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# The Auditor's Role and Responsibilities towards Auditing Environmental Performance of Firms

**Gehan Abdel-Hady Mousa Mohamed**

**Thesis submitted in fulfillment of the Degree of Doctor of Philosophy (Ph.D)**

**University of Durham**
**Business School**
**Durham, UK**

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Thesis submitted in fulfillment of the Degree of Doctor of Philosophy by

***Gehan Abdel-Hady Mousa Mohamed***

Thesis title: ***The Auditor's Role and Responsibilities towards Auditing Environmental Performance of Firms***


## Abstract

Environmental issues have a significant impact on business and the auditing profession. Each year firms are prosecuted and fined for violating environmental laws. Corporations are faced with increasing pressures from diverse stakeholder groups, including governmental agencies, to address environmental concerns. However, environmental disclosure is still very low. The implications of environmental issues on business lead to the emergence of a number of arguments concerning the role of financial auditors in environmental auditing. The critical question posed is should financial auditors be involved in environmental auditing? and what factors which limit their participation?.

Accounting research, which addresses environmental auditing, environmental impacts on business and the auditing profession, corporate environmental disclosure, and companies' motivations for environmental disclosure, are reflected upon to draw the theoretical findings of the research. The theoretical framework of research is based on legitimacy theory to recognize companies' motivations for environmental disclosure in Egypt and to identify the impact of these motivations on the demand for environmental auditing. Empirical findings based on surveying three groups (researchers-practitioners-companies). The central proposal made is that the level of demand for environmental auditing may impact on auditors' participation in environmental auditing. The theoretical foundations of the research and the results of statistical analysis of surveys can be suggested that obstacles, which limit auditors' involvement in environmental audits, depend on two groups of factors:

First group is related to auditors' qualification and the auditing profession (such as accounting education, the ethical and social aspects in accounting, the experience, skills and training of auditors, the absence of professional guidance for environmental issues).

Second group is related to the level of demand for environmental auditing, which depends on companies' motivations for environmental disclosure and companies' lack of the requirements of environmental reports.

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Due acknowledgment must always be made of any material contained in, or derived from, the thesis.

To my husband

Dr. Amin A. A. El-Meligi

for his support, help and love , and
my lovely kids Yara and Ahmed who provide
me with pleasure and happiness

To my father, mother, and my brother and sisters
for their gifts of knowledge, support and love

To my supervisors
for their help, support and encouragement

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*Table of contents*


**ACKNOWLEDGMENTS.....I**

***LIST OF ABBREVIATIONS*.....VI**

***LIST OF FIGURES*.....VIII**

***LIST OF TABLES*.....IX**

**PART I: THEORETICAL PART..... 1**

**CHAPTER 1**

**INTRODUCTION AND OVERVIEW..... 1**

**1. INTRODUCTION..... 1**

**2. OBJECTIVES OF THE STUDY..... 2**

**3. THE IMPORTANCE OF THE STUDY..... 3**

**4. STRUCTURE OF THE THESIS..... 3**

**CHAPTER 2**

**PERSPECTIVES ON ENVIRONMENTAL AUDITING..... 6**

**1. INTRODUCTION..... 6**

**2. THE IMPACT OF ENVIRONMENTAL ISSUES ON BUSINESS..... 7**

**3. BUSINESS ETHICS AND THE ENVIRONMENT..... 11**

**4. SHOULD THE AUDITING PROFESSION BE EXTENDED TO ENCAPSULATE ENVIRONMENTAL ISSUES?..... 14**

**5. THE EMERGENCE OF ENVIRONMENTAL AUDITING..... 17**

**6. THE DEFINITION OF ENVIRONMENTAL AUDITING..... 19**

**7. THE OBJECTIVES OF ENVIRONMENTAL AUDITING..... 21**

**8. TYPES OF ENVIRONMENTAL AUDITS..... 23**

**9. DIMENSIONS OF ENVIRONMENTAL AUDITING..... 24**

**SUMMARY..... 28**

CHAPTER 3

THE RELEVANCE OF FINANCIAL AUDITORS TO MEET ENVIRONMENTAL CHALLENGES ..... 29

1. INTRODUCTION ..... 29

2. AN OVERVIEW OF ENVIRONMENTAL AUDITING LITERATURE ..... 29

3. ENVIRONMENTAL ISSUES AND FINANCIAL AUDITORS' DUTIES ..... 36

4. SHOULD FINANCIAL AUDITORS BE INVOLVED IN ENVIRONMENTAL AUDITING? ..... 50

5. FINANCIAL AUDITORS AND ENVIRONMENTAL SPECIALISTS ..... 54

6. THE AUDITORS' RESPONSIBILITY TOWARDS ENVIRONMENTAL DISCLOSURE ..... 56

7. SOME FACTORS, WHICH LIMIT AUDITORS' INVOLVEMENT IN ENVIRONMENTAL AUDITING ..... 59

SUMMARY ..... 70

CHAPTER 4

THE INTERNATIONAL ENVIRONMENTAL INITIATIVES AND THE PROBLEMS OF CORPORATE ENVIRONMENTAL REPORTING ..... 72

1. INTRODUCTION ..... 72

2. THE ACCOUNTANCY BODIES' ACTIVITIES TOWARDS ENVIRONMENTAL ISSUES ..... 73

3. A REVIEW OF KEY ENVIRONMENTAL INITIATIVES ..... 75

4. AN OVERSIGHT ON THE ENVIRONMENTAL MANAGEMENT SYSTEM STANDARDS ..... 92

5. SOME CRITICAL ISSUES CONCERNING ENVIRONMENTAL INITIATIVES ..... 94

6. OBSTACLES LIMIT COMPANIES TO ENGAGE IN ENVIRONMENTAL REPORTING ..... 95

SUMMARY ..... 106

CHAPTER 5

THE SOCIAL PERSPECTIVE AND CORPORATE ENVIRONMENTAL REPORTING ..... 108

1. INTRODUCTION ..... 108

2. THE CONCEPT OF LEGITIMACY ..... 109
3. AN OVERVIEW ON LEGITIMACY THEORY ..... 110
4. LITERATURE REVIEW ..... 115
5. LEGITIMACY THEORY AND CORPORATE ENVIRONMENTAL REPORTING ..... 118
6. THE CORPORATE IMAGE OR REPUTATION (AS AN EXAMPLE OF THE LEGITIMATING MOTIVE) ..... 122
7. THE RELEVANT PUBLIC ..... 125
8. LEGITIMIZING THE CORPORATE ENVIRONMENTAL REPORTS ..... 129
SUMMARY ..... 131

PART II: THE EMPIRICAL STUDY IN EGYPT ..... 132

CHAPTER 6

RESEARCH METHODOLOGY AND LEGITIMACY THEORY ..... 132

1. INTRODUCTION ..... 132
2. METHODOLOGICAL FOUNDATIONS AND LEGITIMACY THEORY ..... 132
3. RESEARCH METHOD AND QUESTIONNAIRE DESIGN ..... 138
4. LIMITATIONS OF THE RESEARCH ..... 139
5. RESEARCH TIME FRAME ..... 140
6. ANALYSIS OF FINDINGS ..... 140
SUMMARY ..... 141

CHAPTER 7

THE STATISTICAL METHODOLOGY OF RESEARCH ..... 142

1. INTRODUCTION ..... 142
2. THE SAMPLE FRAME ..... 142
3. THE STATISTICAL METHODOLOGY ..... 143
4. THE DESCRIPTIVE ANALYSIS OF QUESTIONNAIRES ..... 145
SUMMARY ..... 183

CHAPTER 8

FURTHER ANALYSIS OF SURVEYS (FACTOR ANALYSIS-CORRELATION AND REGRESSION ANALYSIS) ..... 184

1. INTRODUCTION ..... 184

2. THE RESULTS OF FACTOR ANALYSIS OF SURVEYS ..... 185

3. THE CORRELATION AND REGRESSION ANALYSIS OF SURVEYS ..... 193

4. THE FINDINGS OF THE EMPIRICAL STUDY ..... 213

CHAPTER 9

THE THEORETICAL FRAMEWORK AND RESULTS OF THE RESEARCH ..... 219

1. INTRODUCTION ..... 219

2. LEGITIMACY THEORY AND FINDINGS OF THE RESEARCH ..... 219

3. LIMITATION AND IMPLICATION OF THE FINDINGS ..... 225

4. SUGGESTIONS FOR FUTURE RESEARCH ..... 228

REFERENCES ..... 229

*LIST OF APPENDICES* ..... 264

## *List of Abbreviations*

| | |
|---|---|
| AAA | American Accounting Association |
| $AA_{1000}$ | Accountability $AA_{1000}$ |
| $AA_{2000}$ | Accountability $AA_{2000}$ |
| ACBE | Advisory Committee on Business and Environment |
| AICPA | American Institute of Certified Public Accountants |
| APB | Auditing Practices Board |
| APC | Auditing Practices Committee |
| ASB | Auditing Standards Board |
| ASCPA | Australian Society of Certified Practicing Accountants |
| ASSC | Accounting Standards Steering Committee |
| BS | British Standards |
| CAIP | Cairo Air Improvement Project |
| CC | Copenhagen Charter |
| CEOs | Chief Executive Officers |
| CERCLA | Comprehensive Environmental Response Compensation and Liability Act |
| CFCs | Chloroflourocarbons |
| CNG | Compressed Natural Gas |
| CICA | Canadian Institute of Chartered Accountants |
| CPAs | Certified Public Accountants |
| EC | European Commission |
| EEAA | Egyptian Environmental Affairs Agency |
| EIA | Environmental Impact Assessment |
| EIMP | Environmental Information and Monitoring Program |
| EMS | Environmental Management System |
| EMAS | ECO-Management and Audit Scheme |
| ENDS | Environmental Data Services |
| EP | Egyptian Pound |
| EPA | Environmental Protection Agency |
| EPF | Environmental Protection Fund |
| EWP | Environmental Working Party |
| FASB | Financial Accounting Standards Board |

| | |
|---|---|
| FEE | Federation des Exports Comptables Europeens |
| FSWG | Financial Sector Working Group |
| GAAS | Generally Accepted Auditing Standards |
| GAAP | Generally Accepted Accounting Principles |
| GRIs | Global Reporting Initiatives Guidelines |
| IAPC | International Auditing Practices Committee |
| IAS | International Auditing Standards |
| IASC | International Auditing Standards Committee |
| ICAEW | Institute of Chartered Accountants in England and Wales |
| ICC | International Chamber of Commerce |
| IFA | International Federation of Accountants |
| IFAC | International Federation of Accountants Committee |
| ISO | International Organization for Standardization |
| MSEA | Ministry of State for Environmental Affairs |
| NBU | National Biodiversity Unit |
| SAS | Standard Auditing Statement |
| SD | Standard Deviation |
| SEC | Securities and Exchange Commission |
| SFAS | Statement on Financial Accounting Standard |
| TRI | Toxic Release Inventory |
| UIG | Urgent Issues Group |
| UK | United Kingdom |
| UN | United Nations |
| UNEP | United Nations Environmental Program |
| US | United States |
| VET | Vehicle Emission Test |

## *List of Figures*

Figure (3.1): Auditor's responsibility for the work of others in auditing environmental disclosure

Figure (3.2): A general framework of the necessary characteristics of environmental auditors

Figure (4.1): An overview of the Eco-Management and Audit Scheme's elements

Figure (4.2): The AA 1000 Process Model

Figure (5.1): Legitimacy theory and corporate social disclosure

Figure (6.1): Summary of the methodological foundations of research

Figure (9.1): Obstacles limit auditors' participation in environmental auditing

## *List of Tables*


Table (3.1): Auditor's opinion concerning environmental issues in the audit of financial statements

Table (4.1): ISO 14000 series of environmental standards

Table (4.2): GRI recommended elements to include in a sustainability report

Table (4.3) A general framework of the contents of environmental reports

Table (4.4): FEE arguments about environmental reporting

Table (4.5): Criteria should be considered in environmental reporting

Table (4.6): Recommended guiding principles for environmental reports

Table (4.7): The principles of GRI (2000) reporting

Table (4.8): A general framework of the requirements of environmental reports

Table (5.1): Category of internal users and their needs of environmental information

Table (5.2): The users and their needs of environmental information

Table (7.1): The impact of environmental issues on the financial statements of companies

Table (7.2) Types of environmental audits conducted

Table (7.3): The potential advantages of environmental audits

Table (7.4): The potential disadvantages of environmental audits

Table (7.5) companies' motivations for environmental disclosure

Table (7.6): Views on environmental guidance and regulation

Table (7.7): Views on extending the auditing profession to encapsulate environmental issues

Table (7.8): Audit Firms and environmental issues

Table (7.9): The external auditor and environmental issues

Table (7.10): Factors which limit external auditors' involvement in environmental auditing

Table (7.11): The impact of environmental issues on the financial statements of companies

Table (7.12): The external auditor's practicing and environmental issues

Table (7.13): Types of environmental audits conducted

Table (7.14): The potential advantages of environmental audits

Table (7.15): The potential disadvantages of environmental audits

Table (7.16) companies' motivations for environmental disclosure

Table (7.17): Views on environmental guidance and regulation

Table (7.18): Views on extending the auditing profession to encapsulate environmental issues

Table (7.19): Audit Firms and environmental issues

Table (7.20): The external auditor and environmental issues

Table (7.21): Factors which limit external auditors' involvement in environmental auditing

Table (7.22): Position and experience

Table (7.23): Types of industry

Table (7.24): Company's activities impact on the environment

Table (7.25): The impact of environmental issues and regulation on companies

Table (7.26): The group, which is responsible for environmental issues in the company

Table (7.27): The importance of the environmental issues

Table (7.28): Current environmental issues in companies

Table (7.29): Types of environmental audits conducted

Table (7.30): Personnel conducting environmental audits (Internal-External- Both)

Table (7.31): External personnel conducts environmental audits

Table (7.32): Internal personnel conducts environmental audits

Table (7.33): The potential advantages of environmental audits

Table (7.34): The potential disadvantages of environmental audits

Table (7.35): The financial auditor's role in environmental auditing

Table (7.36): A summary of the results of the descriptive analysis of surveys.

Table (8.1): Types of environmental audits

Table (8.2): The potential advantages of environmental auditing

Table (8.3): The potential disadvantages of environmental audits

Table (8.4): Companies' motivations for environmental disclosure

Table (8.5): Factors limit the external auditors' involvement in environmental audits

Table (8.6): Types of environmental audits

Table (8.7): The potential advantages of environmental auditing

Table (8.8): The potential disadvantages of environmental audits

Table (8.9) companies' motivations for environmental disclosure

Table (8.10): Factors limit the external auditors' involvement in environmental audits

Table (8.11): Types of environmental audits

Table (8.12): The potential advantages of environmental auditing

Table (8.13): The potential disadvantages of environmental audits

Table (8.14): Correlation between the obstacles to the external auditor's involvement in environmental auditing and the environmental awareness of researchers

Table (8.15): Correlation between the obstacles to the external auditor's involvement in environmental auditing and environmental auditing variables (second attribute)
Table (8.16): The regression model of survey 1 (researchers)
Table (8.17): Correlation between the obstacles to the external auditor's involvement in environmental auditing and the environmental awareness of practitioners.
Table (8.18): Correlation between the obstacles to the external auditor's involvement in environmental auditing and environmental auditing variables (second attribute)
Table (8.19): The regression model of survey 2 (Practitioners)
Table (8.20): Correlation between the external auditor's involvement in environmental auditing and the environmental awareness of companies
Table (8.21): Correlation between the external auditor's involvement in environmental auditing and environmental auditing variables (second attribute).
Table (8.22): The regression model of survey 3 (Companies)
Table (8.23): A brief summary of the research findings and previous studies
Table (9.1): The relationship between the theoretical framework and findings of the research

## *List of Appendices*

Appendix 1: Fines and Imprisonment in the UK(according to the Environmental Act 1990)

Appendix 2: Fiscal year 1991 the U.S. EPA Civil Penalty Statistics

Appendix 3: Brief summary of the 17 major Federal Environment Regulations in U.S.

Appendix 4 : Background about the Environment in Egypt

Appendix 5: Official documents for a number of Egyptian companies

Appendix 6: Environmental auditing surveys (survey 1, 2, and 3)

Appendix 7: Frequency Tables of the descriptive analysis of surveys

Appendix 8: The factor analysis of surveys (2 and 3)

# Part I: Theoretical part

# Chapter 1: Introduction and Overview

## 1. Introduction

The earth has been evolving and changing throughout its history, and it may continue to do so. Previous environmental changes were driven by natural forces, and the primitive ancestors had to adapt to these in order to survive. Today certain environmental changes are taking place as a result of modern industrial area. For example, in just one industrial sector: refrigeration which uses chlorofluorocarbons (CFCs), the use of CFCs resulted in the depletion of ozone layer in the upper atmosphere (Meall, 1990; Atchia and Tropp, 1995). Environmental issues arise from increasing concern about the interaction between business and the natural environment which will affect companies.

The last two decades therefore have witnessed the growing importance of environmental issues. The report of the World Commission on the Environment and Development (1987, p.6) points out that "we found everywhere deep public concern for the environment, concern that has led not just to protests but often to changed behaviour. The challenge is to ensure that these new values are more adequately reflected in the principles and operations of political and economic structures".

Companies are currently faced with an increasing number of environmental laws and pressures from a variety of stakeholders regarding environmental performance. These laws impose sanctions on offending companies. These sanctions lead to the creation of environmental risks for companies such as fines and penalties for pollution of land, water or air, loss of the public confidence, and also companies may be shut down (Graves et al., 1996; Wood, 1990; Sternberg, 2000; Mason, 1995). Because of these risks, stakeholders, consumers, investors, and others ask for information about environmental impacts on business. Environmental information can help them to take their decisions. The credibility of this information will increase if it is audited by an independent audit (ICAEW, 1992).

An increasingly substantial number of studies (APB, 1995, 1993; APC, 1991; CICA, 1992, 1994, 1997; Collison et al., 1996; Collison and Slomp, 2000; ICAEW, 1992, 2000; FEE, 1993; Collison and Gray, 1997) have argued that environmental issues have a significant impact on the auditing profession and financial auditors should consider these issues when auditing the financial statements of companies. The possible implications of environmental issues on financial auditors' functions are discussed (Blockdijk and Drieenhuizen, 1992; Colbert and Scarbrough, 1993; Gray et al., 1993; Owen, 1992; Roussey, 1992; Collison and Gray, 1997; Brown, 2000; ICAEW, 1992, 2002).

Collison et al. (1996) argue that auditors are becoming more involved in various aspects of the environmental agenda and the notion of auditing is gaining a wider currency on the environmental agenda than as applied to only attestation of financial statements. Also, 57 % of finance directors surveyed by Coopers and Lybrand (1990) expected their financial auditors to understand environmental issues affecting their business. Despite this auditors' participation in environmental audits is still limited, a number of arguments have emerged concerning the relevance of financial auditors to participate in these audits. Some studies advocate this participation, especially, if auditors co-operate with other specialists. While, other studies have criticised auditors' ability to take part in these audits.

The critical question of this research is should the financial auditors be involved in environmental auditing? and what are obstacles which limit their participation?. The research investigates the factors, which limit auditors' involvement in environmental audits through applying legitimacy theory to recognise companies' motivations for environmental disclosure across the Egyptian community, which may impact on the level of demand for environmental auditing.

## 2. Objectives of the Study

The general objective of this research is to increase an understanding of environmental impacts on the auditing profession and the financial auditors' work, as well as recognizing obstacles, which limit auditors' participation in environmental auditing in Egypt. Specific objectives of this research are to describe the following attributes (1-environmental awareness, 2-environmental auditing, and 3-auditors' involvement in environmental auditing and obstacles which limit this) by surveying three groups (researchers-practitioners and some companies).

## 3. The importance of the study

Environmental issues are a critical subject for business. Some researchers have done work in this area, particularly in the United States and the United Kingdom, but in Arab countries environmental issues just start to be considered.

Therefore, this research is necessary for the Arab countries, especially, Egypt for the following reasons:-

-to highlight the importance of environmental issues and their impact on business,

-to increase awareness of environmental issues in society,

-to investigate companies' motivations for environmental disclosure, and

-to determine the barriers which face financial auditors to take part in environmental auditing.

## 4. Structure of the Thesis

The study is divided into two parts (the first is theoretical and the second is empirical.

***The theoretical part consists of six chapters:***

***-Chapter one*** serves as the introduction to the entire study. It provides brief information about the purpose of the research. It also explains the importance and objectives of this research.

***-Chapter two:*** The purpose of this chapter is to address the question "is there a need for environmental auditing?". The relationship between business ethics and the environment is provided. Arguments about the importance of widening the scope of conventional auditing to encapsulate environmental issues are presented. A number of matters related to environmental auditing are presented (such as, its emergence, definition, objectives, types and its dimensions) to introduce a background about environmental auditing.

***-Chapter three:*** the chapter addresses the impact of environmental issues on the auditing profession and financial auditors' work. It attempts to answer the question, are financial auditors able to contribute in environmental audits? and what are barriers which limit their participation in these audits?. Arguments about the relevance of financial auditors in carrying out environmental audits and their responsibility towards environmental

disclosure are provided. A discussion about factors, which limit auditors' involvement in environmental audits, is addressed in an attempt to suggest a general framework of the necessary characteristics of environmental auditors.

***-Chapter four:*** The chapter investigates the obstacles, which make companies prefer not to engage in environmental reporting and identifies a general framework of the requirements of environmental reports. It reviews a number of the accountancy bodies' activities concerning environmental matters and environmental initiatives, such as the Copenhagen Charter (CC) (1999), the Accountability AA1000 (and AA2000), the Global Reporting Initiatives Guidelines (GRIs 2000), the British Standard (BS7750), the International Organization for Standardization (ISO 14000), and the Eco-Management and Audit Scheme (EMAS). The problems, which limit companies to produce detailed environmental reports, are presented. Whether the international environmental initiatives can meet the requirements of environmental reports are provided.

***-Chapter five:*** the chapter provides a theoretical framework based on legitimacy theory to examine the question why some companies pay attention to environmental issues and engage in environmental disclosure while others ignore these issues. It aims to identify companies' motivations for environmental disclosure, which may impact on the level of demand for environmental auditing, consequently, may effect on auditors' participation in that audit. The chapter includes defining the concept of legitimacy, and presenting perspectives on legitimacy theory. The literature of legitimacy theory is reviewed. The relationship between legitimacy theory and corporate environmental reporting are presented. The corporate image as an example of the legitimating motive is addressed. The relevant public who has the right to know environmental impacts on business is discussed. Legitimizing the corporate environmental reports is provided.

***The empirical part consists of four chapters***

***-Chapter six:*** the chapter examines the researcher's rationality for adapting a research methodology, which based on conducting surveys for three groups (researchers-external auditors-some companies). In deciding an appropriate and adequate research methodology, methodological foundation of the research are based on the following five steps:-

1-Identifying the central proposal of research.

2-Suggesting the subsidiary hypotheses of research.

3-Identifying the theoretical framework of research.

4-Observing the nature and type of corporate environmental disclosure in Egypt.

5-Determining research method.

***-Chapter seven:*** this chapter presents the research methodology, which is primarily an empirical study surveying the views of some researchers, practitioners and companies concerning external auditors' involvement in environmental audits and companies' motivations for environmental disclosure through specific attributes (environmental awareness, environmental auditing and the external auditor's involvement in environmental auditing and obstacles, which limit that). The sample frame, the statistical methodology, and the descriptive analysis of surveys are presented. The statistical methodology based on adapting three steps:-

1-The descriptive analysis.

2-The factor analysis.

3-The correlation and regression analysis.

***-Chapter eight:*** the chapter provides additional statistical analysis (factor analysis and correlation and regression analysis) to describe the external auditors' involvement in environmental auditing and obstacles limiting their participation. The Pearson correlation analysis is used to examine the relationship between obstacles to auditors' participation in environmental auditing and other variables. Stepwise regression is employed to select the independent variables for designing the descriptive regression model for each survey.

***-Chapter nine:*** It outlines the findings and implications of the research. Suggestions for future research are addressed.

# Chapter 2

# Perspectives on Environmental Auditing

## 1. Introduction

Each year, hundreds of firms are prosecuted for violating environmental laws and hundreds of millions of dollars in penalties are assessed. At the same time, a much larger number of firms escape the various costs associated with ligitation by adhering to the provisions of the same laws and regulations (Kassinis and Vafeas, 2002; Burnett-Hall, 1994 (a); Balcconire and Patten, 1994; Shields and Ber, 1997; Graves et al., 1996; Natale and Ford, 1995).

During 1991, the US Environmental Protection Agencies (EPA) assessed a total of $ 73.1 million in civil penalties and criminal fines totalled $ 14.1 million [see appendix 2]. Environmental laws are now becoming more complex and extensive. If a company chooses not to comply, the eventual cost in terms of later clean up, fines, and penalties could be in the billion of dollars.

Today social factors are of much higher consideration than they were in the 1980s, also environmental factors are at the top of social considerations. In Europe and the United States, the late 1980s and early 1990s witnessed the emergence of interest in environmental accounting, auditing and reporting (Owen et. al., 2000). Governmental bodies, environmental groups, firms and the accountancy profession in most countries have a concern about environmental issues (Longford, 1995). The social demands and the significant environmental legislation that have forced companies to undertake and participate in extensive environmental activities. Therefore, organizations increasingly recognise the importance of addressing environmental issues effectively (Judge and Douglas, 1998; Beets and Souther, 1999). Stakeholders are increasingly demanding the disclosure of information that reflects the interaction between organizations and the environment (Moneva and Llena, 2000). Brown and Deegan (1998) reported that there is an increasing propensity for firms to disclose information about their environmental performance. However, Post and Altman (1994) argued that the method companies use to address environmental requirements influence the success or failure of their products. Brady et al., (1999) argued that competitive opportunities exist for companies that address concerns for environmental costs, risk reduction, innovation, efficiency, and regulatory

pressures. A number of companies have declared that they have not only economic but also environmental and social responsibilities. One part of taking these responsibilities is the reporting of the relevant achievements in environmental reporting (Schaltegger et al., 1996). It can be argued that environmental issues are evolving quickly and developments in thinking, law, practice and attitudes are rapid with consequent potential impact on a company's sustainability and the auditing profession.

The purpose of this chapter is to address the question "is there a need for environmental auditing?". The chapter includes environmental impacts on business. The relationship between business ethics and the environment is provided. Arguments about the importance of widening the scope of conventional auditing to encapsulate environmental issues are presented. A number of matters related to environmental auditing are presented (such as, its emergence, definition, objectives, types and its dimensions).

## 2. The impact of environmental issues on business

At the beginning of the century thick dark smoke and stinking water were regarded as a necessary evil of economic welfare. Today society demands clean air, clean water, and sustainable development (Drummond and Bain, 1994, Kenneth and John, 1982, Peter, 1981, Sternberg, 2000, Mason, et. al, 1995). The human impact on the natural environment is not only local or regional but poses a threat to the global ecosphere. As shown by scientific findings [e.g. about the ozone layer and climatic change]. In general, environmental issues have two aspects. The first is pertinent to the natural resource-base and involves land development to support food production, water shortage and quality, availability of energy and management of the natural heritage. The second is concerned with the decay of environmental quality such as air pollution and water pollution, soil erosion, solid waste and noise pollution (Attia, 1999).

