservation of the environment in Jordan and can give some attention to the relationship between investment, environmental law and environmental policies(AlSufi, Al Qatish & Qarqeesh, 2012).

In Egypt, the Egyptian Agency for Environmental Affairs (EEAA) was established in the 1980s to improve environmental conditions, which did not have clear powers or roles until the enactment of the Environmental Law No. 4 of 1994 and its Executive Regulations in 1995. An independent Ministry of Environmental Affairs. The Egyptian Accounting Standard No. 7 of 1997 on Emergency and Post-Budget Events, Egyptian companies facing environmental conditions are obliged to apply this standard and the amount of potential environmental loss is recognized as an expense or liability if the events are likely to confirm the loss of an asset commitment in history budget, or if it is possible to estimate the amount of loss expected to occur properly, and accompanied by these developments official, legislative and professional interest of researchers and accountants in Egypt the subject of accounting and environmental auditing (EEAA , <http://www.eeaa.gov.eg> ,1994).

In Algeria to protect the environment, many legislations have been issued: Law no (19-1) issued in 12th of December 2001 about the waste transfer and disposal legislation; Law no (03-83) issued on 5th of February 1983 about environmental protection legislation, and under the finance act in 1998 a legislation against water pollution(Elobuddy,2015).

Third, National Legislations in The Field of Environmental Protection and Support Environmental Accounting

In Libya, can review the most important domestic legislation issued in the framework of environmental protection and sanitation and reduce the effects of the various causes of pollution has been followed by legislation, but it has been characterized mostly from the beginning to address the causes of pollution as some of

them are direct services to citizens hygiene work and control of food and regulation of water and sewage facilities (Libyan law).

- Law No. (5) for the year 1969 concerning the planning and company of cities and its amendments, which created within the framework of the provisions and the planning principles, which contributes to the sanitation of the environment from pollution, and the fifth section provides for the provisions related to the establishment, management and maintenance of public utilities of water and sewage.
- Law No. (8) of 1973 concerning the prevention of pollution of seawater by oil.
- Law No. (130) for the year 1973 concerning the local administration system. Because of this law it grants the provincial councils the authority to adopt the regulations issued by the municipalities under which the regulations relating to sanitation and environmental protection.
- Law No. (39) for the year 1975 concerning municipalities. This law was promulgated on the company of the Ministry of Municipalities, including in its second article, the text of the organizational structure of the Ministry where it established public administrations including the General Directorate for Environmental Protection, which is responsible for the actual supervision of all drinking water While conforming to health requirements.
- Law No. (7) of 1982 regarding the protection of the environment and its executive regulations was issued by the General People's Committee No. 386 of the year. It is one of the most important laws issued by the libyan state in the field of environment, and by Decree No. 363 established the General Authority for Environment, and perhaps one of the most important tasks entrusted to the commission in accordance with the provisions of the decision to establish it aims to protect the environment in which human beings and all living things, including water, soil, air and food pollution, has been subjected to the law to determine the general duties to preserve the environment from pollution in the following areas: Air Protection; Protection of the sea and marine resources; Protection of water resources; Food Protection; Protection against common diseases; Soil and plant protection; Wildlife Protection; Environmental sanitation.

The law contains seventy-five articles and a section into eleven chapters

(Libyan Law No.7).

Law No. (15) for the year 1989 concerning the protection and improvement of the environment, this law aims to achieve environmental control for the purpose of protecting and improving it as the environment in which man and all living organisms live, including water, soil and food from pollution, and to work to maintain the environmental balance of the natural environment and prevent and combat the pollution and damage resulting from them and reduce them, and improve the framework of life and conditions, and the development of plans and practical programs for this purpose also aims at achieving sustainable development, and benefit from natural resources and work on optimal utilization, and the law included seventy-nine material and divided into eleven chapters.

As a result of the foregoing, can say that the responsibility of the company towards the society in which it operates cannot be achieved through the production of goods or services, but it has become the responsibility not to inflict the least harm, through the use of available economic resources or overuse these resources, in a way that does not allow future generations to use these resources efficiently, or the effects of the use of these resources, which led to the emergence of environmental accounting and through their application can contribute to the preservation of the environment. For the company to achieve this, it bears a larger set of costs which are borne by the mere completion of normal production processes, this set of cost elements is what so-called environmental costs.

2.2 Theoretical Framework of Environmental Costs

The concern about environmental costs is increasing from one company to another since many companies considered the cost of avoiding environmental pollution to be correct investments, while others considered the interest in environmental costs to be strategically correct in terms of the environment of cultural growth focused on environmental protection. The environment is constantly increasing the value of the total investment in the industrial countries during this century, thus resulting in an increase in environmental costs, which has become the

focus of attention of the accountant and auditor, because of the significant impact on the prices of the companies's products and thus its competitiveness.

2.2.1 The Concept of Environmental Costs

The accounting intellection considers environmental costs as enabling companies to prepare financial statements for use by investors, lenders and other beneficiaries of such reports, in accordance with the principle of disclosure, which is one of the principles generally accepted, and therefore environmental cost accounting is the accounting of estimates of environmental obligations and the financial cost of environmental resources.

From the point of view of management accounting, environmental costs are the process of collecting accounting information for making administrative decisions in the fields of environmental protection and reducing environmental pollution, in addition to determining the contribution of the company to achieve sustainable development.

There are several definitions of environmental costs *“The environmental cost is defined as an accounting entity in its process of sustainable development, in line with the principles of responsible for environment, for the management of business activities on the environment impact to take measures or is required to take measures costs, and other costs of execution environment for companies objectives and requirements to pay for”* (Jing & Songing , 2011, p1).

It is noted from this definition that it focuses on protecting the assets of the company from harmful environmental effects resulting from the company's practice of its activity and neglecting other aspects of environmental costs.

Also, environmental costs were determined by the EPA as *“Those costs that have a direct financial impact on an entity (internal costs), as well as the costs that have an impact on the society and the environment (external costs)”* (Rakos & Antoht, 2014 , p3).

This definition is more comprehensive because it distinguishes between the costs borne by society and the costs incurred by the project itself as a result of activities that have affected the environment. They are defined as those costs incurred by the company to comply with environmental regulatory standards, costs to reduce or

halt the emission of harmful substances, and other costs associated with the process of reducing adverse environmental impacts on workers and the whole companies (Dai, Yin & Lam , 2011).

This definition shows us that environmental costs are all that the company spends on the environment and this to comply with the standards governing the environment, whether the costs of reduction or prevention of pollution.

Environmental costs are defined as all elements of costs incurred by the company because of its compliance with environmental laws, such as costs incurred in reducing waste in raw materials, energy consumption, water and waste reduction, solid and recycled insurance premiums incurred by the company to meet potential environmental risks (Leontina, 2007).

It is clear from this definition that linking the environment to the whole of the company's environmental commitment both to the prevention of environmental risk or mitigation and the distinction between types of these costs.

It may also be known as sacrifices, which may be explicit or implied by the company and to comply with the environmental performance in accordance with the laws and environmental legislation on the one hand, and on the other hand, on the assets of the company, and on third to meet the wishes of consumers and outward parties (Tijani & Hamadi,2013).

2.2.2 Reasons and Motivations of Companies to Study Environmental Costs

Environmental costs arise from a combination of causes:(Asma,2015)

- Legal or legislative reasons: The legal or legislative reasons result from environmental costs or obligations resulting from the law obligating these companies to adjust their conditions to reduce or reduce negative environmental impacts on the environment. This results in environmental costs incurred by the company for the installation of pollution control assets and equipment.

The environmental costs or obligations incurred by the company are the results of the non-compliance of the company with the environmental laws and legislation, resulting in the company having large compensation and fines.

- Social and cultural causes: The company bears responsibility for environmental costs to the community, and these costs are treated as social costs borne by the

community. The costs of the environment are not considered a burden on the company, which contradicts the accepted accounting principles and principles.

- The cost of environmental pollution control as a cost to the costs of the company's activities necessarily leads to a profit reduction which is a measure of the economic efficiency of the activity. However, the fulfillment of the environmental responsibilities of the company increases its social and economic returns towards society.
- Reasons for the consumer and the project: One of the main causes of environmental costs is the need for the company to satisfy the consumer by providing products that do not cause environmental damage, in addition to increasing their ability to compete in the markets and penetrate .

Understanding environmental costs help support the environmental management system that many companies are seeking to develop as a means of obtaining ISO 14001 certification for the environment developed by the International Organization for Standardization (Zobel,2016).

2.2.3 Environmental Activities and Sources of Access to Information on Environmental Costs

Environmental conservation activities within the company are the main reason for the development of elements of environmental costs and obligations, which represent the extent of the company's fulfillment of environmental obligations set by environmental legislation.

- Environmental Activities: The classification of these activities has been varied and has been classified by the American Accountants Association according to its goal of four groups, which are as follows: (Alsaeed ,2009 ; Thoms , 1999)
Prevention activities: This set of activities aims to reduce and eliminate potential causes that lead to undesirable adverse environmental impacts. Examples of such activities include redesigning production processes so as not to use toxic or harmful raw materials, and notes that the costs associated with these activities represent the costs of preventing environmental damage.

Assessment Activities: This set of activities aims at measuring and tracking potential sources of environmental damage. Examples of such activities include monitoring the levels of toxic substances within the plant, measuring and monitoring levels of related toxic substances fumes and vapors, environmental audits and office activities associated with cooperation with government agencies for the protection of the environment. The conduct of these activities results in costs for evaluations.

Control activities: This group of activities aims to control and control harmful substances, such as the use of certain types of steel in the construction of fuel tanks, liquid waste treatment, and control activities are regulated by these activities.

Failure activities: This set of activities aims at remedying the environmental damage that has already occurred and the activities of these activities include the costs of treatment and removal of waste and various environmental damage.

It is clear to us that both legal considerations (laws and legislations) and optional considerations (reasons related to the needs of society and the consumer) are conducive to the creation of conservation activities, which in turn are the cause in the creation of costs and environmental commitments.

- Sources of access to environmental cost information: To identify environmental costs well the sources of information must be identified. The following are examples of how to obtain information on environmental costs: (Mylonakis & Tshinkis , 2006 ; Jasch , 2002)

Fees and fines: can be obtained and verified through legal documents and management estimates.

Equipment and asset protection costs: These can be obtained from maintenance records and service contracts.

Costs of loss of production or harmful substances: Can be obtained through production records, advance estimates, laboratory reports, and statistics.

Depreciation: The extent of the increase in the value of depreciation resulting from the adverse environmental effects of the activity of the company is obtained through the asset record.

Follow-up costs: Information can be obtained through administrative and engineering estimates.

Training costs: It is intended to train the staff of the company to avoid environmental risks. Information can be obtained through the personnel records and management estimates.

Custom Dispute: Its adequacy can be verified by obtaining information from legal affairs on environmental issues filed against the company.

An environmental tax: is a tax which has a specific passive impact on the environment (Mylonakis & Tshinkis,2006).

Environmental protection decisions are not derived from financial terms, but from the requirements of international regulations and laws, especially in light of the need for environmental information by industrial companies as well as investors to make more informed decisions as such information affects them in the medium and long-term, as well as on the decision-making area in which the administration uses different and new ways and means to achieve rationalization based on information available from different systems, this is the flow of information the fulcrum systems are very important to make these decisions, according to the study Al-Sofi , environmental costs play a role in rationalizing administrative decisions (AlSufi, Al Qatish & Qarqeesh, 2012).

There is a reciprocal relationship between the environmental costs and the decision-making process of a company, where it is assumed to be the use of a database for environmental accounting and developed by the companies internally and externally. Therefore, the decision of the company to consider the cost within the environmental costs depends mainly on the purpose of this costs and its relevance to the environment. The decisions taken by the establishments to implement and activate environmental accounting are as follows: (Nasser & Al khafaf, 2012)

- The important and vital elements of good project management by measuring environmental costs and their impact on the appropriate environmental and administrative standards for these costs, considering the principle of cost and reason.
- The correct measurement of the value of the investment and the magnitude of environmental costs, to determine the impact of this investment on improving the effectiveness of performance and the construction of logical decisions by using the return/cost index.

- Disclosure of environmental costs to assess the company's trends towards environmental management by determining the ratio of the company's environmental costs to the total costs of the activities, enabling users to inform the activities of the company about the direction of environmental protection, which leads to the evaluation of the company itself.
- Decisions to rationalize the use of resources. Environmental costs contribute to reducing the poor use of scarce resources, which increases the technical and economic efficiency of industrial companies.
- Decisions to determine the technology used in production, and the nature of production processes that minimize the size and level of environmental pollution.
- Decisions on the costs of reducing and recycling raw and consumed materials.
- Decisions related to environmental research and development costs.
- Decisions on the costs of environmental conservation.
- Decisions on the costs of environmental investment through spending on disposal of environmental damage.

From the above, it can clarify the following decisions taken in the light of environmental cost information are more precise because those decisions are influenced by the type of information collected, and corporate administrations select technologies and procedures that meet environmental requirements and build cost-benefit relationships.

Decision-makers are always looking for ways to describe the benefits and cost-effectiveness of environmental activities, which has led to the inclusion of environmental considerations in rational decision-making. As well as with the increased investor needs for environmental cost information to make investment decisions and the impact of environmental cost information in the long or medium term.

Indeed, when making decisions, the real costs of operations and product costs, including environmental costs, must be considered, increase the volume of expenditures on the quality of the environment, which emphasizes the need to consider when making the decision.

2.2.4 Types of Environmental Costs

To better understand environmental costs, the types of environmental cost classifications must be identified according to different viewpoints, as is the following:

- Costs according to these activities can be classified into four main groups: (Mansouri & Ramze, 2008)

Costs of prevention activities: The costs of the activities designed by the company are specifically designed to eliminate or reduce potential causes, which have negative impacts on the environment, both in the pre-production stages and in the stages of production, packaging, and marketing until the product reaches the consumer, so that non-toxic and harmless material is used.

Costs of measurement and evaluation activities: Is the cost of the activities of the company to measure and follow up the potential sources of environmental damage, which are: follow-up levels of toxic substances within the plant , measurement and follow-up levels of toxic substances related to fumes, and vapors and office activities associated with cooperation with government agencies for the protection of the environment the objective of these activities is to measure and track potential sources of environmental damage. The costs resulting from these activities are called measurement and evaluation costs.

Costs of control activities: The objective of these activities is to control the materials used and which have adverse effects on the environment, for example, treatment of liquid waste, and the establishment of the company of the fast-flowing table tank against the reactions, for example, the costs arising from these activities are called the costs of control activities

Costs of failure to control environmental performance: Are the costs of the activities of the company, with a view to removing and remedying the environmental damage caused, which it has been unable to prevent or control, arising from the lack of control activities in the performance of its role. Among these costs, costs of treatment and removal of environmental waste caused by the company have been found, also the value of fines for non-compliance with environmental conditions and requirements.

- According to the environmental management system: The Environmental Organization of Japan which is interested in following the environmental management system, has divided environmental costs into two types: (Ali , 2013)

Costs of environmental pollution prevention: The costs of prevention or reduction of pollution as the costs of improving raw materials so as not to use toxic or harmful substances to the environment and to improve the production requirements to suit the requirements of the environment which means the production process doesn't result in an environmentally damaging waste harmful to the environment, and the costs of planning and control and the costs of measuring pollution prevention and reduction or treatment.

Costs of removing environmental impacts: It refers to the costs of removing solid or liquid wastes, and fumes of the various factories as well as fines resulting from the establishment because of violating environmental legislation.

It is clear from the above that there are many classifications of environmental costs and companies have the right to choose the appropriate classification to facilitate the process of measurement and identification and use in the decision-making process.

The researcher believes that the oil companies should focus on the cost of prevention to avoid the costs of greater costs of removal and repair of the damage.

- According to the UNDSO 2001, is classified into four major classifications: (UNDSO 2001)

Waste and radiation treatment: Include the following: Equipment consumption costs including devices and equipment for environmental purposes such as waste containers and policies, systems for improvement or recovery of loss and loss, air pollution, exploitation for noise reduction purposes, water treatment sewage, as well as costs associated with land and soil care, such as landscape protection, replanting and remediation of contaminated sites.

Inspection and maintenance costs, operational materials, services and other costs associated with equipments, and related staff costs such as the cost of labor spent on poor production, salaries of wastewater control personnel, air pollution and other labor costs associated with environmental activities, also wages, taxes, and burdens the costs imposed on the establishment, such as the costs of using sewage, rivers, and

energy, as well as the amount and environmental licenses and the burdens incurred by environmental hazards such as chemical and others.

Fines and penalties imposed on the establishment as a result of environmental violations. Insurance against exposure to environmental hazards the costs incurred by the insurance company against damage caused to individuals or goods due to the presence of environmental pollution, and costs of cleaning, processing, and other provisions these are the costs of obligations that an entity may have to the environment such as the costs of removal or recycling of waste, treatment of contaminated sites, protection of the environment, land reclamation and others .

Prevention and environmental management: Include the following: External services for environmental management these are activities that are not directly related to the treatment of pollution, radiation or unproductive outputs. These are the costs of all external services within environmental management activities such as consultancy, training, testing, environmental auditing, and communications.

Environmental management staff these are the costs associated with costs of external services for environmental management mentioned in the previous paragraph. Moreover, research and development represent the costs of external contracts and internal labor costs for research and development activities related to environmental projects.

Additional expenditures in modern technologies purchased for environmental protection. Other environmental management costs such as the costs of printing the environmental report and the costs of activities ranked in contact with the community such as costs of environmental activities.

Value of purchased materials: Include the following: Costs of basic raw materials that are lost to the establishment for natural or abnormal reasons, including product returns, quality monitoring, product loss, damage, loss, evaporation, tampering and other factors; Costs of auxiliary materials and other operational materials which are not used in the production of good products; Costs lost due to recharging to other regions or countries; Unutilized energy costs in production processes; Water costs lost from those involved in product manufacturing processes.

Operating costs: It refers to operational costs other than those which the company does not benefit from the production of good products such as lost time and

depreciation of machinery and lost power generated internally by the company, as well as auxiliary materials and operating materials that are not included in the cost of the materials purchased.

The authors conclude that environmental costs have become a reality because of the set of factors that lead to their occurrence - which was mentioned earlier - hence the recent interest in environmental costs due to environmental disasters and their increase, as well as the result of multiple types and spread in different business activities, these costs and their role, and their impact on the decisions of companies.

2.2.5 Environmental Cost Management

Accounting for environmental management systems is concerned with the analysis and measurement of environmental costs at the level of the company or at the level of the divisions and products, as well as providing the data and information necessary to support strategic and operational decisions towards the environmental and economic performance management of the company especially in the preparation of budgets and in the design of performance measurement systems and incentives and reward systems.

The concept of environmental management emerged in the 1990s in the industrial sector following the implementation of the Environmental Audit Program, which emerged in the mid-1970s in the industrial sector, environmental management is defined as a tool that organizes a range of human activities that are closely related to an impact on the environment (Reagan, 2006).

The environmental cost management system consists of two parts:

- Measurement of environmental costs: The objective of this phase is to measure the total environmental costs at the department, department or company level and then tabulate the environmental costs (Russell , Skalak & Miller,1994).
- Preparation of environmental cost reports: The environmental cost management system extends beyond the mere cost measurement and tabulation where environmental cost studies require the preparation of environmental cost reporting systems, understanding, study and analysis of management decisions resulting in environmental costs (Russell, Skalak & Miller,1994), reports on the proportion of each type of environmental cost to the total of these costs can be prepared over a

time series for comparison and evaluation purposes.

These reports can help provide an answer to an important question regarding the relationship between prevention costs on the one hand, and measurement, control and failure costs on the other, does the increase in the cost of prevention to total environmental costs indicate a lower proportion of other cost components (Mansouri & Ramze, 2008).

Reports on the percentage of environmental costs in total sales can be prepared at a time series level to clarify the relationship between environmental costs and total sales revenue because they are important and significant when many of the administrative decisions. In the case of the preparation of the company to balance the environmental performance, it is possible to prepare reports aimed at comparing the elements of actual environmental costs to the environmental costs specified in advance, and to identify the differences and analyze them for their types and causes helps to search for corrective actions and decisions (Jamal , 2016).

Environmental cost measurement and reporting are aimed at implementing environmental cost management methods. Environmental costs are rarely achieved or recorded in the section or department that caused this cost (Chang, 2013). For example, the cost associated with environmental activities such as waste treatment compliance with legal considerations and environmental insurance.

This cost occurs in production and production services, while decisions on the quality of products, processes, and types of machines to be purchased, as well as decisions of selection the plant site is taken at the level of design departments, as well as at the level of capital budgeting committees.

It is clear that there is a clear fact that environmental costs are part of the operating costs and that information on environmental costs is also important in the economic decisions.

2.2.6 The Environmental Cost Accounting

Environmental cost accounting is defined as environmental and economic performance management in the creation and development of appropriate accounting systems related to the environment and its applications, including the process of accounting reporting and auditing, in addition to life cycle cost processes,

comprehensive cost accounting, assessment of benefits and strategic plans for environmental management.

It was also known as a tool that provides users with accounting information and decision makers with environmental cost information to give a complete picture of the company's performance, including data on environmental performance as well as financial data and information (Rikhardsson , 1998).

The importance of accounting for environmental costs is that it reduces or even avoids many environmental costs as these costs do not add value to the products. These costs may be operational, investment or joint in redesigning the same products (Henri, Boiral & Roy, 2016 ; Blessing , 2015).

That these costs may be implicitly embedded in indirect costs, or are ultimately ignored in one form or another. That the optimal management of environmental costs leads to the improved environmental performance of the company, in addition to the positive effects of this trend on the health of society, and above all the increase in the success and development of the company.

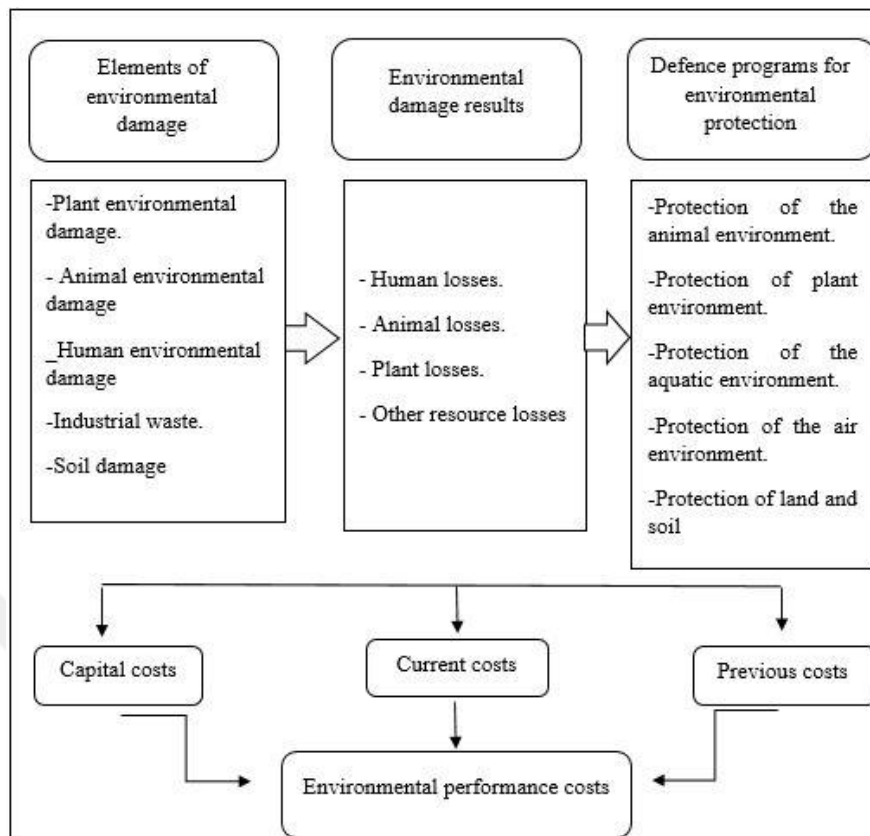
Reviewing existing operating systems and understanding environmental costs helps to provide more accurate information to the company about environmental costs and pricing of products, and thus design products with environmental specifications that achieve better profitability.

Moreover, achieving competition for the company's products by advertising and promoting products with better environmental specifications.(Henri, Boiral & Roy,2016 ; Blessing , 2015).

Understanding environmental costs help support the EMS, which many companies seek to develop for importance under the World Trade Organization (WTO).

The daily activity of companies, especially industrial ones, entails environmental costs and obligations that may have a direct impact on the financial statements, this effect has negative consequences, such as a clear confusion between what can be considered ongoing costs and what can be considered capital costs:

Figure (2.2) Reflects The Environmental Impacts of Facilities Activities



Source:(Al.Shehadeh, 2010,p 20)

To distinguish between these costs, the following points are displayed:

Current environmental costs

Where current environmental costs are defined as the cost items incurred by the plant or company in exchange for the implementation of environmental protection programs for one accounting or financial period (Al.Shehadeh, 2010). As it is also defined as those costs incurred by the financial year and which are directly or indirectly related to the benefits realized during the financial year.

Examples of these costs are:

- Costs of treatment of production waste.
- Costs of disposal of waste and waste resulting from the activity.
- Costs of training programs for personnel related to environmental fields.
- Environmental management costs; Internal audit costs and environmental auditing in general.

- The cost of hiring experts to help develop environmental protection programs.
- The costs of sampling and analysis from time to time so as not to exceed the maximum damage to the environment.
- The costs of treatment required for the employees of the company and resulting from the activity of the company.

From the above definition, it is clear to us that environmental expenditures related to the activity of the company, which can be repeated on a regular basis, can be considered as current expenditures on the fiscal year in which they occurred.

Therefore, the environmental costs mentioned above can be considered current expenses that can be incurred in the fiscal year in which they occurred, in terms of their relevance to activity, many environmental expenditures are associated with activity and are used to classify expenses in the income statement into operating expenses. However, there are some non-operational expenses, such as what the company will eliminate from contamination of a currently unused operating site (Moore,2008).

Capital environmental costs

Capital environmental costs are the set of cost items incurred by the company causing the environmental damage events in return for the provision of machinery, equipment, and equipment that contribute to the reduction of pollution and the treatment of its effects for several periods or financial years (Weidman, Welsh & Bonino, 2016).

According to the Financial Accounting Standards Board, the costs involved in addressing environmental pollution are generally treated as expenses and can be sent if they are recoverable, subject to one verification from the following criteria: (FASB ,1990)

- That such costs may increase or prolong the period of utilization of the asset owned by the company or increase its capacity or improve its degree of safety or efficiency and should lead to an improvement in the state of the asset as compared to its original state at the time of construction or acquisition.
- That such costs may result in the reduction or prevention of environmental damage, both current and potential, that may result from future activities of the company, and should improve the status of the asset as compared to its original state at the time of

construction or the acquisition of which is affected by the environmental damage resulting from the activity of the company, or improving the condition of the asset by adding measures to reduce the environmental damage caused by its operation.

- The company has incurred the costs for the preparation and processing of the asset currently on sale, which has been affected or affected by environmental damage.

Examples of such capital costs include the costs of installation of machinery and equipment in oil refineries to prevent harmful emissions, the costs of constructing contaminated water treatment plants, reuse or before discharge at sea (Othman , 2014).

Recent studies in the field of environmental accounting have indicated the need to distinguish between the current environmental costs and the capital environmental costs of industrial companies to reduce the cost of environmental damage and risk reduction programs, reflecting the continuing decline in the cost of program operation. While the capital cost is spent once and is only repeated after the end of the useful life of environmental control equipment and tools.

Costs relating to a previous financial period or periods

Some environmental expenses are treated as past years' expense in the event of errors or omissions in the preparation of the financial statements for those years, in accordance with IAS 8 (IAS8, 2008), especially if they are relevant to the benefits of the company's activities and examples: (Al.Shehadeh, 2010)

- The expenses incurred by the company in accordance with the environmental laws for the disposal of pollution that has occurred have been sold in a previous period.
- The expenses incurred by the company for the disposal of hazardous wastes resulting from its activities in a previous period in case the risks of such wastes are not known to the company in the previous period and therefore the disposal costs can be considered as a correction to an error in the financial statements. In that previous period.

The Part II: Measurement and Disclosure of Environmental Costs

In this part, the study aims to measure and disclosing environmental costs, which are the focus of many studies in the field of environmental accounting, especially in the last decade of the twentieth century, due to the interest of financial information users in the serious economic effects of pollution.

In the first section, the accounting measurement of environmental costs will be identified by defining the concept of environmental measurement and the problems that arise. How to explain the environmental costs in accounting measurement and the requirements of measuring environmental costs by knowing the importance of measuring and the difficulties experienced by the accountant during the measurement process as well as identify the stages of measurement and identify the methods and approaches to measuring environmental costs.

The second section, which will address the nature of environmental disclosure by studying the concepts related to it as well as studying the requirements and constraints and factors affecting it, and also learn how to disclose environmental costs by knowing the methods of environmental performance disclosure and environmental reporting models at environmental disclosure, in addition to discuss the disclosure of environmental costs and obligations, and to identify environmental disclosure and its impact on the quality of financial reports, as well as the environmental information to be disclosed and its qualitative characteristics.

2.3 Measurement of Environmental Costs

The measurement process is a translation of the various activity processes in a more effective manner in decision-making. Thus, this requires that the accounting measurement of the company's operations in the environment include the environmental activity of the company. That accounting for environmental activities in the core of the accountant's work because most of the environmental information is of a quantitative and financial nature, the accounting profession must translate these environmental activities and determine the net contribution of the company to the surrounding environment .

2.3.1 Theoretical Framework of Measurement of Environmental Costs

It can be said that the valuation determines the value of the financial position, the measurement is the determination of the values of income statement items. This means that the environmental fixed assets must be recognized in the statement of financial position by determining their real value and also by measuring the outcome of the activity by meeting the expense income.

The environmental measures to eliminate the effects of the activities of the company as a result of the exercise of its activities, it applies to the concept of measurement as they are economic events affect the values of the financial statements, and the use of accounting methods and procedures for environmental events to register until reflected in the banquet money (Aldabbagh & Ibrahim, 2014).

Thus, environmental measurement is a translation of the activity of the company into the environment quantitatively or financially, through which environmental information can be obtained to explain to the users the financial statements of the company. Environmental measurement can be studied through the company or through society, from the company's point of view.

The environmental measurement is a number of costs incurred by the company as a result of its commitment and responsibility to the surrounding environment, and this obligation may be optional or compulsory under the law, and the measurement is based on actual cost (Sief, 2014).

Therefore, the process of environmental measurement is one of the foundations of the scientific framework of environmental accounting on which it relies to improve it.

The measurement of environmental accounting coincides with the emergence of some environmental protection laws, especially those relating to new ISO 14000 standards, which require that companies conduct environmentally friendly activities in various production and marketing processes, the measurement of environmental costs contributes to the provision of information necessary to plan the activities of the company on a realistic basis (Asma, 2015).

Despite the increasing interest of administrators and accountants in the environmental costs, environmental activities have not received enough attention to establishing clear rules for measuring them as the company is not environmentally responsible.

This is clearly evident from the results of the accounting operations, while they overlook data and information that show the role of the company in protecting the environment, this is due to the difficulty of measuring environmental costs, but these difficulties did not prevent the company from looking for methods which enable them to track and limit these costs because of their importance at the level of the company or society (Grzebieluckas, Camposl & Selig, 2012).

The importance of measuring environmental costs lies in helping it to provision of information to industrial companies to assist in the development of cost reduction programs with a view to participating in improving environmental performance, and report them to clarify the extent of response and commitment with the environmental laws in a manner that improves the image of the company. As well as for the reasons below: (Al Shehadeh , 2010)

Rationalization of decisions to determine the type of product, selection of raw materials used, product design and manufacturing method, selection of appropriate disposal method, elimination of activities that do not add value to environmental activities, consideration of alternatives investing in clean and environmentally safe technologies.

To assist the company in preparing environmental indicators for its various activities necessary to achieve control over the various pollution elements and to make appropriate decisions to reduce or limit pollution levels (Bagliani & Martini, 2012).

The precise definition of the cost of the products, and thus the proper correlation between the revenues and costs of these products, and contribute to the rationalization of pricing decisions, and accurate measurement of the cost of each product at the level of different sections, which leads to improve the profitability of the company and improve its reputation in the capital market (Al Sraj , 2016).

Analysis of the performance of some departments of the company such as product management, procurement management, quality control, with a view to reducing environmental costs, and to take environmental decisions supporting the center of the competitive company to increase profitability.

Environmental impact assessment of proposed new companies, where the analysis of environmental costs such as the cost of environmental control systems and the cost of solid waste recycling and conversion to finished products can reduce the

expected environmental impact of such companies. Thus, the environmental dimension is important in determining the economic value of the proposed company.

The lack of measurement of environmental costs has had a negative effect. Some accounting studies have shown that lack of interest in measuring and assessing environmental costs leads to the following negative environmental impacts: (Al Shehadeh , 2010)

Poor quality of environmental performance leads to the loss of the company as an environmentally friendly company, with legal and social consequences, and the company bears many sacrifices. In addition, the decline of production techniques and the aggravation of environmental problems to the extent that polluted production companies have no alternatives to allow them to comply with strict environmental regulations and laws, and the only way is the complete restructuring of production technology, which is not available to finance necessary, resulting in the exit of production companies from the market.

The decline in competitiveness and marketing performance (both domestic and external) and the decrease in the market share of the company due to the high costs of production due to the inefficient use of inputs and the use of unsafe inputs and production methods, resulting in accumulation of commodity inventory, the company is exposed to continuous losses and low return on investment.

2.3.2 Difficulties in Measuring Environmental Costs

Some consider that there are some difficulties in identifying and measuring environmental costs and reporting their actual results which are: (Al Sayed , 2014)

- The difficulty of limiting the elements of environmental costs: The problem arises from the fact that the environmental commitment of the company is the activity generated by the expenditure event and causing the elements of environmental costs is an unspecified concept, and its dimensions are not conclusively agreed from the practical point of view.

A specific agreement on what environmental obligation and the fact of its components would automatically mean the inability to identify and report elements of environmental costs resulting therefrom.

- The difficulty of separating environmental costs from economic and social costs: The overlap between economic, social and environmental activities leads to one of the fundamental problems associated with the process of measuring the environmental performance of the companies objectively.

For example the costs of research and development aimed at increasing the safety of the product can be considered social costs necessary to create a kind of prosperity and satisfaction from The products of the company within the customers' hearts, and can be considered environmental costs aimed at the safety of the customer when using the products and enable the recycling of waste for these products, economic costs can also be considered to give a competitive boost to the product in order to increase market share and increase the profitability of the company.

- Difficulty in linking costs with environmental returns: It is often difficult to judge the effectiveness and efficiency of environmental costs because of the difficulty of linking these costs to environmental returns.

In other words, the difficulty of meeting the costs of environmental performance over a given period of time with the environmental returns generated by performance during the same period, with two characteristics: a)It is usually not possible to express them in units of monetary measurement, but rather is suitable for descriptive measurement. b)The length of time between the date of occurrence of the cost and the return on it.

- Other difficulties: There are other difficulties in measuring environmental costs of which the difficulty of accurately identifying the environmental damage resulting from the economic activity of the company, and it is not easy to estimate the financial values of all environmental damage since some may have a market value such as losses of fisheries and tourism, others have no market value such as damage to human health because of pollution (Hamad , 2014).

2.3.3 Stages of Measuring Environmental Costs

The process of measuring environmental costs goes through two basic stages: the reduction of environmental costs and the classification of environmental costs according to the following: (Al Shehadeh, 2010)

First: The stage of inventory of environmental cost elements: the objective of this stage is to determine the total environmental costs at the company level through the applicable accounting system, which computes cost elements according to the following:

- Capital environmental costs: The cost items incurred by the company causing the creation of one or several elements of environmental pollution in return for the provision of machinery, equipment that contributes to reducing pollution for a period or for financial periods, capital costs include all cost items incurred by the company in the pre-purchase, installation, testing and operation of machinery, these include the fees paid to the engineering companies, external consultation for the workplace inspection, emission assessment and environmental hazards, feasibility studies and preparation of the remedial action plan (Zouina , 2011).

Accordingly, capital environmental costs are shown in the balance sheet as assets or as environmental capital expenditures. The depreciation of machinery and pollution control equipment over the consecutive accounting periods is included in current costs and shown in the statement of income as the current expense, as well as the recognition of emergency environmental commitments in the income statement if the amount of the loss is measurable (Cho et al , 2010; Foy,1990).

- Current environmental costs: A set of cost items incurred by the company for the implementation of environmental pollution control programs for one accounting or financial period (Durdan, Hassel & Upton ,1999), including the cost of workers' wages in the inspection and safety sections of the company, environmental safety materials and tasks, depreciation of capital pollution control equipment, pollution control, and the cost of dealing with warehouses in respect of environmental safety materials and tasks, fines and environmental losses, and the cost of using fixed assets (buildings and furniture) for environmental purposes (Keitel et al, 2011).

Second: Environmental cost classification phase: At this stage, the costs of pollution reduction programs can be categorized in industrial companies, the relative importance of environmental costs, which can be based on the type of environmental activism, the accounting tab or the environmental terms of reference, or the potential for tangible and intangible cost discrimination, however, the preferred tab of the

environment-related cost components internationally is as follows: (Schaltegger , 2015)

- Cost of materials related to products: Whether major or minor products or packaging.
- The cost of non-product materials: Is the purchase of materials such as energy, water and others that do not become part of the products but may become waste and emissions.
- Cost control of waste and emissions: These include the costs of handling, treatment, and disposal of waste and emissions, as well as the cost of damages.
- Cost of environmental protection: It includes preventive environmental activities such as clean production projects and the costs of environmental measurement and planning systems.
- Research and development costs: Include all costs related to environmental projects and environmental development.
- Intangible costs: Include the internal and external costs of intangibles such as environmental responsibility, future laws, productivity, the reputation of the company.

2.3.4 Entrances to Measure Environmental Costs

There are many entrances to measure environmental activities and then to disclose them. It depends on the descriptive side, where the focus is on the activities of the control of the environment in the areas of water and air pollution through the descriptive presentation of the positive and negative aspects of the company in the form of a list, and another model is based on measuring the actual costs of protecting and improving the environment such as land reclamation costs used for waste and waste disposal, and the costs of installation of pollution control devices.

There are many entrances to measuring environmental costs, which are as follows: (Emaraa ,2011)

First: Quantitative Entrance of Single Content: The quantitative measurement of a single object quantifies objects and phenomena quantitatively by a uniform standard that reflects a common property, so that the information resulting from the measurement of these objects and phenomena can be obtained from the mathematical

aggregation at the level of all its constituents, and the two-way distinction is made regarding the common standard used to measure environmental processes they are:

- Measurement using the social utility unit: This is based on the distinction between two types of value for the object, the value of the swap and the value of the use, and the "swap value" means something that has certain characteristics to exchange something the "value of use", refers to the ability of the object to satisfy a human need directly when used by the person, or the benefit of the object to those who use it or are affected by it, but despite the basis of the idea of unity of environmental benefit from a logic that revolves around what should be different from what is being, and the difficulty of measuring utility in practice is sufficient reason not to be used as a reliable basis in the field of environmental measurement.
- The method of monetary measurement: The measurement of financial accounting depends on exchange rates, as for environmental accounting, these prices are often not available or are an incorrect indication of value when the price does not reflect the benefit achieved by the commodity or service (Al Dahabi ,2009).

Second: Multidimensional Measurement Entrance: The multidimensional measurement portal measures objects and phenomena in different methods and measurements that provide information that reflects the contrast and multidimensional characteristics of the objects and phenomena measured, without being restricted to a particular measurement method, a specific measurement system or a single scale, information on the number of employees who have benefited from the pollution reduction program may have a better environmental impact than the information generated from the use of the monetary input portal (Xuefeng & Song , 2011), if the one-dimensional quantitative input is limited to the quantitative measurement method based on the original counting system, its scope extends to the quantitative measurement method of its various systems along with descriptive measurement, these two approaches are presented below: (Al Hamdani, 2011)

- Descriptive measurement method: Based on structural description of the characteristics or manifestations of a specific event so that the description reader can imagine the event on the nature and is one of the easiest methods that can be applied in the field of environmental measurement and the least expensive, it depends on the description of the environmental activities of the company in a

narrative style that is not subject to specific rules, but its absolute reliance on environmental measurement does not provide objective information on the environmental performance of the company.

Therefore, it should be used only in cases where quantitative measurement is impossible. In such cases, only descriptive information on the environmental performance of the company is better of the lack of information.

- Quantitative multidimensional measurement method: In this method, the quantitative inventory of the measurement process is then quantified and then transferred to its financial assessment of the money according to historical or estimated value, or disclosed in a non-financial quantity form due to the absence of an exchange rate or the inability to estimate the value of such quantities (Emaraa , 2011).

Third: Inland Loading of Environmental Processes and Natural Resources: This approach is based on the preparation of the Manual on Agricultural Natural Resources Accounts (e.g. Agricultural Land - Water) for the inventory of available natural resources classified according to use and depending on the situation in which each resource is located. The classification of natural resource accounts in terms of the extent or detail of these accounts depends on the size and quality of the desired environmental data (Asma,2015).

The purpose of environmental accounting in-kind is to describe the relationship between society and the environment. The general structure of in-kind accounting regulates a set of accounts (Freedman, 2014), such as accounts (an account of the air component - the account of petroleum energy and other energy accounts).

Fourth: Introduction to the Accounting of Actual and Standard Costs of Environmental Costs: Through this portal, comparisons are made to the company's data to help understand and rationalize management using some accounting indicators.

These comparisons include a comparison of environmental performance costs in the current period with changes during previous periods to demonstrate environmental performance, and comparison of costs of actual performance of environmental costs with the costs of planning or standardization in accordance with this approach, the following accounting indicators are used (Nasser & Al Khafaf, 2012).

The annual cost of pollution control per ton of material or product produced:

$$= \frac{\text{annual costs of pollution}}{\text{actual annual production per ton}} = \text{XX } \$/\text{ton}$$

Ratio of cost of control to industrial:

$$= \frac{\text{Average cost of control per ton}}{\text{Final industrial cost per ton}} \times 100 = \text{XX}\%$$

Percentage of the annual capital costs of pollution control to the total annual capital costs of the establishment (fixed assets and projects under working) and are calculated as follows:

$$= \frac{\text{Annual capital costs of pollution control}}{\text{Total annual capital costs of the entity}} \times 100 = \text{XX}\%$$

Percentage of annual net annual costs of pollution control to total annual production costs:

$$= \frac{\text{Current annual costs of pollution control (---) - Savings}}{\text{Actual annual production costs}} \times 100 = \text{XX}\%$$

Pollution control rate per ton of component:

$$= \frac{\text{The annual cost of controlling the item}}{\text{The annual quantity of emissions element in tons}} = \text{XX } \$/\text{ton}$$

Pollution control rate per component per year: This calculation requires the determination of the annual cost of control, the total amount of emissions and the control or prevention ratio for each component.

$$= \frac{\text{(The annual cost of controlling the item)}}{\text{/(Total quantity of element emissions during the year} \\ \times \text{Control ratio achieved for the element)}} = \text{XX } \$/\text{ton}$$

Pollution control rate for each individual affected by pollution is calculated as follows:

$$= \frac{\text{Annual costs of pollution control}}{\text{Total population of benefit} \times \text{Percentage of affected population}} \\ = \text{XX } \frac{\text{An affected individual}}{\$}$$

There is no doubt that the multidimensional measurement input is appropriate in terms of the practical application of mass measurement to the effects of environmental and social processes that fall within the scope of the environmental responsibility of the company, because of the information that provides useful in identifying the

different dimensions of the important environmental performance of the company and the nature of this information under this portal to three levels:

Level 1: Financial information on the results of measurement of environmental processes whose effects can be measured in the monetary unit.

Level 2: Quantitative information on the results of measurement of environmental processes whose effects cannot be measured by a monetary scale and which are available to measure non-monetary quantitative measures.

Level 3: Descriptive information that reflects the effects of environmental processes that cannot be quantified.

2.3.5 Methods of Accounting for Environmental Costs

Despite the difficulties encountered in the accounting measurement of pollution costs, there are many efforts and accounting attempts to achieve this measurement because of its importance through indirect methods: (Nasser & Al Khafaf, 2012)

Response or Impact Method: It is based on the assessment of the relationship between exposure to quantities of pollution and their impact on human or physical assets such as buildings, machinery, and equipment. This type of road is based on a causal link between pollution and the impact it has on human, material and natural resources.

For example, during the measurement of direct costs such as the cost of treatment, nursing, healthcare, medicines and others provided to a person with diseases caused by pollution, and measuring indirect costs include the inability of the injured person to work the same efficiency as before the incidence of diseases Resulting from pollution and environmental damage and can be measured by low productivity. Examples of this type of cost are the costs of premature death borne by society because of lost productivity (Nasser & Al Khafaf, 2012).

It is clear to us that the costs spent on environmental pollution control will lead to the desired level, thus avoiding any damage such as pollution and the spread of epidemics and diseases, while the social benefits are to the extent that can be reduced from the value of such damage, and to avoid or reduce costs direct and indirect the value of benefits to society.

Change Productivity Method: This method is based on observation of the

physical change in production associated with certain changes in the environment. For example, air pollution can negatively affect agricultural productivity, which, reduced production in quality and quantity.

The pollution may also lead to erosion of agricultural soil and thus decrease its productivity. Change or decrease in productivity the amount of decline in productivity is multiplied by the price of a ton of a given product (Hanan, 2014).

Replacement Costs Change Method: Pollution and environmental degradation may cause damage to various assets and resources such as agricultural land and built-up property. In such a case, these effects can be calculated financially by calculating the replacement costs of the asset affected by a new asset or the cost of returning it to its original state.

Examples of this type of cost include the replacement or repair of an air- it should be noted that this approach is difficult to apply if the assets affected are assets of historical or cultural value (Hanan, 2014).

Preventive Costs Method: In general, people prefer to avoid risks and give priority to measures that prevent them from accidents, environmental disasters and contaminants of various types such as radiation and nuclear accidents.

So it is preferable to stay in areas far from danger despite the low prices of buildings in the surrounding areas. The price difference reflects the amount of sacrifice that represents the environmental costs in this case (Hamad, 2014).

Value of real estate method: The price of the specific property is considered a land, a building, or other. It reflects several factors and characteristics such as the age of the property, the quality of construction, the number of rooms in addition to other factors related to the site such as light, the view, air quality, population density, proximity to service centers and others.

The previous factors combined, assuming the stability of the previous factors except for environmental factors, can determine the environmental impact represented by noise, odours , gases, dust, emitted and all other forms of pollution on the price of the property. Many studies have shown a decline in real estate prices when approaching the source of pollution compared to his counterpart, which has the same advantages but in pollution-free areas (Pearce, Atkinson & Mourato, 2006).

Wage Differences Method: The method of wage differences is like that of real estate in its theoretical basis, but differs in determining the acceptance of individuals by increasing wages and exposure to health risks such as infection-related diseases and premature death, in return for increased pay, compared to those who do the same work in a pollution-free zone. The difference between the two values represents the cost of pollution that individuals wish to bear in exchange for the risk of pollution (Pearce, Atkinson & Mourato, 2006).

The Cost of Travel Method: This method is based on the existence of non-market environmental goods represented in natural places and recreational sites such as parks, forests, beaches and lakes, which do not have a market price. The basis of this method is the recognition of individuals and their willingness to pay cash to travel to sites with certain environmental features based on this, is a rare resource for any family.

In other words, an individual or family has the opportunity to allocate costs at the time of travel regardless of its monetary cost. Generally, this method devotes environmental values by comparing one site to another with environmental qualities different the cost of travel is similar to cash and time (Asma, 2015).