Awareness of environmental issues has been rising during the last 20 years and environmental pressure groups have been growing in most countries. A number of countries have environmental laws and regulations to protect the environment such as the U.S. the UK, Egypt, Canada, Swiss, Dutchland, and Germany [see appendix 3 and 4]. These laws impose sanctions on offending companies, therefore, environmental issues may

have a material effect on companies either directly or indirectly. The last decade has witnessed a lot of environmental risks for organizations, for example, in the 1960s, the asbestos industry sold products that have been causing tremendous health damage in the 1980s and 1990s. Today, asbestos as a product is mostly phased out and the insurance companies (which have not caused the damage) are having to foot the financial bill. The consequent financial liabilities for pollution, illnesses, and clean up liabilities for asbestos are estimated to be $ 2 trillion alone in the U.S. (Schaltegger, et. al., 1996). In 1984 a cloud of poisonous methyl iso-cyanate leaked from union Carbide's Pesticide Plant, located on the outskirts of Bhopal, India. Its effect on human life was devastating with approximately 4,000 deaths and 200,000 injuries. The financial impact was also pronounced and virtually immediate. Within five trading days of the chemical leak the market value of Union Carbide's common stock fell approximately 27.9 % from US $ 3,443 million to US $ 2,483 million (Balcconire and Patten 1994).

Some environmental liabilities have exceeded the worst losses of companies. Among the major disasters in the 1980s were Bhopal (Union Carbide), Schweizerhalle (Sandoz), and Prince William Sound (Exxon), all of which had substantial financial consequences for the companies involved (Patten, 1992). On March 24, 1989 Oil Tanker Exxon Valdez ran ground in Prince William Sound on Alaska's West Coast. Forty million liters of crude oil spilled into the sea, causing enormous damage to the marine flora and fauna. The announcement of the court's decision in the first of four stages of the proceeding led to a 4 % fall in Exxon's share price wiping out roughly US $ 3.1 billion of the firm's market capitalization (in short term). By then the company had already spent $ 2.5 billion on cleaning much of the 2,400 km of beaches soiled by the spill, and another $ 1.1 billion to settle several claims under criminal law. In the second stage the court decided that Exxon would have to pay $ 268.8 million to affected fishermen. Third, the court decided the fine in total Exxon was confronted $ 16.5 billion: ($ 3.5 million for clean up, $ 1.5 million in compensation and the rest as punitive penalties). In the fourth stage, the court will deal with the claims of thousands of individuals and groups that do not belong to those of stage three of the court case (Patten, 1992, Schaltegger et al., 1996). In the US, Act of 1980 [referred to as the "Superfund Law"], which enables the US Environmental Protection Agency (EPA) to enforce landfill remediation by companies. EPA can also

require any person or company involved to carry the total of all remediation costs, no matter how much of them the respective party has actually caused (Roussey, 1992).

In 1992, Monsanto Company made a provision for liabilities to clean up waste sites, which was almost 83 % of its 1991 net income (McMurray, 1992). During 1990, Atlantic Richfield Company (ARCo) added $ 220 million to its reserves relating to future environmental clean up costs. On December 31, 1990, such reserves totaled $ 737 million (Roussy, 1992, P. 51). Even banks, in the US, which have given mortgages or which manage closed properties can be held liable. The costs of cleaning up superfund sites are expected to exceed $ 500 billion in the next 40 to 50 years (EIU, 1993).

The US Environmental Protection Agency (EPA) ordered in 1991 a major manufacturer of electronic parts to pay an estimated $ 14.9 million to clean a contamination site in upstate New York [Roussey, 1992, P. 48]. In 1993, the E. I. Dupont de Nemours and company spent approximately $ 500 million for capital projects related to environmental goals and environmental expenses were about $ 1 billion (Shields, and Ber, 1997). Also, the management of Amoco York town refinery estimated that its environmental costs were approximately 3 % of operating costs, but the environmental costs were determined to be approximately 22 % of operating costs (Shields and Ber, 1997).

It can be argued that environmental risk is one area of risk that has grown in importance in recent years due to an increasing the number of governmental regulations, the areas of this risk can be summarized as follows:

-Fines for pollution of land, water, or air.

-Penalties may be imposed on a company.

-Clean up costs for land sites.

-Liability for disposal of hazardous wastes.

-System breaks down allowing environmental problems to occur.

-Loss of employee time and / or employee law suits due to safety hazards.

-Product liability suits or recalls costs.

-Loss of the public confidence (a company will have a bad reputation or corporate image).

-Loss of market share when environmental incidents occur.
-A company may lose its license or shut down (Flesher, 1996; Specht, 1992; Natale and Ford, 1995; Gray, et al., 1993).

However, the previous discussion provides evidence that environmental issues may have a strong impact on the financial statements of companies. Gray et al. (1993) argue that on the basic of such events environmental issues have many potential impacts on financial statements, such as specific costs for clean up, effluent and emission control or reduction, waste treatment and minimization, remediation, and insurance costs. Also, contingent liabilities, provision, fines, damages, increased costs of plant, accelerated depreciation on machines or increased provisions for abandonment.

$IAS_{36}$ sets out the requirements for recognizing and measuring impairment losses for assets. It points out that an enterprise should asses at each balance sheet date whether there is any indication that an asset may be impaired. If any such indication exists, the enterprise should estimate the recoverable amount of the asset and after the recognition of an impairment loss, the depreciation charge for the asset should be adjusted. This standard identifies a range of factors, which an enterprise should consider when it evaluates an asset, such as significant changes with an adverse effect on the enterprise have taken place during the period, or will take place in the near future, in the technological market, economic or legal environment in which the enterprise operates or in the market to which an asset is dedicated (IASC, 1998).

Dittenhofer (1995) argues that financial auditors must be familiar with the environmental aspects of reviewing assets and liabilities to determine that the valuation is proper, that contamination has not reduced the underlying value of assets, and that the expending and capitalization of remedial costs have been recorded properly.

ICAEW (1992) points out that environmental issue can impact on financial disclosures in financial statements in relation to: -
-provisions, e.g. for site restoration
-contingent liabilities, e.g. for pending legal action
-asset values, e.g. where stocks of goods, or the fixed assets used in producing them, are subject to environmental concern

-accounting for capital or revenue expenditure on cleaning up the productive process or to meet legal and other standards

-product redesign costs

-product viability – going concern, e.g. where new regulations impose tighter emissions criteria

-any non-financial environmental disclosures within the financial statements, for example regarding environmental impact or actions to protect the environment (unlikely at present), will be subject to audit.

Schaltegger et al. (1996, p. 88) define contingent environmental liabilities as: "an obligation to pay future expenditures to remedy environmental damage that has occurred because of past events or transactions, or to compensate a third party, which has suffered from the damage" . It can be argued that contingent environmental liabilities have become not only much more common but also have much more impact on financial statements and the sustainable advantage of many companies. Environmental issues have many potential impacts of financial statements. Despite these potential impacts, financial auditors should express an opinion on financial statements. They have to make a decision based on the risk of such matters affecting the financial statements.

## 3. Business ethics and the environment

Business ethics is commonly associated in the media with environmental disasters and financial scandals. Ethical concerns permeate every aspect of business activity. Ethical issues arise in connection with core ethical values (Sternberg, 2000; Mason, et al., 1995).

There are some interconnections between business and environmental ethics. Drummond and Bain (1994) argue that business has obligations to protect the environment over and above what is required by environmental law and that it should cooperate and interact with government in establishing environmental legislation. Therefore, business should develop and demonstrate environmental moral leadership. The negative effect of business on the environment is easily observed. Planet Earth suffers from droughts, heat waves and forest fires, raising fears of global warming due to the build-up of carbon dioxide and other gases in the atmosphere. Moreover, water in rivers, seas ... etc. has become polluted by raw sewage, medical wastes, oil spills, chemical materials, toxic

materials ...etc. In addition, dumping tons of toxic wastes contaminates land. Air is polluted by poisonous gases such as carbon dioxide, chlorofluorocarbons (ferions), which led to depletion of the ozone layer...etc. All of these negative effects result from companies' activities (Drummond and Bain, 1994, Kenneth and John, 1982, Peter, 1981).

Luthans et al. (1984) argue that the right of society to place ethical constraints on business stems from three considerations. First, a society has the right to dictate business's ethical actions because it has given the organization the legal right to conduct business. It can also determine the conditions that will prevail in that environment. The second justification rests with the all-encompassing nature of the state. A third justification for society to define the ethical boundaries of business relates to the failure of companies to regulate themselves. The Business Roundtable's Corporate Ethics Report (1998, p. 4) states that: "the corporate community should continue to refine and renew efforts to improve performance and manage effectively through programs in corporate ethics. Corporate ethics is a strategic key survival factor for profitability in this era of fierce competitiveness in a global economy". In contrast, Bowie (1990) argues that the real burden for environmental changes lies with consumers, not with corporations. If consumers are willing to accept the harm done to the environment by favoring environmentally unfriendly products, corporations have no moral obligation to change so long as they obey environmental law. The question now is, who produces products which effect badly on the environment?. Consumers don't make products, provide services which can be either environmentally friendly or unfriendly.

It can be argued that business may have a moral responsibility to educate the public and promote environmentally responsible behavior. Blanchard and Peale (1988) argue that protecting the environment requires moral management in business. It requires commitment, courage, and involves risk and sacrifice. Perhaps business is capable of such a challenge. Wood (1990) argues that ethics is not only an individual, personal matter but also that business provides a unique and specific social setting in which ethical standards are applied. The law will remain a vital mechanism of social control, but the law cannot incorporate all ethical situations. Some of the responsibility for ethical issues can rest with organizations and with consumers.

Moreover, stakeholders' pressure has led a number of organizations to disclose about their environmental performance and to initiate voluntary environmental auditing. ICAEW (1992, p.1) points out that "the business community should place improvement of its environmental performance high on its agenda. Government regulations and market pressures from the green consumer, the environmental pressure groups, employees and investors allow no other choice". Wood (1991) argues that most parties in any society think the organization's duty is to act affirmatively for social well being. It should examine its role in the environment to ascertain its social and environmental responsibilities.

However, environmental issues are becoming increasingly important to a broad range of corporate stakeholders, including consumers, shareholders, regulators, employee,...etc. (Bringer and Benforado, 1994, Makower, 1993, Craig, 1992).Direct investors, take-over bidders and bank lenders are increasingly aware of the need to ascertain whether potential responsibilities for environmental liabilities are lurking within the companies with which they become involved (KPMG,1991). Oliff and Vandermerwe (1990) point out that from a consumer perspective, growing numbers of customers are showing preference for greener companies and products. For example, approximately a third of all adults in the UK pay premia of 15-50 % for organically sourced foods.

Clark (1990) points out that from an employment perspective, "it is becoming more difficult to attract Chief Executive Officers (CEOs) and other key employees to positions in industries with high environmental risk". Howes (2002) argues that the sustainability of businesses in long-term future is linked to their ability to minimize the environmental damage caused by their activities. Consequently, an awareness of a business's exposure to environmental risks can help managers in their strategic planning. When reported, environmental issues can help a business to boost its reputation, attract the best employees and differentiate itself from less proactive competitors.

Ilintch et al. (1998) argue that stakeholders pay more attention to companies' environmental performance, measurement issues are becoming increasingly important, and demand is growing for relevant information to assist them in making key decisions. Also, the authors discussed the need for a common definition and consistent and reliable

measures of corporate environmental performance in order to assist users of such information in making informed consumption, employment, and investment decisions.

It can be argued that, the importance of business ethics stems from: -

- Business ethics plays an important role in protecting and preserving the environment.
- It is essential and vital for business. The business ethics challenge is to make that inevitable ethical decision-making explicit so as to make it better.
- Owners want to ensure that their investments are safe, as reflected in accurate financial disclosure. Society wants to ensure that its firms reflect the values and ethics of a competitive, equal-opportunity environment.
- Business ethics actually provides essential support for maximizing long-term owner value (Mason, 1995; Sternberg, 2000; Luthans, et al., 1989; Peter, 1981).
- Stakeholders have a right to know about the social and environmental implications of an organization's operations at all times-not just when management has been shocked into action by legitimacy threatening events (Deegan, et al., 2000).

## 4. Should the auditing profession be extended to encapsulate environmental issues?

The relationship and overlap between financial and environmental audits has been widely discussed (IFAC, 1995). A number of studies have addressed the relevance of accountants and financial auditors in carrying out environmental audits (Huizing and Dekker, 1992; Collison and Gray, 1997, Collison et. al, 1996; Collison, 1996; Collison and Slomp, 2000; Bebbington, et. al, 1994; Power, 1997; FEE, 1993; IFAC, 1995; ICAEW, 1992, 2000; CICA, 1992 and 1997; Black, 1998; Gray and Symon, 1992; Greeno et. al, 1989). ICAEW (1992) addresses the question of the competence of the financial auditor in the environmental area. It suggests that financial auditors should apply scientific expertise, according to their professional qualifications, as would any specialist, in order to achieve credibility in an environmental audit.

An increasingly substantial number of studies (APB, 1995, 1993; APC, 1991; CICA, 1992, 1994(a), 1997; Collison et. al, 1996; Collison and Slomp, 2000; ICAEW, 1992, 2000; FEE, 1993; Collison and Gray, 1997) have argued that environmental issues

have a significant impact on the auditing profession and financial auditors should consider these issues when auditing the financial statements of companies. "The importance of environment issues is increasingly recognized. They often have implications for business and can not be ignored by auditors" (ICAEW, 2000, p. 1).

The American Institute of Certified Public Accountants (AICPA, 1973) pointed out that the basic objective of financial statements is reporting about an organization's activities, which impact on society, can be determined or measured, and are essential for the organization's role in its environment. AICPA (1976) argued that there is a necessity to wide the scope of conventional auditing for evaluating environmental control standards or regulatory procedures. It concluded auditors had responsibilities for environmental management. They should understand different situations for control pollution and be able to evaluate its effects for external parties. AICPA (1989) addressed the impact of illegal acts (such as, environmental violations) on the auditors' report when auditing the financial statements.

In 1991:1992, Price Waterhouse established two empirical studies in U.S. about environmental accounting and measurement of environmental costs. These studies recommended widening the scope of financial auditing to include environmental issues and its liabilities (Price Waterhouse, 1992). The European Commission (EC) proposed that environmental audit can be carried out either by the company's own auditors (if the company has established its own appropriate system) or by auditors authorized for this purpose by a body recognized by the relevant member state. Also the environmental statements must be validated by authorized environmental auditors (Accountancy, 1992).

Accountancy (1991) pointed out that some big accounting and auditing companies in the UK such as KPMG, Price Waterhouse, Coopers and Lybrand established the association of environmental consultancies. They will be founder members, become involved with a variety of legal firms and technical consultancies. These companies felt their reputation was being threatened by fringe organizations set up overnight and calling themselves environmental auditors. This association aims to set standards for environmental auditing, avoiding their imposition by government. It hopes to become the accreditation body for registered environmental auditors. It can be concluded, these big

accounting organizations in the UK can perform environmental auditing with help from legal firms and environmental consultants.

Colbert and Scarbrough (1993) argue that the financial auditor's concern with environmental issues arises because of the need for appropriate accounting for the financial aspect. Environmental problems may result in contingent losses. Such losses must be appropriately reflected in the financial statements. The role of financial auditors concerning accounting for contingencies is presented in chapter 3.

ICAEW (1992) argues that stakeholders ask for information about the environmental impact on business. They need information to be appropriate and credible. The credibility of environmental information can be achieved by conducting the independent audit. A number of studies (Owen et al., 2000; Burnett-Hall, 1994(a); Wood, 1991; Innes et al., 1981; Hatherly, 1980; Pratt, 1987; Brown, 1962; Gwilliam, 1988; Dunn, 1991; Wallace, 1980; Show et al., 1980; Coopers and Lybrand, 1989; ICAEW, 1992, 2000, IFAC, 1998) argue that auditing has many objectives, such as to give independent opinion upon the financial statements of a company, to improve management performance, to control and monitor on the company's activities. However, these studies point out that auditing lends credibility to accounting information, which assists a variety of users, such as shareholders, creditors and employees to take their decisions.

There are a number of professional bodies now offer a comprehensive set of environmental auditor certification programs to meet the emerging needs of the environmental auditing profession, such as the Canadian Environmental Auditing Association (2002). The Board of Environmental Auditor Health and Safety (2000) and the American Industrial Hygiene Association have formally entered into an agreement to offer certification to qualify environmental auditors. Moreover, the interest of teaching the implications of environmental issues on the accounting and auditing profession has grown in the last decade. For example, a business school in Manchester University, in the UK, provides the public and social accounting course to final year students. The course was started in 1986. It concerns with social issues in the public and the private sectors such as: the social responsibility, social reporting, environmental accounting, and environmental auditing (Lewis et al., 1992). Surrey and Glasgow universities are now to offer a

qualification to audit social and ethical accounts in conjunction with the Accountability AA1000 guidance (Brown, 2000). Consistent with the previous discussion, it can be argued that environmental issues have a number of implications on both the auditing profession and business. The auditing profession cannot continue to ignore these implications and it should accept this challenge. The auditing profession should develop its performance by widening its scope to encapsulate environmental issues, if it wants to keep its position as a source of credible information for diverse stakeholders. The users of the audit report may be placing an excessive amount of reliance on the figures in the accountants. Therefore, there is a crucial need to activate the role of the auditing profession concerning environmental issues.

## 5. The emergence of environmental auditing

Although the origins and some of the underlying concepts of social auditing go back as far as the nineteenth century, it was not generally accepted as a recognized audit activity until the 1960s (Sherer and Kent, 1983). In the nineteenth century, many early efforts were embodied in social legislation designed to protect employees from some of adverse effects of the industrial revolution. But the term of social responsibility has as its symbolic starting in Howard Bowen's Seminal book, "Social responsibility of the businessman" (Bowen, 1971). In 1960s, industrialized economics of North America and Western Europe started to concentrate on non-economic and non-financial variables such as the quality of the environment, working conditions, and equality of opportunities, only when a high level of material welfare has already been achieved (Sherer, and Kent, 1983). Therefore, social audit emerged as a mechanism to persuade the corporations to recognize and respond to society's demand. The efforts of governments in many countries from the mid-1960s to the mid-1970s to make social audit regulations took place in four main social areas: environmental protection, workers safety and health consumer and equal employment opportunities (Frederick, et. al, 1992; Natale and Ford, 1995). For example, in May 1970, the US General Motors Company set up a committee to investigate the corporation's record of social responsibility in a number of areas. These areas included the amount of pollution produced by its cars and the efforts of corporation was making to reduce that pollution, the amount of researches to improve the safety and reliability of cars, and the increase in social accountability (Sherer and Kent, 1983).

Brown (1979) expected the trend of social responsibilities to continue through the 1980s because corporations need to continue to be involved in social activities focussed on the growing interest in social and economic issues. Brown was correct in that the environmental movement began to develop in the 1980s. Both environmentalists and organisations began to embrace the concept of sustainable development and compromise on ways to temper the impacts of growth without sacrificing growth itself. Since 1980s an important emerging area of social audit practice is environmental auditing (Owen, 1992).

The 1990s have seen an increasing interest in environmental issues. In many countries, governmental bodies, environmental groups also the accountancy profession, and business have contributed to the process. A number of institutional investors argue that the corporation, which is not responsive to corporate social responsibility, will be a more risky investment (Dillard, 1991; Hawtin, et al., 1994). A number of countries have environmental regulations. If a company chooses not to comply, the eventual cost could be in the billion of dollars. Environmental issues have a great impact on the organisation's financial aspects. There is a crucial need to provide information about the organisation's environmental performance for diverse stakeholders. They need information, which they can rely on and take their decisions. They will trust in the environmental information if this information is audited by an independent audit as ICAEW (1992, 2000) argues that the reliability and credibility of environmental disclosure can be increased by independent verification or audit.

Burnett- Hall (1994a) argues that society expects auditors to play an important role on solving the environmental problems, which face organisations. Auditors could add to the credibility of environmental estimates by determining whether these estimates are reasonable, also whether the presentation and disclosure of environmental estimates are appropriate and adequate [details about the relevance of financial auditors to be involved in environmental issues are presented in chapter 3]. The accountancy bodies should start to encourage the development of appropriate auditing and accounting for dealing with environmental issues by applying their unique expertise to corporate environmental reporting, practices of environmental auditing, and evaluation of risks and liabilities

(Collison and Slomp, 2000; Balacconiere and Patten, 1994; Brown, 2000; Burnett-Hall, 1994 (a, b); Frederick, et al., 1992; Gray, et al., 1993; Jacobs, 1991).

It can be argued that environmental auditing is a necessary tool for knowing more about the influence of environmental issues on companies and about the effects of organisations on the natural environment.

## 6. The definition of environmental auditing

Until now, there is no specific definition for environmental auditing may be because this subject is relatively new in auditing, but there are a number of attempts to establish some definitions for environmental auditing by the accountancy bodies, and researchers. Some of these definitions focus on the financial aspects of environmental issues, while others address performance aspects as follows:-

Cornell and Apostolou (1991, p. 18) point out that "an environmental audit is a systematic examination of a client's operations and properties, both past and present, to identify potential liabilities arising from environmental causes".

Gray and Collison (1991, pp. 17-25) State that:-

"An environmental audit is a means for organisations to both assess the environmental impact of their activities and to monitor the results of any environmental improvement programmes they decide to enact".

The European Committee (1996) Defines it:-

"as a systematic, documented verification process of objectively obtaining and evaluating audit evidence to determine whether specified environmental activities, events, conditions, management systems, or information about these matters conform with audit criteria, and communication the results of this process to the client" (ISO 14011, 1996, p. 5).

It can be observed that the most important part in this definition is communicating the results of audit process to users.

The U.S. Environmental Protection Agency (EPA) defines environmental auditing as:- "a systematic, documented, periodic and objective review by a firm or other regulated entity of facility operations and practices related to meeting applicable requirements"

($CH_2MHILL$, 1993, p. 4). Specht (1992, p. 29) states that:- "An environmental auditing involves investigating a particular parcel of real property to determine the likely presence of hazardous substances that have been released or may be released".

The International Chamber of Commerce (ICC, 1991, pp. 3-6) defines "environmental auditing" as:-

A management tool comprising a systematic, documented, periodic and objective evaluation of how well environmental organisation, management, and equipment are performing with the aim of helping to safeguard the environment by:

(1) facilitating management control of environmental practices, and

(2) assessing compliance with company policies which would include meeting regulatory requirements.

This definition does not refer to any external performance standards against which a company's policies and practices should be judged in carrying out the audit (other than applicable laws and regulations). It suggests a continuing function of environmental auditing inside the company (CICA, 1992). From the previous definitions, it can be argued that:-

- A number of definitions are narrow while others encompass a wide range of elements of the environmental management system.
- There is no agreement on the role of environmental auditing in organisation and its aims also still no uniform procedure of conducting environmental audit.

However, the definition of American Accounting Association (AAA, 1973, pp. 1-4) for an audit, which is generally accepted between researchers and practitioners, points out that:- "auditing is a systematic process of objectively obtaining and evaluating evidence regarding assertions about economic actions and events to ascertain the degree of correspondence between those assertions and established criteria and communication the results to interested users".

Through this definition, it can be argued that: -

- This definition is a comprehensive definition because the term "auditing" is modified by a descriptive word to indicate all kinds of auditing such as financial audit, internal audit, management audit, social audit, environmental audit …etc.

- Also the term "economic" actions in this definition mean the process of auditing does not investigate only the information in financial statements. Moreover, the term economic concerned with any situation in which a choice must be made involving scarce resources.
- Also this definition confirms that the auditing is a means of communication to inform interested users about the results of audit process.

Consistent with the previous discussion, environmental audit considers a new field in auditing. Then, environmental auditing can be defined as:- an integral part of auditing which concentrates on evaluating an organisation's environmental performance and its environmental control systems, determining environmental liability accruals and the environmental impacts on the financial statements, and communicating environmental information to interested users in society.

## 7. The objectives of environmental auditing

An environmental audit achieves five basic objectives (Wilson, 1992; Thompson, 1993):

-Examination an organization's management system.

-Determination of an organization's compliance with regulatory requirements.

-Determination of an organization's conformance with the organization's own policies and with related industry standards.

-Evaluation of the organization's routine management and house keeping practices.

-Creation of an action plan to correct any identified deficiencies.

The Institute of Internal Auditors in the US (1993) points out that the objectives of environmental auditing as follows:-

- Determining whether the company is in compliance with environmental regulatory requirements and laws.
- Evaluating the effectiveness of the environmental management and control systems.
- Determining the environmental organisation's risks.
- Identifying future environmental policy and plans.

- Determining whether the company's internal polices, procedures, and practices are in compliance with future environmental plans.
- Meeting customer requirements.
- Providing environmental information for many parties such as stakeholders, shareholders, etc.
- Determining that known environmental liabilities are properly identified and reported and establishing that associated financial accruals are adequate.
- Identifying and monitoring safety and health risks to employees and the public.
- Verifying the effectiveness of waste reduction, energy conservation, or recycling programs or the use of recycled products.

Maltby (1995) argues that environmental audit has many objectives, such as providing an early warning, increasing employee awareness, testing environmental performance against aims, assessing risk of litigation and reporting to third parties. Sinclair- Desgagne and Gabel (1997, p. 331) state that "nowadays, environmental audits are being routinely conducted within companies to define the extent of their liabilities towards the environment, to check compliance with environmental legislation, to test newly acquired land or buildings, and to assess environmental risks, employees' safety, energy consumption, waste streams, or pollutant emissions". It can be argued that:- environmental auditing has external and internal purposes. External purposes, such as to communicate information about corporate environmental performance to many parties in society as lending institutions, governmental agencies, consumers, stakeholders, etc, to help them to take their decisions or for disclosing environmental information in annual reports. While, internal purposes, such as to inform management that operations comply with regulations, environmental management decisions are being made on the basis of fact, and environmental liability accruals are appropriate.

## 8. Types of environmental audits

It can be argued that environmental auditing has a number of objectives, therefore it may vary from an organisation to another organisation according to some aspects as follows:-

-The nature of an organisation's activities (retail, service, business offices, manufacturing industries, public works, etc.).

-The environmental policies, plans, and objectives of organisations.

-The types of environmental risks, which organisations have faced.

-The environmental laws, regulations, and requirements, which organisations must follow.

-The objective of environmental audits.

Environmental audit is used to refer to a variety of activities, which are conducted to assess and promote compliance with environmental regulations. This wide range of activities encompasses many types of audits (Elkington and Jennings, 1991; $CH_2MHILL$, 1993; Graves et al., 1996).

Environmental audits can be grouped into:-

(a)Compliance audits.

(b)Environmental management system audits.

(c)Transactional audits.

(d)Treatment, storage, and disposal facility audits.

(e)Pollution prevention audits.

(f)Environmental liability accrual audits.

(g)Product audits.

***(a)Compliance audits***

Compliance audits have become the most common form of environmental audits for organisations because of the potential for civil and criminal liability from environmental regulatory violations and laws in most countries. Compliance audits have centred around whether operations are in compliance with governmental regulations, whether organisation's operations are being performed competently and legally, and also environmental liability accruals are appropriate.

***(b)Environmental management systems audits***

Environmental management systems audits focus on whether systems are in place and operating properly to manage future environmental risks.

***(c)Transactional audits***

Transactional audits concentrate on assessing the environmental risks and liabilities of land or facilities prior to a property transaction.

***(d)Treatment, storage, and disposal facility audits***

In some countries such as the U.S., under environmental regulations, all hazardous materials are tracked from cradle-to-grave (creation to destruction), and all "owners" of these materials have liability for them as long as the owners exist. This type of audits focuses on how the organisation's waste is treated, stored, or disposed.

***(e)Pollution prevention audits***

The aim of pollution prevention audit is to reduce or eliminate waste and pollution of organisation's operations.

***(f)Environmental liability accrual audits***

The accounting profession is interested in recognising, quantifying, and reporting liability accruals for environmental issues.

***(g)Product audits***

Product audits concentrate on making sure the company's products environmentally friendly. Also these products and chemical restrictions are being met.

## 9. Dimensions of environmental auditing

It can be argued that environmental auditing has two dimensions, the social and the accountancy dimensions as follows:

***The social dimension***

In the last two decades, a number of organisations, according to their social responsibilities, take into account environmental factors when they establish their strategies, objectives, and procedures to achieve a number of aims (Patten, 1992; 2000; Milne and Patten, 2002; O'Donovan, 1999, 2000, 2002; O'Dwyer, 2001; Reich, 1998). This may be due to the following aspects: -

-The emergence of environmental pressure groups such as the Friends of the Earth, which concentrates on environmental protection. Friends of Earth has announced that it intends to prosecute directors of major companies that it identifies as breaching legal limits for polluting discharges to rivers, if the directors have not taken action to prevent further breaches (Burnett-Hall(a) 1994).

-The evidence from the literature (Adams et al., 1995; Deegan and Rankin, 1996, 1997 and 1999; Deegan et al., 2000; Dowling and Pfeffer, 1975; Gray et al., 1995; Benston, 1982) indicates that there is a social contract between the company and the society, where society provides natural resources and imposes regulations to protect the environment, while, the company uses society's resources and then, it is expected from the company to comply with the society's regulation. If the company does not comply, the society may revoke its contract then the company can not continue. Therefore, a company may bear its environmental responsibility to gain the acceptance of society to continue (more details about environmental issues and social perspectives are presented in chapter 5).

However, over recent years-widespread public concern for effective protection of the environment has resulted in far more stringent legislation and tougher enforcement. For example in the UK under environmental legislation, directors of offending companies can face up to five years in prison or an unlimited fine [see appendix 1]. In Egypt, government established Egyptian Environmental Affairs Agency (EEAA), which is responsible for the environmental control. Organisations are forced to bear their environmental responsibilities for avoiding sanctions by EEAA. These sanctions may lead to shut down the organisation (see, appendix 4).

-Some social perspectives (Mathews, 1993; Brown and Deegan, 1998; Reich, 1998) argue that there is an exchangeable relation between the organisation and the environment where the organisation considers as a producer and the environment as a supplier (both of them depend on and impact on the other). Therefore, the organisation must protect the environment to keep this relation and to guarantee its sustainability.

-A number of studies (Gingrich, 1995, Walley and Whitehead, 1994) argued that environmental protection may suppress the economic development programs and if the organisation established its environmental responsibility may lead to weakness of the economic performance because of generating costs that business will never recover.

In contrast, other studies (Freedman and Jaggi, 1994; Russo and Fouts, 1997; Ruf et al., 2001; O'Dwyer, 2001) proved that if the organisation spends on reducing pollution

results from its activities, this will not be accompanied negative effect on the economic performance in long term, contrary, improving environmental performance is related positively with financial benefits. For example, companies can achieve many benefits from protecting the environment, such as a good reputation or image, and competitive advantages.

-There are many changes in the role of management in companies. The objectives of management are now achieving not only the economic welfare for owners, and maximising profits but also the social welfare for all parties that are connected to the organisation. In recent years, the awareness of environmental issues has been rising and the protection of the environment has become the most important contents of social welfare (Ruf et. al., 2001).

-The 1990s have witnessed an increasing interest in environmental issues therefore the need for providing sufficient information about the organisation's environmental responsibility becomes a critical demand for diverse stakeholders. Investors no longer concentrate on achieving profits only but they argue that the corporation, which is not responsive to corporate social responsibility, will be a more risky investment (Surma and Vondra, 1992). Investors need correct and accurate information about the social performance.

***The accountancy dimension***

A number of accounting and auditing aspects are related to environmental issues as follows:-

-The need for environmental auditing stems from that environmental information has quantitative and financial nature. Environmental issues may impact on the organisation's assets and its liabilities. The effects of environmental legislation are pervasive that virtually every business organisation is likely to be affected to a greater or lesser degree and no valuation of business or its assets can safely undertaken without taking this into account (Burnet-Hall, 1994(b)). The financial statements should reflect the implication of contingent liabilities that result from non-compliance with environmental laws.

-The Institute of Chartered Accountants in England and Wales (ICAEW, 1992 and 2000) points out that environmental issue impacts on financial statements in relation to many areas, such as provisions, contingent liabilities, asset values, and going concern

considerations. It also argues that auditors should consider these issues when auditing financial statements.

-Under the environmental regulations and laws, the users of financial statements have become more interested to know information about environmental clean up costs and environmental effects. Zuber and Berry (1992) argue that the auditors of financial statements should evaluate whether environmental issues have been considered and whether environmental liabilities have reflected on these statements according to Generally Accepted Auditing Standards (GAAS).

-The International Federation of Accountants (IFAC, 1998) issued an international auditing practice statement developed by the International Auditing Practice Committee (IAPC) on "The Consideration of Environmental Matters in the Audit of Financial Statements". This study referred to environmental issues may have a material impact on an entity's financial statements.

-A number of studies (Accountancy, 1991, 1992; Langford, 1995; Wood, 1991) address the responsibility of organisation to pay for environmental protection costs. Therefore, the responsibilities of accountants are to evaluate, record and determine environmental costs in financial statements

-Nowadays, the accountancy bodies, scientific institutions, researchers, and environmental agencies in many countries argue that the environmental performance should be obligatory or compulsory. For example the USA and Canadian Exchange Commission both require reporting in the financial reports on the current and future financial effect of environmental protection requirements. Denmark (1996) adopted a legislative requirement for companies with a significant environmental impact (Brown, 2000).

-In U.S. the Financial Accounting Standards Board (FASB) and the Securities and Exchange Commission (SEC) concentrate on measuring contingent environmental liabilities, which have become now within the scope of external auditing (KPMG, 1999).

-The United Nations (UN), in 1991, recommends disclosure in the notes to financial statements, including reporting of accounting practices in the notes, as well as, specific financial information about liabilities, provisions and reserves, and contingent liabilities (if quantifiable), as these relate to environmental measures (Niskala and Pretes, 1995).

Consistent with the previous discussion, it can be argued that the importance of environmental auditing is increasing. This importance stems from a number of factors as follows:-

-The material impact of environmental issues on companies' financial statements.

-The implications of environmental issues on the accounting and auditing profession.

-The increase of environmental awareness among a variety groups of society, such as consumers, investors, creditors, bankers...etc. These groups asked for clean environment and providing information about environmental performance of companies.

-The increase of environmental risks because of environmental laws and regulations in a number of countries.

## Summary

Awareness of environmental issues has been rising during the last 20 years and environmental pressure groups have been growing in most countries to enact environmental laws for protecting the environment. These laws impact on organizations either directly or indirectly. Offending Companies may be paid millions of pounds as fines or penalties besides losing their reputation, customers, employees ...etc because of environmental violations.

A number of arguments have emerged to address the need for widening the scope of conventional auditing to encapsulate environmental issues. The emergence of environmental auditing goes back to social origins. There is no definitive definition for environmental auditing. It can be defined as an integral part of auditing concentrates on evaluating an organization's environmental performance and its environmental control systems, determining environmental liability accruals and the environmental impacts on financial statements, and communicating environmental information to interested users in society. The importance of environmental auditing attributes to a number of factors, such as the increase of environmental impacts on business and the auditing profession, as well as the increase of environmental laws.

# Chapter 3

# The Relevance of Financial Auditors to Meet Environmental Challenges

## 1. Introduction

"The importance of environmental issues is increasingly recognized. They often have implications for business and can not be ignored by auditors" (ICAEW, 2000, p. 1). An increasingly substantial number of studies (APB, 1995, 1993; APC, 1991; CICA, 1992, 1994, 1997; Collison et. al, 1996; Collison and Slomp, 2000; ICAEW, 1992, 2000; FEE, 1993; Collison and Gray, 1997) have argued that environmental issues have a significant impact on the auditing profession and financial auditors should consider these issues when auditing the financial statements of companies. Despite this auditors' participation in environmental audits is still limited. A number of arguments have therefore emerged concerning the relevance of financial auditors to participate in these audits. Some studies advocate this participation, especially, if auditors co-operate with other specialists. While, other studies have criticized auditors' ability to take part in environmental audits.

The chapter aims to address the question are financial auditors in a position to assess environmental implications for business and make a contribution in the area of environmental auditing?. It proceeds on to suggest a general framework of the necessary characteristics of environmental auditors. The chapter reviews the academic environmental auditing literature. The impact of environmental issues on financial auditors' work is presented. Arguments about the relevance of financial auditors in carrying out environmental audits are provided. The responsibility of financial auditors towards environmental specialist's work and environmental disclosure is provided. A discussion about factors, which limit auditors' involvement in environmental auditing, is addressed.

## 2. An Overview of environmental auditing literature

Publishing on the subject of environmental auditing effectively started in the late 1970s and early 1980s, when environmental regulation was beginning to increase rapidly and the practice of environmental auditing was first emerging. Researchers during this time focused on the importance of environmental auditing and appropriate methodologies

(Schaltegerr et al., 1996; Black, 1998; Wood, 1991; Flesher, 1996; Roussey, 1992; Sherer and Turley, 1991). In the late 1980s studies started to focus on a number of areas, such as contingent environmental liabilities, which may be generated by companies' activities or non-compliance with environmental laws. Other studies discussed environmental issues and the role of the accountancy bodies, accountants, and auditors (ICAEW, 1992, 2000; Collison et al., 1996; Collison and Slomp, 2000; Bebbington et al., 1994; CICA, 1992, 1994, 1997; FEE, 1993). On the other hand, a number of studies addressed the motivations for companies to bear their responsibility towards the environment seriously and to engage in environmental reporting (Patten, 1992, 2000, Miln and Patten, 2002, O'Dwyer, 2001, Deegan et al., 2000, Deegan and Rankin 1997).

Within the broad area of research in environmental auditing literature, there are many areas or issues that can be researched. In the brief discussion below, it can be outlined some of these issues as follows: -

- the importance of environmental auditing
- environmental management systems
- corporate social and environmental reporting
- the financial auditor and environmental issues

***The importance of environmental auditing***

Environmental auditing has attracted increasing attention world-wide over the past few years as a new tool to be used by industrial and government enterprises in the management of their health, safety, and environmental responsibilities (ICC, 1991).
Boland (1988) addresses the elements of environmental auditing and describes how an audit should be conducted. The International Chamber of Commerce (ICC) published a paper on "Environmental Auditing" in March 1989, which described the basic elements of environmental auditing and served to inform business on how environmental auditing might improve health, safety, and environmental programs.

Cordiano (1992) discusses the benefits of environmental audits in detecting, and correcting noncompliance, and also appropriate audit staff qualifications, managerial support, program development, legal issues and information protection. Bailey et al. (1992)

argue that environmental auditing has emerged as a means of examining the effectiveness of past environmental impact assessments in an attempt to identify ways of improving the utility and efficiency of future assessments.

Reed (1987) discusses the use of environmental auditing by Canadian firms. This study describes the results of a survey of the Canadian industrial sector, including the fact that individual firms use auditing programs to meet diverse objectives, such as verifying compliance, identifying risks and hazards, and limiting liability. Roussey (1992) discusses accounting and auditing issues including problems of estimating liabilities, proper accounting procedures, disclosure considerations, risk assessment factors, appropriate audit procedures and possible impacts on the audit report. Brimelow and Spencer (1992) presented a critique of the current state of US EPA and its successes and failures. Dansing et al. (1987) examined the evaluation of government and corporate interests in environmental auditing. The authors concluded that audit programs save money for companies in the long-term.

***Environmental management systems***

"A company should implement an effective environmental management system in order to help protect human health and the environment from potential impacts of its activities, products or services, and to assist in maintaining and improving the quality of the environment" (ISO 14004, 1996, p. 3). A number of studies have discussed the use of environmental management systems in companies.

Buckley (1991) discusses a number of environmental aspects, which relate to environmental auditing such as, environmental risk management, identifying potential liabilities, quantifying the probabilities and size of prosecutions and penalties and assessing the effectiveness of environmental management systems. Maday and Kuusinen (1991) describe how environmental auditing can improve the effectiveness of the basic environmental management system, while at the same time determining compliance with requirements.

Wells et al. (1994) assert that effective managerial systems drive environmental results. There are a number of international environmental initiatives to establish standards for environmental management systems such as:-

-in 1991, the British Standards Institution (BSI) issued $BS_{7750}$, which is a specification for an environmental management system.

-the International Organisation for Standardisation (ISO) issued ISO 14000 series, which focuses on the quality of environmental management systems.

-the European Community has adopted the Eco-Management and Audit Scheme (EMAS) which concentrates on establishing an environmental management system and reporting publicly on companies' performance (details about these initiatives are presented in chapter 4).

***Corporate environmental reporting***

Recent studies indicate that a number of firms are increasing the reporting of environmental matters (Harte and Owen, 1997; Patten, 1992; Gamble et al., 1995). Freedman and Stagliano (1991) argue that increased environmental disclosure may be the result of regulatory effects. Patten (1991, 1992) indicates that environmental disclosures may be linked to efforts to legitimise corporate actions and to the development of a positive corporate image due to social changes.

A number of studies (Herremans et al., 1993; Hays and Pereira 1990, Hoogheimstra, 2000; Gray and Balmer, 1998; Rosthorn, 2000; Deegan and Rankin, 1996, 1997, 1999) suggest that companies may engage in environmental reports to create a positive image or reputation about their activities, which helps companies to achieve a number of benefits such as confirming their legitimacy, creating competitive advantage, and attracting investors (details about the phenomenon of voluntary social and environmental reporting are discussed in chapter 5).

In the UK, the Advisory Committee on Business and Environment (ACBE) established a Financial Sector Working Group (FSWG) to assist their members to improve their environmental awareness and performance. In February 1993, the FSWG issued a report including the disclosure by companies of information about their environmental

performance, the report indicated that the level of disclosure is still low, there is no standard for the quality of environmental reporting and disclosure varies between companies (Langford, 1995). Freedman and Stagliano (1991) found a broad diversity of disclosure, which ranged from extensive discussion to very little, even within the same industry. KPMG (1999) survey analysed the reporting of the global top 250 companies in eleven countries (Australia, Belgium, Denmark, France, Germany, Japan, Netherlands, Norway, Sweden, UK, and USA). The majority of the top 250 companies are based in the USA, Japan, Germany and France. Overall only 35 % (88) of the top 250 companies issued an environmental report. The level of reporting varied widely between countries and within industrial sectors. Walden and Schwartz (1997, p. 125) state that "disclosing environmental information in annual reports may affect the perceptions of an enterprise's earnings and cash flows". Johnson (1993, p. 127) reports that environmental issues can dramatically impact upon a company's short-term financial position and its chances for long-term success.

It can be observed that:-

-Despite corporate environmental reporting studies indicate the importance of environmental performance disclosure for many stakeholders. These studies do not provide a theoretical framework for the contents and shape of corporate environmental reporting.

-There is no agreement as to how companies should report and what information should be disclosed in environmental reports (details about companies' problems to produce detailed environmental reports are discussed in chapter 4). Adams and Kuasirikun (2000) investigate the reporting of ethical issues in the corporate annual reports of the largest UK and German chemical and pharmaceutical companies between 1985 and 1995. The study found substantial differences in the nature and patterns of reporting both across time and between the two countries studied. Also, it referred to factors, which might be thought to have caused this diversity in reporting between the two countries including: industry activities, extent of regulations demanding ethical responsibility, and other social and political pressures.

A number of studies (Belkaoui, 1976; Jaggi and Freedman, 1982; Anderson and Frankle, 1980; Tilt, 1994; Epstein and Freedman, 1994) examined how investors react to corporate social disclosures, with this reaction often being gauged by market share reactions. These studies indicate that various stakeholder groups find corporate social

disclosure to be useful to their decision making processes. Spicer (1978) provided some empirical evidence relevant to the social performance disclosure by testing some relations between a number of economic and financial indicators of investment value (profitability, size, total and systematic risk, price, earning ratio) and corporate performance on one key social issues (pollution control) in a sample of companies drawn from a pollution prone industry. The author assumed that there is a strong relation between the investment value of a company's common shares and its social performance. Some statistically significant relations were found to exist. While generalisation of these results will require further research, the findings reported were consistent with stated investors' perceptions.

Herremans et al. (1993) investigated whether large U.S. manufacturing companies with better reputation for social responsibility provided investors better stock market returns and lower risk in 21 manufacturing industries, such as mining, oil, chemicals...etc, during a six-year period 1982-1987. Three main findings emerged in the study:

-A good reputation for corporate social responsibility and higher reported profitability are strongly related.

-A good reputation for corporate social responsibility is strongly associated with lower total firm risk.

-Investors appear to be cognisant of differences in reputation about social responsibility among companies as evidenced by positive abnormal returns accruing to the stocks of companies with superior reputation during the period of the study.

Ilintch, et al., (1998) report that investors, stakeholders,...etc, suffer when companies pay million of dollars in fines, clean up fees, and court costs to keep corporate officers out of jail because of environmental issues. Cormier and Magnan (1997) discuss the market's assessment of the magnitude of implicit remediation liabilities in some Canadian industries "pulp and paper, chemicals and oil refining", and steel, metals and mines. The authors found a direct relationship between the degree of pollution and the implicit environmental liability, as estimated by the relationship between market value of the company equity and levels of other balance sheet items.

It can be observed that, although the previous studies found a relationship between the impact of environmental issues and the investment value of the company's shares, the

results of these studies might need more research to allow generalisation also, these studies did not provide explicitly look to estimate the impact of environmental issues on business.

***The financial auditor and environmental issues***

In recent years, environmental issues have become an increasingly significant focus of the companies throughout the world. A number of regulations and environmental laws have been enacted by various countries, such as, US, UK, Egypt...etc. These laws are becoming extensive. If a company chooses not to comply, the eventual cost in terms of later clean up, fines and penalties could be in the billion of dollars.

The Auditing Practices Board (APB), in the UK, (1992), in the McFarlane Report (paragraph 5.24) states that:- "auditors are already involved in assessing environmental issues when auditing financial statements". Auditors may become involved in reporting on corporate environmental issues, such as remediation liabilities, evaluating the effects of environmental issues on management systems, and providing decision-makers with quantitative information on environmental performance.

Environmental issues have been a challenge for auditors. Stakeholders put increasing pressure on companies to receive more information about the environmental impacts on business. For most stakeholders environmental performance may be a part of overall corporate performance and for some interest groups and individuals, it may be the most important aspect. Stakeholders ask for appropriate information for their assessment. ICAEW (1992) argues that stakeholders think that the credibility of environmental information will be achieved if the independent auditor audits and reports upon this information.

A number of studies have emerged to address the role of external auditor in environmental issues. Collison and Gray (1997) discuss the relevance of environmental issues for the financial auditor. This study reports on a large-scale survey of audit practitioners in the UK. The questionnaire investigated auditors' experience of the issues and any actions that they may have been taken in response to them. The results suggest that some firms may be at risk of giving insufficient attention to the financial implications of environmental issues. The majority of respondents thought the environmental awareness of

auditors needs to be raised. The study also expects a possible wider role for the financial auditor in the verification of environmental reports. Collison (1996) explores the reaction of UK financial auditors by a series of interviews with a range of audit practitioners to the growth of society's environmental awareness and attendant legislative pressures. The results show that environmental issues can have significant implications for financial statements and should be of concern to auditors who express opinions on them.

Colbert and Scarbrough (1993) argue that although the financial effect of environmental issues may be indirect, the amounts may be material. The auditor must be alert to the possibility of loss contingencies and must ascertain if the contingencies are accounted for properly. Roussey, (1992), and Neebes et al. (1991) discuss the auditor's responsibilities for illegal acts according to Generally Accepted Auditing Standards (GAAS). A number of arguments have addressed the relevance of financial auditors to be involved in environmental audits by co-operating with environmental specialists (IFAC, 1995; FEE, 1993; ICAEW, 1992, 2000; CICA, 1992, 1994; Power, 1997; Gray and Symon, 1992).

Other studies (Lehman, 1988; Ponemon, 1990, 1992; Power 1991; Puxty et al., 1994; Mathews, 1997; Bebbington, 1993, 1995; Lewis et al., 1992) argue that the education and training of auditors are not sufficient to help them to involve in environmental audits.

The purpose of this thesis is to recognize the financial auditor's role concerning environmental issues. Therefore, an explicitly review of previous studies is presented to identify the impact of environmental issues on financial auditors' duties and their relevance to participate in environmental auditing.

## 3. Environmental issues and financial auditors' duties

The 1990s have witnessed the growth in green consumerism, the green ethical investment trusts and the growth of environmental concerns that have lead to specific changes and it can be expected that these changes will affect the accounting profession (Gray, 1990). ICAEW (1992, p. 3) points out that " where environmental factors will

impact on a company's policy and activities, and will impose costs on the company, or affect its asset values or liabilities, actual or contingent, the financial consequences need to be accounted for or reported in accordance with existing accounting requirements". In the past, consumers have demanded traditional information to make their economic choice in areas such as, value, price, quality, and service. Now consumers have new values such as, the impact of products on the environment, environmental protection, etc. and they need information about those values to express their choice and make the market work effectively (Adams, 1990). Herremans et al., (1993) argue that investors prefer not to deal with companies, which have a bad reputation or do not have a socially responsible attitude towards the environment.

Collison et al., (1996) point out that accountants are becoming more involved in various aspects of the environmental agenda and the notion of auditing is gaining a wider currency on the environmental agenda than as applied to only attestation of financial statements. Collison and Slomp (2000) suggest that every accountant and auditor should be able to evaluate the consequences of environmental issues in relation to accounting and auditing practices in the financial statements audit. Achieving this will require changes in the education and training of accountants, including such areas as the treatment of environmental costs and risks in financial statements.

ICAEW (1992, 2000) argues that the financial auditor's responsibilities already extend to consideration of the impact of environmental factors because environmental issues can impact on financial disclosures in the financial statements such as, provisions and contingent liabilities. Accountants and auditors are involved in reporting on corporate environmental issues, particularly evaluating contingent liabilities, determining the incentive effects of the environmental movement on environmental management, and providing decision-makers with quantitative information on environmental performance (Shields and Boer, 1997, Gray, 1990, Collison et al., 1996).

Accountants and auditors will increasingly find themselves involved in areas, such as, dealing with new types of taxes, having to take new factors into consideration in investment appraisal, helping cost out new pollution control methods, examining the feasibility of replacing materials used with sustainable resources and exploring recycling

opportunities, and helping estimate the impact of green consumer preference in existing new markets (Gray, 1990).

It can be argued that environmental responsibility, whether voluntary or through regulation, is a major new challenge for accountants, auditors and business. The demand for environmental information by accountants and auditors is increasing rapidly. They have to cope with their new responsibilities for environmental issues.

The impact of environmental issues on the auditing profession and financial auditors' work can be summarized as follows:-

(a) Environmental violations and illegal acts

(b) Accounting for contingencies

(c) Auditing accounting estimates

(d) The going concern assumption

(e)Materiality policy

***(a) Environmental violations and illegal acts***

The term illegal act in the US $SAS_{54}$ "Illegal Acts by Clients" refers to violations of laws or governmental regulations (AICPA, 1989, p. 67). $SAS_{54}$ divides illegal acts into two categories with the first, illegal acts that have a direct and material effect on line-item amounts in the financial statements. The second illegal act that has an indirect effect (Neebs et al., 1991).

A number of laws affect companies. Environmental laws and regulations are among those, which could have an indirect impact on the financial statements. The effect is not direct because environmental issues do not necessarily directly affect the financial and accounting areas of the company. The indirect-effect illegal acts relate to company's operations more than its finances. The indirect effect arises from the possibility of a contingent liability (Colbert and Scarbrough, 1993; AICPA, 1989; Roussey, 1992, Neebes et al., 1991).

$SAS_{54}$ provides guidance to the auditor considering environmental transactions or situations, which may be violations of rules, regulations, or laws. The standard aids the auditor who is considering the possibility of environmental illegal acts by defining the

auditor's responsibility with respect to such occurrences (Colbert and Scarbrough, 1993; Roussey, 1992; Neebes et al., 1991).

In the UK the APC (1991) argues that illegal acts may be expected to have a fundamental effect on the operations of the entity and this could have financial consequences that are material to the true and fair view of financial statements. Colbert and Scarbrough (1993) point out that the possible monetary effect of an environmental violation might take many forms. The company could be fined. Penalties may be imposed. Damages could be assessed. A company might be shutdown, resulting in loss of income and litigation could occur. If any of these possible monetary effects could be material the auditor must ascertain that the event has been treated as a loss contingency and occurred or disclosed as appropriate.

AICPA (1989) and APC (1991) identify the auditors' responsibility for detecting the illegal acts as follows:-

- The auditors should be aware of the possibility that such illegal acts may have occurred. Therefore, they should understand the client's business and be aware of those laws, regulations and provisions of an entity's constitution, which may be expected to have a fundamental effect on the operations of the entity.
- If specific information comes to the auditor's attention that provides evidence concerning the existence of possible illegal acts that could have a material indirect effect on the financial statements, the auditor should apply audit procedures to ascertain whether an illegal act has occurred.
- The auditor should consider the effect of illegal acts on the financial statements including contingent monetary effects, such as fines, penalties and damages. Loss contingencies resulting from illegal acts that may be required to be disclosed or should be evaluated in the same manner as other loss contingencies.
- The auditor should evaluate the adequacy of disclosure in the financial statements of the potential effects of illegal acts on the entity's operations. If material revenue or earnings are derived from transactions involving illegal acts, or if illegal acts create significant unusual risks associated with material revenue or earnings, such as loss of a significant business relationship, that information should be considered for disclosure.

Furthermore, AIPCA (1989) addresses the impact of illegal acts on the auditor's report as follows:-

-If the auditor concludes that an illegal act has a material effect on the financial statements, and the act has not been properly accounted for or disclosed, the auditor should express a qualified opinion or an adverse opinion on the financial statements.

-If the client precludes the auditor from obtaining sufficient competent evidential matter to evaluate whether an illegal act that could be material to the financial statements has, or is likely to have, occurred, the auditor generally should disclaim an opinion on the financial statements.

-If the client refuses to accept the auditor's report, the auditor should withdraw from the engagement and indicate the reasons for withdrawal in writing to the audit committee or board of directors.

-The auditors may be unable to determine whether an act is illegal because of limitations imposed by the circumstances rather than by the client or because of uncertainty associated with interpretation of applicable laws or regulations in these circumstances, they should consider the effect on their report.

Although, the auditors should normally report to senior management of an entity illegal acts, there may be exceptional occasions when it is necessary for the auditors to report direct to a third party without the knowledge or consent of management (APC, 1991). In circumstances the auditors are not bound by their duty of confidentiality and can disclose matters to a proper authority in the public interest such as, if they have a reasonable suspicion of an illegal act and they can demonstrate that in the court. Finally, the auditors have to decide whether they consider disclosure of the matter is justified in the public interest (APC, 1991).

***(b)Accounting for contingencies***

The US Statement on Financial Accounting Standards No. 5 ($SFAS_5$) "Accounting for contingencies", is the most applicable standard to the accounting for environmental costs. Contingent liabilities arising from environmental clean up costs should be accounted for and disclosed according to $SFAS_5$.

A contingency is defined in $SFAS_5$ as: -

"an existing condition, situation or set of circumstances involving uncertainty as to possible gain or loss to an enterprise that will ultimately be resolved when one or more future events occur or fail to occur. Resolution of the uncertainty may confirm the acquisition of an asset or the reduction of a liability or the loss or impairment of an asset or the incurrence of a liability" (FASB, 1975, p. 1).