2.3.6 How to Measure Environmental Costs

First: Accounting for Direct Environmental Costs: This section includes the environmental activities carried out by the company either on the basis of a legal text or based on its responsibility towards the society. These activities include the following: (Al Hamdani, 2011)

Improving the working environment: The monetary costs of improving the working environment can be measured on the basis of the actual costs incurred by the company as a result of the improvement of these environmental conditions. These costs are the value of the equipment required for this procedure, as well as operating and maintenance expenses for such equipment, industrial safety, and security guidelines, and may result from non-compliance of the company with the necessary laws and instructions to avert damage and injury to some workers.

Preservation of the environment and avoidance of pollution causes: The environmental costs incurred by companies arising from pollution control are as

follows: Costs of machinery and equipment used in pollution control, operating and maintenance expenses arising from the use of special machinery and equipment in pollution control, costs of treatment of industrial waste and pollutants before and after placing them in waterways or in non-allocated areas.

And the costs of processing and disposal of production waste and removal of damages. In addition to pollution disposal costs. Contraindications as a result of the activities of the company, the cost of training employees in relation to environmental activities, such as the operation and maintenance costs of related equipment for improving environmental performance.

Improving product specific activities: Compliance with quality standards and safety conditions in the product reduces the risk of exposure when using these products and provides protection and safety for this use.

Monetary measurement of the environmental costs of this activity can be made based on actual costs incurred by the company the quantitative measurement of this activity can be carried out based on the quantity of product rejected by consumers due to non-conformity with international standards and requirements and safety requirements. Quantified based on the number of complaints submitted to the company for non-standard product specifications and the conditions required matching.

Second: Accounting Measurement of Indirect Environmental Costs: Indirect costs are the costs of resources consumed during the production process whether these resources are soil, water or wildlife from plants or animals. The cost categories associated with the environment, according to the publications of the International Federation of Accountants as follows: (Sief, 2014)

Material costs for production outputs such as natural resources and other resources that are converted into finished products; material costs for non-product outputs such as purchases and treatment of energy sources and other materials that become outputs of waste and emissions.

The costs of controlling and controlling emissions and wastes are the costs of reclamation and treatment of associated waste costs as compensation for environmental damage resulting from the activity of the foundation and the costs of

prevention related to environmental management are the costs of prevention of products that comply with environmental measurement standards.

In addition to research and development costs related to environmental issues and costs associated with the company to assume its responsibility towards members of the community and these costs it is to create projects that improve the environmental image of the company (Al Shehadeh, 2010).

Quantitative measurement of the costs of environmental conservation and avoidance of pollutant, pollution can be made by comparing the permitted levels of pollution determined by international and local laws and regulations and actual levels.

The descriptive measurement of these activities can also be carried out by describing the effects of such impacts and such phenomena as diseases community and the extent to which they are hazardous to public health or damage to plants or animals (zweina, 2011).

2.4 Disclosure of Environmental Costs

Environmental disclosure is one of the components of the comprehensive disclosure. It contributes to meeting the needs of financial statement users and concerned parties in financial information that helps in assessing the efficiency of companies with respect to the use of economic resources and their contribution to the fulfilment of their social responsibility with regards to protect the environment and preserve their resources, and sparing society the risk of contamination.

2.4.1 Theoretical Framework of Disclosure of Environmental Costs

The disclosure of accounting and other information plays an important role in the business world as it provides all investors with the information necessary for them to make various economic decisions. Accounting disclosure is also the procedure by which accountants can express their efforts in providing accounting information.

There is an agreement in different definitions for researchers of the concept of accounting disclosure one point is to provide accounting information that helps in making decisions while disagreeing over the extent, type and amount of accounting information disclosed (Albiati,2007).

The information disclosed in the main financial statements is the statement of financial position, income statement, statement of changes in equity and cash flow statement, as well as supplementary notes, in accordance with American and International Accounting Standards.

Accounting disclosure represents the essence of accounting theory and requires that final financial statements of accounting policies and information should be disclosed in full, in a comprehensive and clear manner, in addition to the notes to these financial statements, in order to enable parties to make these decisions.

The attention of accounting thinking stems from environmental disclosure based on the fact that the information related to environmental performance is of a financial and quantitative nature, which directly affects the financial position of the company and the result of its activity. The financial statements must reflect the actual and potential commitments that result from the company's non-compliance with environmental protection laws. Despite growing interest in accounting for environmental disclosure, it is still new (Dejean & Martinez, 2009).

Environmental disclosure can be defined as the process by which information about environmental obligations arising from the company's daily activities is presented and the extent to which the company responds to these commitments so that different stakeholders can obtain information necessary for planning, monitoring and performance evaluation (Abdel Sayed, et al, 2009).

It is also known as the presentation of data, information on environmental activities established in the lists, periodic reports and accompanying notes, which facilitates the task of users of financial data and information in assessing environmental performance and rationalizing decision-making (Stanwick & A. Stanwick, 2000). In addition, environmental disclosure types can be categorized as:

Optional disclosure: Is intended to provide additional information in excess of what is required by the standards and legal legislation and is undertaken, where the company initiates to provide this additional information to meet the needs of users (Alqatati, 2007; Ahmad, 2014).

Compulsory disclosure: This disclosure is made based on the accounting standards issued by professional organizations that require companies to disclose the information necessary to users of financial reports, in addition to what is required by

the relevant bodies such as the Capital Market Authority, which obligates stock-issuing companies to provide minimum information to investors in accordance with the rules and requirements of listing those companies in the market. Compulsory disclosure reduces information asymmetries between management and investors, as well as reducing the social costs that investors must search and obtain information (Hanan, 2014).

2.4.2 How to Disclose Environmental Costs

The types of items that the company considers environmental costs be defined as all costs associated with the impact of the company's activity on the environment, such as the cost of solid waste disposal, in addition to the costs incurred by the company as a result of its compliance with environmental laws, which is also borne by the company to meet environmental risks, environmental costs often improve both operational efficiency and environmental efficiency (Ali , Inclan & Petroni,1996).

Therefore, the company must identify items that fall within environmental costs, and the distribution of environmental costs that are included in the income statement should be disclosed and analyzed in a manner consistent with the nature and size of the company.

Also, costs incurred by the company in the form of fines or irregularities due to non-compliance with environmental laws or in the form of compensation paid to parties affected as a result of environmental pollution associated with the company's activity, where fines and compensation are different from other environmental costs, and do not result in any benefit or return to the company, and therefore must be included in a separate statement (Ahmad, 2014).

The importance and benefits of environmental cost disclosure lie in that it reduces product cost better, and reduction resulting from an unwillingness to maintain two sets of accounting records, which leads to consistency of the information used by the management and the external user when making their decisions. Thus, a comprehensive report that reduces the process of disclosing information to some users (such as financial analysts), and those allowed to all other users (Alqatati, 2007).

Consequently, there are several requirements for disclosing the environmental costs that must be met in the financial reports. Including, describe the costs and

environmental obligations because identifying any of them requires the exercise of personal judgment, and the basis for measuring environmental obligations should be disclosed (Flood, 2015).

Disclose any costs incurred by the company as a result of fines or penalties for non-compliance with environmental legislation and for compensation paid as a result of damage caused by previous environmental pollution. Also, the disclosure of the amount of expenses capitalized during the current period separately, and disclosure of the environmental costs recorded as contingency expenses separately. In addition, disclose any incentives granted to the company such as grants and tax credits to contribute to the costs of environmental protection borne by the company (Omar,2017).

The problems of the environmental costs disclosure are that many types of information related to environment- related costs do not exist in accounting records. Accounting records do not contain much information about future environmental costs, which can be relatively high information because traditional accounting systems concerned with the facts that have occurred before (Ben Bouziane & Ben Al dab,2012).

Accounting records also lack much of the less obvious environmental costs, for example, the costs incurred as a result of loss of access to markets with restrictions on the product associated with environmental pollution, loss of access to insurance and finance services, such types of costs may be difficult to estimate for their financial importance to the company, but at the same time, they cannot be omitted.

Environmental cost information may often be hidden by being included in overhead accounts. This classification of general expenses may contain important information on environmental costs, legal expenses and other information that the director can use (Elul, 2013).

To help make rational economic decisions, for example, the costs of disposal of hazardous wastes that may be high for a particular production line, and these costs are low for another production line that does not use these hazardous materials. In this case, the allocation of waste disposal costs based on production volume will be not accurate product pricing and other decisions based on this information will be inaccurate.

Therefore, the Securities and Exchange Commission (SEC) has established rules for disclosure of obligations and environmental costs. Along with, to the standards of accounting and environmental accounting adopted by the Financial Accounting Standards Board (FABS) and other emergency losses in the financial statements, the committee to monitor the operations of the stock market has adopted three rules governing the disclosure of obligations and environmental costs of companies listed on the stock market: (Ahmad, 2014 ; Feller, 1993)

Item 101 of Regulation S-K: The basic rule require from the companies to disclose material effects in compliance with US federal laws and local laws of each state issued or adopted for the regulation of the environment, including disclosure of capital expenditures, profits, competitive position of the company for the current year and future years and any effects on the environment can be impressive.

Item 103 of Regulation S-K: This rule states that any suit filed in a large degree in the same cases arising under any federal courts or provisions issued or adopted to regulate the discharge of substances in the environment or for the purpose of environmental protection is not considered ordinary routine litigation incidental to the work.

Item 303 of Regulation S-K: The rule states that management discussion and analysis is a narrative and analysis of financial statements and conditions that may include important and predictable environmental obligations. This rule requires companies listed on the US Stock Exchange to disclose and inform management discussion analysis which includes demand trends, commitments, and uncertainties but are known to management and are likely to have material effects.

Environmental costs information should be disclosed in such a way that the users of the financial statements can understand this information for different types of investors, the choice of where to disclose environmental information depends on the nature of the information and its importance(Hamad, 2014).

2.4.3 Disclosure of Environmental Information in Financial Statements of The Company

The disclosure in its current form did not meet the needs of the users of the information on a company social responsibility to protect the environment. Hence,

there was an urgent need to develop the disclosure standard in accounting thinking to include the environmental disclosure of environmental information in the form of explanatory lists and traditional reports (Fares & Zuwifi, 2001).

With regard to the nature of environmental information, either descriptive information or quantitative information that refers to environmental measures such as the level of emissions, or financial information can be expressed in monetary units and descriptive disclosure of environmental information is more prevalent in practice than financial or quantitative disclosure.

The value and importance of environmental information is very high for decision-makers, as users of financial reports believe that environmental information is important for their decision, they look for it in the annual reports of companies, and if they put it in the ranking after the financial information in terms of importance (Shibasaka, 2003).

The disclosure of environmental information consists of two parts which disclosure of the financial statements that information of a digital nature derived from financial records. Financial and environmental information must be disclosed together as an integral part of the overall performance of the company. Which can be mentioned in the financial statements but are considered necessary.

They are mentioned in the notes and notes attached to the financial statements and as accounting information to explain the figures and results in the financial statements and the external information that is essential for the investor (Albiati, 2007).

Disclosure outside the financial statements includes explanatory notes and explanatory notes to the financial statements; Additional data included in parentheses (Hamdan, 2009); Additional tables and supplements; Report of a board of directors; And auditor's report (Dillard ,Yuthas & Baudot, 2016).

Two methods can be distinguished in the preparation of such reports. The first is to integrate environmental performance reports into economic performance reports as an integrated unit, and the second to produce independent environmental performance reports. These two approaches cannot be considered as complementary but mutually complementary.

First: Disclosure of Environmental Information Within the Financial Statements:

According to the first method, this type of report is prepared by including financial environmental data and information within the recognized financial statements (statement of income, statement of financial position and cash flow statement) as follows:

Income Statement: In accordance with Standard No. 1-96 (SOP), the companies in the income statement have to disclose whether the costs of environmental treatment were charged as operating expenses? If the answer (no), and to be considered as expenditures (Ahmad, 2014), this reflected in the statement of income, adjusted for environmental effects in the table (2.1) available in appendix 2.

Statement of Financial Position: The SOP (1-96) provides for the inclusion in the balance sheet of many assets relating to the treatment of environmental obligations, including debtors from responsible parties, insurers and former owners, and these amounts should not be compensated for environmental remediation obligations. The amounts have been recorded as assets (Ahmad, 2014). The table (2.2) shows the statement of financial position adjusted for environmental impacts, available in appendix 2.

Statement of Cash Flows: The cash flow statement includes three types of flows which are cash flows from operating activities that operating cash flows of the company's activity must be separated from the operating cash flows of the environmental activities. Furthermore, cash flows from investing activities also need to distinguish between the flows of investments in the purchase of economic assets from those for investments in the buy of environmental property (Saleh, 2009).

Cash flows for financing activities: Here, too, there must be a distinction between the inward and outward flows of economic assets and liabilities than those of environmental assets and liabilities (Beltratti, 2012). The table (2.3) shows the cash flow statement adjusted for environmental effects, available in appendix 2.

Non-financial statements are addressed in the supplementary notes to the financial statements. Examples include:

- Environmental policies adopted by the company.
- Detailed description of hazardous waste disposal operations.
- Environmental impacts of production processes and ways of reducing them.

- Environmental programs for the conservation of natural resources to achieve sustainable development.
- Environmental certificates and licenses obtained by the company.

Second: Disclose Environmental Information in Independent Environmental Reports:

Independent environmental performance reports are optional either in the form of these reports or in their content, environmental information is disclosed in separate reports on traditional financial reports prepared by companies.

The form and method of disclosure of environmental information can be divided into three basic methods. As for descriptive reports, or as quantitative reports that contain quantitative information on environmental performance supported by numbers, statistics, ratios, and rates within the environmental report, such amount of emissions, amount of waste, etc.

In other words, these reports provide information that cannot be measured by a monetary measure and are available to measure non-monetary quantitative measures. Also, as financial reports which information on environmental performance can be obtained in a financial form that enables the determination of the cost and return of environmental activity. Any reports that express all its vocabulary in a critical way (M & A, 2004; Ahmad, 2014).

The divergence of users' wishes for the disclosure of environmental information has had a significant impact on the multiplicity of reporting formats adopted in environmental disclosure, resulting in the absence of a single standard model that can be used in this area. Therefore, the different level of user awareness of the information making the information levant to a particular party may not necessarily be appropriate for another party (Abdel Sayed, Sultan & Yousef, 2009). Some examples of models for environmental disclosure will be explained as follows:

First: Environmental Reporting Working Model: (Alqatati, 2007)

Table (2.4): Shows The Financial Reporting Work Model at The Time of Environmental Disclosure

About (Company, Factory)	Identify the activities of the company and its products and their impact on the environment.
Policies, objectives and environmental objectives	Identify the environmental considerations and their fields especially when implementing the operations adopted by the company.

Environmental management analysis	Discuss how to manage the company to achieve its goals and environmental goals.
Environmental performance analysis	Describe the progress of the company by means of the main indicators and measures of performance and the corresponding environmental analysis of the activities related to the company.
Special vocabulary (optional)	Having additional information for users to understand what is going on around the company.
Third Party Ray (Optional)	Support independent opinion of the extent of reliance on some or all of the information contained in the environmental report.

By observing the previous table, it is clear that it has been divided into six sections:

Section I: A history of company and operations that are environmentally polluting is presented

Section II: Clarifies the environmental policies and objectives, and clarifies the intention of the company in managing its relationship to the environment.

Section III: Describes the system of environmental management performance and the steps used by the company to identify the environmental performance and the continuous follow-up of environmental performance.

Section IV: Explains to the reader how strategic management can reach its objectives using statistics, financial and operational data and related scientific aspects.

Section V: It is to clarify the meaning of environmental terms that may be unknown to readers.

Section VI: This is what the environmental auditor can confirm in his report to some environmental information related to the company.

Second: Model United Nations :(Abdel Sayed, Sultan & Yousef, 2009)

Table (2.5): Shows The Model for The United Nations Financial Report Submitted in 1991

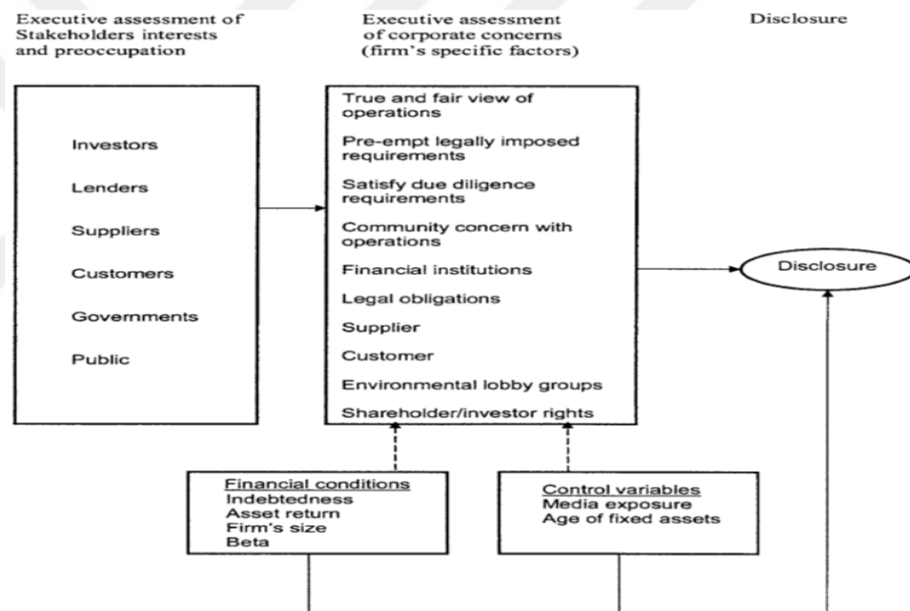
<p>What the Director's Report contains:</p> <ul style="list-style-type: none"> * Environmental sources related to the company and industry. * Environmental policy followed. * Improvements made since the adoption of environmental policy. * Degree of response to government laws and regulations. * Environmental legal and physical sources surrounding the company. * Effects of environmental protection on invested capital and gains. * Costs of materials loaded on current operations. * Amount of materials sent during the period. <p>Notes in the financial statements</p> <ul style="list-style-type: none"> * Accounting policies for recording liabilities and reserves for disasters, and disclosure of contingent liabilities. * Amount of liabilities "in dollars" and reserves and what was achieved during the period.
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- * The amount of contingent liabilities "in dollars".
- * Tax effects.
- * Government grants during the period

In its efforts to protect the environment, the United Nations submitted a report in 1991 emphasizing the importance of companies disclosing their environmental activities, with the government following up on the observations contained in the report as shown in the table above. It is clear from the observation of the report that it is somewhat general, with difficulty in segregating other environmental costs, especially with regard to capital expenditure.

Third: Stakeholder Model for Environmental Reports: (Cormier, Gordon & Magnan, 2004)

Table (2.6): Shows The Stakeholders' Model for Environmental Reports



According to this model, the company's managers must communicate with different groups to achieve or protect environmental disclosures. The main objectives of this model were to determine who are the stakeholders in the company and to identify the types of impacts they exert. Disclosure in this form is defined as information communicated to stakeholders through the company's annual and environmental reports (Llena, Moneva & Hernandez, 2007).

The authors of this model believe that environmental managers should be the focus of environmental disclosure because they are the managers who implement the broad disclosure policies established by the board and communicated by the executive

director to other managers. That is, there is a series of decision-making processes initiated by the board of directors that take into account the interests of the stakeholders.

Once an environmental manager has been taken, the individual who makes the daily implementation decisions that ultimately affect the actions taken and reflect the disclosures of the stakeholders. Actions on the reporting issues are returned to the chief executive officer and the board (through the audit committee or the environmental committee) externally detected.

Fourth: Oil Sector Companies Model: (Abdel Sayed, Sultan & Yousef, 2009)

Table (2.7): Shows The Oil Sector Companies Model

<p>First: Environmental and natural assets</p> <p>1. Natural assets</p> <ul style="list-style-type: none"> • Reserves from non- renewable natural resources • Reserves from renewable natural resources <p>2. Environmental assets</p> <ul style="list-style-type: none"> • Circulation * Pollution bonds • Fixed * Environmental deposits • Environmental reputation • Environmental Performance Bonds • Environmental bonds <p>Second: Economic assets</p> <ul style="list-style-type: none"> • Current assets • fixed assets 	<p>First: Current and potential environmental liabilities</p> <p>1. Current liabilities</p> <ul style="list-style-type: none"> • Obligations of an agreement • Medical claims • Contingent liabilities • Liabilities for natural assets <p>2. Future (potential) liabilities</p> <ul style="list-style-type: none"> • Obligations of an agreement • Medical claims • Contingent liabilities • Liabilities for natural assets <p>Second: Equity and other liabilities</p> <ul style="list-style-type: none"> • Property rights. • Long-term liabilities. • Short-term liabilities
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The oil sector prepares its accounts on the basis of the unified accounting system, whereby all types of expenses and revenues that are appropriate to the nature of the operating units are determined regardless of the type of activity and in the final accounts according to generally accepted accounting principles.

Environmental expenditures can be classified as capital expenditures and operating expenses. Which means opening separate accounts for each activity so that expenditures can be monitored and reported, bearing in mind that all units whose business is linked to environmental assets must work to show these assets in their budget as well as in the oil reserves, trees, etc.

In return, all liabilities and liabilities associated with these assets should be shown in the final lists as shown in the table (2.7), depends oil companies in Libya on

such a model.

Indeed, if the preparation of financial reports is a deregulation of the responsibility of management towards shareholders, and environmental reporting is a deregulation of the responsibility of management to society, the environmental reports under the current accounting systems encounter a range of obstacles (Cormier & Magnan, 2007).

Where, there is no agreed pattern of environmental reporting, some of which are in the form of a series of separate reports on financial performance and others mixed with financial performance. Moreover, the difference in the quality of information covered by environmental reports. Some environmental reports cover only the costs of companies to reduce pollution, others address the environmental obligations of companies and the impact on their assets, and include some environmental policy disclosure reports (Hanan, 2014).

In addition, some environmental information is disclosed in the traditional financial statements, some in the notes to the financial statements or in detailed reports. Some companies resort to disclosure in other media such as the electronic network. The environmental disclosure ranges between quarterly periods as the stock exchange committee requires the stock exchange to a period of 3 years and some companies do so.

As that, companies are hesitant to disclose environmental information out of concerns with potentially increased proprietary costs, to identify the impacts of the SEC's new guidance with respect to company disclosures (Savage, et al, 2001).

After the oil spill incident in Alaska in 1989 by the naval vessel Exxon Valdez, companies in the oil industry and many companies whose activities have an impact on the environment have increased and significantly improved disclosure of environmental information on cleaning costs in annual or environmental reports (Suttipun & Stanton, 2012).

It is clear to us that the disclosure of environmental costs provides users of the financial statements the ability to assess the company on the impact of environmental performance on the financial position, and if the company stabilizes the independent reporting method of environmental performance disclosure, there is a set of elements that must include this report may not differ from company to company (AlSufi, Al

Qatish & Qarqeesh, 2012).

The main objective of the financial statements is to present the financial statements as a result of the company's operations and financial position in all fairness and clarity in the light of the accepted accounting principles. The primary objective of the financial statements can be described in the form in which the financial statements are presented. Such information is fair and honest and is prepared in accordance with agreed accounting principles (Saleh, 2009).

The financial statements also aim at providing the beneficiaries, especially investors, with information that enables them to judge the financial activity of the company and determine the profit on the stock. The state also helps determine the taxes on the company, as well as managing the company to benefit from the financial reports in the implementation of control and planning (Omar, 2017).

With companies desire to join the global financial markets and gain investor confidence and join the more advanced countries, measuring and disclosing corporate risk is one of the most important accounting practices to be applied. It is necessary to provide financial and non-financial information on the types of risks facing these companies. Therefore, the disclosure of environmental information, whether in the financial statements or independently, will lead to an increase in the quality of accounting information, through the availability of the quality characteristics of the accounting information set out in Recommendation No. 2 of the accounting standards recommendations of the US Accounting Standards Board (IASB), which provide a framework for the quality of financial reporting (Omar, 2017).

The focus on environmental impact has been on the rise in many companies around the world. However, most companies are struggling to keep up with ever-increasing demands. As this trend continues, industries face challenges in managing productivity that increase revenues and profits without causing harm to the environment (Magara, Aming & Momanyi, 2015).

Reducing the cost of production due to financial support, low cost financing or preferential tax treatment increases the volume of the company's activity. The company uses its resources as efficiently as possible while protecting the environment from the harmful effects of pollution, which helps to increase profits.