It can be observed that, $SFAS_5$ defines both loss and gain contingencies but contingencies that might result in gains usually are not reflected in the accounts since to do so might be to recognize revenue prior to its realization. The discussion in this study is limited to loss contingencies. When considering a loss contingency, the accountant determines the likelihood that a future event will confirm the impairment of an asset or the incurrence of a liability. $SFAS_5$ categorizes the likelihood into three levels: probable, possible, and remote (FASB, 1975).

-Probable: the future event or events are likely to occur.

-Reasonably possible: the chance of the future event or events occurring is more than remote but less than likely.

-Remote: the chance of the future event or events occurring is slight.

However, $IAS_{37}$ (1998) defines a contingent liability as:-

(a) a possible obligation that arises from past events and whose existence will be confirmed only by the occurrence or non-occurrence of one or more uncertain future events not wholly within the control of the enterprise; or

(b) a present obligation that arises from past events but is not recognized because:

-it is not probable that an outflow of resources embodying economic benefits will be required to settle the obligation; or

-the amount of the obligation can not be measured with sufficient reliability

(IASC, 1998).

The accounting treatment of a loss contingency will be discussed in two points as follows:-

***Measurement of a loss contingency***

A loss contingency must be measured or reliably estimated in order to qualify for recognition in the financial statement under certain conditions.

Schaltegger et al., (1996) suggest factors to be considered when estimating a loss contingency such as:-

- current laws and regulations
- the extent of regulatory involvement
- the number and viability of the parties involved
- prior legal, economic, political and scientific experience
- the complexity of the problem, existing technologies and technological experience.

However, $SFAS_5$ requires that:-

A loss contingency should be incurred by a charge to income if both of the following conditions are met:-

-Information available prior to issuance of the financial statements indicates that it is probable that an asset had been impaired or a liability had been incurred at the date of the financial statements.

-The amount of loss can be reasonably estimated (FASB, 1975).

International Auditing Standard no. 10 ($IAS_{10}$) requires that:-

"the estimation of the amount of a contingent loss to be recognized in the financial statements may be based on information that provides a range of amounts of loss which could result from the contingency. The best estimate of the loss within such a range is recognized when no amount within the range is indicated as a better estimate than any other amount. At least the minimum amount in the range if there is a possibility of loss in excess of the amount recognized" (IASC, 1995, p. 183). Among the factors taken into account by management in evaluating the contingency are the progress of the claim at the date on which the financial statements are authorized for issue, the opinions of legal experts or other advisers, the experience of the enterprise in similar cases and the experiences of other enterprise in similar situations (IASC, 1995).

***Disclosure of a loss contingency***

Disclosure of a loss contingency depends on the likelihood of loss and in some cases, on the ability of the company to estimate the loss. However, disclosure of the contingencies should be made in financial statements if they are material and if the contingencies or the events leading to the contingencies are probable or if these contingencies can be reliably measured (or reasonably estimated) (FASB, 1975).

The disclosure of a loss contingency should indicate the nature of the contingency and should give an estimate of the possible loss or range of loss or state that such an estimate can not be made (FASB, 1975).

IASC (1995) requires that contingent losses must be disclosed in the notes to the financial statements if they are probable that they have occurred, although no reasonable estimate can be made of the amount. Footnote disclosure of the contingent loss is appropriate if the likelihood of a loss is at least reasonably possible. Also, if the likelihood of loss is remote, there is no disclosure necessary. For example, if the environmental protection agency informed a company that its disposal site does not comply with legal regulations, it is still not known which technique of remediation will be necessary, and thus what costs the company will face. Then, at least the costs of the cheapest remediation should be recognized. An additional exposure to loss should be disclosed in a footnote and the management should mention that the amount cannot be estimated (Roberts, 1994). Furthermore, reserves for contingent liabilities may be made according to the same rules as reserves for other liabilities. Reserve charges to income or provisions for contingent liabilities can be made to cover losses or debts, which are defined and which on the date of the balance sheet are either likely to be incurred or certain to be incurred, but uncertain as to amount or as to the date on which they will arise (IASC, 1992).

FASB (1975, p. 3) pointed out that:-

"Some enterprises accrue estimated losses from certain types of contingencies by a charge to income prior to the occurrence of the event or events that are expected to resolve the uncertainties while, under similar circumstances, other enterprises account for those losses only when the confirming event or events have occurred". In general, $SFAS_5$ requires that a provision for a loss contingency be recorded when it is probable that a liability has been incurred at the date of the financial statements and the amount of the loss can be reasonably estimated (Roussey, 1992).

IASC (1997, p. 58) states that:-

"Some liabilities can be measured only by using a substantial degree of estimation. Some enterprises describe these liabilities as provisions. In some countries, such provisions are

not regarded as liabilities because the concept of a liability is defined narrowly so as to include only amounts that can be established without the need to make estimates".

A slightly different tack is taken by the Canadian Institute of Chartered Accountants (CICA 1993) who recommend as follows:-

- Environmental liabilities should be disclosed separately in the financial statements.
- Environmental liabilities of individual materiality should be disclosed separately.
- A deferred charge should be disclosed in connection with the liability it relates to.
- The nature of any uncertainties of measurement should be explained.

Hawkshow (1991) argues that the general accounting standards would be sufficient to cope with environmental liabilities, if they were only applied correctly or enforced by regulatory authorities, so there is no need for new accounting standards defining the disclosure of environmental liabilities.

***(c)Auditing accounting estimates***

$SAS_{57}$ provides guidance to auditors on obtaining and evaluating sufficient competent evidential matter to support significant accounting estimates in an audit of financial statements in accordance with Generally Accepted Auditing Standards (GAAS) (AICPA, 1989). Colbert and Scarbrough (1993) argue that $SAS_{57}$ should be considered when the company has developed or should develop as estimate of an environmental liability. However, $SAS_{57}$ emphasizes that management is responsible for making the accounting estimates included in the financial statements. Estimates are based on subjective as well as objective factors and, as a result, judgment is required to estimate amount at the date of the financial statements. Management's judgment is normally based on its knowledge and experience about past and current events and its assumptions about conditions it expects to exist and courses of action it expects to take (AICPA, 1989).

The auditor is responsible for evaluating the reasonableness of accounting estimates made by management in the financial statements taken as a whole. As estimates are based on subjective as well as objective factors, it may be difficult for management to establish controls over them. Even when management's estimation process involves competent personnel using relevant and reliable data, there is potential for bias in the subjective factors. Accordingly, when planning and performing procedures to evaluate accounting

estimates, the auditor should consider, with an attitude of professional scepticism, both the subjective and objective factors (AICPA, 1989).

Environmental issues have a strong effect on business and this may lead to some environmental costs. Management bases the estimate of these costs on assumptions and actions, which it expects to take. For example, the company may have received notice from the Environmental Protection Agency that it is in violation of regulations concerning smoke emissions. The company plans to modify the equipment to bring the emission within acceptable limits. Management should identify relevant factors, which may affect the estimate and gather data on which to base it. The cost of modification should then be estimated and accrued (Colbert and Scarbrough, 1993).

However, AICPA (1989) points out that if the auditors believe the estimated amount included in the financial statements is unreasonable, they should treat the difference between that estimate and the closest reasonable estimate as a likely error and aggregate it with other likely errors. They should also consider whether the difference between estimates best supported by the audit evidence and the estimates included in the financial statements, which are individually reasonable, indicate a possible bias on the part of the entity's management.

It can be argued that, the auditors have three objectives when auditing environmental estimates. First, the auditor should ascertain that all necessary material environmental estimates have been developed. Second, they should determine that the estimates are reasonable. Finally, the auditors should consider that the presentation and disclosure of environmental estimates are appropriate (AICPA, 1989; Colbert and Scarbrough, 1993; Roussey, 1992; Buckley, 1991).

***(d) The going concern assumption***

In recent years widespread public concern for effective protection of the environment has resulted in pervasive and extensive legislation in many nations. Environmental issues may actually threaten the company's viability as a going concern. For example, a chemical company, after numerous warnings and fines, continues to dispense

hazardous materials into a lake. The external auditor should consider the likelihood that a governmental agency could order the company to be shutdown (Colbert and Scarbrough, 1993).

However, the going concern assumption is a fundamental concept of annual financial reporting. This means that it is assumed that the business will continue in existence and there will be no dramatic change in its economic circumstances, it excludes the possibility of short-term break-up, forced sale or liquidation (Shaw et al., 1980; Sherer and Turley, 1991).

IASC (1997, p. 76) recognizes "going concern" as one of fundamental accounting assumptions. According to this assumption, the enterprise is normally viewed as a going concern, that is, as continuing in operation for the foreseeable future. It is assumed that the enterprise has neither the intention nor the necessity of liquidation or of curtailing materially the scale of its operations. While, the external auditor is not concerned to express an opinion on the quality of the management, if the audited accounts provided an appropriate representation of economic reality, then users should be able to form their own judgment about managerial effectiveness. One limited instance in which the external auditor has to consider especially the effectiveness of management is in regard to its success in ensuring the continued short-term future existence of the enterprise (Shaw et al., 1980; Sherer and Turley, 1991).

$IAS_1$ requires that where fundamental accounting assumptions are followed in financial statements, disclosure of such assumptions is not required. If a fundamental accounting assumption is not followed, that fact should be disclosed together with the reasons (IASC, 1997). Because of the importance of going concern assumption to the form and content of the accounts, external auditors indicate by inference their belief that it is the appropriate basis. They do not guarantee that the business is a going concern in the long term, but they do confirm that the going concern assumption is a valid basis for the financial statements (Shaw et al., 1980; Sherer and Turley, 1991, 1997). Tweedie (1987, p. 22) states that "the Auditing Practices Committee's guidance suggests that only if the auditors become aware of indications that the going concern basis may not be valid, they should carry out additional procedures".

$SAS_{59}$ "the Auditor's Consideration of an Entity's Ability to Continue as a Going Concern". This standard requires that, on every audit, the auditor consider whether the entity will continue as a going concern for a reasonable period of time (AICPA, 1989). If the auditors conclude, there is substantial doubt about the entity's ability to continue as a going concern for a reasonable period of time, such as violations of environmental regulations, potential losses, they should: -consider the adequacy of disclosure about the entity's possible inability to continue as a going concern for a reasonable period of time and, - include an explanatory paragraph (following the opinion paragraph) in their audit report to reflect their conclusion. If the auditors conclude that substantial doubt does not exist, they should consider the need for disclosure (AICPA, 1989).

Furthermore, ICAEW (1992) points out that financial auditors may be required to comment directly on environmental uncertainties in their audit reports will be increased if the Auditing Practices Board (APB) exposure draft "Auditors' Reports on Financial Statements". It requires auditors to draw attention in their report to inherent uncertainties, when those uncertainties;-

-affect the validity of the going concern assumption; or

-involve possible outcomes falling within a range which is unusually or exceptionally wide in relation to the financial statements; or

-involve possible outcomes which are so material and pervasive in their possible effects that resolution of the matter could significantly alter the view given by the financial statements.

It can be argued that environmental issues threaten the continuity of a company. Stakeholders need information about the impact of these issues on a company, especially in an uncertain situation. Diverse stakeholders may depend on financial statements to get information, which can help them to make their judgments. Therefore, external auditors may find themselves involved in some aspects of environmental issues.

***(e) Materiality policy***

Accounting policies encompass the principles, bases, conventions, rules and procedures adopted by management in preparing and presenting financial statements (IASC, 1997). $IAS_1$ requires that the disclosure of all significant accounting policies, which have been adopted in the preparation and presentation of financial statements. Accounting

policies such as prudence, materiality…etc, should govern the selection and application by management in the preparation of financial statements (IASC, 1997).

A variety of users such as stakeholders, creditors, employees…etc, depend on financial statements to get information for making evaluations and financial decisions. They cannot make reliable judgments on these matters unless the financial statements clearly disclose the significant accounting policies, which have been adopted in preparing them (IASC, 1997). ICAEW (2000) points out that materiality criterion applicable to environmental information are no different from those applicable to other information, i.e. that information is material if it could influence users' decisions taken on the basis of the financial statements.

Jones and Bates (1990) point out that materiality signifies two aspects of auditing. The more common use of the word relates to the size and sensitivity of errors that may affect an audit opinion. The other aspect was touched on above and relates to the depth of search in an audit. The two concepts are linked since the depth of search will govern the likelihood of errors being discovered. In essence materiality relates to those monetary values above which auditors believe that their objectives are directly affected. As such, materiality is subjective to external auditors and it may be varied from one audit situation to another. Using modern audit technique materiality rather than risk is the main determinant of the depth of search. Arens and Loebbecke (1994, p. 39) state that "materiality is a misstatement in the financial statements can be considered material if knowledge of the misstatement would affect a decision of a reasonable user of the statements". Flint (1988) argues that materiality is the major determinant of the impact which any piece of information produced by the audit investigation has in stimulating further enquiry or the value of information for the purposes of the report or opinion which an external auditor proposes to make to discharge the audit responsibility and fulfill the audit purpose. Also, the concept of materiality underlies the application of Generally Accepted Auditing Standards (GAAS). It has a pervasive effect in a financial statement audit. The concept of materiality is extremely important to external auditors in that:-

- planning the audit, it will indicate to their the amount of work that should be done in any particular audit area.

- evaluating whether the financial statements taken as a whole are presented fairly in conformity with GAAS ( Pratt, 1987; Kell et al., 1986).
- Determining information and data essential for the audit report. This includes accounting and non-accounting information and data necessary to auditors to enable an adequate understanding of the organization affairs, the financial statement, the audit objective, and the significance of the audit report (Flint, 1988). In the UK, $SAS_{220}$ addresses materiality and the audit. It requires that:-
- Auditors should consider materiality and its relationship with audit risk when conducting an audit.
- Auditors should consider materiality when determining the nature, timing and extent of audit procedures.
- In evaluating whether the financial statements give a true and fair view, auditors should assess the aggregate of uncorrected misstatements (Woolf, 1997).

Materiality is an essential consideration in determining the appropriate type of report for a given set of circumstances. For example, when a misstatement in the financial statements exists but is unlikely to affect the decisions of a reasonable user, it is considered to be immaterial. Unqualified opinion is therefore appropriate (Arens and Loebbecke, 1994).

FASB (1980, p. XV) defines materiality as "the magnitude of an omission or misstatement of accounting information that, in the light of surrounding circumstances, makes it probable that the judgment of a reasonable person relying on the information would have been changed or influenced by the omission or misstatement". This definition requires external auditors to consider both the circumstance pertaining to the entity and the information needs of those who will rely on the audited financial statements (Kell et al., 1986).

The previous discussion provides evidence that environmental issues impact on financial auditors' work. The ability of financial auditors to participate in environmental auditing and limiting factors to this participation need to be addressed in more details in next sections.

## 4. Should financial auditors be involved in environmental auditing?

The financial audit and environmental audits are similar in crucial aspects. This similarity leads to emergence of the arguments about the relevance of financial auditors to perform environmental audits. A number of studies have addressed the relevance of accountants and financial auditors in carrying out environmental audits (Huizing and Dekker, 1992; Collison and Gray, 1997; Collison et al., 1996; Collison, 1996; Collison and Slomp, 2000; Bebbington, et al., 1994; Power, 1997; FEE, 1993; IFAC, 1995; ICAEW, 1992; CICA, 1992 and 1997; Black, 1998; Gray and Symon, 1992; Greeno et al., 1989).

ICAEW (1992) addresses the question of the competence of the financial auditors in the environmental area as in the financial audits. It suggests that the financial auditors should apply scientific expertise, according to their professional qualifications, as would any specialist, in order to achieve credibility in an environmental audit. The FEE (1993) points out that the financial auditor has a long standing tradition of investigating and evaluating systems as well as reporting the findings because environmental auditing has many similarities with traditional auditing.

Collison et al. (1996) argue that on the basis of the evidence from the European countries the potential role for the financial auditing, which is related to environmental audits, clearly exists. The CICA (1992) addresses the relationship between financial and environmental audits and evaluates the expertise of accountants, which might be relevant. Power (1997) argues that accountants have begun to compete for work in the environmental auditing field, such as the verification and development of EMAS and $BS_{7750}$. In doing so they have to establish competing claims by experts in other fields. Collison et al. (1996) conducted a survey concerning financial auditors' responses to environmental issues. The results indicate that there is a majority desire for guidance from professional accountancy bodies related to environmental matters and also a majority view that many auditors have a potentially useful role to play in attesting environmental reports.

The CICA (1997) points out that accountants and auditors need to expand their knowledge of environmental effectively with other disciplines regarding environmental issues. Gray and Symon (1992) argue that accountants trained as statutory auditors should

be in a position to assess the extent to which environmental information systems provide sufficient evidence to come to conclusions about the reliability of reported data. Black (1998, p. 24) states that "the attention of environmental auditors should now shift to the audit of fully integrated environmental management systems, which are designed to sustain and promote environmental advances while utilising a fewer resources than a compliance approach requires". Power (1997) argues that the potential role for accountants to act as environmental verifiers and certifiers has become an increasingly prominent theme in the UK and elsewhere.

Blokdijk and Drieenhuizen, (1992) point out that the Limperg Institute in the Netherlands published a discussion document; Milieu en Accountant (the Environment and the Audit Profession). It concluded that the financial auditing profession can make an important contribution to the training of environmental auditors and to the implementation of environmental audits. It also suggested that the verification of environmental reports should be made by a specially trained environmental auditor rather than a financial auditor. The Limperg Institute's study group has drawn up a profile of a member of this new profession. An environmental auditor should be well versed in the design of accounting systems and internal controls, including the methods and techniques used to measure and verify variables (the basic principles of financial auditing). The financial audit profession can make a meaningful contribution to the training of environmental auditors. The working relationship between the financial and environmental auditor would be similar to that between the auditor and the actuary of an insurance company's pension fund.

In the UK, $SAS_{600}$ "Auditors' reports on financial statements" (APB, 1993) uses an alleged breach of an environmental regulation in its first example of a paragraph within the audit report describing a fundamental uncertainty. Also, $SAS_{160}$, "Other Information in Documents Containing Audited Financial Statements", requires that in some circumstances, for example when auditing the financial statements of limited companies in the UK, auditors have a statutory responsibility to consider whether the information (financial and non-financial information) given in the directors' report is consistent with the financial statements in which it is issued. If they are of the opinion that it is not, they are required to make reference to the inconsistencies in their report. Also International Standards on Auditing ($ISA_{720}$) "Other Information in Documents Containing Audited

Financial Statements" addresses the considerations which auditor should consider in auditing this information (APB, 1999).

Collison and Gray (1997) point out that there are two factors related to financial auditor's awareness and involvement with environmental issues. The first is related to direct guidance from the professional accountancy bodies on matters related to the environmental aspects of the statutory financial audit. The second factor is related to the environmental audit and the attestation of environmental reports. Power (1997) argues that the financial auditor's potential role in environmental auditing is normalised by analogy with other areas where they have worked with non-accounting specialists.

ICAEW (1992, p. 108) states that "it is more likely that a relevant physical scientist or engineer would be the appropriate person to provide such verification because of technical and narrow focus of such disclosure". The auditors in this situation have a broad field to work, while they use the specialist for technical problem. Also, it indicates that the environment is no different from other specialist areas such as property valuation or interpretation of legal agreements. The environment is one area among others, which can be integrated into audit process, which will involve discussion with specialists (ICAEW, 1992).

It can be argued that some companies may trust the auditors or the certified public accountants more than any other specialists to ask them advice in business situations. For example, in the US a recent survey found that small business owners consider Certified Public Accountants (CPAs) as the primary source of external advice concerning a variety of business situations. The CPAs were chosen by 44.5 percent of the respondents as the most trusted external advisor far ahead of other, types of business consultants (20 percent) and attorneys (18 percent) (Steadman et al., 1995). The previous discussion may lead to the argument whether the financial auditors are the only choice for performing environmental audits or there are other choices. There are in fact many different disciplines and many specialists such as, engineers, chemists, lawyers and others compete accountants and auditors in performing environmental audits.

Stittle (1992, p. 21) states that "if accountants fail to grasp this opportunity (means performing environmental audits) there are many other types of organisation that will take

up the challenge. Maltby (1995) points out that accounting firms are not the only organisation offering environmental audit services.

In the UK there are engineering and science-based consultancies. Moreover, the consultants listed in the UK ENDS Directory (1991) exhibit a wide variety of specialists. Some have a background in engineering, others in landscape design, others again are ecologists or geologists and accountancy firms. Furthermore, an investigation into the attestation of environmental reports (on 26 companies from FEE member countries) published in Europe has been made by Kamp-Roelands (1995) (as quoted in Collison et al., 1996, p. 14), the results indicated that the majority of audits has been undertaken by non-accounting firms, and while the proportion of audits carried out by accounting firms is 25 % in total. However, this not static and there are reasons for thinking that the role of financial auditors in environmental audits is increasing in importance, such as:-

-The US (EPA) endorsed the concept of environmental auditing in its policy statement issued in July 1986. This policy statement emphasises the importance of auditing to ensure that corporations comply with the environmental rules and regulations (Rezaee et al., 1995).

-The directory of Environmental Consultants (1991), published by Environmental Data Services (ENDS), lists 225 environmental consultancy firms and notes that their numbers have increased by 80 % since its first edition in 1988. Environmental audit is not the main reason for this increase, but rather one of many activities demanded by business and government in response to legal, consumer and competitive pressures.

-Companies have commissioned environmental audit reports, such as, in the UK, Norsk Hydro published a 28-page environmental report on its operations. Independent environmental consultants (Lloyd's Register) performed a review on the report and their summary of findings was published as its last section. Also, Caird Group has commissioned two environmental audits in 1989 and 1991. A summary of auditor's findings was published. The auditors summarised Caird's activities and expressed an opinion on them (Maltby, 1995). The British Airways provided experimental forms of independent attestation in advance of EMAS and $BS_{7750}$ schemes (Gray, 1993).

-The Australian Society of Certified Practising Accountants (ASCPA) has established an Ethics Centre of Excellence, from which practitioners are encouraged to obtain advice and consultation on ethical issues (Leung and Coopers, 1994).

-There are some institutions, which start to offer courses, training and certifications to qualify environmental auditors such as the Canadian Environmental Auditing Association. Also, the National Association of Environmental Risk Auditors in the US offer training courses on environmental auditing and three levels of auditor certification:-

(1) Certified Environmental Risk Screener-A

three-day courses for preliminary screening and phase I auditing.

(2) Certified Audit Reviewer-for banking professionals to review phase I audits and asses whether additional audit phases are needed

(3) Certified Environmental Risk Auditor-A

two-week program for auditors to learn conduct phase II and III audits including soil and water testing, laboratory sampling, analysing laboratory reports, and identifying remedial requirements ($CH_2MHILL$, 1993).

## 5. Financial auditors and environmental specialists

The education and experience of auditors enable them to be knowledgeable about accounting and auditing. Auditing standards recognize that auditors are not expected to have expertise in other fields. There are instances in which they consult with specialists in other areas, e.g., in an audit of a client with possible environmental violations, auditors may utilize the work of an environmental specialist or consultant (Colbert and Scarbrough, 1993).

The auditor's use of a specialist is the topic of $SAS_{11}$, "using the work of a specialist" (AICPA, 1989). $SAS_{11}$ provides guidance to the auditor who uses the work of a specialist in performing an audit of financial statements in accordance with generally accepted auditing standards. $SAS_{11}$ defines a specialist as:-

a person (or firm) possessing special skill or knowledge in a particular field other than accounting or auditing. For example, appraisers, attorneys, engineers (AICPA, 1989). It is widely accepted that environmental auditing requires a multidisciplinary team (ICAEW, 1992; FEE, 1993; Salter, 1992; Hillary, 1993; Huizing and Dekker, 1992; Sanehi and Waire, 1991). Where financial auditors can use the work of environmental specialists as using any other specialist's work such as lawyers, engineers, appraisers and others, there is a need for a multidisciplinary team (FEE, 1993).

Salter (1992); Hillary (1993); Sanehi and Waire (1991) and Huizing and Dekker (1992) indicate that the environmental auditing team consists of external auditors and other scientists who have technical and environmental legislative skills. On the other hand, Gray and Symon (1992) argue that there are many different disciplines that can be involved in environmental audits such as, specialist biologist, chemists, engineers etc. But all of them may have little understanding of the economic, financial or management implications of their conclusions. However, in performing an audit of financial statements, auditors may find matters potentially material to the fair presentation of financial statements in conformity with Generally Accepted Accounting Principles (GAAP) that require special knowledge and that, in their judgment, require using the work of a specialist. Furthermore, the auditors and the specialists should reach an agreement as to the work to be performed. The agreement, preferably in writing, should include the objectives and the scope of the consultant's work, the methods and assumptions to be used, the planned form and content of the consultant's report, and the use of the report (AICPA, 1989; Colbert and Scarbrough, 1993).

However, the specialist's work may impact on the auditors' report as $SAS_{11}$ points out, "if auditors determine that the specialist's findings support the related representations in the financial statements, they may reasonably conclude that sufficient competent evidential matter has been obtained. If there is a material difference between the specialist's findings and the representations in the financial statements, or if auditors believe that the determinations made by the specialist are unreasonable, they should apply additional procedures. If, after applying any additional procedures that might be appropriate, they are unable to resolve the matter, auditors should obtain the opinion of another specialist, unless it appears to the auditors that the matter cannot be resolved. A matter that has not been resolved will ordinarily cause them to conclude that they should qualify their opinion or disclaim an opinion because the inability to obtain sufficient competent evidential matter as to an assertion of material significance in the financial statements constitutes a scope limitation" (AICPA, 1989, p. 159).

A number of studies address the use of specialists in the teams used for environmental auditing (Buckely 1991; Salter, 1992; Sanehi and Waire; 1991). Dezalay

(1995) addresses the role of a lawyer in environmental audit team. Patrick (1990) discusses the use of environmental consultants in the audit team for investigating the physical conditions and regulatory issues involved.

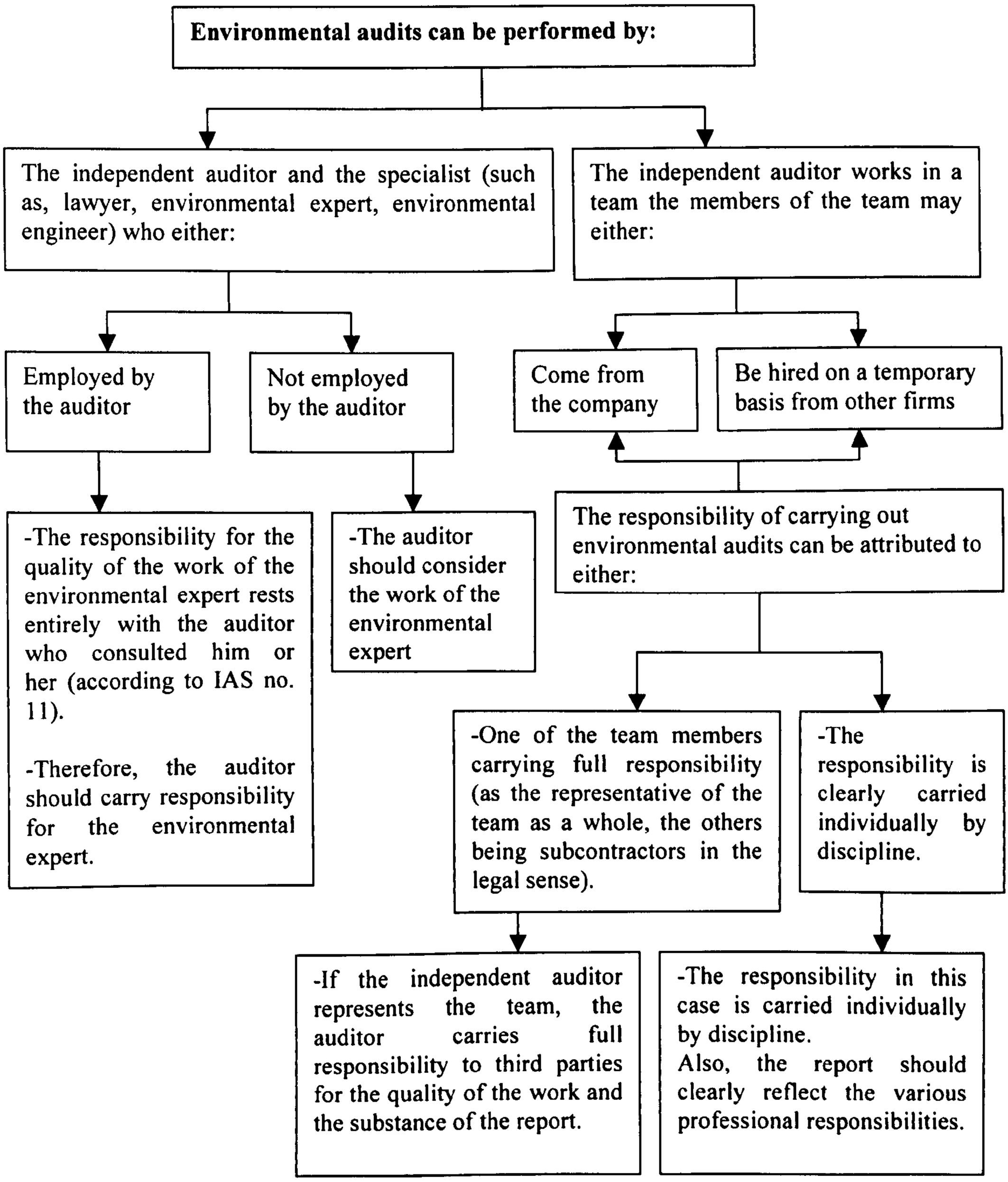
It can be argued that, during the auditor's work, if environmental issues arise, there will be many questions, which the auditor needs to have answered to assess the materiality of contingent liabilities. A specialist can aid the auditor in some matters such as, identifying applicable laws, determining possible environmental violations, measuring the physical conditions and rectifying the situation. A number of users of environmental information may be less interested in the level of polluted emissions, but are more interested in the implications of these emissions on company's financial statements in the situation where this company is fined or penalized by governmental agencies because of its environmental violations.

## 6. The auditors' responsibility towards environmental disclosure

It is widely accepted that financial auditors can participate in environmental audits with other specialists or in multidisciplinary teams (ICAEW, 1992; FEE, 1993; IFAC, 1995; Hillary, 1993; Maltby, 1995; Huizing and Dekker, 1992; Sanehi and Waire, 1991; Gray and Symon, 1992; Collison and Gray, 1997).

IFAC (1995) and AICPA (1989) discuss the auditor's responsibility for using the work of an expert. The application of ISA involves the auditor assuming responsibility for the quality of the work performed by the expert. Also, $SAS_{57}$ points out that management is responsible for accounting estimates included in the financial statement. The auditor is responsible for evaluating the reasonableness of these accounting estimates. IFAC (1995, p. 41) states that "management is responsible for ensuring that the entity complies with the environmental regulatory requirements and its own environmental policies, and for establishing and maintaining an effective EMS". AICPA (1989), IFA (1995), and IAPC (1995 and 2000) discuss how environmental audits should be performed in an attempt to specify auditor's responsibility towards environmental disclosure. This discussion is presented in the following Figure (3.1):-

Figure (3.1) Auditor's responsibility for the work of others in auditing environmental disclosure



Moreover, AICPA (1989) and APC (1991) address the impacts of illegal acts on the auditors' report. In accordance with GAAP an auditor should express an opinion when auditing financial statements. This opinion may be qualified, unqualified, adverse or disclaimer in nature (Kell et al., 1986). The auditor's opinion when auditing financial statements and environmental matters can be summarized in the following Table (3.1):-

Table (3.1): auditor's opinion concerning environmental issues in the audit of financial statements.

| | |
|---|---|
| **Unqualified opinion** | -If the auditor thinks that the financial statements presented fairly. The statements are not affected by a major uncertainty (such as, environmental liabilities, law suits).<br>-In other words there are no impacts from environmental issues on financial statements or the company's continuity |
| **Qualified opinion** | -If the auditor concludes that environmental issues have a material effect on the financial statements and the company has not properly accounted for or disclosed this.<br>-If the auditor is unable to obtain sufficient evidence concerning items in the statements<br>-If financial statements contain a material departure from GAAP. |
| **Adverse opinion** | -If the auditor concludes that environmental issues have a material effect on the financial statements and the company has not properly accounted for or disclosed this.<br>-If financial statements are not presented fairly in conformity with GAAP and a qualified opinion is not appropriate |
| **Disclaimer opinion** | -If the auditor is precluded by the company from obtaining sufficient competent evidential matter to evaluate whether environmental issues could be material to the financial statements.<br>-If there are significant uncertainties (such as, contingent environmental liabilities) affecting the financial statements as a whole and qualified opinion is therefore not appropriate. |

## 7. Some factors, which limit auditors' involvement in environmental auditing

The evidence from the literature indicates that the auditing profession can contribute in environmental issues. However, financial auditors' participation in the area of environmental auditing is limited.

A number of studies point out some of factors which may limit auditors' participation in environmental auditing (Lehman, 1988, 1995, 1999; Ponemon, 1990 and 1992; Power, 1991 and 1997; Lewis et al., 1992; Mathews, 1997; Bebbington, 1993 and 1995; Puxty et al., 1994; FEE, 1993; IFAC, 1995; CICA, 1992; ICAEW, 1992; Gray et al., 1994; Hopwood, 1990; Geary and Sims, 1994; Day, 1995; Collison et al., 1996; Collison and Gray, 1997; Grice, 1992; Hillary, 1993; Mathews, 1997, 2001; Brown and Deegan, 1998; Maltby, 1995; Milne, 2001; Milner et al., 1999; Brinkman and Sims, 2001). Through reviewing these studies, it can be suggested that a number of factors, which limit auditors' participation in environmental audits, as follows:-

(a) Accounting education

(b) The ethical and social aspects in accounting education

(c) Research in accounting and auditing profession

(d) The experience, skills and training of financial auditors

(e) Professional guidance for environmental matters

(f) Auditors' views towards participating in environmental audits

Details of these factors as follows:-

### *(a) Accounting education*

Education is the key to changing long-established patterns of social behaviour. It can help combat the unsustainable production and consumption patterns that are responsible for environmental degradation, loss of biodiversity, population growth beyond the capacity of systems, and unplanned urbanisation (Atchia and Tropp, 1995). Lehman (1988) points out that the contemporary notions of accounting education rest on a commitment to training in a technical sense, teche from the Greek, or technique: skilful production expert mastery of objectified tasks. The role of accounting education in qualifying business students and the impact of accounting education on the profession has

recently attracted many researchers attention (Lehman, 1988, Ponemon, 1990 and 1992; Power, 1991 and 1997; Lewis et al., 1992; Mathews, 1997; Bebbington, 1995; Hopwood; 1990; Gray et al., 1994; Leung and Coopers, 1994; Gordon, 1998, 2001; Booth, 2001; Grinnell and Hunt, 2001). Puxty et al. (1994) observe that practising accountants are themselves a product of the socialisation that arises from the educational and training process.

Albrecht and Sack (2000) identify four of the accounting education deficiencies. These are that accounting courses:-

-technical and rule-based with a focus on professional exams,

-lack future-oriented views, global focuses and fail to deal with values, ethics and integrity,

-fail to use real world examples, and

-fail to develop students' critical thinking skills.

Mathews (2001) argues that accounting theory and ethics courses seem to be needed to educate accounting faculty and administrators that such courses are (or should be) broadening as opposed to content driven. Leung and Coopers (1994) discuss that business schools aim to produce academically qualified graduates. They educate their students in the theory and practice of financial accounting, marketing, finance, taxation and many other areas. However, it is not often that business schools look beyond these immediate concerns. It can be argued that other matters may be more important to educate in business schools. Lehman (1988) argues that business educators are responsible for teaching students to be conscious of the sides they are choosing and to be critical thinkers in decision having ethical consequences.

Mathews (1997) argues that the teaching or educational aspect has not reached a satisfactory level of activity and is needed if the next generation of academic accountants are to carry on the work, and if the professional arm is to be reformed. A satisfactory educational programme would be one where accounting theory and alternative forms of accounting received a level of emphasis equivalent to that given to conventional corporate accounting.

Gray and Bebbington (1994) argue that existence of a university teaching dominated by technique acquisition, which generates neither practically trained individuals who can be immediately useful in the office nor educationally developed individuals with a

sophisticated capacity to enqûire, reason, conceptualise and evaluate. Other studies (Hopwood, 1990; Laughbin et al., 1986; Puxty, 1991) discuss the same arguments, neither the training nor the education of accounting students is satisfactory. This failure, at least of the educational component of university accounting teaching, has been widely remarked upon.

McPhail and Gray (1996) argue that students display different levels of ethical awareness in fields outside accounting and they suggest that something unusual is occurring in accounting education, which may connect students of ethical awareness only the sphere of accountancy. The authors suggest that the way in which accounting is conceived, constructed and taught makes it inevitable that accounting students will experience intellectual and moral atrophy. Geary and Sims (1994) argue that the weakness of the accounting pedagogy is illustrated by such issues as ethical problems which often do not have specific correct solutions like those problems on the Certified of Public Accountant (CPA) examination. An emphasis on factual rules important to success in professional examinations can create a classroom expectation that is especially un-welcoming to the unstructured and ill-defined ethical problems that students will actually face.

Moreover, the role of pedagogy in accounting education was addressed in a strongly worded statement the American Accounting Association (AAA) Future Committee (1986, p. 177) made the following observation:-

"Fifty years ago, the method of lecture together with routine-problem-solving was generally used. Today that some method tends to dominate accounting teaching methods, although class discussion in the form of teacher-question and student-answer is given more emphasis. The current pedagogy also emphasises problems with specific solutions. As the number of authoritative pronouncements has expanded, textbooks and faculty have required students to learn more factual rules and procedures to be applied in rather rigid fashion. A primary focus in many cases has been on the acquisition of knowledge needed to pass professional examinations".

On the other hand, Geary and Sims (1994) suggest that if accounting faculty reach consensus on the goals of ethics education, make wise pedagogical choices emphasising active rather than passive learning strategies, incorporate a well-structured and well-implemented debriefing phase, and provide for feedback through an effective assessment

process, ethics education will mature as an integral and vital component of an accounting curriculum.

Gibson (1997) argues that the important reason to develop an environmental accounting course is that it can endeavour to overcome the narrowness of accounting education. Broadening students' understand of accounting in its social function can encourage more creative thinking about the changes necessary to help mitigate socially and environmentally damaging activities.

Attempts have been recently made to argue the case for a limited social and environmental accounting education programme as a part of other conventional accounting courses (Gordon, 1998, 2001; Grinnell and Hunt, 2001; Booth, 2001; Lehman, 1995; Lockhart and Mathews, 2000; Mathews, 2001; Milne, 2001). These studies suggest a number of methods to widen and develop accounting education to encapsulate environmental issues. For example, Grinnell and Hunt (2001) described the development and structure of an integrated course in accounting including supported for an environmental strategy. Lockhart and Mathews (2000) provided a description of the structure of a successful undergraduate environmental accounting programme and the source materials used. Mathews (2001) proposed the qualitative background to a social and environmental accounting course and suggested assessment approaches that have been used in this area, such as the use of case analysis of real companies and a project based on analysing how a real company has dealt with environmental issues in its reports.

It can be argued that there is a crucial need to make a number of changes in accounting education to qualify auditors to cope with environmental matters, such as, teaching:

-ethical and social aspects

-environmental sciences, auditors must have multimedia expertise

-new skills and technical ways

-real problems and case studies, which may face auditors in fact and, also raising auditors ability to think, collect and analyse information, estimate and evaluate environmental matters.

***(b) The ethical and social aspects in accounting education***

The integrity of ethical and social aspects in accounting education is very important to the qualifications of accountants and auditors who should be able to deal with new professional challenges, such as environmental matters. The importance of an ethical component business and accounting education has been addressed in a number of studies (CICA, 1992; ICAEW, 1992; Lewis et al., 1992; Lehman, 1988, 1995, 1999; Brinkmann and Sims, 2001; Milner et al., 1999; Gordon, 1998; Ponemon, 1990 and 1991; Puxty et al., 1994; Loeb, 1991 and 1988; Bebbington, 1993).

The goals of ethics education in accounting are to develop a sense of moral obligation or responsibility, to develop the abilities needed to deal with ethical conflicts, and to learn how to deal with the uncertainties of the accounting profession (Loeb, 1988). The CICA (1992) points out those ethical characteristics similar to those of financial auditors would be needed in the environmental field. Gray et al., (1994) argue that accounting education fails to develop students' intellectual and relatedly, ethical maturity. The authors suggest that there are many possible solutions to this problem. One possible solution may lie with social and environmental accounting, which challenges much of the traditional approach to accounting education in universities, offers a vehicle within which many of the implicit assumptions of accounting and accounting education can be explored and provides a potential opportunity to enhance the ethical and intellectual development of accounting students.

In the US, the report of National Commission on Fraudulent Financial Reporting "Treadway Commission" (1987) recommends that business and accounting curricula should emphasise ethical values, that professional certification examinations should test students on ethical values, and that continuing professional education and continuing management education should focus on ethical values.

The AAA (1986) argues that students in business schools should be exposed to the ethical dimensions of their business studies. Although many studies advocate teaching ethical application in accounting, this subject still not receives adequate attention in accounting education (Loeb, 1991). Lewis et al. (1992) observe that there is a reluctance to

explore the ethical dimension of current economic to explore the ethical dimension of the current economic and political structures underpinning accounting practice. Therefore, accounting courses must consider traditional business and society issues as well as the resolution of moral dilemmas (Geary and Sims, 1994). A significant number of business schools do not systematically integrate or incorporate ethics issues into business disciplines (Milton-Smith, 1991).

Mathews (1987, p. 12) states that "the use of social in conjunction with accounting does not seem to work as well as the addition of financial, management or tax, these words add a large measure of explanation and precision to accounting, which social does not, perhaps one difficulty is the range of total activity included under social accounting". Puxty et al. (1994) argue that professional accountants are induced to act ethically through two aspects of their socialisation: the educational process preparing them for qualifying examinations and the influence of work experience and role models who show what it means to be ethical.

A number of studies (Adams et al., 1999; Milner et al., 1999; Milne, 2001; Lehman, 1999, 1995; Brinkmann and Sims, 2001) show that business students exhibit lower levels in their ethical perceptions and actions that their non-business counterparts. Milner et al. (1999) explain that matter may be due to business students' lower entry ethics than the effects of their university education. They find no improvements due to university education. Adams et al. (1999) report there is a doubt on the current ability of university education to prepare students for workplace ethical issues and dilemmas. It can be argued that there is a need to encapsulate ethical and social dimensions in accounting education to raise the abilities of financial auditors to cope with environmental issues and to deal with the uncertainties of these issues.

***(c) Research in accounting and auditing profession***

The ability of research to support the development of practice has attracted a variety of studies (Sterling, 1973; Lee, 1989; Day, 1995; Kaplan, 1984; Lehman, 1988; Bebbington, 1994; Lews et al., 1992; Power, 1991 and 1997). Academics do not offer solutions for problems, which face practitioners in their work (Gray, 1996; Bebbington,

1997). Sterling (1973) argues that research is isolated from education and practice. Education and practice are complementary in that educators teach accepted practices and practitioners practice what they are taught. Also, the author argued that any practitioner or teacher in the field of accounting would find it difficult to assert that there is congruence between research in his or her field and actual education and professional practice. A state of affairs that is usually viewed as being detrimental to both research and practice (Lee, 1989).

Kaplan (1984) suspects that researchers will not learn about the production and organisation problems of contemporary industrial corporations by reading economics and management science journals. Researchers will need to leave their offices and study the practices of innovating organisations. Day (1995) argues that the possibilities of changing accounting practices depend just as much on transforming current generations of accounting student's understandings, as on transforming current practitioners, and their understanding. Lee (1989) examined the relationship between accounting's research, practice and education functions. In summary much of the material in the area has led a number of commentators to express concern that research appears to exist in increasing isolation from education and practice. Bebbington (1995) has provided a review of the lack of connection between curricula and the services, which accountants provide. Research is needed to investigate the extent to which curricula are determined by the profession, the academic institution, the individuals teaching the programme or various combinations of these groups. It can be argued that there is a need to link research with teaching or education, and teaching with practice, through the development of the curriculum.

***(d) The experience, skills and training of financial auditors***

The financial auditors can play a role in environmental auditing but they possess only one element of the required knowledge, skills and experience needed to carry out environmental audits (FEE, 1993). Hillary (1993, p. 36) states that "defining auditors' skills is difficult because there are no recognised standards". Huizing and Dekker (1992) argue that if there really is to be a new environmental audit profession, its personnel and skills are as yet indeterminate and vague. Lehman (1988) points out that accounting

students are trained in how to do (how to apply a present formula or model) but the underlying implications of why are either unarticulated or not scrutinised.

Burchell et al. (1980) point out that formalised accounting knowledge can be seen as a condition for the possibility of the professionalization of accounting and that professionalization in turn changes the conditions underlying the elaboration and development of accounting knowledge. The claim to expertise plays a central but complex role in sustaining professional communities. The complexity relates both to and between the external legitimising function of such claims and the internal specification of the content of expert knowledge itself (Power, 1991). Grice (1992) argues that students in the accounting profession should be trained not only in areas such as communications and ethics but also in a broad range of human relationship skills. There is a requirement for auditors to have adequate environmental experience as well as auditing experience (Mathews and Reynolds, 2001).

Auditors need many skills to effectively conduct a successfully environmental audit. For example, Neebes et al. (1991) argue that the auditors' ability to evaluate the contingent effect an illegal act (environmental violation) on the financial statements are limited. They generally do not have the legal training or experience. Auditors need many techniques to effectively and efficiently gather and analyse information while maintaining the necessary level of objectivity (Greeno, et al., 1989). Langford (1995) points out that every accountant and auditor should be able to evaluate the consequences of environmental issues in relation to accounting and auditing practices in the financial statement audit. This will require changes to the education and training of accountants.

It can be argued that educational systems consider one of the essential processes by which expertise is transmitted, developed and regulated. Financial auditors need to learn more about the impact of environmental matters on business and the implications of these matters on financial statements. They also need new experience, training and the opportunity to develop skills to deal with environmental challenges. Auditors' skills concerning some issues need to be improved, such as the use and analysis of environmental information, the evaluation and the estimation of uncertainty, and those, which relate to environmental issues.

### *(e) Professional guidance for environmental matters*

The accounting professional bodies do not provide adequate and specific guidance for determination, estimation, measurement and disclosure of environmental issues. Ilintch et al. (1998) point out that the accounting profession has been slow to take on the role of measuring and controlling environmental matters. Welton et al. (1994) argue that the accounting profession needs to develop the ability to consider ethical issues. Bebbington et al. (1994) concludes accountants and auditors will make little progress until there are rules and guidance on environmental issues. Brown and Deegan (1998) point out that the professional accounting bodies in various countries should dedicate both effort and financial resources towards the development of environmental disclosure guideline.

A number of empirical studies (Collison and Gray, 1997; Collison, 1996; Collison et al., 1996; Collison and Slomp, 2000; Maltby, 1995; Rezaee et al., 1995; Huizing and Dekker, 1992) provide strong evidence that the absence of professional guidance limits auditors' involvement in environmental audits. However, a number of factors indicate the need for the establishment of uniform and specific accounting guideline, such as:-

-Companies and community will benefit from the disclosure of environmental issues

-The importance of information on environmental costs and obligations

-The inconsistencies in environmental reporting practices

-The lack of authoritative standards

-The increasing environmental regulations (Rezaee et al., 1995).

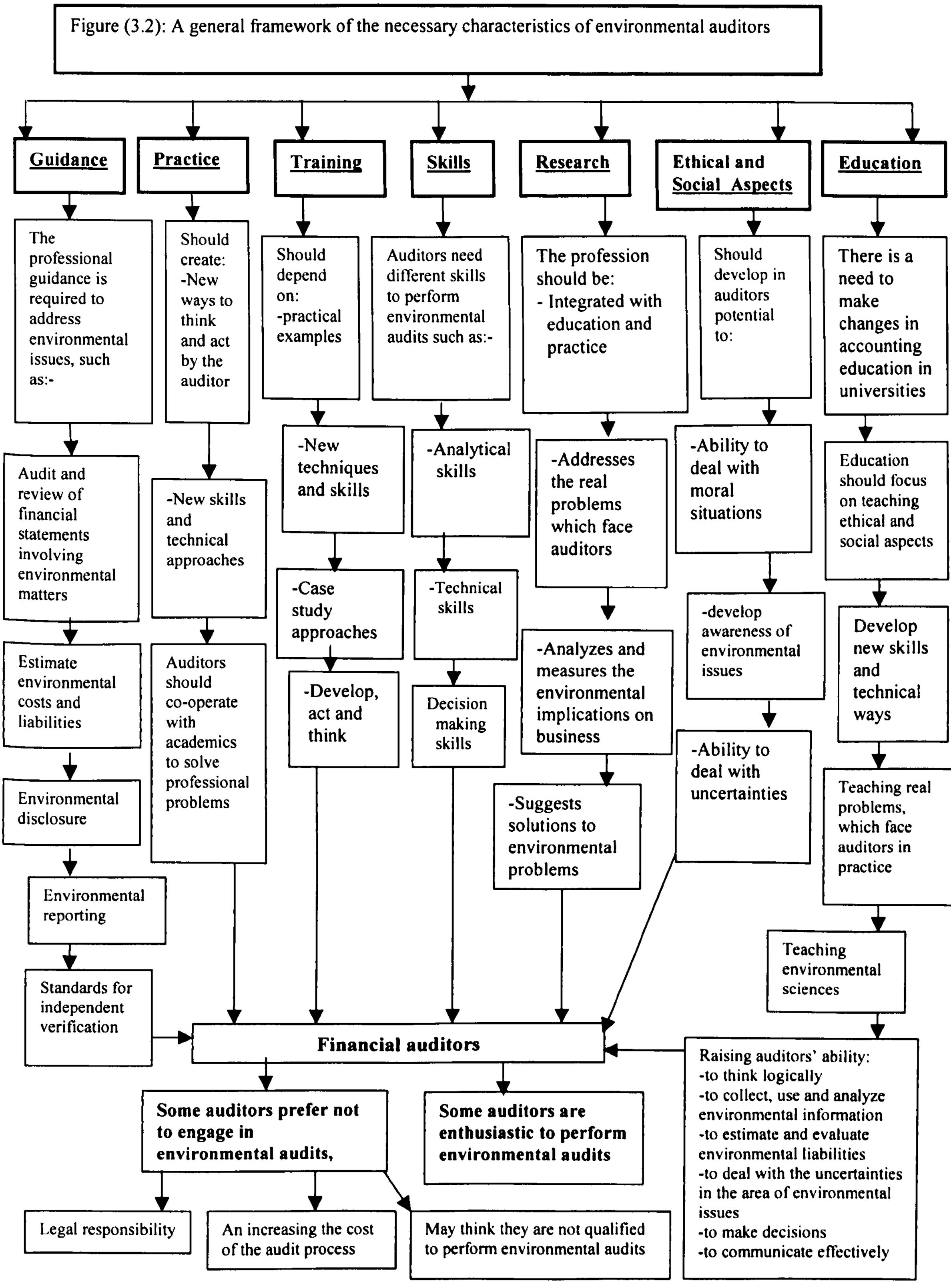
IAPC (1995) points out that it is necessary for the accounting profession to develop guidance on how to address environmental issues in its audit services.

It can be argued that without professional guidance auditors may not be able to meet environmental challenges. Professional guidance should address a number of matters, such as environmental costs and liabilities, environmental disclosures, environmental reporting and standards for independent verification.

### *(f) Auditors' views towards participating in environmental audits*

Empirical studies of financial auditors' views on environmental matters have produced mixed evidence (Collison and Gray 1997; Collison et al., 1996; Collison, 1996; Maltby, 1995' Coopers and Lybrand, 1990; CICA, 1994; The Limperg Institute, 1992; FEE, 1993). The evidence suggests some auditors perceive a risk of litigation because of legal responsibilities in the area of environmental disclosure. If auditors become involved in environmental issues, that may end up landing auditors with a very unwelcome set of responsibilities. Huizing and Dekker (1992) surveyed Dutch practitioners' views concerning their involvement in environmental audits. A proportion felt that they lacked the necessary technical, ecological, administrative, and organisational expertise. Whilst others believed that they could make judgements about the integrity of systems, which generate green reports. In order to pull the analysis of previous arguments together within the literature, a general framework of the necessary characteristics of environmental auditors has been suggested in Figure (3.2):-

Figure (3.2): A general framework of the necessary characteristics of environmental auditors



## Summary

In recent years widespread public concern for effective protection of the environment has resulted in environmental laws. If a company chooses not to comply, fines and penalties could be at the order of billion of dollars. Stakeholders demand information about environmental impacts on business. Environmental issues can affect a number of items in the financial statements, such as contingent liabilities, expenditures, provisions, assets values and future profitability. Consequently, these issues will impact on the auditing profession, some accounting principles and the work of financial auditors. The auditing literature is beginning to pay attention to identify these impacts on the financial statements of companies, the auditing profession and the sustainability of a company. However, Environmental issues are having a variety of impacts on business. The speed with which these impacts have occurred has made it difficult for auditors and accountants to keep their knowledge up to date. Therefore, environmental issues can still be considered a new challenge for accountants and auditors.

The question is whether accountants and auditors are able to cope with environmental issues. The public expects more services from accountants and auditors, especially, in determining the impact of environmental issues on business. Many arguments advocate that auditors can participate in environmental audits with other specialists, such as environmental specialists, engineers and lawyers. Financial auditors should consider the adequacy and competence of specialists' work.

A number of factors limit auditors' involvement in environmental audits, such as accounting education, the ethical and social aspects in accounting profession, auditor's experience, skills and training, research in accounting profession, and auditor's views concerning the contribution in environment auditing.

There is a crucial need to make a number of changes in accounting education to qualify auditors to deal with environmental matters. Ethical and social dimensions need to be encapsulated in accounting education to raise the abilities of financial auditors to cope with environmental issues and the uncertainties of these issues should be integrated. Auditors need a wide variety of skills to cope with environmental matters, e.g., analytical, technical and decision making skills.

There is a need for professional guidance, which should address items such as environmental costs, liabilities, environmental disclosures, environmental reporting and standards for independent verification. Without this guidance auditors may not be able to cope with the demands of environmental auditing.

# Chapter 4

# The international Environmental Initiatives and the Problems of Corporate Environmental Reporting

## 1. Introduction

Environmental issues present challenges for companies. A number of studies (Maltby, 1995; Rezaee et al., 1995; Lloyd, 2001; Deegan et al., 2000; Brown and Deegan, 1999; and KPMG, 1996, 1997, 1999; O'Dwyer, 2001) have indicated that environmental disclosure of corporations is still very low even though they are faced with increasing pressures from diverse stakeholder groups, including governmental agencies, to address environmental concerns.