One of the strategies to integrate the costs and benefits associated with the

environment in financial management accounting system to ensure the efficiency of resources, including the environment. EMA systems define and regulate environmental costs, which helps environmental managers, and justify cleaner production projects and to identify ways to save money and improve environmental performance (Magara, Aming & Momanyi, 2015).

In this regard, the organization becomes self-regulatory by tracking environmental costs in order to achieve cost savings and thereby maintain cash flows. Specific management accounting techniques are useful in identifying and allocating environmental costs such as input and output analysis, flow cost accounting, activity-based costs (ABC), and life cycle costs (Omar, 2017).

Environmental disclosure creates better relationships between the company and stakeholders, such as government agencies, shareholders, employees, customers, suppliers, financiers and pressure groups, and the use of disclosure as a means of informing that the company is voluntarily disclosing environmental information (Hajj, 2017).

The attempt to improve the image of the company within the society in which it is active, especially for companies whose reputation has been damaged, which has strengthened the confidence and respect of society and individuals in companies, and thus increase the demand for their products due to the occurrence of accidents or environmental disasters and the expansion of investments; The end on the outcome of its activity and its status of money, and its value. And to prepare for the application of environmental laws and regulations that will require disclosure of environmental information and are expected to be binding on all companies (Hajj, 2017).

Environmental costs are considered the best weapon for the application of the polluter pays principle. The goal is to make those responsible for environmental problems bear the cost of environmental impacts. And the state by using economic instruments budgets and other standards make them responsible for payment of polluted and destroyed by imposing fees and taxes on pollution of vehicles and others (Hajj, 2017).

The disclosure of environmental costs separately in the financial statements allows for measurement of their usefulness, such as assisting investors to clearly see the policies applied by the company to protect the environment and thus rationalize

their decisions regarding the company (Ben Bouzaine, & Ben Aldab, A, 2012).

The impact of environmental disclosure on the cost of capital is demonstrated by the fact that environmental disclosure should be mandatory, especially in companies with a negative impact on the environment, and to issue a number of strict laws and regulations governing the disposal of waste from contaminated industries, as well as the need to provide disclosure to these companies information on pollution and its reasons for the fulfillment of the obligations of the corporation in the field of pollution control (Ben Bouzaine, & Ben Aldab, A, 2012).

The researcher considers that financial reporting is not an end in itself but is intended to provide information that is useful in decision-making, whether financial or non-financial, and therefore there is a need to demand new standards for measurement and disclosure and to increase the amount of information disclosed to meet new information requirements, which leads to the development and improvement of the disclosure of information in the financial reports, it results in increased quality of financial reporting and the potential for reliance on decisions to improve environmental performance.

The Part III- Environmental Performance

2.5 Assessment and Improvement of Environmental Performance

In order to find the most effective way to address and reduce the types of pollution, it is necessary to know the damage they cause in the form of deterioration and reduction of the ecological and economic value of the natural habitat and the health of the organism translated in the form of costs to be borne by the affected, therefore, an optimal level of pollution must be found that matches the benefits, the amount of pollution and the damage expected to be reduced, companies need to measure and evaluate their environmental performance to meet the wishes of stakeholders from within and outside the company, and have therefore turned to environmental management systems as tools for managing, monitoring and evaluating their environmental and social performance. They have also begun to use the standards provided by global professional bodies to help companies identify indicators measurement of environmental performance.

2.5.1 Concept of Environmental Performance

Given the critical importance of measuring and accounting for environmental costs in completing the intellectual framework of environmental accounting, the accounting assessment of environmental costs and environmental performance is only part of one of the environmental accounting problems, which is the measurement and accounting procedures for environmental costs through which environmental performance can be assessed for companies.

The environmental performance of the company is to protect the environment from pollution and remove the damage caused by the exercise of its activities (Emaraa, 2011), it can be defined as the activities and operations carried out by companies compulsory or optional that prevent the environmental and social damage resulting from the activities of the company's production or service, as defined by ISO 14013 as the results obtained by the company through its dealings with the environment (Hussein & Nasreeya, 2011).

While in the field of environmental management it is defined as the various measurable results in the environmental management system, which is related to the control of the company in all its environmental aspects according to its environmental policy, its objectives and environmental trends (Rabohe, 2016). Finally, environmental performance is an essential tool that reflects the environmental position of a company interested in the environment.

To include dimensions in environmental performance it is proposed that they be represented in two axes: vertical axis refers to the internal / external dimension, and horizontal axis refers to the after-effects / processes, so that the convergence points of these two axes highlight the structure of the various dimensions of environmental performance summarize these dimensions in the following table: (Renaud, 2004)

Table(2.8) Shows The Structure of The Various Dimensions of Environmental Performance

	Results	Processes
Internal	Financial Impact	Product and process improvement
External	Environmental Impact	Relations with other parties and stakeholders

Source: (Renaud, 2004)

Thus, the dimensions of environmental performance are: (Renaud, 2004; Al Aib & Baka, 2011)

After the environmental impact and image of the company, and indicates the general reputation of the company and the degree of fulfillment or exceeding the standards required by laws and legislation with respect to radiations and emissions.

After stakeholder relationships, and refers to the interaction between the company and the various external departments, allowing the concept of environmental performance to indicate the ability of the company to build relationships with these parties in relation to their environmental performance.

After financial impact, this dimension purifies the financial implications of environmental practices such as reduced product and process costs and reduced legal control costs. These dimensions represent external and environmental factors of performance.

After improving the product and processes, the integration of environmental practices within operations produces competitive advantages for the company such as improving quality, increasing productivity and encouraging innovations. This dimension represents the internal and organizational factors of performance.

2.5.2 Requirements for Improving Environmental Performance

Companies are trying to carry out their activities in a manner that minimizes or eliminates negative environmental and social impacts and maximizes positive impacts. They must preserve natural resources and the vital environment of the current generation and future generations. To achieve this, the company adopts a systematic program to reduce hazardous waste, negative impacts, study environmental costs, and develop strategies to improve environmental performance.

The importance of improving the environmental performance of companies by integrating environmental indicators into their long-term strategies, not just compliance with environmental laws and regulations, has an impact on achieving many of the company's strategic objectives such as: Community service, maximizing profit, customer satisfaction, realize the concept of full quality management and enhance competitiveness.

Companies should initiate a strategy to implement environmental management

systems and adopt one or more strategies to improve environmental performance, as this is a competitive weapon that guarantees its survival and continuity in the global market and its future success is (Gad Mawla, 2012).

As a result, the International Organization for Standardization (ISO) has issued a special environmental protection standard (ISO 14000), which has resulted in considerable competition among companies to comply with such standards, due to the increasing demand from consumers who are primarily interested in buying environmentally friendly products at reasonable prices.

This has been an incentive for many companies to establish departments or departments specialized in environmental management, coordinating with other departments of the company and abroad through the disclosure of this information and to include them in their financial report (Graff, 1998).

Improving environmental performance helps to improve the image of the company to its customers, which positively reflects its competitiveness. Companies should take an interest in product life cycle analysis, study the environmental impacts created by this product at each stage of production, and the role of environmental management in companies to comply with environmental laws and regulations only, but extends its role to include the current and future environmental costs in the analysis and strategic planning of the company (De Burgos-Jime'nez, et al, 2013).

The use of environmental information in a performance appraisal system gives a comprehensive picture of the company's position in society as an independent entity based on the profitability index as a means of evaluating performance.

However, as a result of the company's responsibility towards external parties (society and environment) obligations to meet their responsibilities towards them whether it is social responsibility or environmental responsibility, and the availability of information on the responsibility of the company towards the external parties can change the goal of the company from the mere profit to the service of the community or the preservation of the environment beside the profit and this means that the goal of the company becomes an integrated set of goals through which it seeks to the service of different parties dealing with the company, thus ensuring their survival in business.

It is clear to us that the interest in improving environmental performance is necessary for any company that wishes to continue and grows in the market. This was

optional (improving the image and reputation of the company to its customers) or compulsory (due to compliance with environmental laws and regulations) inevitable for companies especially for oil companies.

Environmental performance is a necessary and essential condition for improving economic performance. Then, improves the performance of a company. This means that improving the company's relationship with long-term stakeholders means maximizing the company's revenues while reducing costs (Broch & Dahimi, 2011).

Improving environmental performance will facilitate market access by reducing pollution and various environmental impacts, which will improve the overall image of the company and ensure that its products meet the needs of consumers. Through an (OCDE) survey of 4,000 companies in seven countries, 43% have evaluated the environmental performance of their suppliers to meet the environmental requirements they have committed to. Thus, maximize returns and green purchasing power (Broch & Dahimi, 2011).

Interest in the legislative aspect helps improve environmental performance and thus reduces costs by enacting laws such as California's Electronic Waste Recycling Act, which came into force in 2007. Recycling of industrial companies leads to economy in raw materials, energy, and reduces industrial waste significantly (Lanoie & Llerena, 2015).

Improving the environmental performance of the company will reduce the costs of equipment, energy consumed, and services related to production and capital costs. For example, the British Petroleum Company (BP), which reduced the carbon dioxide emissions by 10% compared to 1990, during their application to production theories and reducing leaks (Bouafih & Burezk, 2013).

2.5.3 Concept and Importance of Environmental Performance Assessment

Environmental performance assessment is a system designed to ensure that available resources are used by matching actual performance with planned normative performance and to ensure compliance with the various environmental laws.

Environmental performance assessment is a method to identify, measure, analyze and track the costs and benefits of environmental activities and programs carried out by companies to protect the environment against the adverse effects of

their activities in the light of a set of environmental objectives, requirements, criteria and indicators to support and rationalize various decisions on improving their environmental performance (Chen, Yu & Hu, 2017).

ISO 14031 defines environmental performance as an input to facilitate management decisions on environmental performance by selecting indicators, gathering and analyzing data, and evaluating information in accordance with standards of performance, reporting, information delivery and periodic testing. Finally, this approach is developed (O'Reilly, Wathey & Gelber, 2000).

The importance of environmental performance assessment is reflected in reducing environmental risks resulting from the activities of the company; reducing energy consumption and thus reducing costs; Improving the image of the company; Integrating the concerns of the company within the framework of the sustainable development strategy; Meeting consumer demand for environmental products; Identification of environmental impacts. And, identify the possibility of better management of environmental impacts such as pollution prevention (Rabohe, 2016).

The assessment of environmental performance in companies is due to many reasons, the most important of which are include: (Darwish, 2010)

The high rates of pollution of the environment and thus increase the volume of environmental obligations, which led to an increase in lawsuits won by owners against many of the companies whose operations cause damage to the environment. As well as the imposition of penalties and fines by government authorities on companies violating laws and environmental regulations led companies to the need to properly detect their environmental performance constantly.

Increased attention to health, safety and the environment as a result of the companies' interest in the environment, the assessment of their mandatory performance , the spread of environmental awareness due to the interest of the society and interested parties in the financial and non-financial information related to environmental performance published by the companies in order to assess the environmental responsibility of companies objectively, which is reflected on investor decisions.

Increased management's demand for environmental cost information to identify the extent to which companies are able to achieve strategic objectives of providing a

product of high quality and affordable prices without harming the environment (producing environmentally friendly products) (Rabohe, 2016).

Attention to environmental performance assessment is due to several reasons as environmental regulatory requirements; increased voluntary acceptance of managers to manage environmental impacts of projects; increasing number of shareholders and ethical investors.

Also, to encourage educational companies and local, national and international government agencies to produce such information; To assist management in the performance of its environmental activities, and the increasing number of companies that adopt the concept of environmental economic efficiency as a logical engine of management and as a way to promote strategies that encourage and safeguard social legitimacy - environmental economic efficiency is a term that reflects the good use of environmental resources available to meet economic and environmental objectives, and the achievement of outputs at the lowest level of inputs- (Burritt & Saka, 2006).

The environmental performance assessment process aims to achieve a better understanding of the impact of the company on the environment; Providing a basis for administrative, operational and environmental measurement; Identify opportunities for improving energy efficiency and materials; Determine whether environmental goals and targets are going as planned; Demonstrate their commitment to legal and legislative aspects; Determine the most appropriate allocation of resources; Increase awareness of employees and community and improve customer relationships (Broch & Dahimi, 2011).

The company's commitment to implementing environmental performance assessment is very important, the latter adapts according to the size of the geographical conditions, the type of the company as well as its needs and priorities.

The information obtained through environmental performance assessment can benefit the company in the identification of all important activities through the development of environmental performance requirements, identification of important environmental impacts, and identification of the potential for better management of environmental impacts such as pollution prevention; identification of shared desires through environmental performance (Broch & Dahimi, 2011).

To assess environmental performance, a range of requirements must be met, of which the most important: (El obuddy, 2015)

- Identify and measure environmental costs and disaggregate them according to the quality of the environmental activities that cause them (prevention, measurement, control and failure costs).
- Determine the current and expected environmental impacts of all the activities of the company, and all actions, and all available alternatives from the beginning and before the activity or conduct.
- Determine the environmental benefits resulting from the company's various environmental activities, whether they are optional or compulsory. Identify the environmental standards that industrial companies must adhere to ensure improvement and development of environmental performance.
- The use of a set of financial and non-financial measures and indicators to measure and evaluate the environmental performance of the company, provided that these measures are objective, accurate and reliable, in order to achieve the objectives of different stakeholders.
- To design and prepare models for descriptive, quantitative and financial reports with the aim of disclosing the environmental performance of the company because of its importance in attracting investments, in addition to its importance in rationalizing administrative decisions, as well as serving stakeholders.

2.5.4 Environmental Performance Assessment According to ISO 14000 Environmental Standards

The World Organization for Standardization and Metrology has issued a series of standards, metrics and indicators known as the ISO series to encourage and increase the trade of goods and services on a global level in various fields such as ISO 9001 Quality Management System, ISO 20000 Information Management System, ISO 27001 Information Management System, Occupational Safety ISO 18001. ISO 14000 Environment Management System with a view to further development and improvement of the environmental protection system, any industrial company wishing to obtain an environmental ISO certification has to have an environmental management system.

ISO 14000 certification an indicator of the quality of the ecosystem, quality is the integration of features and characteristics of a product or service to meet specific needs and requirements, and ISO is a simple part of the concept of total quality, an indicator of increased production and reduce costs, competitiveness, and a guide for customers, investors and legislators that the company makes an honest effort to comply with environmental laws, which is reflected in their satisfaction and trust (Walid,2014).

The most important criteria of the ISO 14000 group on environmental quality, environmental performance assessment standard 14031 which provides indicators for measuring and analyzing environmental performance, this standard provides the management of the company with a clear picture of the surrounding environment, providing a basis and benchmarking for the management of the evaluation of the performance of operations, and helping the environmental management system to measure and evaluate waste and thus rationalize the consumption of energy and natural resources (O'Reilly, Wathey & Gelber, 2000).

2.5.5 Indicators of Environmental Performance Measurement

The objectives of the company are to determine the achievements of the company in managing any interaction between its activities and products or its service to the environment. This is achieved through the environmental performance indicators which are the standards that depend on specific quantities that can be observed or seen which reflect the environmental impacts related to certain activities in different ways possible. Material quantities of material used in industry, or material quantities resulting from the industrial process.

Environmental performance assessment indicators are defined as those quantitative and financial measures that can be used to manage, measure and evaluate environmental performance in companies with the aim of increasing the efficiency and effectiveness of their environmental activities, highlighting how to improve their environmental performance, to identify the possibility of reducing their environmental costs and to provide objective and accurate information and data, allowing for different comparisons at the company level, while helping to prepare environmental reports to support and rationalize various decisions (Mousa, 2011).

The Environmental Performance Index (EPI) consists of 25 performance indicators that are classified into 6 groups covering the areas of environmental health, air quality, water resources, biological diversity and variability (T, Bali & Abd Allawi, 2016).

Environmental performance assessment indicators are designed to compare the environmental performance of the company during a given time series, highlighting the possibility of improving environmental performance, seeking environmental objectives, identifying the possibility of reducing environmental costs, comparing environmental performance among similar industrial establishments, facilitating environmental reporting internally and externally, and finally technical support in the establishment of an environmental management system (Lahcen, 2011).

Environmental performance assessment indicators include several characteristics: To provide a meaningful picture of environmental conditions and pressures on the environment, to be derived from the strategy and linked to specific targets (targets), to be clearly defined, simple to understand and easy to interpret.

In addition, to be objective, accurate and reliable, to provide accurate and timely feedback, to rely on international standards that provide a basis for comparison, to be documented in an efficient and concrete manner, to be updated at regular intervals (Broch & Dahimi, 2011).

There are several initiatives to identify environmental performance indicators such as the Global Reporting Initiative guidelines, the Business Efficiency Guidelines for the Business Council, and the ISO 14031, on environmental performance assessment. Indicators of environmental performance assessment can be divided into the following (Kolk & Mauser, 2002):

Environmental management indicators: The management's efforts to influence the environmental performance of company, which is related to the vision, strategy and environmental policy, the organizational structure of environmental management, management, and documentation systems, administrative commitment on environmental issues, communication with internal and external stakeholders.

Indicators of environmental status: These indicators provide information on the local, regional or international environmental situation, such as ozone layer thickness, global average temperature, a concentration of air, soil, water pollution, etc.

Environmental performance indicators: These indicators are divided into environmental operational indicators: They relate to the areas of measurement of possession, technical parameters of the product or process, product or process usage standards and waste disposal. And environmental impact indicators: relate to outputs such as: Waste, material and energy consumption, and emissions of gases (Jaboo & Hali , 2006).

Indicators of environmental performance assessment can be divided into two main types: Appropriate indicators for all companies and indicators used in specific companies (Abdel Halim, 2005).

Table (2.9) Indicators Suitable for All Companies

Environmental impact	Absolute data	Measured data	Trend data
Gas emissions	Total annual CO2 emissions	CO2 emissions per employee per unit output, etc.	Total CO 2 emissions or emissions per employee compared to previous years
Water Consumption	Total annual water consumption	Water consumption per employee, per unit output ..etc	Total consumption or consumption per employee compared to previous years
Waste output	Total annual waste output per ton	Waste output per employee, per unit output, etc.	Total waste or waste per employee compared to previous years

Table (2.10) Indicators Suitable for Specific Companies

Environmental impact	Indicator	comment
Emissions from air (other than gases)	The total amount per tonne for gases, responsible for the ozone hole such as SO2, NO2, atoms.	Indicators are suitable for these gases.
Use of resources and raw materials	Total quantity in ton of raw materials used	Measured data that links the amount of inputs of raw materials to the quantity or units of output normally used.
Transportation	<ol style="list-style-type: none"> 1. Total spent fuel. 2. CO2 emissions per 1000 kg 3. Percentage of vehicle ignition and percentage of vehicles traveling free. 4. Number of kilometers employees sign on business trips (land / air / rail) 5. Percentage of employees who move alone by car when switching 	In some companies employee switching may be caused by important environmental impact.
Energy	<ol style="list-style-type: none"> 1. Emissions depending on the type of 	The needing to complete

	CO2 energy or primary use. 2. Consumption by type	information on the total CO 2 emissions of the energy used with their breakdown into types or uses.
Water Contaminants	1. Total drainage of the final solubility in cubic meters. 2. The final threshold of cubic meters per ton produced.	This may include the required chemical oxygen emissions, the required organic oxygen, and other studies and materials.
Dangerous wastes	The total size of dangerous waste produced from each activity.	If the company has provided specific waste material, it should be known that the waste material may estimate separately.

Criteria and indicators related to the environmental dimension may be limited to two types, one of which is for the production process and the other for the product (Darwish, 2010).

Table (2.11) Measures of Environmental Dimension Indicators

Operational standards		Related product standards
Resource usage	Emissions	Percentage of recyclable components
Energy usage	Emissions to water	Emissions to water ratio of recyclable components
Water usage	Emissions to air	Middle-aged medium for non-recyclable components
Materials usage	Solid waste	The average time to continue the product
	Hazardous Wastes	Number of available substitutions

Environmental Performance Assessment Indicators (EIAs): Are an essential tool for achieving the objectives of the environmental dimension in the activity of the oil companies, where highlight the most important indicators of environmental performance assessment in oil activity through the following form (Mahjoubi & Makhlafi, 2016).

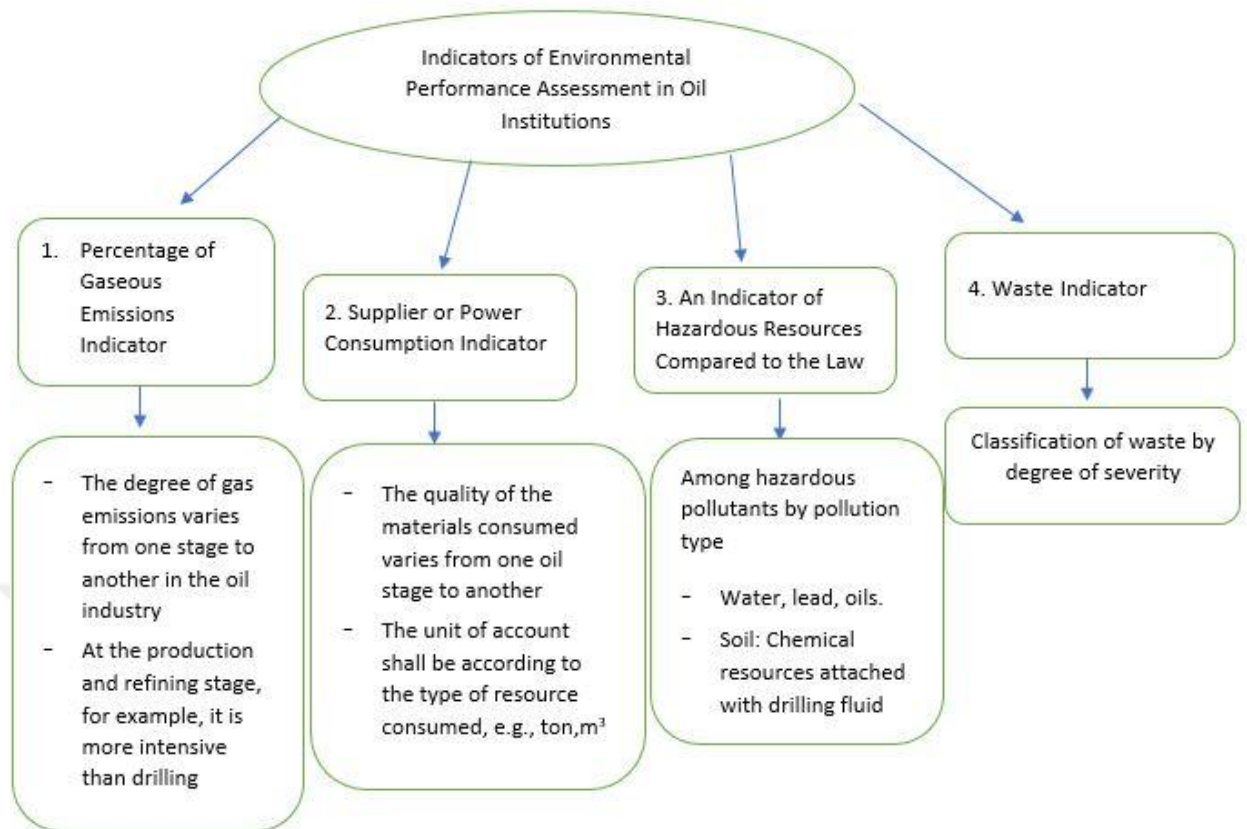


Figure (2.3) Shows Indicators of Environmental Performance Assessment in Oil Companies

CHAPTER 3: Study Design and Methodology

Field study is an integral part of the research study. Generally speaking, it is the use of statistical approaches in a quantitative research area, which it could be done a variety of techniques and discipline, as explained later.

Throughout this chapter, a general description of the selected technique to collect data in the given survey. In addition, to describe how this data has been analyzed. Internal consistency and reliability are considered in each part of the survey using a method called Alpha Cronbach.