In spite of the substantial contingent financial exposure the superfund legislation created for chemical and other firms, disclosures of liabilities are a relatively recent phenomenon (Milne and Patten, 2002). This in turn increases the importance of environmental disclosure, the financial impacts of environmental matters. This need is providing a strong motivation for the accountancy bodies and many international associations to provide frameworks to improve the treatment of environmental issues. In an attempt to encourage and help corporations to engage in environmental reporting, some international organizations have produced environmental initiatives such as the Copenhagen Charter (CC, 1999), the Accountability AA1000 (and AA2000), the Global Reporting Initiatives Guidelines (GRIs 2000), the British Standard (BS7750), the International Organization for Standardization (ISO 14000), the Eco-Management and Audit Scheme (EMAS).

This chapter reviews a number of the accountancy bodies' activities concerning environmental matters and presents a range of environmental initiatives, which have been put forward by different organizations to aid the development of social and environmental disclosures. The problems, which face companies to engage in environmental reporting, are presented. Finally, whether these initiatives can provide a general framework of the requirements of environmental reports are addressed.

## 2. The accountancy bodies' activities towards environmental issues

A number of the accountancy bodies are beginning to pay attention to the impact of environmental issues on companies' financial statements. A number of studies have been issued as follows:-

***The Institute of Chartered Accountants in England and Wales (ICAEW)***

The Environmental Research Group of the ICAEW issued studies, which discuss the impact of environmental issues on the accounting and auditing profession. The ICAEW (1992) argued that auditors should carefully consider environmental issues when planning and carrying out audits. In 1995, it discussed the relations between environmental issues, the accountancy profession, and companies' activities.

It funded some projects to investigate auditors' response to environmental issues and the verification of environmental reports (Collison and Gray, 1997; Collison, 1996, Collison et al., 1996). In 2000, it provided a discussion paper entitled "Environmental Issues in the Audit of Financial Statements", which provided a little guidance relating to the auditing implications of environmentally related issues.

***The Auditing Practices Board (APB)***

APB provided a number of studies concerning environmental issues and the accountancy profession. In 1992, it discussed the future developments of auditing. Then, APB (1993, 1995) discussed other issues such as, auditors' reports on financial statements, and using the work of an expert.

***The International Federation of Accountants Committee (IFAC)***

In May 1995, IFAC issued a discussion paper entitled "The Audit Profession and the Environment". It was prepared by the auditors and the environment subcommittee of IFACs and International Auditing Practices Committee (IAPC). It discussed a number of matters such as, environmental auditing, the reporting of environmental performance, and the impact of environmental issues on financial statements. In March 1998, IFAC issued an

international auditing practice statement developed by the International Auditing Practices Committee (IAPC) on "The Consideration of Environmental Matters in the Audit of Financial Statements". This referred to the increasing significance of environmental matters and the fact that such matters may have a material impact on an entity's financial statements.

***The International Auditing Practices Committee (IAPC)***

IAPC has a number of studies related to the environmental implications on the auditing profession, such as:-

-in 1995, it issued a paper entitled "The Audit Profession and the Environment".

-in 1997, it issued a statement concerning environmental problems, which face auditors when auditing financial statements.

***The Institute of Internal Auditors Research Foundation (in the USA)***

It provided a study, in 1993, concerning the role of internal auditors concerning environmental issues.

***The Canadian Institute of Chartered Accountants (CICA)***

A number of studies have already been issued by the CICA. For example, the CICA (1992) discussed environmental auditing and the role of the accounting profession. In 1993 it issued two studies, the first discussed environmental costs and liabilities, accounting and financial reporting, the second focused on environmental stewardship, accountability and the role of Chartered Accountants.

CICA (1994) issued a study entitled "Audit of Financial Statements Affected by Environmental Matters". A further indicator of the development of the Canadian accounting response was the publication of "The Environment: an Accountant's Perspective". This is a substantial two-volume loose-leaf guide to practical financial accounting and statutory audit issues and is subject to annual updating. Another reflection of environmental awareness is a regular "Environmental Manager" section in CICA's professional Journal, CA Magazine (Collison, et el., 1996). CICA (1997) issued a study

entitled "Full Cost Accounting from an Environmental Perspectives". This study addressed the types of environmental costs and their accounting treatments.

### *The Fédération des Experts Comptables Européens (FEE) (The representative Organizations for the accountancy profession in Europe)*

FEE's environmental activities may be dated to early 1992 when it was requested by the European Commission (EC) to carry out a study on the statues of environmental accounting in Member States for presentation to the EC Accounting Advisory Forum. The FEE council created the Environmental Working Party (EWP) on 25 March 1994. The EWP aimed to:-

- encourage and facilitate the exchange of information among member bodies and other interested parties,
- promote the role of the accountancy profession in environmental auditing, accounting and report matters,
- stimulate developments in environmental accounting and auditing, and
- encourage the European studies research programmes and disseminate the results. (Collison and Gray, 1997; Collison, 1996, Collison et al., 1996).

FEE issued a number of studies (1993, 1994, 1998, 1999, 2000) to discuss environmental issues relating to accounting and auditing areas, such as the relevance of financial auditor to involve in environmental issues, and corporate environmental reporting.

## 3. A review of key environmental initiatives

### *The British Standard (BS 7750)*

In 1991, the British Standards Institutions (BSI) issued BS 7750, which is a specification for an environmental management system to prevent environmental damage by focusing on the use of environmental auditing (Rezaee et al., 1995).

The standard was first published in June 1992, and was subsequently reviewed and revised to a new in January 1999 issue. BS 7750 was developed as a response to concern about environmental risks and damage (both real and potential). Compliance to the standard is voluntary for companies, and complements required compliance to statutory legislation (BS 7750, 2001). Also, BS 7750 helps to put a system, which is used to describe the company's environmental management, evaluate its performance and to define policy,

practices, objectives and targets, and provides a catalyst for continuous improvement (BS 7750, 2001). It confirms the quality of environmental management systems and the quality could be low, for example, permitting unacceptable levels of waste discharge (Carty, 1993). It requires that the operation of the environmental management system "should be internally audited and evaluated on a regular, pre-determined basis" (Maltby, 1995, p. 15).

Carty (1993) points out that BS 7750 is merely an internal management system without external reporting requirements, but it gives a foundation for compliance with the ECO-Management and Audit Scheme (EMAS). BS 7750 describes audits as assessments of the effectiveness of the environmental management system, as well as, the achievement of environmental objectives.

It recommends that all parts of the organization should be externally audited at least every three years. Also, parts of the organization having a particular potential to cause environmental harm or damage should be externally audited at least once a year. The primary function of an audit is to assess compliance and the effectiveness of previous corrective action. Audits may also suggest remedial measures to overcome environmental performance (Sayre, 1996; Wever, 1996; Carty, 1993; Rezaee et al., 1995).

Sayre (1996) argues that BS 7750 addresses that organizations must conduct their business within a structured management system, integrated with overall management activity and addressing significant environmental effects, the system documents, procedures and instructions, specifies environmental objectives and consequent targets, control documents and operations, maintains a record of legislative, regulatory and policy requirements. Environmental management audits and reviews are inherent in this standard.

It can be argued that BS 7750 does not establish specific requirements for environmental performance, it just requires compliance with applicable legislation with a commitment to continuous improvement. This means companies can carry out these activities in different ways. Therefore environmental information from companies, even if these companies are in the same sector, will not be comparable. This standard does not discuss the qualification of the person who should perform these audits.

## *The International Organisation for Standardisation (ISO)*

The International Organization for Standardization (ISO) formed a Technical Committee (TC 207) to develop an international environmental standard. The result of the committee's efforts is the ISO 14000 series, which is a standard for an environmental management system (Sayre, 1996; ISO 14001, 1996).

Registration for the ISO 14000 series is voluntary for any company (whatever its size). Once the organization is registered follow up environmental audits are required. These audits can be carried out by the organizations own personnel, and/or by external parties selected by the organization. In any case, the person conducting the audit should be in a position to do so objectively and impartially and should be properly trained (ISO 14001, 2002).

The ISO 14000 series consists of standards on environmental management systems. This series also covers a number of issues concerning environmental auditing. There are environmental management audits, compliance audits, and audits of environmental statements.

The following Table presents some of ISO 14000 series.

Table (4.1): ISO 14000 series of environmental standards.

| Standard | Description |
|---|---|
| * ISO 14000 | Environmental management systems. General guidelines on principles, systems, and supporting techniques. |
| * ISO 14001 | Environmental management systems. Specification with guidance for use. |
| * ISO 14004 | Environmental management systems. General guidelines on principles, systems, and supporting techniques. |
| * ISO 14010 | Guidelines for environmental auditing. General principles of environmental auditing. |
| * ISO 14011/1 | Guidelines for environmental auditing. Audit procedures- Part 1: Auditing of environmental management systems. |
| * ISO 14012 | Guidelines for environmental auditing. Qualification criteria for environmental auditors. |

Source: Sayer, D., (1996), "Inside ISO 14000 the Competitive Advantage of Environmental Management", London, St. Luice Press, pp. 39-41.

The ISO 14001 standard (1996, p. 10) defines an environmental management system (EMS) as: "The part of the overall management system that includes organisational structure, planning activities, responsibilities, practices, procedures, processes and resources for developing, implementing, achieving, reviewing and maintaining the environmental policy".

Wever (1996) points out that:- ISO 14001 defines environmental aspects as elements of a company's activities, products and services, which are likely to interact with the environment and determines some types of data that might be useful (such as, legislative and regulatory requirements, codes of practice, emissions to air, contamination of land).

ISO 14011 (1996, p. 19) defines an environmental management audit as:-
"systematic and documented verification process of objectively obtaining and evaluating audit evidence to determine whether an organization's environmental management system conforms to the environmental management system audit criteria, and communicate the results of this process to the client". It can be argued that a significant part of the requirement in this definition is communicating the results of an EMS audit to client because it may encourage the increase of environmental disclosure by companies.

Fredericks (1997, p. 85) states that:-
"the most important concept underlying the ISO 14010 and 14011 environmental standards and the EMS audit guidelines is the verification process that audits provide. The environmental auditor's primary role is to determine compliance or conformance-not performance".

ISO 14010 (1996) goes on to define an environmental auditor as a person qualified to perform environmental audits. The qualification criteria are specified in ISO 14012 (1996). This standard deals with the necessary education, work experience, and training for an effective environmental auditor, the qualification of environmental auditors, and the environmental auditor registration body.

***The benefits of participating in ISO 14000 series***

A company may achieve benefits if it decides to participate in ISO 14000 series such as:-

-Improve a company's image or reputation and its performance (by giving it a chance to present its responsibility towards environmental issues).

-Legitimise the environmental activities of the company and enhance the public perception of environmental performance.

-Enable a company to achieve commercial benefits (such as increased market opportunities, more sales and more customers).

-Assist in maintaining and improving the quality of the environment.

-Compliance with environmental laws and regulation.

-Save on costs by providing resource conservation and reducing the cost of waste.

-Reduce environmental risks in long term (limit liabilities).

(Sarey, 1996; Wever, 1996; Rezaee et al., 1995; ISO 14001, 1996; Langford, 1995; Hillary, 1995).

***Communication and Reporting in ISO 14000 series***

The ISO 14000 series encourages internal and external communication. In ISO 14004 (1996) an organization can communicate environmental information in a variety of ways:

- externally, through an annual report, regulatory, public government records, industry association publications, the media, and paid advertising;
- organization of open days, the publication of telephone numbers where complaints and questions can be directed;
- internally, through bulletin board postings, internal newspapers, meeting and electronic mail messages.

ISO 14001 requires that a company establishes and maintains compliance with five key requirements (ISO 14001, 1996; ISO 14001, 2002) as follows:-

-Environmental policy (a company should ensure commitment to an EMS and define its policy).

-Planning (a company should formulate a plan to fulfill its environmental policy).

-Implementation (a company should develop the capabilities and support mechanisms necessary to achieve its environmental policy, objectives and targets).

-Checks and Corrections (a company should measure, monitor and evaluate its environmental performance).

-Review (a company should review and continually improve its environmental management system, with the objective of improving its overall environmental performance).

Consistent with the previous discussion, it can be argued that:-

The ISO 14001 standard does not set absolute environmental performance requirements. It applies to those environmental aspects, which the company can control and over which it can be expected to have an influence. It does not itself state specific criteria for performance (ISO 14001, 1996).

Mathews and Reynolds (2000) state that:- "It is a peculiarity of the ISO 14001 standard that organizations may self declare, thus, the verification process is not performed by an external verifier. There is also no registrar to formalize the registration. Most organizations that attempt ISO 14001 implementation seek external help with verification and registration. This may relate to the desire to legitimize the environmental activities of the organization and enhance the public perception of environmental performance".

ISO 14000 series does not deal with the contents of environmental reports, environmental indicators, the quality of environmental information and independent verification. However, it provides the starting point for environmental management system that would facilitate the process of reporting. It helps to increase environmental awareness for the company's stakeholders.

### *The ECO-Management and Audit Scheme (EMAS)*

In many countries, there is an increasing pressure, and in some cases legal insistence, for public reporting of corporate environmental performance, generally based on regular environmental audits.

The European Community's Eco-Management and Audit Scheme (EMAS, 1993) is a good example. Promulgated in June 1993, this scheme has been adopted by many European countries (Ralf, 1995; Coopers and Lybrand, 1995; Langford, 1995; Maltby, 1995; EMAS, 2001; Hillary, 1995). EMAS contains 21 articles and 5 annexes. They cover a range of issues, such as, objectives, auditors and verifiers, participation, auditing and validation, the environmental statement, accreditation and supervision of accredited environmental verifiers, the list of accredited environmental verifiers, and registration of sites.

EMAS is a voluntary registration scheme, which enables companies to demonstrate a commitment to improving their environmental performance by establishing an environmental management system and reporting publicly on their performance (Carty, 1993).

The overall objective of the EMAS is to promote continuous environmental performance improvements of industrial activities by committing companies to:-

-establish and implement environmental policies, programmes and management systems,

-periodically evaluate in a systematic and objective way the performance of the site elements, and

-provide environmental performance information to the public (Hillary, 1995; Accountancy, 1992).

Companies participating in EMAS will have to register the national body designated for that purpose by each member state. In order to register, a company must carry out an initial environmental review of site and, on the basis of this, establish an environmental protection system (the criteria for which are set out in an annex to EMAS) covering all site activities.

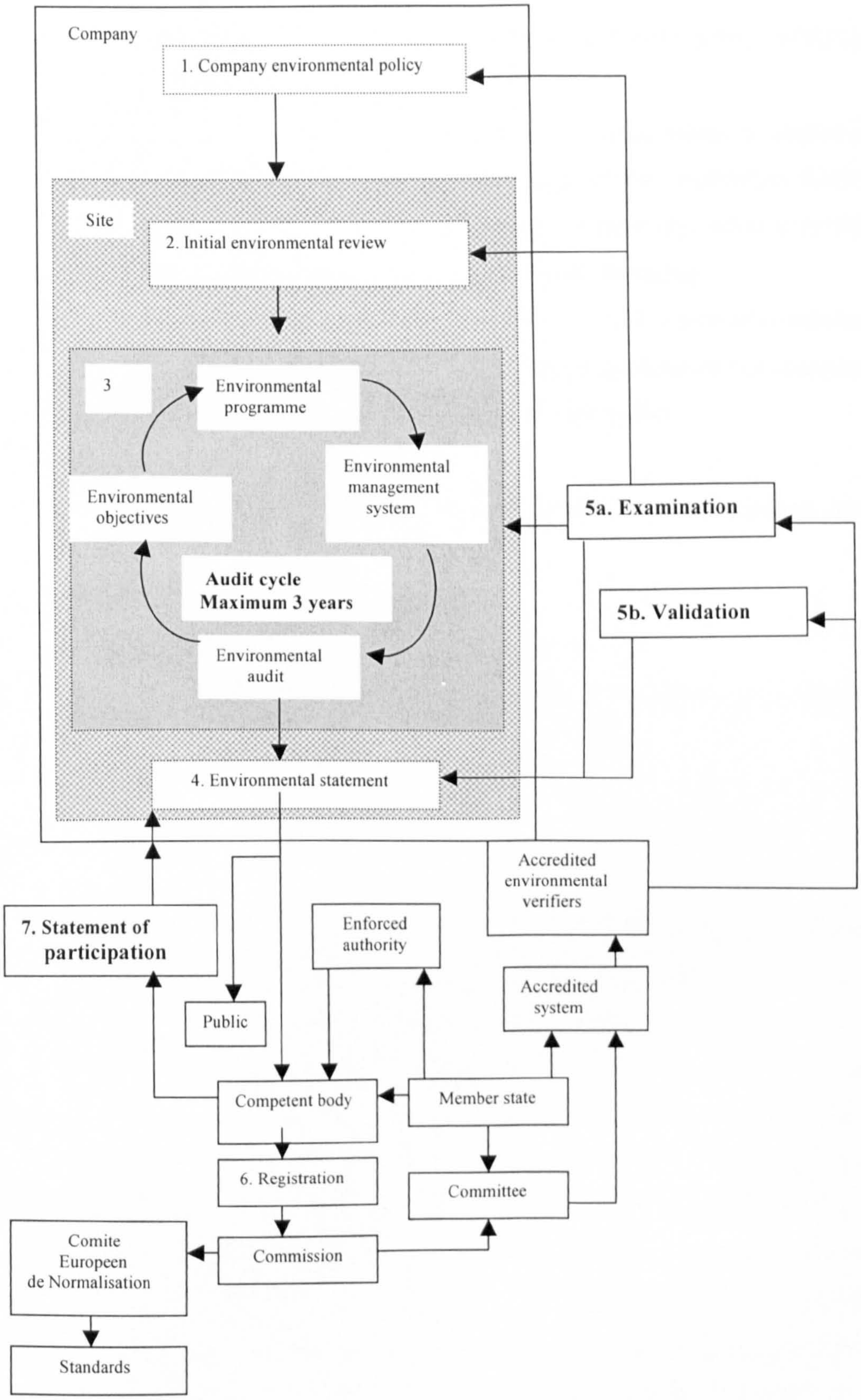
Companies will have to file an environmental statement (validated by authorized environmental auditors). Once registered, a company will have to conduct environmental audits and publish the results. The environmental audits will have to be carried out at least every three years and cover all of business's activities (Accountancy, 1992; Hillary, 1995; Langford, 1995).

Furthermore, under EMAS, companies will be required to have an environmental policy and an environmental management system, and to have quantifiable targets for continuous improvement of performance (Maltby, 1995).

Fundamental to EMAS is the public environmental statement and its validation by accredited environmental verifiers. A site's environmental statement will include a description of the site's activities, an assessment of all the significant environmental issues, a summary of figures on pollution emissions, waste, production, consumption of raw material, energy and water, and noise, a presentation of the company's environmental policy and the site's programme and management system, the deadline for the next statement, and the name of the accredited environmental verifier (Hillary, 1995; Carty, 1993; EMAS, 2001).

The EMAS elements can be summarized in the following Figure (4.1):-

Figure (4.1) An overview of the Eco-Management and Audit Scheme's elements.




Source: Hillary, R., (1995), "Developments in Environmental Auditing", Managerial Auditing Journal, vol. 10, no. 8, p. 35.

*-The benefits of joining EMAS*

If companies participate in EMAS, they may achieve many advantages (Accountancy, 1992; Maltby, 1995; EMAS, 2001) such as:

-Improve companies' image or reputation. The ability to demonstrate a responsible environmental attitude can dramatically improve the image of the corporation fostering better relations with the company's stakeholders. Perhaps importantly, adverse publicity about companies' environmental performance is always highly damaging.

-Meeting customer requirements. No customer would want to risk a tarnished reputation (or non-compliance to legislation) from the poor environmental performance of companies.

-Increased market opportunities (such as, more sales, more customers).

-Reduced environmental risks and legal liability.

-Achieving cost savings (such as, reduce waste and cost of disposal, reduce energy utilization).

-Increase the public awareness of environmental issues.

-Improved the public perception of a company's activities.

-Participation in EMAS at this stage, even through voluntary, may give certain competitive advantages if it is later made compulsory.

*-Accredited environmental verifiers*

EMAS requires that a company has to file an environmental statement validated by authorized environmental auditors (Accountancy, 1992). Accredited environmental verifiers have two clear roles. First, to check that the elements of EMAS, i.e. the environmental policy, management system, programme, review and audit are in place, operational and carried out in accordance with the appropriate specifications in the annexes of EMAS. Second, as well as, checking the reliability and coverage of the information in the environmental statement, the verifiers will have to validate that information (details on the accreditation of environmental verifiers and their function are outlined in annex III of the regulation) (Hillary, 1995). The second purpose is to check the company has made provision for legal compliance, check that the frequency of the audit cycle is three years or less and that it addresses environmental performance, and that the data in the

environmental statement is a fair representation of the company performance (EMAS, 2001). It can be argued that:

-There are barriers for small companies to participate in EMAS, such as, the management time required to implement an internal environmental management system, and the cash costs to achieve certification and registration of the EMAS (Coopers and Lybrand, 1995).

-EMAS has a number of the weaknesses in that the process is voluntary, no specific performance standards are laid down and no standardized report is issued.

-It does not address disclosure issues, such as environmental indicators and the quality of environmental information.

-EMAS has a number of requirements, such as, both internal and external auditing for environmental issues, and then, to publish the results of these audits. These requirements may have a strong impact on corporate image. Therefore, a number of companies may be not willing to participate in EMAS or at least, companies will estimate the commercial costs and benefits of participation before taking decision.

### *The Copenhagen Charter (CC1999)*

The Copenhagen Charter (CC) (1999) a publication sponsored by the Danish Offices of Ernst and Young, KPMG, Price Waterhouse Coopers and the House of Mandag Morgan, is a management guide to stakeholder dialogue and reporting. It aims to set out, briefly and concisely, the most important motives and principles involved.

It consists of three parts. Part one concentrates on the effects of stakeholder reporting which is used by management as a valuable tool for improving dialogue and communication with the company's stakeholders, providing a foundation for trust and openness to change. These reports aim at creating external value for the company in the form of stronger stakeholder relationships and an improved corporate image or reputation. This gives the company competitive advantages such as, attracting and motivating the best employees, building customer loyalty and securing access to investor capital. Stakeholder reporting can also be seen as a form of "insurance policy" protecting the company's reputation, thereby minimizing the risk of potential financial losses in the future (CC, 1999).

Part two of the charter discusses the principles of stakeholder reporting. These are listed in three groups; laying the groundwork, embedding and communicating. Laying the groundwork includes the commitment of top management in the area of the company's objectives and resources. The embedding process includes identifying key stakeholders, strategies, values, critical success factors, and performance indicators. The communication process includes preparing the report, publishing the report, and consulting stakeholders about performance and values.

The last part of the charter addresses "credibility in stakeholder reporting". It involves accounting principles, information relevance, and verification by an independent party.

***Under verification the CC points out that:***

The responsibility for the quality and credibility of stakeholder reporting ultimately rests with management. However, both quality and credibility may be enhanced by obtaining verification of the process and results from an independent party. The independent verifier should be competent to critically assess the overall process, including management's choice of accounting and reporting methods. The verifier would reach a conclusion by assessing the relationship between four factors: the subject matter, the criteria used in the report, the process, and the quantity and quality of evidence (CC, 1999).

The Copenhagen Charter suggests some principles, which should be applied whether internal or external audits are being undertaken, and include integrity, objectivity and independence professional duties including rigour, judgment, significance, and clear communication to stakeholders.

Mathews and Reynolds (2000) argue that the CC provides a philosophical statement about the need for stakeholder reporting. It does not provide standards, which could be used as a structured base for disclosure. It can be argued that the absence of the characteristics of a conceptual framework and standards in the CC can be inferred from the following:-

-It states that management will determine key performance indicators.

-It does not provide standards or guidance concerning the design of the reports.

-It ignores a number of important issues, such as how independent verification can be achieved and by whom.

### *Institute of Social and Ethical Accountability (AA1000 and AA2000)*

The Institute of Social and Ethical Accountability launched the Accountability 1000 (AA1000) standard in November 1999 at Accountability International Conference on Social and Ethical Accounting, Auditing and Reporting, held in Copenhagen, Denmark, which took as its theme "Building Stakeholder Relations". (AA1000, 2001).

The AA1000 standard provides both a framework that organizations can use to understand and improve their ethical accountability and a means for others to judge the validity of ethical claims made. Also, the AA1000 focuses on securing the quality of social and ethical accounting, auditing and reporting.

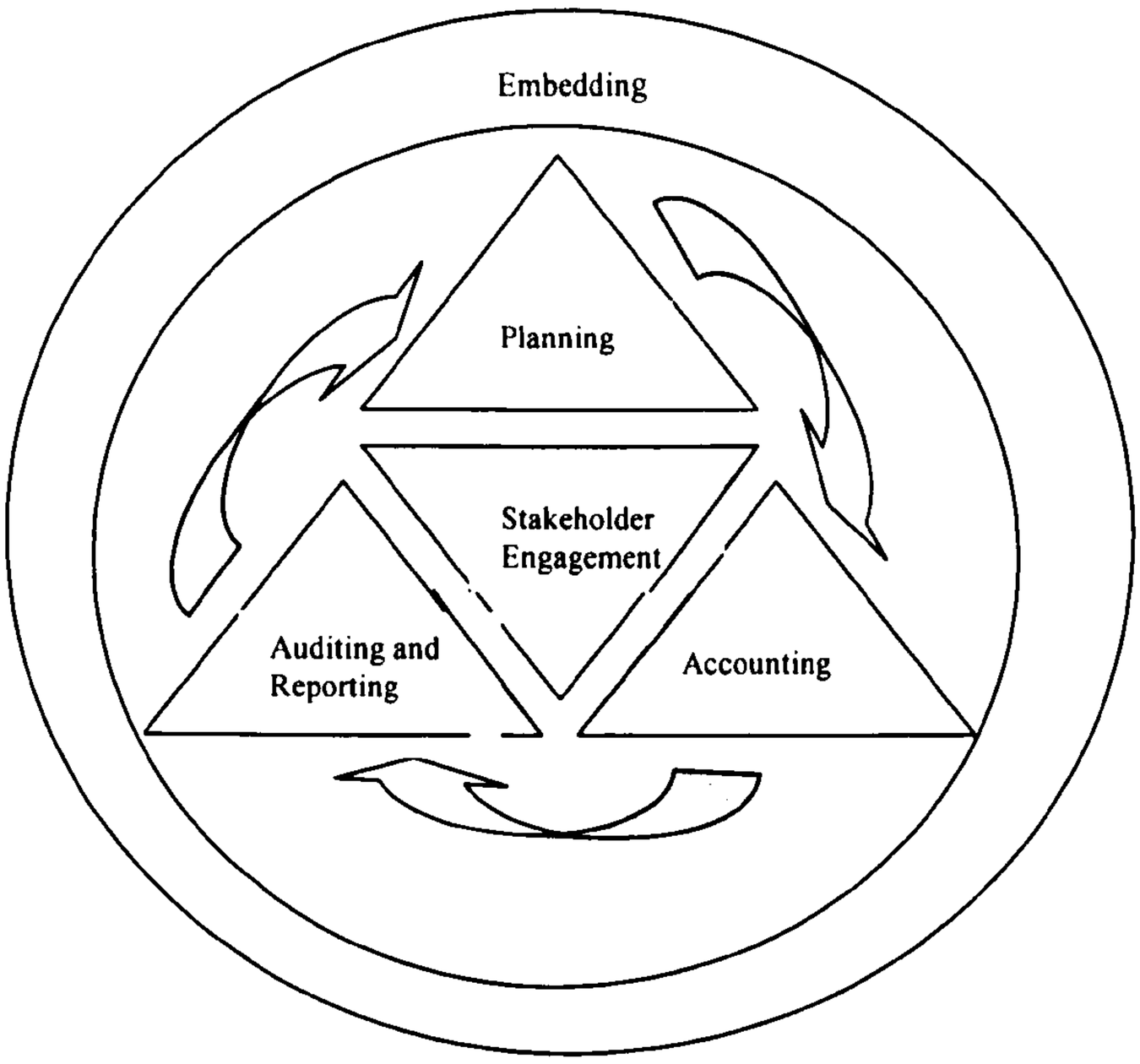
The AA1000 has been developed to assist an organization to:-

- define goals and targets,
- measure progress,
- audit and report on performance, and
- provide feedback mechanisms.