3.1 Methodology

The aim of the study is to acknowledge the impact of applying of measurement and accounting disclosure of the environmental costs as a part of the environmental performance improvement of the oil companies in Libya. The descriptive analysis approach has been used, this approach provides the study of phenomena and collecting all the information and the facts about it, as well as, given explanation and values in a way of trying to achieve general results and recommendations, to enrich the quality of the study.

For data collection, two well-known essential methods described was used, as follows:

- a- Primary Data:** Used for the theoretical framework which includes, references, periodicals, journals articles and papers, and previous studies on the same research area.
- b- Secondary Data:** have been used to manipulate the field study part, which expected to provides the initial information leading to an obtain desired results. A questionnaire has been developed for this purpose, includes values of equations (a copy of the questionnaire is included in the appendix (one)).

The questionnaire given in the appendix (one) was translated to Arabic - in the appendix (Three) - and applied to responders to test their awareness about of the importance of measuring and disclosing environmental costs in financial statements to improve environmental performance.

To do so, the questionnaire has been distributed on the intended samples, then collecting, uploading, and analysing it using special Software called Packages Social Science (SPSS)(IBM19).

The importance of this subject stems of the general accounting and environmental accounting in particular oil companies to reduce the phenomenon of environmental pollution, comes this study entitled " Measurement and Disclosure of Environmental Costs in Financial Statements of Oil Companies to Improve Environmental Performance: An Empirical Study conducted in Libya ". It aimed at:

- The need and requirements of the Libyan environment for such studies in field business.
- Importance of environmental accounting in the reduction of environmental pollution.
- Special attention to this field and this is due to the specialization (accounting).
- The newness of the topic in the field of scientific research in Libya.

3.2 Design Field Study Tool (Questionnaire)

A well-structured field part tool of any research is a crucial step, as it is reflected the accuracy and reliability of research theoretical results and recommendations, drawing on the theoretical aspect that has presented on this subject, and to consult with experts in this field in the academic and professional fields. For the purpose of this study, the questionnaire is designed as follows:

3.2.1 Questionnaire Structure:

The study questionnaire is divided into two parts; as follows :

Part 1: In this part, the data collecting based on the targeted group responders, personal information (Gender, Qualification, Experience, Occupation, and the job which in the study sample works) .

Part 2: This is part of a study which aims to identify the affect of measurement and disclosure of environmental costs in the process of improvement of environmental performance. And this section contains a set of questions, the number of forty-three question divided into five main dimensions, as follows:

Dimension One

This dimension has the title: The awareness among officials of the importance of applying measurement and disclosure for environmental costs affect to improve the environmental performance, this axis is denoted by **X₁**, and it comes in nine questions.

Dimension Two

Which titled: The obstacles that limit the application of measurement and disclosure of environmental costs affect to improve the environmental performance. And it was denoted by **X₂**, also comes in nine questions.

Dimension Three

Which comes under the titled : The application of accounting measurement models of environmental costs to increase the company's commitment to its environmental responsibilities affect to improve the environmental performance. This axis was denoted by **X₃** and has seven questions.

Dimension Four

Entitled: The accounting measurement of environmental performance and an increase in the quality of financial statements. This axis gave the symbol **X₄** and has nine questions.

Dimension Five

Which titled: The measurement and disclosure of environmental costs affect to improve environmental performance in oil companies. This axis is denoted by **Y** and comes into nine questions.

The aim to cover all theoretical study sides through the questions, as well as meeting all requirements that affect the hypotheses of the study. Most of the questions are clear, and have closed ends to be easy and quick to answer, and analysed.

This scale consists of five degrees, and it measures the response of the questionnaire responders as clearfield in the next table:

Table (3.1) : Degrees of Likert Scale

Response	Strongly agree	Agree	Neutral	Disagree	Strongly Disagree
Score	5	4	3	2	1

Source:designed by the researcher.

3.3 Study Population and Period

For the purpose of this study, the sample was taken in a judgmental sample* from the population, where a number of 285 of questioner distributed to the targeted population, where a number of 270 questioner copies was returned, and 10 was excluded because of lacking the required conditions.

The study population consists of officials of the financial departments, auditing and costs in the oil companies in the first place, as well as the parties concerned with the preparation of financial reports such as the sections of the preparation of budgets and financial statements, and staff working in these departments and sections in order to achieve the objectives of the field study.

Distributed, Collected, and Excluded Questioners

The following table (3.2) shows distributed, collected, and excluded questioners copies :

Table(3.2): Distributed, Collected, and Excluded Questioners

Distributed questioner	Collected questioner	Excluded questioners	Considered questioners	Percentage ratio of responses
285	280	10	270	95%

The table (3.3) illustrates the consists of the questionnaire and the number of questions of each part.

Table (3.3): Questionnaire Related to Dimensions and a Number of Questions

Dimensions		N	Item
General Questions		5	1,2,3,4,5
X ₁	The Awareness Among Offices	9	6,7,8,9,10,11,12,13,14
X ₂	The Obstacles	9	15,16,17,18,19,20,21,22,23
X ₃	The Accounting Measurement Models	7	24,25,26,27,28,29,30
X ₄	The Increase in The Quality of Financial Statements	9	31,32,33,34,35,36,37,38,39
Y	The Improving Environmental Performance	9	40,41,42,43,44,45,46,47,48

* Is the method of non-random sampling where the elements of the sample are taken exclusively to the knowledge of the researcher and his/her occupational judgement.

The data was collected from samples taking in 2017, where the questionnaires were distributed over the following oil libyan companies names:

Alkaleeg company of oil, Surt company , Raas Elanof company , Elzoatina company , el Waha company Elbraga company, UAE company, El Kakos company, and Elhrarooqe company. These companies are distributed on the cities of :

(Benghazi, El Brega , Raas Elanof , Tripoli).

3.4 Internal Consistency Reliability

The questionnaire preliminary draft has been presented to some specialized academic professors who have experience and knowledge in the field of accounting. Responding to their recommendations changes had been made as deleting, resting some questions and ended up with a final draft of the questionnaire.

Cronbach alpha method is one of the most important ways used to examine and estimate the internal consistency and reliability of survey responses. Alpha Cronbach factor is positively correlated with reliability, the minimum acceptable value is %70 and above, where the reliability factor is the square root of stability factor (Sekaran,2003).

This method had been applied to all dimensions and questions of the questionnaire. Table (3.4) illustrates the results for each dimension, these results reflect a high level of consistency and reliability.

Table (3.4) : Internal Consistency Reliability

Dimensions	Item	N of Items	Cronbach's Alpha
The Awareness Among Officres	Items 6 - 14	9	0.71
The Obstacles	Items 15 - 23	9	0.65
The Accounting Measurement Models	Items 24 - 30	7	0.80
The Increase in The Quality of Financial Statements	Items 31 - 39	9	0.88
The Improving Environmental Performance	Items 40 - 48	9	0.84

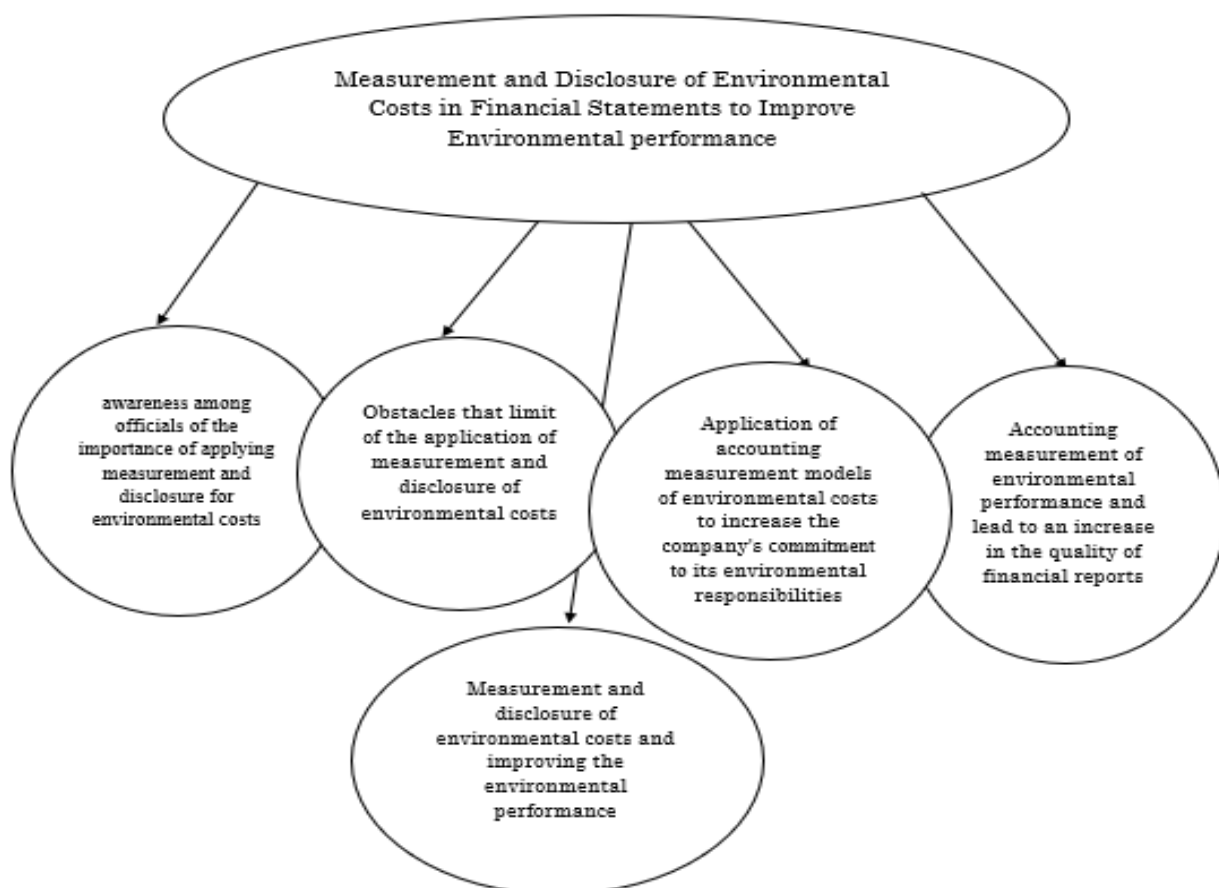
It is clear from the results shown in Table (3.4) that the values of the Cronbach alpha are high in most items except in the second item, the value of the alpha-Cronbach is low but acceptable in empirical researches.

Where the ratio is between 60% -70% is acceptable, the ratio between 70% -

80% is good and the ratio is higher than 80% is excellent (Dilio,2015; Haouch,2018).

This means that the results are highly reliable, dependable and can be safely circulated according to the value of Cronbach alpha, and indicate a positive relationship between the questionnaire and the specific response, reflecting the internal consistency of the questionnaire responses.

3.5 Study Model



3.6 Data Analysis and Hypotheses Testing Methods

For the purpose of this study, the collected data had been uploaded, and analyzed utilizing special computer program called Statistical Package for the Social Science (SPSS) (IBM19). The following are statistical techniques used for data analysis:

1. Descriptive Statistics: The frequencies and percentages were calculated to identify the personal characteristics of the study elements and to determine their responses to the main terms of the study. Pie charts were also used to display data distribution.

2. Inferential Statistics: Throughout this study, inferential statistical tools had been used in analyzing the data as well as assisting in hypothesis tests.

- **Correlation Analysis and Multiple Regression Test**, in this part, the correlation analysis had been used in the study of the difference between two variables and also used in determining whether or not there is a relationship between these two variables and the strength of this relationship, and testing of study hypotheses at a level of significance 0.05.

The regression had been used to determine the value of one variable by estimating the value of the other variable, the value of the independent variables influence from the hypothesis had been determined (X1, X2, X3, X4) on the dependent variable (Y), using the regression equation $Y = B_0 + BX + e$
Y: Process to development and improve environmental performance;

X: Main dimensions;

B_0 : The Y-intercept;

B: Regression coefficient.

- **T-Test**, this test was used to examine whether any significance an effect of the measurement and disclosure of environmental costs to improve environmental performance between groups (accountants and others and gender). The t-test was used because it compares the means of groups, which should be approximately normal
- **F-Test (One Way ANOVA)**, this test is used to examine the means of two groups that are divided into independents variables and was used to test the main hypothesis of the study in order to find out the existence of differences in the effect of independent variables on the dependent variable, using one of the demographic factors of the responders

The significance level (α) was 5%. If the significance is less than 0.05 and the means are greater than the scale 3, then there are statistically significant differences as a result of that the null hypothesis could be rejected, on another hand. The questions are not positive in the sense that the responders do not strongly agree with their content.

3.7 Hypotheses

The null and the alternative hypotheses for this study are,

H₀: There is no effect of the measurement and disclosure of environmental costs in financial statements of oil companies to improve environmental performance in Libya.

H₁: There is an effect of the measurement and disclosure of environmental costs in financial statements of oil companies to improve environmental performance in Libya.

H₀: $\mu < 3$

H₁: $\mu \geq 3$

In this study, there are five dimensions of this study and there are as following:

H1_a: The awareness among officials about the importance of applying measurement and disclosure for environmental costs affects to improve the environmental performance of oil companies in Libya.

H1_b: The obstacles that limit the application of measurement and disclosure of environmental costs affect to improve the environmental performance of oil companies in Libya.

H1_c: The application of accounting measurement models of environmental costs to increase the company's commitment to its environmental responsibilities affect to improve the environmental performance of oil companies in Libya.

H1_d: The accounting measurement of environmental performance affects an increase in the quality of financial statements of oil companies in Libya.

H1_e: The measurement and disclosure of environmental costs affect to improve the environmental performance of oil companies in Libya.

CHAPTER 4: Integrated Findings and Discussion

This chapter includes a presentation of the data analysis and testing hypotheses of the study, in order to answer the study question and review the main results of the questionnaire which were reached through the analysis of the questions related to the measurement of accounting for environmental costs and disclosure in the financial statements and the impact on the improvement of environmental performance via SPSS (IBM19).

4.1 Limitation

There is a limitation of companies of the study, which led to the exclusion of some companies such as MELLITA company, which is located in the area of security disturbances and Al-JOUF company, which was transferred to a new headquarters during the distribution of the questionnaire. Thus, the researcher was unable to reach the staff concerned in the study.

4.2 Characteristics of Responders

The following table illustrates the demographic data analysis of the study sample using descriptive analysis as follows:

Table (4.1) All Characteristics of Responders

		Frequency	Percent
Gender	Male	192	71.1
	Female	78	28.9
Level of Education	Higher Diploma	56	20.7
	Bachelor Degree	159	58.9
	Master Degree	49	18.1
	PhD Degree	2	.7
	Other	4	1.5
Profession	Financial Manager	9	3.3
	Accountant	179	66.3
	Account Manager	13	4.8
	Internal Auditor	38	14.1
	Other	31	11.5
Years of Experience	0-5 years	58	21.5
	6-10 years	77	28.5
	11-15 years	45	16.7
	More than 15	90	33.3

Job Department	Accounting (finance)	118	43.7
	Auditing	41	15.2
	Costs	49	18.1
	Reporting	34	12.6
	Other	28	10.4

The previous results in the table (4.1) indicate that:

All responders have the ability to answer the questionnaire and can understand the subject of the study because the majority of the sample of the bachelor has specialized in accounting with experience for more than 15 years, so the answer to questions was highly professional.

As result, that strengthens the trust in their answers and then depend on them in the analysis.

The following tables illustrate the demographic data analysis of the study sample using descriptive analysis as follows:

4.2.1 Gender

Table (4.2) Characteristics of Responders According to Gender

	Frequency	Percent
Male	192	71.1
Female	78	28.9
Total	270	100.0

Table (4.2) The results showed that 71.1% of males and 28.9% of females. This indicates that the majority of the study sample is male, and figure (4.1) Show this percentage.

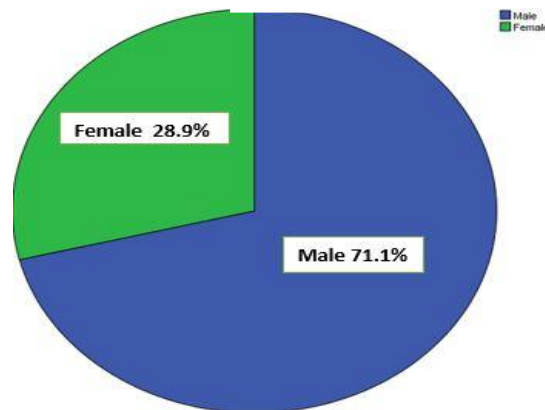


Figure (4.1) Characteristics of Responders According to Gender

4.2.2 Level of Education

Table (4.3) Characteristics of Responders According to Level of Education

	Frequency	Percent
Higher Diploma	56	20.7
Bachelor Degree	159	58.9
Master Degree	49	18.1
Phd Degree	2	.7
Other	4	1.5
Total	270	100.0

The table (4.3) shows that most of the study sample of holders of bachelor's degree and their proportion 58.9 %, and that about 18.1% of the sample obtained a master's degree, and that 0.7% of the sample of the study have a Phd, and 20.7% of the holders of higher diploma, and the results, also shows that 1.5% of the sample obtained other certificates, and the previous results indicate that all responders have the ability to answer the questions of the questionnaire, and this will strengthen trust their answers and then rely on them in analysis, figure (4.2) shows that.

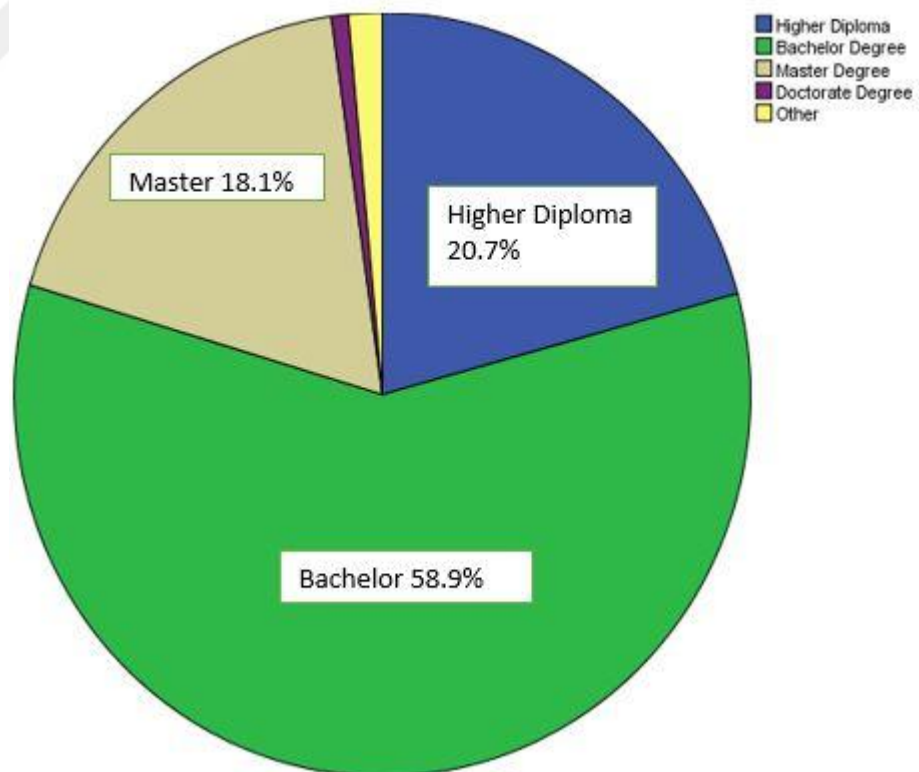


Figure (4.2) Characteristics of Responders According to Level of Education

4.2.3 Profession

Table (4.4) Characteristics of Responders According to Profession

	Frequency	Percent
Financial Manager	9	3.3
Accountant	179	66.3
Account Manager	13	4.8
Internal Auditor	38	14.1
Other	31	11.5
Total	270	100.0

The table (4.4) shows that 66.3% of the sample of the study are accountants and that the proportion of 14.1 % they are internal auditors, and 11.5% of the sample were consultants or administrators in the relevant sections. This gives a positive meaning because the subject of the study is related to the accounting of environmental costs and the impact of measurement and disclosure on the performance of the environment, as the specialists in accounting are better able to understand the subject of study and answer questions highly professional. It shows that in the figure (4.3).

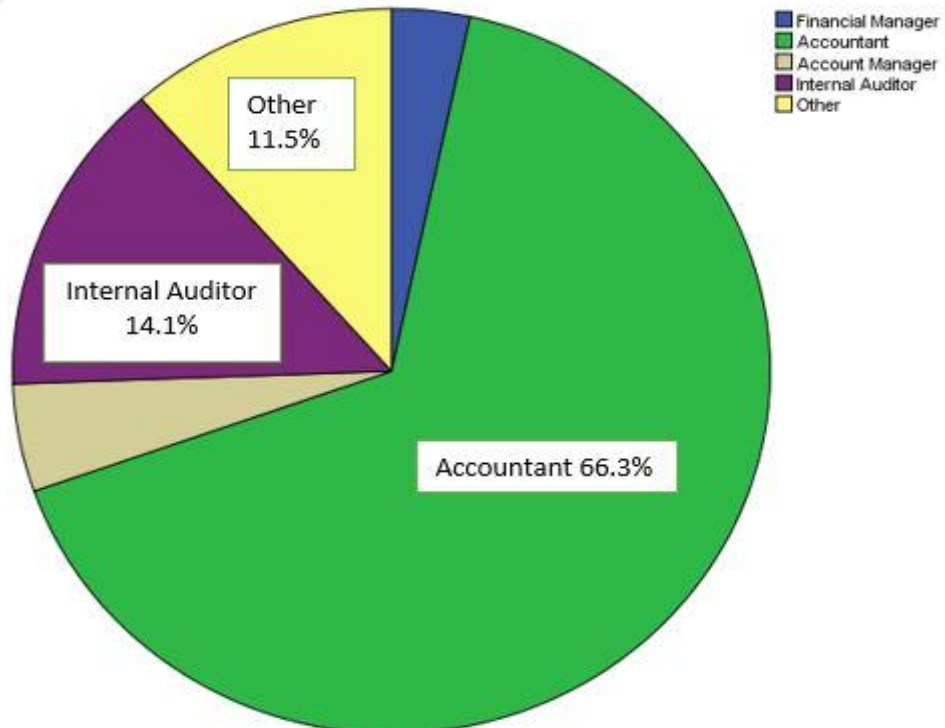


Figure (4.3) Characteristics of Responders According to Profession
4.2.4 Years of Experience

Table (4.5) Characteristics of Responders According to Years of Experience

	Frequency	Percent
0-5 years	58	21.5
6-10 years	77	28.5
11-15 years	45	16.7
More than 15	90	33.3
Total	270	100.0

Table (4.5) shows that 21.5% of the study sample had years of experience of "less than 6 years", and 28.5% of the sample of the study reached the years of experience for deem "from 6 to 10 years", and 16.7% of the study sample had years of experience "from 11 to 15 years", and 33% of the sample of the study years of experience for the "more than 15 years" .This indicates that the sample represents the society of the study fairly, in addition to the high level of experience of workers in oil companies in Libya leads to the health and safety of the results to be reached. It shows that in the figure (4.4).

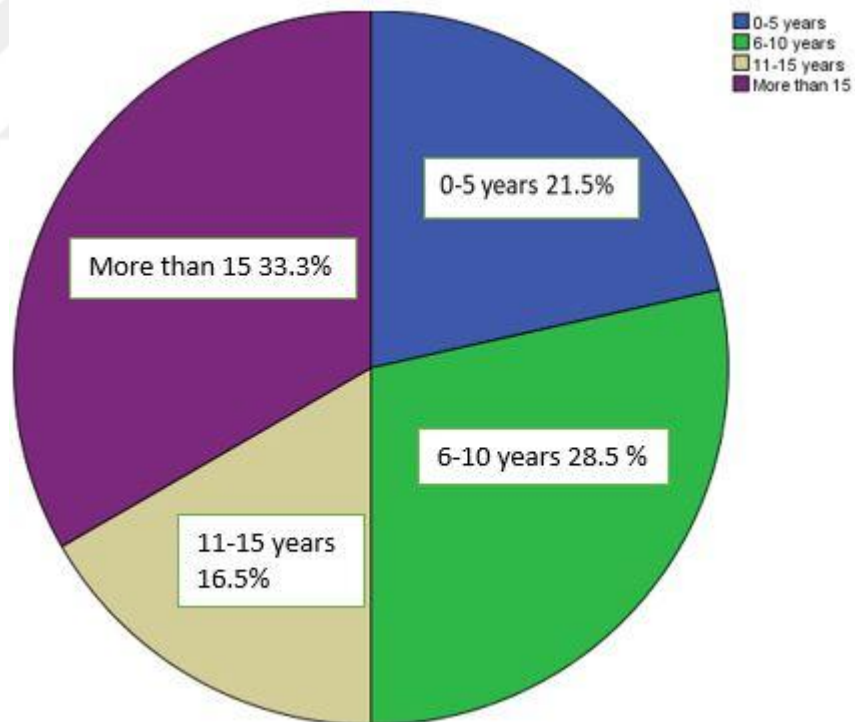


Figure (4.4) Characteristics of Responders According to Years of Experience

4.2.5 Job Department

Table (4.6) Characteristics of Responders According to Job Department

	Frequency	Percent
Accounting (finance)	118	43.7
Auditing	41	15.2
Costs	49	18.1
Reporting	34	12.6
Other	28	10.4
Total	270	100.0

Table (4.6) shows that 43.7% of the study sample work in finance or accounting departments and that 15.2 % of the sample of the study work in the auditing department, 18.1% of the study sample in the cost section, and about 33 % of the sample work among the sections of reports or budgets or treasury or as consultants in most sections. This gives a positive meaning because the subject of the study is related to the accounting of environmental costs and the extent of the impact of measurement and disclosure on the performance of the environment, as the specialists in accounting are better able to understand the subject of study and answer questions highly professional, and figure (4.5) Show this percentage.

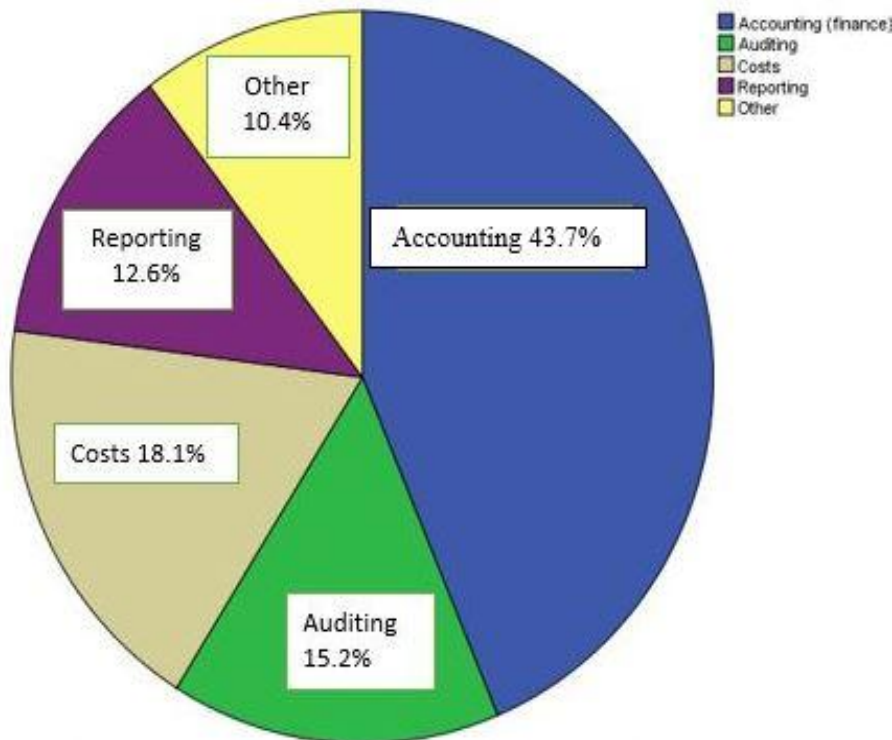


Figure (4.5) Characteristics of Responders According to Job Department

4.3 Discussion of Results

This section discusses the main findings and links them to the main research questions. This study addresses the following points, awareness among officials about the importance of measuring and disclosing environmental costs, the obstacles that limit its application, the accounting models for environmental costs, environmental performance measurement leads to increased quality of financial statements. Finally, the affect of measurement and disclosure of environmental costs lead to improving environmental performance.

4.3.1 Part One, Descriptive Statistic

Table (4.7) shows the mean and standard deviation for all dimensions of the sample of the study in and the results are shown in the table:

Table (4.7) Analysis of All Dimensions of The Study

Descriptive Statistics				
Dimensions	N	Mean	Std. Deviation	
X1 The awareness among officials of measurement and disclosure	270	3.95	.432	
X2 The obstacles that limit the application of measurement and disclosure	270	3.73	.492	
X3 The application of accounting measurement models	270	3.86	.495	
X4 The accounting measurement of environmental performance and an increase in the quality of financial statements	270	3.84	.565	
Y Improve Environmental Performance	270	3.86	.512	

In table (4.7) it shows that the mean average for all independent and dependent variables were positive attitudes toward these questions, because of their mean were greater than the mean of the scale 3, and the standard deviation between 0.432 to 0.565.

4.3.2 Part Two, Correlation Analysis and Multiple Regression Test,

4.3.2.1 Correlation Analysis

In this part, the correlation analysis had been used in determining whether or not there is a relationship between two variables and the strength of this relationship, and testing of study hypotheses at a level of significance $\alpha = 0.05$. The hypotheses of the study are validated as follows:

H₁: There is a positive correlation between the affect of measurement and disclosure of environmental costs in the financial statements of oil companies on improving environmental performance in Libya.

X1: The awareness among officials of measurement and disclosure;

X2: The obstacles that limit the application of measurement and disclosure;

X3: The application of accounting measurement models;

X4: The accounting measurement of environmental performance and an increase in the quality of financial statements;

Y: Improve Environmental Performance;

Table (4.8) Bivariate Correlations between The awareness among officials; The obstacles; The accounting measurement models; The increase in the quality of financial statements, and improving the environmental performance

Correlations						
		X1	X2	X3	X4	Y
X1	Pearson Correlation					
	Sig. (2-tailed)					
	N					
X2	Pearson Correlation	.179**				
	Sig. (2-tailed)	.003				
	N	270				
X3	Pearson Correlation	.453**	.328**			
	Sig. (2-tailed)	.000	.000			
	N	270	270			
X4	Pearson Correlation	.378**	.504**	.534**		
	Sig. (2-tailed)	.000	.000	.000		
	N	270	270	270		
Y	Pearson Correlation	.412**	.458**	.585**	.740**	1
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	270	270	270	270	207

** . Correlation is significant at the 0.05 level (2-tailed).

The following table (4.8) shows the correlations between (The awareness among

officials, the obstacles, the accounting measurement models, the increase in the quality of financial statements) and improving the environmental performance in the financial statements of oil companies.

According to Pearson's Correlation Coefficient values, there was a statistically significant correlation ($\text{sig}=0.00 < p=0.05$) between (The awareness among officials, the obstacles, the accounting measurement models, the increase in the quality of financial statements) and improving the environmental performance. It is possible to say that the null hypothesis could be rejected.

The results show that the correlation between the accounting measurement of environmental performance and an increase in the quality of financial statements and the improvement of the environmental performance in the financial statements of the oil companies is high which was 0.740, this is due to responders consider Information of environmental costs provided by the company positively affects the company's reputation and profitability, and measuring and disclosing environmental costs in financial statements increases the quality of information that influences the decisions of current and prospective investors

4.3.2.2 Multiple Regression Test

In this part, multiple regression had been used to test and analyze the hypothesis of the study at a significant level 0.05, where the alternative hypothesis was tested as comprehensive for all independent variables.

H₁: There is an affect of the measurement and disclosure of environmental costs in financial statements of oil companies to improve environmental performance in Libya. as follows:

Tables (4.9)A, B (4.10) show summarizes the most important results according to SPSS. In order to ascertain the relationship between the application of measurement and the disclosure of environmental costs in the process of improving environmental performance according to the dimensions of the study, had been used the multiple regression model to test this hypothesis according to the following model:

$$Y = B_0 + B_1X_1 + B_2X_2 + B_3X_3 + B_4X_4 + e$$

The null hypothesis H₀: $\beta_0 = \beta_1 = \beta_2 = \beta_3 = \beta_4 = 0$

The alternative hypothesis H₁: $\beta_0 \neq \beta_1 \neq \beta_2 \neq \beta_3 \neq \beta_4 \neq 0$

B_0 : The Y-intercept;

B_1, B_2, B_3, B_4 : The regression coefficient (the theoretical slope).

Where:

X1: The awareness among officials of measurement and disclosure;

X2: The obstacles that limit the application of measurement and disclosure;

X3: The application of accounting measurement models;

X4: The accounting measurement of environmental performance and an increase in the quality of financial statements;

Y: Improve Environmental Performance;

Table (4.9)A Model Summary

R	R Square	Adjusted R Square	Std. Error of the Estimate
.782a	.611	.605	.32163

a. Predictors: (Constant), X1, X2, X3, X4

Table (4.9)B ANOVA

	Sum of Squares	df	Mean Square	F	Sig.
Regression	43.029	4	10.757	103.989	.000a
Residual	27.413	265	.103		
Total	70.443	269			

a. Predictors: (Constant), X1, X2, X3, X4

b. Dependent Variable: Y

Table (4.10) The Multiple Regression coefficients of the affect of Measurement and Disclosure of Environmental Costs on Improving Environmental Performance

	Coefficients ^a				t	Sig.
	Unstandardized Coefficients		Standardized Coefficients			
	B	Std. Error	Beta			
(Constant)	.300	.221		1.359	.175	
X1	.106	.052	.090	2.051	.041	
X2	.101	.046	.097	2.177	.030	
X3	.233	.050	.225	4.693	.000	
X4	.486	.046	.537	10.619	.000	

a. Dependent Variable: Y, (F - critical = 3.842)

The tables (4.9)A,B (4.10) show the validity of the model to test the main

hypothesis, where F- calculated was 103.989 and the F- critical was 3.842. By comparing the values obtained in the test of this hypothesis, the calculated value is greater than the scale value. Therefore, the null hypothesis is rejected and the alternative hypothesis is accepted which provides for there is a statistical correlation between measurement and accounting disclosure of environmental costs and improving the environmental performance in oil companies in Libya.

It is clear from the data received, sig between 0.000 to 0.041 which is less than a significance level of the estimated regression model $\alpha = 0.05$, the significance of the slope parameter β_1 , β_2 , β_3 , β_4 which reached 0.090, 0.097, 0.225, 0.537 which indicate a positive significant correlation between independent variables and dependent variable statistically (measurement and accounting disclosure of environmental costs and improving and developing the environmental performance).

In other words, the effect of the independent variables (the awareness of the officials, the application obstacles, the environmental measurement models, and the quality of the financial statements when the company assumes its environmental responsibility) in the dependent variable (improvement of environmental performance) is valid to predict and therefore it can be said that there is the effect of measurement and accounting disclosure environmental costs on improved environmental performance in oil companies in Libya, indicating the significance of the slope, which is different from zero and figure (4.6) illustrates that.

It is also possible to observe the results of the table (4.9)A,B that, the coefficient of determination R^2 which was 61% at P-value = 0.000. Moreover, the Adjusted R Square is .605, indicating the quality of the linear regression model, and the independent variables explain the dependent variable by 60.5% from the point of view of the study sample.

The results of Table (4.10) show that the value of β_4 the accounting measurement of environmental performance and an increase in the quality of financial statements was high which 0.537, this is correlated with the correlation coefficient in Table (4.8), indicating that there is a significant effect of the accounting measurement of environmental performance and the quality to improve environmental performance in the financial statements of oil companies.

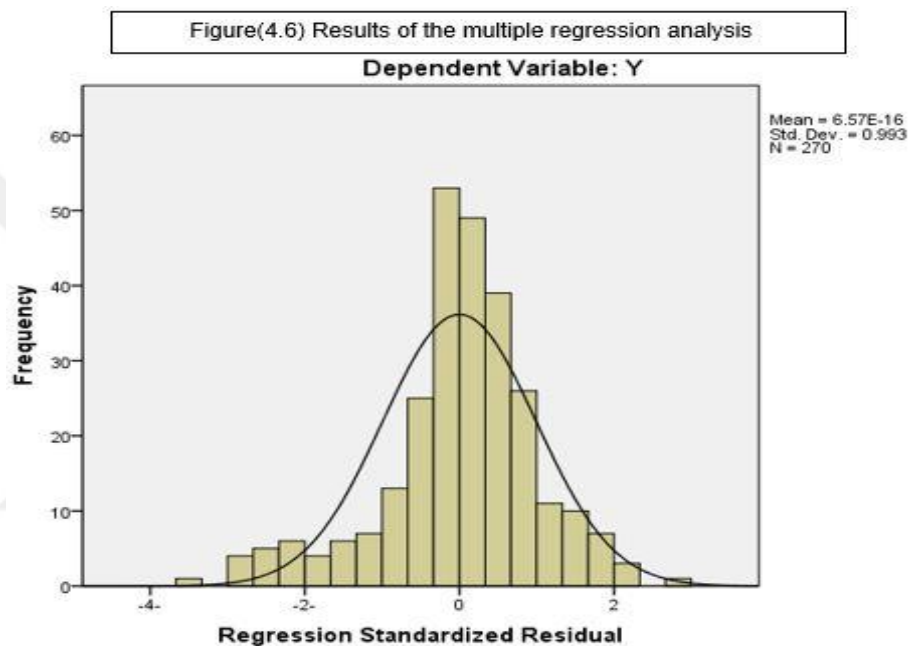
In other words, the dependent variable interprets the dependent variable by

0.54%, this is due to the fact that the responders consider the importance of accounting for environmental costs and how they affect the quality of the financial statements of companies

According to the results of the regression analysis, the null hypothesis $H_0: \beta_1 = \beta_2 = \beta_3 = \beta_4 = 0$ can be rejected.

Therefore, from the results of the previous tables, the equation of the simple linear model is as follows:

$$Y = 0.300 + 0.090X_1 + 0.097X_2 + 0.225X_3 + 0.537X_4$$



4.3.3 Part Three, Test (Independent Samples T-Test),

For the differences in the sample's responses according to the demographic factors

In this part, it was used the profession and gender as demographic variable for all dimensions with the level of significance (α) set at 0.05 (5%). Also, it was assumed that the variances are equal and with two tails test.

First Demographic Variable, Primary Profession

H₀: There were no statistically significant differences between the responses on the affect of measuring and disclosing the environmental costs in the financial statements of the oil companies on improving the environmental performance based on

demographic variable of a profession:

Table (4.11)A Results of Independent Samples T-test Based on Demographic Variable of Profession

Group Statistics					
	PG	N	Mean	Std. Deviation	Std. Error Mean
X1	Accountant	179	3.9286	.44842	.03352
	Others	91	3.9829	.39784	.04171
X2	Accountant	179	3.6377	.50046	.03741
	Others	91	3.9011	.42682	.04474
X3	Accountant	179	3.8460	.48751	.03644
	Others	91	3.8901	.51158	.05363
X4	Accountant	179	3.7554	.56329	.04210
	Others	91	4.0024	.53543	.05613

Table (4.11)B Results of Independent Samples T-test Based on Demographic Variable of Profession

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower		Upper
X1	Equal variances assumed	.000	1.000	-.976-	268	.330	-.05429-	.05563	-.16382-	.05524
	Equal variances not assumed			-1.015-	201.332	.311	-.05429-	.05350	-.15979-	.05111
X2	Equal variances assumed	2.322	.129	-4.290-	268	.000	-.26343-	.06141	-.38434-	-.14252-
	Equal variances not assumed			-4.517-	208.321	.000	-.26343-	.05832	-.37840-	-.14846-
X3	Equal variances assumed	.387	.535	-.692-	268	.490	-.04414-	.06382	-.16980-	.08152
	Equal variances not assumed			-.681-	173.576	.497	-.04414-	.06484	-.17211-	.08383
X4	Equal variances assumed	.727	.395	-3.463-	268	.001	-.24701-	.07134	-.38746-	-.10656-
	Equal variances not assumed			-3.520-	189.446	.001	-.24701-	.07016	-.38541-	-.10861-

T- critical of at a significance level of 0.05 is equal to 1.98

The results are shown in Tables (4.11)A-B which shows that the value of T-test in the awareness among officials, and the application of accounting measurement models (-.976-1.015-.692-.681-) less than T- critical which is equal to 1.98, and the value of the significance level is greater than 0.05 in same dimensions, indicating that there are no differences between the means responses of the responders on the affect of measurement and disclosure of environmental costs in the financial statements of the oil companies on improving the environmental performance attributed to the profession at the level of significance 0.05 in some dimensions, and the researcher attributed the absence of statistically significant difference between the means of the answers of accountants and the rest of the groups to the lack of knowledge of

accountants, what was the awareness of officials about the importance of accounting for environmental costs and the lack of clarity of the models accounting for the costs of the environment. This is consistent with what has been achieved, (Al-dosari, 2011), and (Saleh, 2015).

It is also noted from the results of the table that the value of the T- calculated in the obstacles that limit the application of measurement and disclosure, and the accounting measurement of environmental performance and an increase in the quality of financial statements (4.290-4.517-3.463- 3.520) are greater than the value of T-critical which is equal to 1.98, and the level of significance (0.00 - 0.001) are less than 0.05, indicating that there are differences between responders' responses to the effect of measurement and disclosure on the environmental costs in the financial statements of the oil companies to improve the environmental performance attributed to the profession at the level of significance 0.05 in these dimensions, because responders believe that the effect of the obstacles and the measurement of accounting for environmental performance and the increase in the quality of financial statements depending on the profession.

Second Demographic Variable, Gender

H₀: There were no statistically significant differences between the responses on the affect of measuring and disclosing the environmental costs in the financial statements of the oil companies on improving the environmental performance based on the demographic variable of gender:

Table (4.12)A Results of Independent Samples T-test Based on Demographic Variable of Gender

Group Statistics					
	Gender	N	Mean	Std. Deviation	Std. Error Mean
X1	Male	192	3.9745	.41136	.02969
	Female	78	3.8789	.47519	.05381
X2	Male	192	3.7061	.48134	.03474
	Female	78	3.7766	.51769	.05862
X3	Male	192	3.9010	.46766	.03375
	Female	78	3.7619	.54807	.06206
X4	Male	192	3.8299	.54799	.03955
	Female	78	3.8604	.60896	.06895

Table (4.12)B Results of Independent Samples T-test Based on Demographic Variable of Gender

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2- tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower	Upper	
X1	Equal variances assumed	.582	.446	1.654	268	.099	.09562	.05783	-.01823-	.20947
	Equal variances not assumed			1.556	126.30	.122	.09562	.06145	-.02599-	.21723
X2	Equal variances assumed	.011	.917	-1.066-	268	.287	-.07046-	.06607	-.20054-	.05963
	Equal variances not assumed			-1.034-	133.93	.303	-.07046-	.06814	-.20522-	.06431
X3	Equal variances assumed	1.580	.210	2.106	268	.036	.13914	.06608	.00904	.26923
	Equal variances not assumed			1.970	124.84	.051	.13914	.07064	-.00067-	.27895
X4	Equal variances assumed	.651	.420	-.402-	268	.688	-.03054-	.07602	-.18021-	.11914
	Equal variances not assumed			-.384-	130.30	.701	-.03054-	.07949	-.18779-	.12672

T- critical of at a significance level of 0.05 is equal to 1.98

The results are shown in Table (4.12) which shows that the value of T-test in most dimensions (1.654 -1.556 -1.066 -1.034-.402-.384-) less than T- critical which is equal to 1.98, and the value of the significance level is greater than 0.05 in same dimensions, indicating that there are no differences between the means responses of the responders on the affect of measurement and disclosure of environmental costs in the financial statements of the oil companies on improving the environmental performance based on demographic variable of gender at the level of significance 0.05 in the study dimensions, and the researcher attributed the absence of a statistically significant difference between means of the answers of males and females that the accounting of environmental costs is a new area of enquiry. This is consistent with what has been achieved (Issa, 2017) and (Al-dosari, 2011).

It is also noted from the results of the table that the value of the T- calculated in the application of accounting measurement models (2.106- 1.970) is greater than the value of T- critical which is equal to 1.98, and the level of significance (0.036 - 0.051) is less than 0.05, indicating that there are differences between responders' responses to the effect of measurement and disclosure on the environmental costs in the financial statements of the oil companies to improve the environmental performance attributed to the gender at the level of significance 0.05 in this dimension.

4.3.4 Part Four, F-Test (One Way ANOVA)

For the differences in the sample's responses according to the demographic factors

In this part, it was used level of education, the experience and job department as a demographic variable for all dimensions of the study, because they are related directly to applying of accounting for environmental costs with a level of significance (α) set at 0.05 (5%).

First Demographic Variable, Level of Education

H₀: There were no statistically significant differences between the responses on the affect of measuring and disclosing the environmental costs in the financial statements of the oil companies on improving the environmental performance based on demographic variable of level of education:

Table(4.13) The Result of F Test for All Dimensions Based on Demographic Variable Level of Education

ANOVA						
		Sum of Squares	df	Mean Square	F	Sig.
X1	Between Groups	1.730	2	.865	4.758	.009
	Within Groups	47.455	261	.182		
	Total	49.185	263			
X2	Between Groups	1.674	2	.837	3.489	.032
	Within Groups	62.619	261	.240		
	Total	64.293	263			
X3	Between Groups	.977	2	.489	1.978	.140
	Within Groups	64.491	261	.247		
	Total	65.468	263			
X4	Between Groups	.930	2	.465	1.489	.227
	Within Groups	81.467	261	.312		
	Total	82.397	263			

F- critical of at a significance level of 0.05 is equal to 3.84

Indicates the F test in table (4.13) at the significance level of 0.05, showing that the value of F calculated in some dimensions study (1.978 -1.489) which is less than the F- critical (3.84), which means that there are no statistically significant differences in the effect of measurement and disclosure of environmental costs on the improvement of environmental performance based on the demographic variable of the level of education, this is confirmed by the level of significance (.140- .227) which is

higher than the significance level of 0.05 in the same dimensions. The researcher attributed the absence of differences of statistical significance due to is not include environmental cost accounting as a basic course in university study. This is consistent with what has been achieved (Al-dosari, 2011), and (Fatima Al-Zahraa, 2014).

It is also noted from the results of the table that the value of F- calculated (4.758 - 3.489) in the awareness among officials of measurement and disclosure; the obstacles that limit the application of measurement and disclosure which is higher than the F- critical, and the level of significance (0.009-0.32) is less than 0.05, indicating that there are differences between responders' responses to the effect of measurement and disclosure of environmental costs financial statements oil companies on improving environmental performance depend on the level of education at a significance level of 0.05 in these dimensions. because responders believe that there is an effect of awareness of officials responsible for measurement and disclosure; obstacles that limit the application of measurement and disclosure depending on the level of education. In this part, the results are equal between accept and reject.

Second Demographic Variable, The Experience

H₀: There were no statistically significant differences between the responses on the affect of measuring and disclosing the environmental costs in the financial statements of the oil companies on improving the environmental performance based on demographic variable the experience:

Table(4.14) The Result of F Test for All Dimensions Based on Demographic Variable The Experience

		ANOVA				
		Sum of Squares	df	Mean Square	F	Sig.
X1	Between Groups	1.289	3	.430	2.335	.074
	Within Groups	48.926	266	.184		
	Total	50.214	269			
X2	Between Groups	2.688	3	.896	3.814	.011
	Within Groups	62.477	266	.235		
	Total	65.164	269			
X3	Between Groups	1.047	3	.349	1.430	.234
	Within Groups	64.929	266	.244		

	Total	65.976	269			
X4	Between Groups	.592	3	.197	.615	.606
	Within Groups	85.369	266	.321		
	Total	85.961	269			

F- critical of at a significance level of 0.05 is equal to 3.842

Indicates the F test in table (4.14) at the significance level of 0.05, showing that the value of F calculated in most dimensions study (2.335 - 1.430 - .615) which is less than the F- critical (3.84), which means that there are no statistically significant differences in the effect of measurement and disclosure of environmental costs on the improvement of environmental performance based on the demographic variable the experience in some dimensions , this is confirmed by the level of significance (.74- .224 -.606) which is higher than the significance level of 0.05 in the same dimensions. The researcher attributed the absence of differences of statistical significance because most responders in the study have the same idea about environmental cost accounting. This is consistent with what has been achieved (Al-dosari, 2011), and (Fatima Al-Zahraa, 2014).