The AA1000 standard covers both internal and external audit. It also addresses some issues including, scope of the audit process, the role of single and multiple auditors, content, format, and language of the audit report and audit opinion, including the concept of "going concern" and qualified audit opinions, levels of assurance conveyed by the audit reports, links between AA1000 and IFAC, IASs, and the quality control of auditors' work (AA1000, 2001).

Stakeholders engagement is crucial to each stage for building accountability and trust between the organization and stakeholders. An organization needs to identify its stakeholders and their requirements. This will help an organization to improve the quality of information supplied to stakeholders and demonstrate clear social and ethical performance.

Figure (4.2). The AA 1000 Process Model




Source: (AA1000, 2001, p. 2).

Accountability commits to:-

- making regular, publicly available progress reports,
- publishing research on tests and developments of the AA1000 framework,
- issuing specialized guidelines, and
- re-issuing an enhanced the AA1000 framework in 2001.

Furthermore, Accountability suggests the standard can be used in two ways:-

-As a standard common currency underpinning the accountability audit profession.

-As a process to manage and communicate social and ethical performance. (AA2000, 2001).

The AA1000 framework was subject to a very broad international consultation process with representatives from companies, non-governmental organizations, consultants and academics. The AA1000 is supported by a set of guidelines and a professional qualification. The institute has taken the route of accrediting training providers rather than running training courses itself. (AA2000, 2001).

### *-AA2000- Accountability Management*

Accountability is committed to develop a revised version of AA1000 in 2001. AA2000 accountability management has been built on an analysis of the use of AA1000 and other standards tools, and an assessment of the needs expressed by corporations and their stakeholders for quality processes of accountability management.

AA2000 Accountability Management was launched as a fully designed exposure draft in early October 2001, a full release in spring 2001, with on-going practitioner notes. AA2000 focuses on developing five areas:-

-innovation and learning,

-stakeholder engagement,

-management systems,

-assurance and governance, and

-risk management.

It can be argued that the AA1000 and AA2000 standard do not provide guidance or suggested the content of the social and ethical reports. They also do not identify social or ethical performance indicators. There is no method to calculate accountability for companies and how they may present it in their reports. They do not establish standards or principles for publicly available social and environmental reports.

### *The Global Reporting Initiative Guidelines (GRIs 2000)*

The GRI (2000) is a major structured guide aimed at producing standardized disclosure of economic, environmental and social information in annual reports. It is sponsored by the United Nations Environmental Programme (UNEP) and it has a significant influence world-wide. The GRI (2000) programme worked to design and build acceptance of a common framework for reporting on the linked aspects of sustainability (economic, environmental and social).

It was set up in 1997 then, in March 1999, the GRI released the Guidelines as an exposure draft for public comment and testing through the spring of 2000. The Guidelines have the following objectives (GRI, 2000):-

-to present a clear picture of the human and ecological impact of business,

-to facilitate informed decisions about investments,

-to provide stakeholders with reliable information that is relevant to their needs,

-to provide a management tool to help the reporting organization evaluate its performance and progress, improvement,

-to establish widely accepted external reporting principles, and

-to promote transparency and credibility.

The Guidelines are intended to be applicable to any size and type of organization. Application of the GRI Guidelines is voluntary. They provide a framework for reporting and promoting comparability between reporting organizations whilst recognizing the practical considerations of collecting and presenting information across diverse reporting organizations.

***-The components of GRI (2000)***

The report of GRI (2000) comprises four parts:

-Part A sets out background on the need for and nature of the GRI, plus general guidance on the design and applicability of the Guidelines.

-Part B outlines reporting the principles and practices underling the GRI (such as, the going concern principle, the conservatism principle, and the materiality principal). Also, part B contains qualitative characteristics for GRI reporting (such as, relevance, reliability, clarity, comparability, timeliness and verifiability, classification of performance reporting elements, ratio indicators and the disclosure of reporting practices).

-Part C sets out the framework for structuring a GRI report, specific content, and guidance for compiling the various parts of the report.

-Part D consists of four annexes. 1, resources for selecting and applying indicators, 2, guidance on incremental application of the guidelines, 3, guidance on verification, and 4, guidance on ratio indicators.

***-The report format of GRI***

GRI (2000) has developed a set of Sustainability Reporting Guidelines on economic, environmental and social performance. These Guidelines provide some recommendations for reporting elements. The following table identifies these elements.

Table (4.2): GRI recommended elements to include in a sustainability report

| **Eco Statement** | **Economic Performance** |
|---|---|
| -Profile of Reporting Organization<br>-Executive Summary and key indicators<br>-Vision and Strategy<br>-Policies and Organization<br>-Management Systems<br>-Stakeholder Relationships | -Profit<br>-Intangible Assets<br>-Investments<br>-Labour Productivity<br>-Wages and benefits<br>-Taxes<br>-Community Development<br>-Suppliers<br>-Products and Services |
| **Environmental Performance** | **Social Performance** |
| -Energy Use<br>-Materials Use<br>-Water Use<br>-Emissions, Effluents and Waste<br>-Transport<br>-Suppliers<br>-Products and Services<br>-Land Use and Biodiversity<br>-Compliance | -Quality of Management<br>-Health and Safety<br>-Wages and benefits<br>-Non-discrimination<br>-Training/ Education<br>-Child Labour<br>-Forced Labour<br>-Freedom and Association<br>-Human Rights (including indigenous and security)<br>-Suppliers<br>-Products and services |
| | **Integrated Performance** |
| GRI (2000). Sustainability Reporting Guidelines. www.globalreporting.org.,2001 pp. 22-36 | |

***-The verification of GRI reports***

The GRI Guidelines (2000) encourage companies to undertake independent verification processes for GRI reports. Independent verification can increase the quality, usefulness, and credibility of a company's reporting. It considers an additional degree of assurance about the reliability and completeness of GRI reports. The GRI Guidelines

provide some approaches to improve the verification processes in conjunction with independent verification include:-

-internal auditing of systems and procedures for measuring, recording, and reporting performance data,

-independent evaluations and commentaries by external experts regarding an organization's economic, environmental, and social performance and/or management processes, and

-a clear statement by a board of directors or chief executive officer that a report has been prepared in accordance with the GRI Guidelines.

Finally, it can be argued that:-

-Whilst, the GRI Guidelines do not provide a standard for environmental performance disclosure, they do provide generally applicable indicators such as, energy (Joules), materials (Tonnes or Kilograms), to assist the preparer to generate information, which should be comparable and be verified.

-They do not provide guidance for implementing data collection, information and reporting system, or procedures for preparing reports.

-The Guidelines are silent on some important issues such as, verification procedures, verifier qualification, and legal requirement to report.

-The Guidelines do however refer to the qualitative characteristics for organizations' reports, but they do not describe how companies can achieve these characteristics in their reports.

## 4. An oversight on the environmental management system standards

There is great similarity between the environmental management system standards (ISO 14000 series, EMAS, and BS7750). All of these standards have a similar set of ingredients such as:-

- An objective understanding of environmental aspects and their impacts.
- The need for an environmental policy, clarifying the environmental principles promoted by the company.
- Objective and Targets defining the environmental goals and the path towards achieving them.
- An environmental management system or programme, defining how the objectives and targets are to be realized.

- Internal Audits of the environmental management system to ensure effectiveness and compliance.
- Management review of the system to ensure that it continues to be suitable and effective for the organization and its aims.

Sarey (1996) points out that the similarity between these standards such as:-

- Establish and maintain an environmental management system with a defined and documented policy.
- Define and document responsibilities, authority, and interrelations of key personnel.
- Have procedures to ensure effective communications to employees and interested parties.
- Provide proper training to employees and contractors.
- Identify, examine, and evaluate environmental impacts.
- Maintain a record of legislative, regulatory, and policy requirements.
- Specify environmental objectives and consequent targets.
- Have a program to achieve the environmental objectives and targets.
- Control documents and operations.

It can be observed that the main difference between ISO 14000 series, EMAS and BS7750 is that for EMAS however there are a number of further requirements, including the preparation of a publicly available environmental statement based on the preparatory review, and regular updates to the statement confirming the performance of the organization. The other primary requirement is that the environmental statement is externally validated by an accredited EMAS verifier. While, ISO 14000 series and BS7750 do not require public disclosure of environmental impacts. It can be observed that a company complying with ISO 14001 or BS7750 will already meet the majority of requirements of EMAS and will therefore no need further expenditure on verification of these aspects as part of an EMAS application.

## 5. Some Critical Issues Concerning Environmental Initiatives

The literature available on these initiatives indicates that:-

-There is no general acceptance of the format of environmental reports and their contents, how verification should be carried out, what should be included in a verification statement or opinion, and who should carry out verification (although some initiatives mention the involvement of independent auditors concerning environmental issues). The current position leaves a different choice as there are no widely accepted or global standards concerning verification of environmental reporting and also there is no common understanding of the various approaches to verifying environmental reports or to the appropriateness of these approaches for the different types of subject matters environmental reports may include.

The previous initiatives have not provided methods, or indicators to measure the environmental performance of companies. There is an absence of a widely accepted set of standards or guidelines for carrying out environmental reporting and verification of these reports neither by the independent auditor, nor on the qualifying criteria for such an auditor.

These initiatives do not provide sufficient discussion for a number of matters such as:-

-The qualification of independent auditor to involve in environmental auditing, addressing the problems that face both the independent auditor and companies concerning environmental issues.

-The problem of data collection relating to environmental matters.

-The difficulties of measuring corporate environmental performance.

-Environmental indicators which should be used in environmental reports. The drawbacks of these initiatives can be considered as a limiting factor for environmental disclosure by companies.

Business wishing to engage in environmental disclosure faces a lack of reliable and credible methodologies to measure, monitor and communicate environmental information.

## 6. Obstacles limit companies to engage in environmental reporting

Consistent with the previous discussion, it can be suggested a number of difficulties, which face companies to engage in environmental reports, as follows:-

a- Lack of environmental data and information.

b- Environmental indicators.

c- The contents of environmental reporting.

d- The independent verification.

e- The absence of standards and principles for environmental reports.

f- Limited public demand on environmental reports.

g-Voluntary reporting.

### *a-Lack of environmental data and information*

One of the problems companies face in producing environmental reports is the lack of data. There are a number of reasons cited (Lloyd, 2001; ASB, 1991; IASC, 1989; CICA, 1994a, 1994b; KPMG, 1996, 1997, and 1999) such as:-

-The existing information systems in companies may not address environmental issues and have inadequate resources (technical, financial, qualified human resources) in order to produce environmental information.

-Difficulties can be encountered when information is required from a number of different divisions within a company or when information is required from outside a company or different countries.

-There are widely different users with many different areas of interest.

-The collected data may not achieve a reasonable quality of data and associated uncertainties. The company may not have a systematic methodology and not apply appropriate techniques to the gathering data.

-The information in an environmental report is relevant if it meets users' needs, helps users to estimate the environmental impact and take their decisions, and provides feedback to the company on its performance.

-It is reliable when it agrees with the underlying data, is capable of independent verification and is reasonably free from error and bias. Also, faithful representation and neutrality are essential components of reliability. To meet the need of stakeholders, information should be understandable for different users.

-To ensure the reports are comparable across a sector, the reports need to be at regular intervals and companies will need to present it consistently over time.

-The accuracy of data will need to be audited, checked, and verified. This can be difficult as there will be a need to translate scientific and technical data into understandable indicators.

-There is a need to identify the best way to present data and information in environmental reporting and choose the suitable level for data aggregation.

***b- Environmental indicators***

Environmental indicators and benchmarks are essential for credibility in environmental reporting. They make the information easier to interpret and understand for different users. Environmental indicators allow meaningful comparisons between companies' performance disclosure (CICA, 1994b; GRI, 2000). The most recent sets of environmental indicators is provided in (annex 4) of GRI (2000). (http://www.dnrec.state.de.us/newpags/Cza/whatis.htm, 2002).

It can be argued that there are barriers to develop environmental indicators, such as:-

-There are difficulties in gathering data and suitable information.

-Uncertainties are inherent in how to estimate and measure the impact of environmental issues in some areas. For example, when accruing costs for future site restoration and determining contingent liabilities. The indicators may be based on estimates and may change because the assumptions and calculations underlying the estimates can be very complex.

-How to choose suitable scientific and technical ways to calculate the indicators.

-What is the appropriate benchmark of environmental performance.

***c- The contents of environmental reporting***

Whilst, it has been shown, there is no generally accepted framework for the contents of environmental reporting, a number of initiatives have suggested potential contents of reports.

IAPC (1995) suggests examples of contents of reporting, such as: (a description of the company's activities, environmental policy, EMS, accounting policies, quantitative performance data). CICA (1994b), on the other hand, points out that environmental reporting consists of: (organization's profile environmental policy, activities and targets, EMS, environmental performance analysis, glossary and a third party opinion).

The CC (1999) refers to the contents of environmental reporting. As including (a brief presentation of the company, an overview of the market in which the company operates, its strategy and values, operational actions, targets and results, accounting principles, the verification statement).

The two reports $AA_{1000}$ and $AA_{2000}$ refer to some key issues concerning environmental reporting, such as, (stakeholder engagement, planning, accounting and auditing, communication, verification) without discussing contents of reports as a whole.
KPMG (1996-1997-1999) in a survey of environmental reporting practice refer to contents of reporting, such as:- (environmental policy statement, EMS, qualitative data on environmental performance plans and targets, bad news, auditing, independent verification).
These elements can be pulled together into an overall framework as shown in table (4.3).

Table (4.3): A general framework of the contents of environmental reports

**1- A description of the company's activities**

-the impact of environmental issues on Land, air, water, natural resource, and non-renewable resources.

**2- Environmental policy and management commitment, such as:-**

-legislative compliance

-employee involvement

-natural resource conservation

-health and safety

-environment protection

**3- Plans and targets, such as:-**

-company commitment

-continually improving the environmental performance

-reducing the level of pollution(air emissions, water, energy and effluent discharges)

**4- A description of the environmental management systems:**

-how the company achieves its objectives

-how the company provides information to meet its stakeholders' requirements

-what are the company capabilities (e.g. technology, programs, training and procedures)

-the mechanisms for continues improvement

-details of the methodology, i.e. ways, processes and procedures, which control the process of producing information

**5- Quantitative data on environmental performance can be categorized into:-**

**(A) Non-financial data, such as:-**

-waste disposal

-emissions into air, land and water

-accidents and incidents

-energy consumption

**(B) financial data, such as:-**

-environmental expenditures and costs

-environmental provisions for liabilities and risks

-estimation of environmental contingencies

-capitalization of costs

-remediation costs

**(C) environmental indicators**

-description of the types of environmental indicators and description of the reasons for their use

**(D) description of the methodology and ways used for collecting data and information in the report**

**6- environmental audits**

(details of environmental audits undertaken, such as, the type of audit, the purpose, the scope and procedures of auditing)

**7- environmental improvements achieved, such as:-**

-reducing the level of pollution (air-water-land)

-repairing environmental damages

**8- negative impacts, such as:-**

-fines and penalties

-information about poor performance

-prosecutions and accidents

-breaches of regulatory requirements

-details of corrective actions

**9- independent verification (a third party)**

independent opinion about many issues, such as:-

-the fairness of the statements in the environmental report

-compliance with policies and procedures

-the effectiveness of the environmental management systems

-the methodology, scope, procedures and process, which relate to environmental audits and collecting evidences of auditing

-description of the scope of responsibility

-the qualifications of a third party

**10- other information, such as:**

- an opportunity to cover other useful information about environmental issues

***(d) The independent verification***

There is no generally accepted, common understanding of the ways to verifying environmental reports or on the appropriateness of these ways for the different types of subject matter environmental reports may include (GRI, 2000; CICA, 1994a, 1994b).

Although, there is no consensus on what should be included in a verification statement or opinion, there is a wide acceptance concerning the importance to verify environmental reports by a third party. Since some stakeholders tend to be inherently suspicious of voluntary disclosure by companies, reporting companies must convince their stakeholders that the data and information in the report are reliable. The independent verification by a third party can enhance the quality, usefulness, and credibility of

information used within the reporting companies. (CICA, 1994a, 1994b; KPMG, 1999, 1997, 1996; GRI, 2000).

There is no standard format for a third party opinion, but there are a number of studies, which suggest examples of information which should be covered by a third party (CICA, 1994a, 1994b; GRI, 2000; ISO14000; KPMG, 1999, 1997, 1996; IAPC, 1995; Hillary, 1995; Langford, 1995; EMAS, 2001) such as:

- The fairness of the statements in the environmental report.
- The appropriateness and quality of the environmental management systems.
- Compliance with legal requirements.
- The methodology and ways used for collecting data and information in the report.
- Risks and uncertainty involved in preparing the environmental information.
- Environmental risks and contingent liabilities.
- The qualifications of preparer, the scope of the work done and responsibility.

***(e) The absence of standards and principles for environmental reports***

Unlike financial reporting, environmental reporting has not been guided by a widely accepted standards and principles that can be used in reporting environmental information. In the absence of these standards and principles, there are various opinions on this matter. It may be summarised as follows:- FEE (2000) believes that some assumptions, principles and qualitative characteristics, which are used in financial reporting to make published information useful and credible, can be appropriately modified for environmental reports. Its arguments can be summarised in the following Table (4.4).

Table (4.4): FEE arguments about environmental reporting.

| Assumptions and principles | Qualitative characteristics of environmental reporting |
|---|---|
| 1- The entity assumption<br>2- The accruals basis of accounting<br>3- The going concern assumption<br>4- The materiality principle | 1- Relevance<br>2- Reliability<br>3- Clarity<br>4- Neutrality<br>5- Completeness<br>6- Prudence<br>7- Comparability<br>8- Timeliness<br>9- Credibility |

Source: the Federation des Exports Comptables Europeens(FEE), (2000), "Towards a Generally Accepted Framework for Environmental Reporting", A Paper Issued by the Environmental Working Party of the FEE, July, Brussels, pp. 15-25.

The Chartered Association of Certified Accountants in the UK suggests criteria should be considered in environmental reporting, in the following Table (4.5):-

Table (4.5): Criteria should be considered in environmental reporting.

| Key criteria | Implications for environmental reporting |
|---|---|
| 1- Comparability | - Industry standards / benchmarks<br>- Compliance with standard |
| 2- Completeness | - Disclosure should cover the whole area of environmental aspects |
| 3- Consistency | - The basis for measurement and disclosure should remain consistent overtime |
| 4- Materiality<br>5- Neutrality<br>6- Relevance | - The level of aggregation of data must be considered in the light of impact on the environment |
| 7- Reliability | - Disclosure is free from bias |
| 8- Timeliness | - Environmental disclosures are relevant for users |
| 9- Understandability | - Disclosure should be independently audited<br>- Disclosure on a regular basis<br>- Disclosure is understandable for different users |
| Additional criteria might include<br>-Accessibility<br>-Degree of Commitment<br>-Subsidiarity<br>-Status | |
| Source: The Canadian Institute of Chartered Accountants (CICA), (1994), "Reporting on Environmental Performance", Toronto, CICA, pp. 175-177. | |

UK Department for Environment, Food and Rural Affairs (2001) recommends guiding principles for environmental reports as follows (Table 4.6).

Table (4.6): Recommended guiding principles for environmental reports.

| | |
|---|---|
| 1- Completeness | -All key environmental impacts should be addressed. |
| 2- Credibility | -Avoid bias and error. |
| 3- Communication | -Recognize needs of different stakeholders and provide to them. |
| 4- Comparability | -Users may wish to compare reported material against other companies or against previous reports. |
| 5- Timeliness | -Many companies report on an annual cycle. |
| Source: UK Department for Environment, Food and Rural Affairs, (2001), (http://www.defra.gov.uk/environment.envrp/general), pp. 3-4. | |

Table (4.7): The principles of GRI (2000) reporting

| Principles of GRI reporting | Qualitative characteristics for GRI reporting |
|---|---|
| - The reporting entity principle<br>- The reporting scope principle<br>- The reporting period principle<br>- The going concern principle<br>- The conservation principle<br>- The materiality principle | - Relevance<br>- Reliability<br>- Clarity<br>- Comparability<br>- Timeliness<br>- Verifiability |

As can be seen from these attempts, there is no agreement on principles and standards for environmental reports. The absence of professional guidance relating to environmental issues is considered a significant barrier limiting some companies to involve in environmental disclosure. Gray et al., (1998, p. 303) state that " the increasing concern with stakeholders, growing anxiety about business ethics and corporate social responsibilities and the increasing importance of ethical investment have all raised the need for new accounting and accounting methods through, which organizations and their participants can address such matters".

*(f) Limited public demands on environmental reports*

One of barriers to develop environmental reporting is the limited level of the public demand for environmental information. The reasons may be due to the fact that factors: firstly, environmental awareness is still low, people need to become aware of many issues on how to protect the environment and its impact on business. Environmental awareness is challenging companies to re-examine their operational processes and products. Companies may need time to be ready for this challenge. There is also a need to increase stakeholders' engagement with their companies, this may in turn encourage companies to produce environmental reports. The value of stakeholders is a key determinant of companies' success. It is difficult to imagine a company that is seeking to have a good corporate image and a sense of trust in its relations without achieving its stakeholders' needs. (CC 1999; CICA, 1994a, 1994b; http://www.stakeholder.dk; 2002; Lloyd, 2001).

*(g) Voluntary reporting*

Because environmental reports are voluntary, a number of companies may choose not to disclose environmental information to avoid attracting public attention, which may impact on their reputation or image and generate problems with governmental agencies. Companies may prefer not to engage in environmental reports because they may be expensive and they need a range of different resources (such as, financial-technical-qualified persons). The lack of resources may be considered a barrier for some companies, especially, small companies, to engage in environmental reports. (KPMG, 1999, 1997, 1996; CICA, 1994a, 1994b). Developing environmental reports may eventually require legal requirements to make reports mandatory.

In order to pull the analysis of the initiative literature together, a general framework of the requirement of environmental reports has been suggested. This framework has then been used to test how the initiatives have made a contribution but failed to provide an over arching framework.

Table (4.8): A general framework of the requirements of environmental reports.

(Table continues to next page)

| The elements | The CC | $AA_{1000}$ $AA_{2000}$ | GRI | $BS_{7750}$ | ISO 14000 series | EMAS |
|---|---|---|---|---|---|---|
| -aims focus on:- *The principle of stakeholder dialogue and reporting *Improving the companies' ethics and accountability *Developing globally applicable sustainability reporting guidelines *The quality of environmental management systems(EMS) *Providing standards of EMS and related areas of environmental auditing, audit procedures, and auditor criteria *Helping companies to establish EMS and reporting publicly on their environmental performance | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| -Dealing with the problems of the quality of environmental data and information in environmental reporting | | | ✓ | | | |
| -Specifies the contents of environmental reports | ✓ | Only independent verification | ✓ | Only EMS | Only EMS | Only EMS and independent verification |

| | | | | | | |
|---|---|---|---|---|---|---|
| -Environmental indicators described | | | ✓ | | | |
| -Independent verification required | ✓ | ✓ | ✓ | | ✓ | ✓ |
| -Verification set by | External preferred | External preferred | External preferred | | External or internal | External |
| -Environmental standards and principles articulated | | | ✓ | | | |
| -Stakeholders' involvement | ✓ | ✓ | preferred | | Preferred | Preferred |
| -Legal framework | Voluntary | Voluntary | Voluntary | Voluntary | Voluntary | Voluntary |
| -Publicly environmental reporting | ✓ | | ✓ | | | ✓ |
| -Environmental auditing | | | | ✓ Internal personal | ✓ External person or internal person | ✓ External personal |
| -Process | Continual | Continual | Continual | Continual | Continual | Continual |

## Summary

It has become a requirement for companies to address environmental issues in order to maintain customers, and thrive in an ever more critical global economy. A number of the accountancy bodies have made efforts to discuss the impact of environmental issues on financial statements, environmental accounting and auditing, the problems of reporting on environmental issues and the role of financial auditor towards environmental problems. A number of environmental initiatives have introduced initiatives to aid companies in solving environmental problems, such as, CC (1999), AA1000 and AA2000, GRI 2000, BS7750, ISO 14000, and EMAS.

Despite all of these efforts, there is still no generally accepted rules and principles concerning many issues. These issues include what should be the contents of

environmental reports, which indicators should be used in reporting, as well as, the problems of collecting and analyzing environmental data, other concerns include how verification of environmental reports should be carried out, in addition the absence of professional standards and finally guidelines for environmental reporting. All these drawbacks actually provide companies with an excuse to avoid environmental disclosure. Therefore, there is a need to achieve coherent and integrated efforts to achieve a generally accepted framework of environmental reports by co-operate on between the accountancy bodies, academics and practitioners. The requirements of this framework need to cover the following:-

1- Identifying the aims of environmental reports.

2- Addressing the problems of achieving the quality of environmental data and information in environmental reports.

3- Determining the contents of environmental reporting.

4- Suggesting environmental indicators which can be used in environmental reporting to be comparable between different companies.

5- Providing generally accepted environmental standards and principles.

6- Specifying a number of issues concerning the independent verification such as, how it will be achieved and by whom.

7- Encouraging stakeholders' involvement in their companies' policies towards environmental matters.

8- Identifying legal and detailed requirements for environmental reports by companies.

9-Encourging companies to conduct environmental auditing and to engage in publicly environmental reports.

# Chapter 5

# The Social Perspective and Corporate Environmental Reporting

## 1. Introduction

Although the investigation of corporate social and environmental reporting practices has utilized a variety of different theoretical perspectives in an attempt to explain the reasons for disclosure, legitimacy theory currently is the dominant perspective (Adams et al., 1998; Patten, 1991, 1992; Deegan and Gordon, 1996; Deegan et al., 2002; Milne and Patten, 2002; Deegan, 2002; O'Donovan, 2002; Reich, 1998).

The framework of legitimacy theory is used to explain disclosures with regard to the environmental and social behaviour of companies (Neu et al., 1998; Deegan and Rankin, 1996, 1999; Hooghiemstra, 2000; Buhr, 1998). The idea of legitimacy theory is based on the argument that sustainability of companies depends upon their acting within the bounds of what society identifies as socially acceptable behavior (Deegan, 2002; Reich, 1998; Mathews, 1993; Buhr, 1998). Dowling and Pfeffer (1975) point out that companies and their accounting systems operate in a social, political, and economic context. Their continuing existence, therefore, depends on obtaining and maintaining social approval, i.e. legitimacy.

A number of studies (Mathews, 1993; Deegan and Gordon, 1996; Deegan and Rankin, 1996, 1997; Brown and Deegan, 1998; Adams et al., 1995; Hooghiestra, 2000; Gray et al., 1995; Tilt, 1994, Neu et al., 1998; Buhr, 1998, Hogner, 1982; Lindblom, 1994; Oliver, 1991; O'Donovan, 1997; Guthrie and Parker, 1989; Coopers and Lybrand, 1993), discuss why companies engage in social and environmental reporting and how they will be influenced by the social values of the community in which they exist.