It is also noted from the results of the table that the value of F-calculated (3.814) in the dimension the obstacles that limit the application of measurement and disclosure is higher than the critical, and the level of significance 0.11 is less than 0.05, which means that there are statistically significant differences in the effect of measurement and disclosure of environmental costs on the improvement of environmental performance based on the demographic variable experience at a significance level of 0.05 in this dimension, responders believe that there is an impact on the obstacles that limit the application of measurement and disclosure depending on the experience.

As the results showed that the percentage of accept is more than the percentage of reject, then we fail to reject the null hypothesis.

Three Demographic Variable, Job Department

H₀: There were no statistically significant differences between the responses on the affect of measuring and disclosing the environmental costs in the financial statements of the oil companies on improving the environmental performance based on demographic variable the job department:

Table(4.15) The Result of F Test for All Dimensions Based on Demographic Variable The Job Departmen

		ANOVA				
		Sum of Squares	df	Mean Square	F	Sig.
X1	Between Groups	1.437	4	.359	1.951	.102
	Within Groups	48.778	265	.184		
	Total	50.214	269			
X2	Between Groups	2.562	4	.640	2.711	.031
	Within Groups	62.603	265	.236		
	Total	65.164	269			
X3	Between Groups	.385	4	.096	.389	.816
	Within Groups	65.590	265	.248		
	Total	65.976	269			
X4	Between Groups	3.127	4	.782	2.501	.043
	Within Groups	82.834	265	.313		
	Total	85.961	269			

F- critical of a significance level of 0.05 is equal to 3.842

Indicates the F test in table (4.15) at the significance level of 0.05, showing that the value of F calculated in some dimensions study (1.951-.389) which is less than the F- critical (3.84), which means that there are no statistically significant differences in the effect of measurement and disclosure of environmental costs on the improvement of environmental performance based on the demographic variable the job department in some dimensions , this is confirmed by the level of significance (.102 - .816) which is higher than the significance level of 0.05 in the same dimensions. This is consistent with what has been achieved (Al-dosari, 2011), (Jamal, 2016), and (Fatima Al-Zahraa, 2014).

It is also noted from the results of the table that the level of significance in the dimensions of the obstacles that limit the application of measurement and disclosure;, the accounting measurement of environmental performance and an increase in the quality of financial statements (0.31- 0.43) is less than 0.05, indicating that there are

differences between responders' responses to the impact of measurement and disclosure of environmental costs in the data financial companies to improve environmental performance based on the demographic variable the job department in these dimensions . In this part, the results are equal between accept and reject.

Discussion

As concluded from this chapter that the developments in the world in the industrial field and the pollution that it causes in the environment forced many countries of the world to introduce reforms in the level of the accounting system, so these countries not only measure and disclose the costs and economic assets only. However, taking the environmental side into consideration by measuring and disclosing environmental costs in separate items from other items because they are important in making decisions that help improve environmental performance.

Although Libya did not explicitly adopt international accounting standards, it did respond to these international developments by issuing Law No. (7) of 1982, including the Financial Accounting System. However, it did not explicitly mention the environmental costs and how to deal with them, although it is highly compatible with international accounting standards both theoretical and technical, although some of the differences are mainly due to the peculiarities of the Libyan economic environment in its preparation.

Through the results of the statistical analysis of the views of the responders, the main findings of the study could be summarized.

First :Table (4.7) shows that according to the descriptive analysis, the values of the mean for all the dimensions of the study(the awareness among officials about the importance of measuring and disclosing environmental costs, the obstacles that limit its application, the accounting models for environmental costs, environmental performance measurement leads to increased quality of financial statements, and the improve environmental performance) which (3.9469- 3.7265- 3.8608- 3.8387- 3.8617) were higher than the scale 3. This indicates the acceptance of the alternative hypothesis of the study which states(The affect of the measurement and disclosure of environmental costs in financial statements of oil companies to improve environmental performance).

Second, the correlation analysis in Table (4.8) shows that there was a correlation between (The awareness among officials, the obstacles, the accounting measurement models, the increase in the quality of financial statements) and improving the environmental performance in the financial statements of oil companies.

According to the correlation values, were between the strong and the weak (.412 - .458 - .585 - .740), and the sig= 0.00 were less than 0.05, it can be said that the null hypothesis was rejected.

Third: Through the multiple regression test, according to the tables (4.9)(4.10), the calculated F value (103.989) is greater than the F- critical (3.842), and the distribution was a natural distribution according to figure (4.6), and sig between (0.000 to 0.041) which is less than a significance level ($\alpha=0.05$).

This indicates that there is an affect of independent variables (the awareness among officials about the importance of measuring and disclosing environmental costs, the obstacles that limit its application, the accounting models for environmental costs, environmental performance measurement leads to increased quality of financial statements) on the dependent variable (the improve environmental performance). Where the Adjusted R Square is .605, and therefore the model is valid for testing the main hypothesis of the study which states that (The affect of the measurement and disclosure of environmental costs in financial statements of oil companies to improve environmental performance).

The results show that the correlation between the accounting measurement of environmental performance and an increase in the quality of financial statements and the improvement of the environmental performance in the financial statements of the oil companies is high which was 0.740, this is due to responders consider Information of environmental costs provided by the company positively affects the company's reputation and profitability, and measuring and disclosing environmental costs in financial statements increases the quality of information that influences the decisions of current and prospective investors.

The results of Table (4.10) show that the value of β_4 in this dimension was high which 0.537, this is correlated with the correlation coefficient in Table (4.8), indicating that there is a significant effect of the accounting measurement of environmental performance and the quality to improve environmental performance in

the financial statements of oil companies.

This indicates that responders believe that there is a strong relationship between the accounting measurement of environmental performance and an increase in the quality of financial statements and improving environmental performance, as the company's interest in the environmental costs and showing it in its financial statements attract new investors and also increases the value of the company in the financial markets.

Fourth, through Independent Samples T-Test results based on demographic factors (profession and age), it was found that there are no differences between the means responses of the responders on the affect of measurement and disclosure of environmental costs in the financial statements of the oil companies on improving the environmental performance based on demographic factors profession and age, according to tables (4.11a-b) (4.12a-b) where the value of the significance level in most dimensions of the study was higher than 0.05. Also, the values of T was the less than T- critical.

The results were consistent with (Al-dosari, 2011) and (Setthasakko, 2009), these studies recognized the lack of commitment of officials to environmental issues and the lack of a clear vision among companies about environmental cost accounting.

However, the results were contrary to the study of (Jamal, 2016), which showed a statistically significant difference between the responses of the responders at the level of significance 0.05 and where the value of T is higher than the T- critical values. The researcher saw in this study that there is a positive relationship between environmental awareness and age.

Fifth: Regarding F-Test (One Way ANOVA) based on demographic factors (level of education, experience, and job department), the results of the study showed that there are some dimensions with no significant differences in the effect of measurement and detection of environmental costs on improving environmental performance based on these demographic variables at significance level 0.05. The F-calculated were less than the F-critical value in these dimensions.

At the level of education factor, F values were less in these dimensions (the accounting models for environmental costs, environmental performance measurement leads to increased quality of financial statements). In the experience factor, most

responders felt that they had the same idea of environmental costs accounting and F-calculated were less than the F- critical value. The job department factor, F- calculated were less than F- critical in (the awareness among officials about the importance of measuring and disclosing environmental costs and the accounting models for environmental costs), This came in line with studies (Al-dosari, 2011), and (Fatima Al-Zahraa, 2014).

However, the results were different from the study of (Jamal, 2016), and (Rivera-Camino, 2001) which showed that there was a difference between responders' responses. A study (Rivera-Camino, 2001) showed a high level of support for management of environmental issues at the level of the organization as a whole and increasing environmental awareness among European communities. While in Libya the attention to environmental issues is still in its infancy.

In conclusion, the results can be explained that there is a statistically significant relationship between the affect of the measurement and disclosure of environmental costs in financial statements of oil companies to improve environmental performance. This result is consistent with the recommendations of international organizations and bodies concerned with the protection of the environment, which calls for the application of environmental accounting through the measurement and disclosure of environmental costs.

The results of the study indicate that there are no statistically significant differences in the effect of measurement and disclosure of environmental costs on improving environmental performance due to some demographic factors of the responders in the study (Gender; Level of Education; Profession; Years of Experience; Job Department).

The field study had been conducted at the level of some of the oil companies operating in Libya also shows that this industry is one of the industries that gave the state great attention due to its importance at the level of the national market, but unfortunately this industry is characterized by the multiplicity and diversity of polluting the environment, which is harmful (Both in and out of the company), resulting in costly costs that would cause losses to these companies. (El-Brage had several court cases). The state has enacted some laws and penal sanctions, and has not established an accounting system in which these costs can be traced, analyzed and

measured, and environmental accounting applied.



CHAPTER 5: Conclusion and Recommendations

5.1 Conclusion

The responses from accountants, both academically and professionally, to the increasing needs of environmental information in order to develop frameworks and tools to measure the physical and financial environmental impacts generated by the company's activities, many international organizations and associations have also sought to set standards to ensure the quality of environmental and economic performance.

Initially, efforts focused on measuring the physical environment impacts of the company's activities to meet legislative requirements, and provide the necessary information to government agencies, associations, and agencies of environmental protection, and even the community.

In general, explaining to them the impact of the companys' activities on the surrounding environment, management efforts in the field of environmental improvement, and the expansion of the measurement to include the measurement of the environmental impacts of the financial represented by the environmental costs incurred by the company to improve the quality of its environmental performance.

Signs of an environmental cost accounting system have emerged, at the same time, researchers and professionals sought to expand the scope of measurement to include the measurement of environmental costs and benefits, and to develop future estimates of environmental protection activities within the companys' environmental management system.

Clearly, there is a need to improve communication between accountants and other environmental management officials and to develop environmental performance indicators that combine qualitative, financial and material standards together with the knowledge that the development of environmental management strategies will remain a challenge until there is a genuine dialogue between accountants and responsible technical and environmental professionals.

The developments witnessed by the world in the industrial world have cast a shadow over the environment through pollution, which represents the most important challenges of the present era. Pollution is caused by various human activities and industrial ones, in particular affecting the environment through its different types, it

has an impact on the individual and other living organisms.

In order to reduce pollution and protect the environment produces different types of costs, which have an impact on the financial and accounting, in the past, accounting ignored environmental costs, making profits not giving the true image of the company, and thinking about corporate compliance with environmental responsibility based on the principle of polluter pays, and in fulfilment of its legal, social, ethical and environmental responsibility.

Therefore, environmental costs have been reflected in the cost of the product and have been involved in policy adoption and decision-making, in order for accounting to contribute effectively to the protection of the environment through social and environmental accounting reports which must contain credible and reliable data and bind companies to their responsibility towards society and the environment.

After extensive study to a set of results that affect the theoretical and practical side as well as the creation and subtraction of proposals and applications in the field of measurement and disclosure of costs.

Measurement and disclosure of environmental costs are an important two-way indicator. It shows whether companies are aware of environmental issues that may affect their existence on the one hand, the users of the financial statements are a measure of environmental events and companies' efforts to improve environmental performance and its financial implications.

Libya has witnessed a development in the industrial field, especially the petrochemical industry, which is one of the most polluting industries. The state has issued several laws and regulations aimed at protecting the environment from the pollution caused by this industry to the environment.

The oil companies in Libya have also made significant efforts in the field of environmental protection and improve their environmental performance, but these efforts are technical and insufficient, but the measurement of environmental costs and disclosure in the financial statements of companies does not exist, which puts the burden on accountants to do this process.

Where many of the oil companies included a new department within its organizational structure under the name of (Environment and Safety Management). This department deals with the environment and the treatment of oil violations, such

as the number of storage containers to purify the sea water from the oil deposits in the oil tankers**.

And based on the content of the study, which was explained by the theoretical and applied side the assertion of the hypotheses that have been developed is reflected:

The first hypothesis: It had been confirmed that the awareness among the officials of the importance of applying accounting measurement and disclosure to the environmental costs affect improving the environmental performance of oil companies in Libya.

The second hypothesis: It had been confirmed that the obstacles that limit application of measurement and disclosure of environmental costs affect improving the environmental performance of oil companies in Libya.

The third hypothesis: : It had been confirmed that the application of accounting measurement models of environmental costs increasing the companys' commitment to environmental responsibilities affect improving environmental performance of oil companies in Libya.

The fourth hypothesis: It had been confirmed that the accounting measurement of environmental performance has a positive affect on the quality of the financial reports of the oil companies and improving the environmental performance.

The fifth hypothesis: It had been confirmed that measurment and disclosure the environmental costs affect improving the environmental performance of oil companies in Libya.

Moreover, the results can be explained that there is a statistically significant relationship between the affect of the measurement and disclosure of environmental costs in financial statements of oil companies to improve environmental performance. This result is consistent with the recommendations of international organizations and bodies concerned with the protection of the environment, which calls for the application of environmental accounting through the measurement and disclosure of environmental costs.

** A personal interview with the Director of the Audit Department and Director of Safety and Environment Department at Elbraga Company in Benghazi.

The results of the study indicate that there are no statistically significant

differences in the effect of measurement and disclosure of environmental costs on improving environmental performance due to some demographic factors of the responders in the study (Gender; Level of Education; Profession; Years of Experience; Job Department).

The field study had been conducted at the level of some of the oil companies operating in Libya also shows that this industry is one of the industries that gave the state great attention due to its importance at the level of the national market, but unfortunately this industry is characterized by the multiplicity and diversity of polluting the environment, which is harmful (Both in and out of the company), resulting in costly costs that would cause losses to these companies. (El-Brage had several court cases). The state has enacted some laws and penal sanctions, and has not established an accounting system in which these costs can be traced, analyzed and measured, and environmental accounting applied.

In this study, a set of results had been concluded in the following points:

Economic growth has led to significant profits, but at the same time has caused environmental damage and problems through various types of pollution and natural resources, which have a negative impact on the social well-being of individuals and on sustainable development.

Traditional accounting has ignored the measurement and disclosure of environmental costs in the financial statements claiming that instruments and means of measurement are not available such costs gave rise to the need to include in these lists data on the impact of the activities of the company on workers, society and the environment and to ensure that the process of comprehensive evaluation of the performance of the company by all parties.

Professional organizations and international accounting societies have given importance to environmental issues, especially regarding to auditing, but disclosure in financial statements and reports has not been of interest at the required level.

The non-measurement of the elements of environmental costs and their disclosure in the financial statements leads to the companys' legal and social consequences and leads to an increase in its burdens.

Environmental disclosure is one of the components of comprehensive disclosure as it meets the needs of users of the financial statements with information that enables them to assess the environmental performance of the company.

The accounting and financial information disclosed in the financial statements of the oil companies in Libya did not indicate any of the financial effects resulting from the performance of environmental activities or operations, even in the form of detailed reports.

Difficult to measure the environmental costs of oil companies because companies include them within the general costs of the product and this in turn affects the evaluation of performance.

The information provided by the environmental accounting system is a supportive tool for the company in evaluating its environmental performance by demonstrating and accurately defining environmental costs, which makes it easy to customize and load the product correctly.

There is a correlation between the importance of awareness among officials of the need to measure and disclose accounting for environmental costs and improve the environmental performance of oil companies.

There is a correlation between the concerns and constraints that limit the adoption of the process of measurement and accounting disclosure of environmental costs and improve the environmental performance of oil companies.

There is a correlation between the models for environmental costs and increase the companys' commitment to environmental responsibilities and improve the environmental performance of oil companies.

There is a correlation between the accounting measurement of environmental performance and the increase in the quality of financial reports of oil companies and improving environmental performance.

There is a correlation between the impact of measurement and accounting disclosure on environmental costs in the financial statements in assessing and improving the environmental performance of oil companies.

5.2 Recommendations

After presenting the results obtained through the study, a set of recommendations and suggestions has been formulated:

Work to spread environmental awareness among all interested parties, whether to communities, officials or companies and their employees, especially managers and accountants.

Joint and effective cooperation between the accountants and the environment in Libya, in order to express the law of the environment in terms of accounting, especially in terms of measurement and disclosure of environmental costs in the published reports of oil companies.

The environmental performance of the company should be considered as an important aspect in evaluating its performance as improving the environmental performance will have a fundamental impact on the rest of the other balanced performance of the company (financial, administrative, marketing, internal improvement and growth).

International and national accounting organizations and bodies must act by issuing special accounting standards that require industrial companies to measure and disclose environmental costs in their financial reports.

The accountant must perform the required role in the field of measurement and disclosure of the environmental costs of oil companies in their financial reports.

Banks should provide loans companies with the required role, by considering the environmental performance of the company requesting the loan is important in the decisions to grant the loan or not.

Reductions and incentives should be offered to industrial companies that measure and disclose environmental costs in their financial statements in order to encourage environmental disclosure.

Auditors must perform the required role in the field of examination and report on the extent of the companies' obligation to audit the environmental performance under the law and the required level.

Effective cooperation between the National Oil Company and the Ministry of Environment and the Libyan universities in training accountants on the applications of environmental accounting in the Libyan oil companies.

Requiring oil companies to make provisions for the purchase of devices that reduce environmental pollution.

The contribution of oil companies to the financing of research related to environmental accounting because it has a positive impact on companies and the surrounding society to make rational decisions in terms of improving environmental performance.

The interest and endeavour to include within the disciplines of teaching in economics the environmental aspect of economic activity and accounting, and not only the issue of maximizing profits and satisfying human needs and reduce the cost.

The need for the State to contribute to the provision of support to preserve the environment and also recommends the study of the need to allocate a percentage of the profits of the company to preserve the environment.

After presenting, findings, and recommendations for this study there are other points are still unknown and can be other research topics and problems waiting for treatment :

- Environmental accounting applications in Libyan industrial establishments.
- Improve environmental performance and its role in achieving competitive advantages for the company.
- Importance of costs or environmental disclosure in the rationalization of administrative decisions in industrial companies.
- The impact of environmental costs on evaluating the performance of industrial companies.
- Problems of disclosure of environmental performance in Libya.
- The role of environmental costs in achieving total quality.
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Appendix

Appendix Number (One)

Questionnaire

Greetings,

The survey is going to be aimed at the strength of the national capacities in support of understanding the roles of environmental cost accounting. The survey is going to be conducted a sample of employees inside the oil companies, on the subject of

**Measurement and Disclosure of Environmental Costs in Financial Statements of Oil Companies to Improve Environmental Performance:
An Empirical Study Conducted in Libya.**

The survey communicates their views of environmental cost accounting that they can provide an opinion about the field and their knowledge or experience about environmental cost accounting and how it is practiced in Libya.

I thank you for your cooperation and assure you that your views will be treated with utmost confidentiality.

Part one: personal information

- 1 What is your Profession?
 - a Financial Manager
 - b Accountant
 - c Account Manager
 - d Internal Auditor
 - e Administrative

- 2 What is your gender?
 - a Male
 - b Female

- 3 What is your level of education?
 - a Higher Diploma
 - b Bachelor Degree
 - c Master Degree
 - d Doctorate Degree
 - e Other

- 4 How many years have you been practicing your profession?
 - a 0-5 years
 - b 6-10 years
 - c 11-15 years
 - d More than 15

- 5 In which department are you work ?
 - a Accounting (finance)
 - b Auditing
 - c Costs
 - d Reporting
 - e Other

Second part:

1- Awareness among officials of the importance of applying measurement and disclosure of environmental costs of oil companies in Libya. How **important are the following points for the measurement and disclosure of environmental costs?**

No.	Questions	Strongly Agree	Agree	neutral	Disagree	Strongly Disagree
6	Measurement and disclosure of environmental costs require the company's application of environmental accounting regardless of its size or capital.					
7	Awareness among interested parties.					
8	Training workers to have multiple environmental skills to do so.					
9	Measurement and disclosure of environmental costs in oil companies require programs and policies to be supported					
10	Moral awareness of management in the companies.					
11	Awareness of management about the competition in the industry					
12	Disclosure of environmental protection costs (such as afforestation costs) borne by the company will improve the image of the company in the eyes of environmental protection organizations and consumers.					
13	Spending on remedying environmental damage (treatment of oil spills) leads to reduced environmental damage to society..					
14	Your company has ISO 14000 certification for environmental quality.					

2- The obstacles that limit of the application of measurement and disclosure of environmental costs oil companies

No.	Questions	Strongly Agree	Agree	neutral	Disagree	Strongly Disagree
15	Complexity of accounting measurement of environmental costs					
16	Non-interference by the State with the enactment of laws requiring companies to measure and disclose accounting for their environmental performance.					
17	Accounting measurement for environmental costs requires expansion (development) of the matching concept					
18	Poor accounting awareness of the importance of applying environmental accounting.					
19	Accounting measurement for environmental costs and disclosure requires the recording of environmental costs in clear and explicit accounts and separating them from the total costs of activity in oil companies					
20	Accounting measurement for environmental costs requires specific criteria to be used in the process of measuring environmental costs in oil companies					
21	There is no clear way to disclose the environmental performance in the financial statements of the oil companies.					
22	Disclosure of environmental costs in the financial statements causes harm of reputation of company					
23	Applied Libyan financial accounting system does not fit with measurement and disclosure of environmental costs.					

3- Application of accounting measurement models to environmental costs to increase the company's commitment to its environmental responsibilities: Application of accounting measurement models to environmental costs

No.	Questions	Strongly Agree	Agree	neutral	Disagree	Strongly Disagree
24	Contributes to the disclosure of the costs of the company's environmental activities.					
25	Contributes to the recognition of the classification of environmental costs in terms of being fixed or variable-etc.					
26	Contributes to the recognition of the company's compliance with legislation and laws on environmental responsibility.					
27	Helps to identify the company's interest in consumer affairs.					
28	Contributes to the recognition of the company's compliance with international standards on environmental accounting.					
29	Helps to identify the extent to which the company cares about the welfare of the community through donations.					
30	Contributes to identifying the means and possibilities necessary to measure the negative external effects of the environmental pollution of the company.					

4- Accounting measurement of environmental performance and an increase in the quality of financial reports:

No.	Questions	Strongly Agree	Agree	neutral	Disagree	Strongly Disagree
31	Measuring and disclosing environmental costs in financial reports increases the quality of information that influences the decisions of current and prospective investors.					
32	Subjecting the effects the positive and negative environment of the unit's activities to accounting measurement leads to the quality of financial reporting.					
33	Using different methods to measure environmental costs enables access to information tailored to the different needs of financial reporting users					
34	The accounting measurement of environmental costs and benefits and their disclosure in the financial reports can be used to obtain information that helps in assessing the extent to which the company fulfills its environmental obligations					
35	Measuring and disclosing environmental costs in financial reports leads to information that enables the assessment of the environmental performance of the company.					
36	The measurement of environmental assets and expenses and the costs of preventing or treating environmental damage and disclosure increases the quality of financial reports of oil companies.					
37	Measuring and disclosing environmental costs in financial reports the company can obtain quality certificates from international organizations to support their survival and sustainability					
38	Measurement and disclosure of environmental costs in financial reports the company can enter quantitative data relating to environmental performance within it.					
39	Information on environmental costs provided by the company positively affects the company's reputation and profitability					

5- There is a relationship between measurement and disclosure of environmental costs and improving the environmental performance of oil companies:

No.	Questions	Strongly Agree	Agree	neutral	Disagree	Strongly Disagree
40	Measuring and disclosing environmental costs in the financial reports considerate as the perception of the company about environmental issues.					
41	The process of measuring and disclosing environmental costs leads to evaluating and improving environmental performance by taking new decisions more rational, such close production line or open new ones the environmental performance.					
42	The process of accounting measurement and disclosure of environmental costs in oil companies to avoid the company to pay fines for violations of the environment.					
43	Measurement and disclosure of environmental costs lead to increasing environmental benefits which impact the environmental return from environmental investments					
44	Measurement and disclosure of environmental costs lead to effective planning and arrangement which leads to reducing the cost of the unit					
45	Measurement and disclosure of environmental costs lead to improving the environmental performance of the company by increasing the rate of return on environmental investments.					
46	Measurement and disclosure of environmental costs lead to improving environmental performance through determining the used technology in producing and nature of production processes that reduce the size of pollution					
47	Measurement and disclosure of environmental costs lead to improving environmental performance through efficient utilization of environmental assets.					
48	The process of measuring and disclosing of environmental costs lead to increasing the company's ability to meet current environmental obligations.					

Appendix (Two)

Disclosure of Environmental Performance Within the Financial Statements

Table (2.1): Income Statement Adjusted for Environmental Impacts

Total	Partial	Statement	Notes
	**	Net sales	
	**	Sales cost	
**		Gross profit	
	**	General and administrative expenses	
	**	Environmental expenses	
	**	Non-depreciation provisions	
	**	Environmental benefits	
	**	Attendance allowances and members of the board of directors	
**		Total cost	
**		Gross profit	
	**	Financing income	
	**	Income of securities	
	**	Benefits payable	
	**	Other income	
	**	Capital gains	
	(**)	Other expenses	
**		Net profit before tax	
**		Tax	
**		Net profit after tax	

Source: (Hamad, 2014).

Table (2.2): Statement of Financial Position Adjusted for Environmental Impacts

Net	Depreciation Complex	The Cost	Statement	Notes
			Long-term assets	
**	**	**	Fixed assets	
**	**	**	Fixed environmental assets	
**		**	Projects under implementation	
**		**	Environmental projects under implementation	
**			Long-term investments	
**			Total long-term assets	
			Assets	
		**	Inventory	
		**	Debtors	
		**	Cash and bank balances	
	**		Total assets traded	
		**	Current liabilities	
		**	Due to banks	
		**	Provisions	
		**	Environmental benefits	
		**	Premiums due	
		**	Suppliers	
		**	Environmental obligations	
	**		Total current liabilities	
**			Working capital	
**			Total	
			Property rights	
**			Equity capital	
**			Reserves	
**			profits stage	
**			General profit	
**			Total	

Source: (Aldahabi, 2009)

Table (2.3): The Cash Flow Statement adjusted for Environmental Effects

Total	Partial	Statement	Notes	
**		First: Cash flows from operating activities		
	(+)	Cash receipts		
	()	Cash purchases and payments		
	()	Paid wages		
	(+)	Cash generated from operating activities		
	()	Local and external benefits paid		
	()	Paid Income Tax		
	(+)	Benefits received		
	(+)	Distributions received		
	()	Other receipts		
	(+)	Cash flows from environmental activities		
**		Second: Cash flows from investment activity		
	()	Payments for the acquisition of fixed assets		
	()	Payments for the acquisition of environmental assets		
	(+)	Proceeds from sale of fixed assets		
	(+)	Proceeds from sale of environmental assets		
	(+)	Cash flows from environmental activities		
**		Third: Cash flows from the financing activity		
	()	Repayment of long term loans		
	(+)	Proceeds from long - term loans		
	()	Dividends paid		
**		Change in cash flow during the year		
		Change in the movement of cash from operating activities		
		Change in the movement of cash from investment activity		
		Change in the movement of cash from financing activity		
**		Cash balance is the first period		
**		Last cash balance		
		In cash		
		Cash in banks		
		Due to banks		

Source: (Hamad,2014)

Appendix (Three)



جامعة اوكان
كلية ادارة الاعمال
قسم المحاسبة

الاستبيان

السادة المحترمين:

تحية طيبة وبعد،

تشكل هذه الاستبانة جزءاً من دراسة تقوم بها الباحثة استكمالاً لنيل درجة الدكتوراه في المحاسبة من كلية إدارة الأعمال في جامعة اوكان، والدراسة بعنوان:

" القياس المحاسبي للتكاليف البيئية والإفصاح عنها في القوائم المالية لتحسين الأداء البيئي:
دراسة تطبيقية في الشركات النفطية في ليبيا"

وتعد المعلومات التي تحتويها هذه الاستبانة ضرورية، وتأمل الطالبة الاستفادة من نتائج هذا البحث في ربط الجانب النظري بالجانب التطبيقي مما يعود بالنفع العام على المستوى الأكاديمي وعلى المستوى المؤسسي. لذا نرجو أن نجد لديكم متسعاً من الوقت للإجابة على الأسئلة الواردة بهذا الاستبانة، ونحيطكم علماً أن بيانات هذا الاستبانة سرية للغاية، ولن يطلع عليها سوى الطالب فقط ، ولن تستخدم نتائجها إلا في أغراض البحث العلمي ولن تعرض نتائجها إلا في صورة إجمالية رقمية ونسب مئوية.

شكراً لحسن تعاونكم ولكم مني كل التقدير

الباحثة: إيمان علي الدريوي

الجزء الأول:

المعلومات الشخصية: ضع العلامة (√) في الخانة المناسبة

الجنس		ذكر	أنثى

المؤهل العلمي	دبلوم عالي	البكالوريوس	الماجستير	الدكتوراه	أخرى أذكرها

المهنة	مدير مالي	محاسب	مدير حسابات	مراجع داخلي	أخرى أذكرها

الخبرة	أقل من 5 سنوات	5 إلى 10 سنوات	10 إلى 15 سنة	أكثر من 15 سنة

العمل في القسم	محاسبة	مالية ومصارف	مراجعة	التكاليف	أخرى أذكرها

الجزء الثاني

1- أثر توعية المسؤولين بأهمية تطبيق عملية القياس والإفصاح المحاسبي عن التكاليف البيئية في الشركات النفطية.

رقم الفقرة	الفقرة	ضيق موافق بشدة	غير موافق	محايد	موافق	موافق بشدة
1	يتطلب القياس والإفصاح عن التكاليف البيئية تطبيق الشركة للمحاسبة البيئية بصرف النظر عن حجمها أو رأسمالها.					
2	يتطلب القياس والإفصاح عن التكاليف البيئية في الشركات النفطية إلى الوعي البيئي لدى المسؤولين.					
3	يتطلب القياس والإفصاح عن التكاليف البيئية في الشركات النفطية إلى وعي وتدريب العمال ليتمتعوا بمهارات بيئية متعددة تمكنهم من فهم ومعالجة التكاليف البيئية.					
4	يتطلب القياس والإفصاح عن التكاليف البيئية في الشركات النفطية وجود برامج وسياسات تدعمها.					
5	يتطلب القياس والإفصاح عن التكاليف البيئية إلى وعي أخلاقي للمسؤولين في الشركات النفطية.					
6	يتطلب القياس والإفصاح عن التكاليف البيئية إلى وعي المسؤولين للمنافسة في الشركات النفطية على أساس الجوانب البيئية.					
7	يؤدي الإفصاح عن تكاليف حماية البيئة (كتكاليف التشجير) التي تتحملها الشركة إلى تحسين صورة الشركة في نظر منظمات حماية البيئة والمستهلكين.					
8	يؤدي الإنفاق على تصحيح الضرر البيئي (معالجة التسربات النفطية) إلى انخفاض الأضرار البيئية التي تصيب المجتمع.					
9	تحوز شركتكم على شهادة إيزو 14001 المتعلقة بجود الأداء البيئي.					

2- المعوقات التي تحد من تبني تطبيق عملية القياس والإفصاح عن التكاليف البيئية في الشركات النفطية.

رقم الفقرة	الفقرة	غير موافق بشدة	غير موافق	محايد	موافق	موافق بشدة
1	تعقد القياس المحاسبي للتكاليف البيئية حال دون تطبيق محاسبة التكاليف البيئية في الشركات النفطية					
2	عدم تدخل الدولة بوضع قوانين تلزم الشركات بالقياس والإفصاح المحاسبي عن ادائها البيئي.					
3	ضعف توعية المحاسبين بأهمية تطبيق المحاسبة البيئية.					
4	القياس المحاسبي للتكاليف البيئية يتطلب توسع مفهوم مقابلة الإيراد بالمصروف في الشركات النفطية					
5	القياس المحاسبي للتكاليف البيئية والإفصاح عن ها يتطلب تسجيل التكاليف البيئية في حسابات واضحة وصريحة وفصلها عن التكاليف الإجمالية للنشاط في الشركات النفطية.					
6	القياس المحاسبي للتكاليف البيئية يتطلب وجود معايير محددة يتم استخدامها في عملية قياس التكاليف البيئية في الشركات النفطية.					
7	الإفصاح عن التكاليف البيئية في القوائم المالية يسبب الإساءة لسمعة الشركات النفطية.					
8	عدم وجود طريقة واضحة للإفصاح عن الاداء البيئي في القوائم المالية للشركات النفطية.					
9	النظام المحاسبي المالي الليبي المطبق لا يلائم القياس والإفصاح عن التكاليف البيئية.					

3- يساعد تطبيق نماذج القياس المحاسبي للتكاليف البيئية في زيادة الإفصاح عن مدى التزام الشركة بمسئولياتها البيئية.

رقم الفقرة	الفقرة	غير موافق بشدة	غير موافق	محايد	موافق	موافق بشدة
1	تطبيق نماذج القياس المحاسبي للتكاليف البيئية يساهم في الإفصاح عن التكاليف الخاصة بالأنشطة البيئية للشركة.					
2	تطبيق نماذج القياس المحاسبي للتكاليف البيئية يساهم في التعرف على تصنيف التكاليف البيئية من حيث كونها ثابتة او متغيرة.					
3	تطبيق نماذج القياس المحاسبي للتكاليف البيئية يساهم في التعرف على مدى التزام الشركة بالتشريعات والقوانين الخاصة بالمسئولية البيئية.					
4	تطبيق نماذج القياس المحاسبي للتكاليف البيئية يساعد في التعرف على مدى اهتمام الشركة بشئون المستهلك.					
5	تطبيق نماذج القياس المحاسبي للتكاليف البيئية يساهم في التعرف على مدى التزام الشركة بالمعايير الدولية الخاصة بمحاسبة البيئية.					
6	تطبيق نماذج القياس المحاسبي للتكاليف البيئية يساعد في التعرف على مدى اهتمام الشركة برفاهية المجتمع من خلال التبرعات.					
7	تطبيق نماذج القياس المحاسبي للتكاليف البيئية يساهم في التعرف على الوسائل والإمكانات اللازمة لقياس الأثار الخارجية السلبية للتلوث البيئي للشركة.					

4- القياس المحاسبي للأداء البيئي يؤدي الى زيادة جودة التقارير المالية للشركات.

رقم الفقرة	الفقرة	غير موافق بشدة	غير موافق	محايد	موافق	موافق بشدة
1	قياس التكاليف البيئية والافصاح عنها في التقارير المالية يزيد من جودة المعلومات التي تؤثر على قرارات المستثمرين الحاليين والمتوقعين.					
2	إخضاع التأثيرات البيئية الإيجابية والسلبية لأنشطة الوحدة للقياس المحاسبي يؤدي الى جودة التقارير المالية.					
3	استخدام الاساليب المختلفة لقياس التكاليف البيئية تمكن من الحصول على معلومات تلئم الاحتياجات المختلفة لمستخدمي التقارير المالية.					
4	القياس المحاسبي للتكاليف والمنافع البيئية والافصاح عنها في التقارير المالية يمكن من الحصول على معلومات تساعد في تقييم مدى تنفيذ الشركة لالتزاماتها البيئية.					
5	قياس التكاليف البيئية والافصاح عنها في التقارير المالية يؤدي الى الحصول على معلومات تمكن من تقويم الاداء البيئي للشركة.					
6	قياس الاصول والمصروفات البيئية وتكاليف منع او معالجة الاضرار البيئية والافصاح عنها يزيد من جودة التقارير المالية للشركات النفطية.					
7	قياس التكاليف البيئية والافصاح عنها في التقارير المالية يمكن الشركة من الحصول على شهادات الجودة من المنظمات الدولية بما يدعم بقاءها واستمراريتها.					
8	قياس التكاليف البيئية والافصاح عنها في التقارير المالية يمكن الشركة من ادخل البيانات الكمية المتعلقة بالأداء البيئي ضمنها.					
9	تؤثر المعلومات حول التكاليف البيئية التي تقدمها الشركة بالإيجاب على سمعة وربحية الشركة					

5- توجد علاقة بين القياس والإفصاح المحاسبي عن للتكاليف البيئية وتحسين وتطوير الأداء البيئي في الشركات النفطية.

رقم الفقرة	المفردة	غير موافق بشدة	موافق	محايد	موافق	موافق بشدة
1	تعتبر عملية القياس والإفصاح المحاسبي للتكاليف البيئية في التقارير المالية دليلاً على إدراك واقتناع الشركات النفطية بالقضايا البيئية.					
2	تؤدي عملية القياس والإفصاح المحاسبي للتكاليف البيئية إلى تقييم الأداء البيئي تحسینه في الشركة من خلال اتخاذ قرارات أكثر رشداً من القرارات القائمة، مثل إغلاق خط إنتاج قائم أو خط جديد.					
3	تؤدي عملية القياس والإفصاح المحاسبي للتكاليف البيئية في الشركات النفطية إلى زيادة المنافع البيئية الملموسة ذات الأثر الواضح في العائد البيئي على الاستثمارات البيئية.					
4	تؤدي عملية القياس والإفصاح المحاسبي للتكاليف البيئية في الشركات النفطية إلى اتخاذ قرارات تحسين الأداء البيئي مما جذب مستثمرين جدد بما يكفي لتعظيم العائد المالي للشركة.					
5	تؤدي عملية القياس والإفصاح المحاسبي للتكاليف البيئية في الشركات النفطية إلى زيادة مقدرة الشركة على مقابلة التزاماتها البيئية الجارية.					
6	تؤدي عملية القياس والإفصاح المحاسبي للتكاليف البيئية في الشركات النفطية إلى تجنب الشركة دفع غرامات المخالفات الخاصة بالبيئة.					
7	تؤدي عملية القياس والإفصاح المحاسبي للتكاليف البيئية في الشركات النفطية إلى فاعلية التخطيط والترتيب الأمر الذي يؤدي إلى خفض تكلفة الوحدة المنتجة.					
8	تؤدي عملية القياس والإفصاح المحاسبي للتكاليف البيئية في الشركات النفطية إلى تحسين الأداء البيئي من خلال قرارات تحديد التكنولوجيا المستخدمة في الإنتاج، وطبيعة العمليات الإنتاجية التي تقلل حجم ومستوى التلوث البيئي إلى أقل حد ممكن.					
9	تؤدي عملية القياس والإفصاح المحاسبي للتكاليف البيئية في الشركات النفطية إلى تحسين الأداء البيئي من خلال كفاءة الشركة في استغلال الأمثل لموجودتها البيئية.					

شكراً لتعاونكم

Appendix (Four)

Results T-test in SPSS

Regression

Descriptive Statistics

	Mean	Std. Deviation	N
IEP	3.8617	.51173	270
AAA	3.9469	.43205	270
OBB	3.7265	.49218	270
AMM	3.8608	.49524	270
IQF	3.8387	.56530	270

Correlations

		IEP	AAA	OBB	AMM	IQF
Pearson Correlation	IEP	1.000	.412	.458	.585	.740
	AAA	.412	1.000	.179	.453	.378
	OBB	.458	.179	1.000	.328	.504
	AMM	.585	.453	.328	1.000	.534
	IQF	.740	.378	.504	.534	1.000
Sig. (1-tailed)	IEP	.	.000	.000	.000	.000
	AAA	.000	.	.002	.000	.000
	OBB	.000	.002	.	.000	.000
	AMM	.000	.000	.000	.	.000
	IQF	.000	.000	.000	.000	.
N	IEP	270	270	270	270	270
	AAA	270	270	270	270	270
	OBB	270	270	270	270	270
	AMM	270	270	270	270	270
	IQF	270	270	270	270	270

Variables Entered/Removed^b

Model	Variables Entered	Variables Removed	Method
1	IQF, AAA, OBB, AMM	.	Enter

a. All requested variables entered.

b. Dependent Variable: IEP

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.782 ^a	.611	.605	.32163

a. Predictors: (Constant), IQF, AAA, OBB, AMM

b. Dependent Variable: IEP

ANOVA^b

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	43.029	4	10.757	103.989	.000 ^a
	Residual	27.413	265	.103		
	Total	70.443	269			

a. Predictors: (Constant), IQF, AAA, OBB, AMM
 b. Dependent Variable: IEP

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.300	.221		1.359	.175
	AAA	.106	.052	.090	2.051	.041
	OBB	.101	.046	.097	2.177	.030
	AMM	.233	.050	.225	4.693	.000
	IQF	.486	.046	.537	10.619	.000

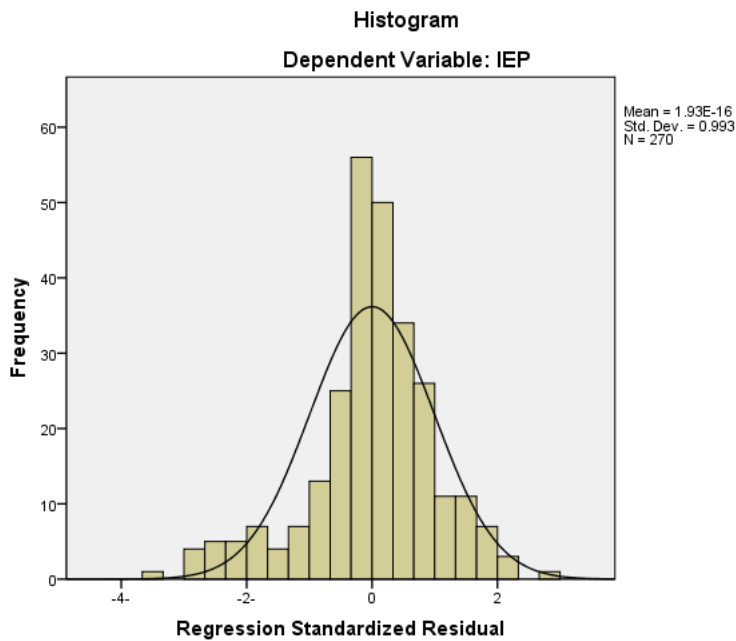
a. Dependent Variable: IEP

Residuals Statistics^a

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	2.3836	4.7841	3.8617	.39995	270
Residual	-1.09462	.91695	.00000	.31923	270
Std. Predicted Value	-3.696	2.306	.000	1.000	270
Std. Residual	-3.403	2.851	.000	.993	270

a. Dependent Variable: IEP

Charts



T-Test

Group Statistics

PG	N	Mean	Std. Deviation	Std. Error Mean
X1(AAA) Accountant	179	3.9286	.44842	.03352
Others	91	3.9829	.39784	.04171
X2(OBB) Accountant	179	3.6377	.50046	.03741
Others	91	3.9011	.42682	.04474
X3(AMM) Accountant	179	3.8460	.48751	.03644
Others	91	3.8901	.51158	.05363
X4(IQF) Accountant	179	3.7554	.56329	.04210
Others	91	4.0024	.53543	.05613

		Levene's Test for Equality of Variances		t-test for Equality of Means							
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference		
										Lower	Upper
X1	Equal variances assumed	.000	1.000	-.976-	268	.330	-.05429-	.05563	-.16382-	.05524	
	Equal variances not assumed			-1.015-	201.332	.311	-.05429-	.05350	-.15979-	.05121	
X2	Equal variances assumed	2.322	.129	-4.290-	268	.000	-.26343-	.06141	-.38434-	-.14252-	
	Equal variances not assumed			-4.517-	208.321	.000	-.26343-	.05832	-.37840-	-.14846-	
X4	Equal variances assumed	.387	.535	-.692-	268	.490	-.04414-	.06382	-.16980-	.08152	
	Equal variances not assumed			-.681-	173.576	.497	-.04414-	.06484	-.17211-	.08383	
X4	Equal variances assumed	.727	.395	-3.463-	268	.001	-.24701-	.07134	-.38746-	-.10656-	
	Equal variances not assumed			-3.520-	189.446	.001	-.24701-	.07016	-.38541-	-.10861-	

Group Statistics

	what is your gender	N	Mean	Std. Deviation	Std. Error Mean
X1(AAA)	Male	192	3.9745	.41136	.02969
	Female	78	3.8789	.47519	.05381
X2(OBB)	Male	192	3.7061	.48134	.03474
	Female	78	3.7766	.51769	.05862
X3(AMM)	Male	192	3.9010	.46766	.03375
	Female	78	3.7619	.54807	.06206
X4(IQF)	Male	192	3.8299	.54799	.03955
	Female	78	3.8604	.60896	.06895

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
AAA	Equal variances assumed	.582	.446	1.654	268	.099	.09562	.05783	-.01823	.20947
	Equal variances not assumed			1.556	126.300	.122	.09562	.06145	-.02599	.21723
OBB	Equal variances assumed	.011	.917	-1.066	268	.287	-.07046	.06607	-.20054	.05963
	Equal variances not assumed			-1.034	133.923	.303	-.07046	.06814	-.20522	.06431
AMM	Equal variances assumed	1.580	.210	2.106	268	.036	.13914	.06608	.00904	.26923
	Equal variances not assumed			1.970	124.884	.051	.13914	.07064	-.00067	.27895
IQF	Equal variances assumed	.651	.420	-.402	268	.688	-.03054	.07602	-.18021	.11914
	Equal variances not assumed			-.384	130.310	.701	-.03054	.07949	-.18779	.12672

Oneway Anova

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
AAA	Between Groups	1.730	2	.865	4.758	.009
	Within Groups	47.455	261	.182		
	Total	49.185	263			
OBB	Between Groups	1.674	2	.837	3.489	.032
	Within Groups	62.619	261	.240		
	Total	64.293	263			
AMM	Between Groups	.977	2	.489	1.978	.140
	Within Groups	64.491	261	.247		
	Total	65.468	263			
IQF	Between Groups	.930	2	.465	1.489	.227
	Within Groups	81.467	261	.312		
	Total	82.397	263			

ONEWAY AAA OBB AMM IQF BY Education/MISSING ANALYSIS.

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
AAA	Between Groups	1.289	3	.430	2.335	.074
	Within Groups	48.926	266	.184		
	Total	50.214	269			
OBB	Between Groups	2.688	3	.896	3.814	.011
	Within Groups	62.477	266	.235		
	Total	65.164	269			
AMM	Between Groups	1.047	3	.349	1.430	.234
	Within Groups	64.929	266	.244		
	Total	65.976	269			
IQF	Between Groups	.592	3	.197	.615	.606
	Within Groups	85.369	266	.321		
	Total	85.961	269			

ONEWAY AAA OBB AMM IQF BY Experiences /MISSING ANALYSIS.

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
AAA	Between Groups	1.437	4	.359	1.951	.102
	Within Groups	48.778	265	.184		
	Total	50.214	269			
OBB	Between Groups	2.562	4	.640	2.711	.031
	Within Groups	62.603	265	.236		
	Total	65.164	269			
AMM	Between Groups	.385	4	.096	.389	.816
	Within Groups	65.590	265	.248		
	Total	65.976	269			
IQF	Between Groups	3.127	4	.782	2.501	.043
	Within Groups	82.834	265	.313		
	Total	85.961	269			

ONEWAY AAA OBB AMM IQF BY Certificate /MISSING ANALYSIS.



CIRRICULUM VITAE

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- Bachelor Degree on Accounting: Fall 2004 - Benghazi University, Benghazi - Libya.
- Master Degree on Accounting Fall 2009 - Benghazi University, Benghazi - Libya.

Teaching Experience:

- Teacher in Alohdha school , Benghazi , Libya between (2001-2004).
- Assistant professor Benghazi University in Benghazi , Libya between (2004-2009).
- Lecturer in accounting department in Economics College at Benghazi University for since Spring 2010.
- Lecturer in accounting department in Mediterranean Sea University for since Spring 2015 in Istanbul.

Technology Skills:

I can use Microsoft Office.

Familiar with statistic program SPSS.

Proficient in Microsoft Office and multiple internet tools.