The purpose of this chapter is to provide a theoretical framework based on legitimacy theory to examine the question why some companies pay attention to environmental reporting, while others ignore environmental issues. The chapter defines the concept of legitimacy. The literature of legitimacy theory is reviewed. The relationship between legitimacy theory and corporate environmental reporting are presented. The

corporate image as an example of the legitimating motive is addressed. The relevant public who has the right to know the environmental impacts on business is discussed. Legitimizing the corporate environmental reports is provided.

## 2. The concept of legitimacy

The concept of legitimacy is important in analyzing the relationships between companies and their environment. Parsons (1960, p. 175) defined legitimacy as "the appraisal of action in terms of shared or common values in the context of the involvement of the action in the social society". Maurer (1971) points out that legitimation is the process whereby an organization justifies to a peer or superordinate system its right to exist, that is to continue, import, transform, and export, energy material or information.

Lindblom (1994, p. 2) defines legitimacy as "a condition or status, which exists when an entity's value system is congruent with the value system of the large social system of which the entity is a part. When a disparity, actual or potential, exists between the two value systems, there is a threat to the entity's legitimacy". Preston et al. (1995) point out that legitimacy is conceived as congruence between institutional actions and social values, and legitimization as actions that institutions take either to signal value congruency or to change social value.

Legitimacy is achieved by demonstrating that companies' activities are concordant with social values. There are two dimensions at play in a company's effort to attain legitimacy:-

1- action-in other words, are the company's activities congruent with social values? And

2- presentation- do the activities appear to be congruent with social values? (Dowling and Pfeffer, 1975).

Companies take actions to ensure their continued legitimacy (Parsons, 1960; Perrow, 1970). Examples of legitimation, as shown by Bansal and Roth (2000) included complying with legislation, establishing an environmental committee or environmental manager position to oversee a firm's ecological impact and developing networks or committees with local community representation, conducting environmental audits,

establishing an emergency response system, and aligning the firm with environmental standards.

It can be argued that legitimacy provides a linkage between companies and their society. It may be considered a useful means to examine a company' behavior with respect to their environment.

## 3. An overview on legitimacy theory

Legitimacy theory concentrates on the concept of a social contract, implying that a company's survival is dependent on the extent to which the company operates within the bounds and norms of society (Brown and Deegan, 1998). The concept of social contract is explained by Shocker and Sethi (1974).

The authors state that:- "any social institution and business, without exception, operates in society via a social contract, expressed or implied, whereby its survival and growth are based on the delivery of some socially desirable ends to society in general and, the distribution of economic, social, or political benefits to groups from which it derives its power".

Mathews (1993, p. 26) states that:-

"the social contract would exist between corporations and individual members of society. Society (as a collection of individuals) provides corporations with their legal standing, attributes and the authority to own and use natural resources and to hire employees. Organizations draw on community resources and output both goods and services. The organization has no inherent rights to these benefits, and in order to allow their existence, society would expect the benefits to exceed the costs to society".

In a dynamic society, neither the sources of institutional power nor the needs for its services are permanent. Therefore, an institution must constantly meet the twin tests of legitimacy and relevance by demonstrating that society requires its services and that the groups benefiting from its rewards have society's approval. According to the social contract between the company and society, the company is expected to comply with the terms of this contract. If a company cannot justify its continued operation then, in a sense, the community may revoke its contract to continue its operations. This may occur, as indicated in Deegan and Rankin (1996), through consumers reducing or eliminating the

demand for the products of the business, factor suppliers eliminating the supply of labor and financial capital to the business, or constituents lobbying government for increased taxes, fines or laws to prohibit those actions, which do not conform with the expectations of the community.

Consistent with legitimacy theory, a company operates in society where it agrees to perform various socially desired actions in return for approval of its objectives, other rewards, and its ultimate survival. It therefore needs to disclose enough social information for society to assess whether it is a good corporate citizen.

In legitimizing its actions via disclosure, the corporation hopes ultimately to justify its continued existence (Guthrie and Parker, 1989). The existence of corporations depends on the willingness of society to continue, to allow them to operate (Reich, 1998). Milne and Patten (2002) argue that managers engage in a process of legitimation to extend, maintain or defend an organization's legitimacy. Companies seek to establish congruence between the social values associated with their activities and the norms of acceptable behavior in the larger social system of which they are a part (Dowling and Pfeffer, 1975). In a dynamic society, the bounds and norms are not fixed but change across time, thereby requiring the company to be responsive. If the company does not operate within the appropriate bounds of society, the public will be dissatisfied with the performance of the company and it can apply pressure on the company to meet expectations or it can use the legal system to require improved performance (Preston and Post, 1975; Deegan and Rankin, 1996, 1997).

Tilt (1994) argues that legitimacy theory relates to behavior where companies respond to the demands of divergent interest groups, and act to legitimize their actions. In other words, legitimacy theory discusses the engagement of companies in social reporting to affect the public's perception of the company (Brown and Deegan, 1998; Neu et al., 1998). Guthrie and Parker (1989) argue that legitimacy theory posits that corporate disclosures are made as reactions to environmental factors and in order to legitimize corporate actions. Patten (2000) argues that the increase in the disclosure of more positive environmental information by US firms is due to the companies' attempts to offset or mitigate the negative impact of remediation related disclosure.

Deegan and Rankin (1996) report that a company will provide information to the users of the accounts to justify or legitimize the company's continued operations within that society. Hogner (1982) argues that social disclosures represent a response to society's expectations of corporate behavior. Hurst (1970) suggests that one of the functions of accounting, and subsequently accounting reports, is to legitimate the existence of the corporation. Wisman (1982) argues that companies have been forced to implement pollution control as a result of social demands.

Gibson (1996) argues that there are many factors, which motivate firms to take their responsibility towards the environment seriously by reducing pollution. These factors include;-

-Competitive advantage from a clean public image

-Limiting corporate environmental liabilities, including future clean-up costs

-Difficulties faced by poor environmental performers in gaining finance, and

-Financial returns possible from cleaner production and waste minimization (Government of Victoria, 1995).

It can be argued that companies may face threats to their legitimacy if they fail to comply with the demands of society, for example, environmental behavior of companies may affect society's views about the acceptability of companies. They may face difficulties in obtaining the necessary resources. A number of parties in society, such as, employees, consumers, investors and others, may refuse to deal with companies, which have reputation for poor environmental behavior.

Coopers and Lybrand (1993, p. 4) (in relation to employees and consumers) point out that:- "employees want to work for clean, safe, and innovative companies. Few people wish to work for a company with a poor environmental record and, as a result, potential recruits are increasingly questioning company environmental policy. Informing and involving employees in environmental improvements will help to keep and attract good staff, suppliers and contractors, including those far removed from the consumer, are coming under pressure to provide their environmental credentials. This is because their

customers in the supply chain can not afford to use components or resell goods that fail to meet their own environmental standards".

Coopers and Lybrand (1993, p. 3) (in relation to investors) point out that:-
"the financial community considers clean producers good investments because they demonstrate market awareness...investors are becoming wary of bad environmental practice because it can increase liabilities and risks, which diminish profits". It can be argued that companies may use environmental disclosure as a method of communicating their legitimating characteristics to the public. In other words, the increase in environmental disclosures may represent a strategy to alter the public's perception about the legitimacy of companies. For example, environmental disclosures increased because of public pressure and media attention after environmental incidents such as, the Exxon Valdez Oil Spill and the Chemical Leak in Bhpoal (India). This is evidenced by a number of companies who reported on their social and environmental achievements (Gray et al., 1995; Deegan and Gordon, 1996; Brown and Deegan, 1998; Gray et al., 1996).

Patten (1992) points out that the amount of environmental and social disclosure is particularly high when the organization or the industry in which it operates is facing a predicament, e.g., environmental pollution, violation of human rights, prosecution of the company. Companies' responses to such public pressure and /or negative media attention, involving increasing the amount of mainly self-laudatory disclosures, and is aimed at reducing the exposure of the company to the social and political environment. Mathews (1993) argues that companies seek congruence between the outside perceptions of its own social values and what is deemed by society to be appropriate social conduct.

Guthrie and Parker (1989) suggest that modern organizations are more likely to provide environmental disclosure in response to public pressure than their predecessors. Management of companies reacts to adverse media coverage, and use corporate disclosures as a strategy to alleviate the potentially adverse effects caused by negative media coverage (O'Donovan, 1997).

Oliver (1991, p. 153) states that:-

"An organization's compliance with the variety of procedures specified by the environmental protection agency elevates its legitimacy and protects it from public criticism and the financial penalties of non-compliance". Dowling and Pfeffer (1975) outline the means by which a company, when faced with legitimacy threats, may legitimate its activities:-

- the organization can adapt its output , goals and methods of operation to conform to prevailing definitions of legitimacy.
- It can attempt, through communication, to alter the definition of social legitimacy so that it conforms to the organization's present practices, output and values, and
- the organization can attempt through communication to become identified with symbols, values or institutions which have a strong base of legitimacy.

Companies may seek to achieve legitimacy by appearing to be doing the right things or not be involved in doing the wrong things when this appearance may have little in common with companies' actual environmental performance. Lindblom (1994) suggests four strategies, which a company seeking legitimization may adopt by seeking:-

1) to educate and inform its relevant public about actual changes in the company's performance and activities.
2) to change the public's perceptions without having to change its actual behavior.
3) to manipulate perception by deflecting attention from the issue of concern to other related issues through an appeal to, for example, emotive symbols.
4) to change external expectations of its performance.

It can be argued that companies may adopt social values and goals to confirm their legitimacy through communication (social and environmental reports) to become identified with symbols and social values. They seek to influence the public's perception by creating a good image about their activities.

# 4. Literature Review

The voluntary nature of corporate social and environmental reporting attracts a great deal of researchers to question why it occurs. What motivates companies to make particular social and environmental disclosure? A number of studies have addressed the relationship between environmental disclosure and the possible motivation underlying decisions to disclose environmental information. Corporate social and environmental reporting has been analyzed from different perspectives. One of these perspectives is legitimacy theory (Patten, 1992, 2002; Milne and Patten, 2002; O'Donovan, 1997, 1998, 2002; Neu et al. 1998; Reich, 1998; Adams et al., 1995; Gray et al., 1995; O'Dwyer, 2001; Honger, 1982). It posits that corporate social responsibility disclosure practices are responsive to environmental pressures (including political, social and economic).

Deegan (2002) provides a theoretical perspective that has been used to explain why managers might select to publicly disclosure information about particular aspects of their social and environmental performance by legitimacy theory. Adams et al. (1998) argue that legitimacy theory is important in explaining motivations for corporate social disclosure even across different environments and, in particular, in continental European countries, as well as, Anglo-American countries. Bansal and Roth (2000) propose three basic motivations for greening the firm: competitive advantage, legitimation and environmental responsibility.

Patten (1992) utilized legitimacy theory to evaluate the effect of the Exxon Valdez Oil spill on the report environmental disclosure practices of in the annual report of North American petroleum firms. The author observed a significant increase in disclosures after the disaster. The results of the study support legitimacy theory, in that where a threat to the legitimacy of the company was evident the industry members sought to address this threat by increasing environmental disclosure to retain legitimacy.

Lindblom (1994) points out that there is one way that companies can maintain or regain their legitimacy in the eyes of society, by disclosing information about their social and environmental performance. Milne and Patten (2002) explore the role that environmental disclosure might play in producing a legitimising effect on investors within

the context of the chemical industry. The results of the study indicate that under some circumstances positive disclosures can restore or repair an organization's legitimacy.

O'Donovan (2002) conducted some interviews with six senior managers from three large Australian companies to investigate the reasons for managers' perceptions about the social and environmental disclosures. The findings of this study support legitimacy theory as an explanation for the decision to disclose environmental information in the annual report.

Deegan and Rankin (1996) examined legitimacy theory to explain systematic changes in corporate annual report environmental disclosure policies around the time of proven environmental prosecutions. The results of the study indicate that the Australian companies provide a significant increase in favorable environmental information in periods surrounding environmental prosecution. The authors also found that in the years of prosecution these companies that had been prosecuted provided more positive environmental disclosures.

Buhr (1998) utilizes both legitimacy theory and political economy theory to explain corporate environmental disclosures by using an in-depth case study and historical overview of the Falconbridge Company. The empirical results suggest that legitimacy theory offers a better explanation than political economy theory to explain why companies perform corporate environmental and social disclosures. The study concludes that social responsibility disclosure is provided in response to external social and economic events.

Deegan and Gordon (1996) reviewed annual report corporate environmental disclosure made by the Australian companies across the years from 1980 to 1990. The authors investigated the objectives of corporate environmental disclosure practices. The results of the study indicated that the increase of the Australian corporate environmental disclosures is over whelmingly self-laudatory claims.

Brown and Deegan (1998) argue that the media can be particularly effective in driving the community's concern about the environmental performance of a particular organization (based on media setting theory). Where such concern is raised, organizations will respond by increasing the extent of disclosure of environmental information within the

annual report (based on legitimacy theory). The results of the study indicate that for the majority of the industries studied, higher levels of media attention are significantly associated with higher levels of annual report environmental disclosures.

Hooghiemstra (2000) argues that social and environmental disclosures are responses to both public pressure and media attention. Companies use social disclosures as a strategy to alter the public's perception about the legitimacy of the company. Neu et al. (1998) consider the influence of external pressure on environmental disclosures in annual reports, including the amount and types of strategies used in disclosure, the characteristics of environmental disclosure and the association between environmental disclosures and actual performance by utilizing the notion of organizational legitimacy.

Deegan et al., (2000) examined the reaction of the Australian companies (to the Bhopal and Exxon Valdez incidents and three local incidents which have a negative impact on the legitimacy of particular industries) in terms of annual report disclosure concerning environmental incidents. The results of the study indicated that companies, which were operating in the affected industries provide more social information in their annual report than they did prior to the incident's occurrence. These results support a view that companies utilize their annual report as a means of legitimizing their ongoing existence.

Deegan and Rankin (1997) indicate that changes in environmental disclosure practices are driven by attempts of organizations to legitimate their operations. They rely on the assumption that various groups do use the environmental information contained within the annual report. The results of the study suggest that such an assumption is valid, some groups within society do perceive environmental issues to be material to their decision-making processes, and they seek information concerning these activities from the annual report. Deegan et al. (2002) examined the social and environmental disclosure of one of the largest Australian companies from 1983 to 1997 to ascertain the extent of social and environmental disclosures over the period and explain the concepts of a social contract and legitimacy theory. This study provided evidence that managers disclose information to legitimise their organisations' place within society.

The literature of legitimacy theory indicates that legitimacy theory may help to explain companies' motivations for environmental disclosure, it may provide a foundation for understanding how and why companies may use external reports to benefit themselves. Corporate environmental disclosure is provided in response to public pressure, regulation and external economic events.

## 5. Legitimacy theory and corporate environmental reporting

Environmental awareness is challenging companies to re-examine their operational processes and the products and services they provide. They need to be able to respond to these challenges effectively. Where they face increasing pressures from the public to have social responsibility towards the environment, many companies seek to confirm their social responsibility by using social and environmental reports (Hooghiemstra, 2000; Elkington, 1997; Adams et al., 1998; Patten, 1992; Gray et al., 1995).

Dowling and Pfeffer (1975, p. 27) point out that:-
"the organization can attempt, through communication, to alter the definition of social legitimacy so that it conforms to the organization's present practices, output and values or… the organization can attempt again through communication, to become identified with symbols, values, or institutions which have a strong base of social legitimacy".

Gray et al. (1993, p. 3) defined corporate social reporting as "the process of communicating the social and environmental effects of organizations' economic action to particular interest groups within society and to society at large".

It can be argued that companies use environmental and social reports to communicate favorable information about their activities to the public. Although there are many vehicles of communication employed by a company such as, advertising, public relations brochures and employee newsletters, none of these has the legitimacy of the annual reports. Buhr (1998, p. 164) states that "the annual report is the most commonly accepted and recognized corporate communication vehicle". Abrahamson and Park (1994) argue that the annual report serves as a legitimating device and also it can be seen as a strategic document that projects selective impressions about a firm's activities. O'Donovan

(1999) suggests that corporate management believe that the annual report is an effective way for informing and educating the public of the corporation's view about certain environmental issues. Guthrie and Parker (1989, p. 344) point out that "the credibility of the annual report to relevant public provides organizational managers with a unique opportunity to design a particular organizational image for their relevant public". Simmons and Neu (1998) point out that the annual report is used by management to respond to public pressure, especially, in response to negative media reports.

It can be argued that companies, through the process of communication (environmental and social reporting), may seek to influence the public's perception towards their operations. They attempt to create a good image and make self-laudatory claims (Patten, 1992; Deegan and Rankin, 1996, 1998, 1999).

Hooghiemstra (2000) argues that companies use corporate social reporting as a corporate communication instrument. The main aim of this instrument is to influence people's perceptions of the company and influence corporate image or reputation. Elkington (1997) points out that corporate social reporting is viewed as a public relations vehicle designed to offer reassurance and to help with feel-good image building.

Deegan et al. (2000) argue that companies consider that annual report social disclosure is a useful device to reduce the effects upon a corporation of events that are perceived to be unfavorable to a corporation's image. Gray et al. (1995) argue that companies use their social reports to construct themselves and their relationships with others as they strive to create and maintain the conditions for their continued profitability and growth. The authors pointed out that corporate social reports serve to rationalize and justify the corporate entity not merely describing effective management, but legitimizing corporate power and maintaining confidence of the public. Adams et al. (1998) report that UK financial executives see the most important role of annual reports as being to help to improve the image or reputation of the company and UK companies use the report as a means of advertising their social responsibility.

Environmental reporting may give companies the opportunity to gain many benefits for example the report of KPMG (1997, pp. 15-17) states that:-

"many business opportunities arise from good environmental practice. These include the marketing benefits arising from reputation for environmental care and improving public relations for the company". Therefore, this may encourage other companies to engage in environmental reporting.

The report of KPMG (1996) points out that:-

The influence of pressure from competitors within an industry sector on environmental reporting levels is apparent. In a number of cases one company in an industry sector has produced an environmental report one year and competitors have then produced reports the following year. In Sweden, for instance, two of the forestry companies produced an environmental report in 1995. Then, in 1996, six companies in the sector had produced some types of environmental reports. There could be a variety of motivations for companies to voluntarily undertake certain activities, such as deciding to report social and environmental information. For example, Norsk Hydro in the UK issued an environmental report in 1991 with three objectives:-

-to publicise its commitment to improving environmental performance-and thus quality- in order to contribute to the environmental debate,

-to confirm its commitment to its employees and neighbors, and

-to get the organization better known to the main opinion formers in the country where it operates (UK), (John, 1993).

O'Dwyer (2001) suggests a number of possible motivations for environmental reporting such as,

-Financial, legal, and reputational risk management.

-Marketing, public image, to get ahead of or stay with competitors.

-Demands of green (ethical) investors.

-To attract staff in a tight labour market.

-To add value to corporate reports.

Deegan (2002) indicates that companies' motivations for environmental disclosure might include: -

- the desire to comply with legal requirements. This would not be a major motivation in a great deal of countries given the lack of requirements in relation to social and environmental disclosures and associated verifications.
- to achieve economic advantages.
- to comply with community expectations ( or social contract).
- to respond to negative media attention, particular environmental incidents ( reporting here as a result of certain threats to the organization's legitimacy ).

Wood (1990) points out the aims of environmental reporting are: -

-to support management in integrating a wide range of social considerations into decision making,

-to provide methodologically sound and comprehensive information on the social impacts of business activities, and

-to permit the monitoring, evaluation, and-where necessary-control of corporate social behavior by stakeholders.

The CICA (1994) suggests a number of aims of environmental reporting such as,

-to communicate information on one or more aspects of financial, environmental or social stewardship,

-to acknowledge a shared responsibility for the state of the environment,

-to report on performance,

-to differentiate the organization from its competitors,

-to educate stakeholders about the organization,

-to obtain social legitimacy for operating practices with stakeholders, and

-to demonstrate regulatory compliance.

It can be argued that environmental reports can achieve a number of aims for companies, such as confirming their legitimacy, gaining competitive advantages, attracting investors, and increasing the amount of sales.

## 6. The corporate image or reputation (as an example of the legitimating motive)

"A company's image or reputation depends on what people think is true and feel is important" (Zadek et al., 1997 as quoted Hoogheimstra, 2000).

Hayes and Pereira (1990) point out that even if companies are not explicitly acting carelessly or illegally, they may still incur significant costs if they attract public disapproval, often expressed these days in the form of a boycott. Some 300 boycotts were reported in the U.S. during 1990, and 27 % of American consumers say they have a boycotted a product because of a manufacturer's poor environmental record. Gray and Balmer (1998) argue that a firm's ultimate survival may well depend on developing and maintaining a recognizable image and favorable reputation.

Companies are facing increasing pressures to publicly account for their environmental performance. Active stakeholders and lobby groups have successfully exerted pressure on companies to improve their behavior (Rosthorn, 2000). For example, Shell in 1995 experienced a lot of negative publicity after it announced its decision to sink the Brent Spar in the Atlantic Ocean. Environmental protection groups, especially, Green Peace, started a public campaign to prevent this (Hooghiemstra, 2000).

It can be argued that corporate image may impact on existing companies and their financial position. For example, Herremans et al. (1993) investigated the relationship between corporate social reputation and profits. The study's findings indicated a positive relationship between reputation for social responsibility and profitability over an extended period of time. Also, the authors point out that the current environmental investments will result in a future competitive advantage and future profits. Rosthorn (2000, P. 9) states that "the market capitalization of British Biotech fell by 90 % in just a few months because of its behavior towards the environment". Deegan and Rankin (1996) argue that companies appear reluctant to provide any information within their annual reports about any negative environmental implications of their operations. They provide environmental information, which is favorable to their corporate image. It appears that companies believe there is a need to legitimize the existence of their operations by increasing disclosure of positive

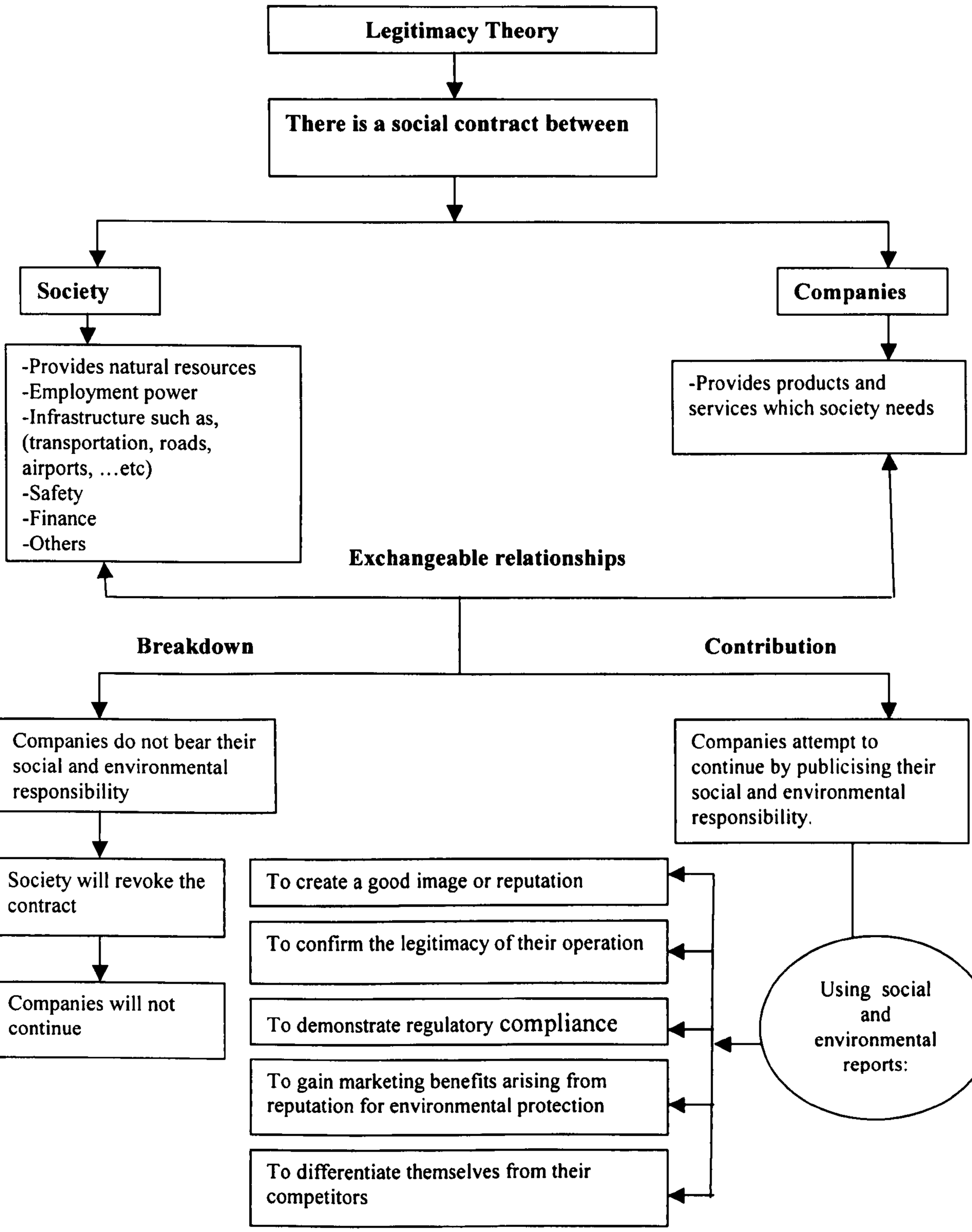
environmental information. Companies may gain many benefits when they have a good image, for example, Fombrun (1996) argues that companies with good reputation can, among other things, charge premium prices, access capital markets, attract investors more easily, and usually obtain lower interest rates.

Cowen et al. (1987) point out that consumer-oriented industries can be expected to exhibit greater concern with demonstrating their interest in social responsibility since corporate image among the mass-market consumers is likely to have an influence over the amount of sales generated. Hooghiemstra (2000, p. 64) states that:- "Corporate social reporting can contribute in creating a competitive advantage; creating a positive image may imply that people are to a greater extent prepared to do business with the company and buy its products". Naj (1990) points out that several companies have reported enhanced productivity and reduced costs from introducing new technologies aimed at reducing pollution.

Andreassen and Lindestad (1998) examine the relationship between corporate image and consumers' satisfaction using data from 600 individual customers categorized as having high or low service expertise of three companies within the package tour industry. The results indicate that corporate image impacts on customer loyalty directly. Gatewood et al. (1993) examine the relationship between corporate image-the image associated with the name of a company, and recruitment image-the image associated with its recruitment message. The results of this study indicate that the corporate image is related to the information available about it. Also, corporate image and recruitment image are significant predictors of initial decisions about pursuing customers to deal with companies.

Legitimacy theory and corporate social disclosure can be outlined in the following Figure (5.1):-

Figure (5.1) Legitimacy theory and corporate social disclosure



## 7. The Relevant Public

Companies are being asked for information on how they deal with the environment. Many groups (the relevant public) want to know what impact companies are having on the environment and how they are dealing with those impacts. They want reassurance that companies are operating responsibly towards the environment and society's values, and if they are not, how to improve their performance in the future to gain the acceptance of their existence in society. A number of studies seek to determine who are the relevant public for environmental disclosure in annual reports or separate reports. Zeghal and Ahmed (1990, p. 49) state that:-

"within the accounting literature financial stakeholders (shareholders and creditors) are assumed to be the primary users of annual report".

Accounting Standards Steering Committee of the ICAEW (1975, p. 17) defined users as those "having a reasonable right to information concerning the reporting entity". It was stated that:- "we consider such rights arise from the public accountability of the entity whether or not supported by legally enforceable powers to demand information. A reasonable right to information exists where the activities of an organization impinge or may impinge on the interest of a user group".

A variety of studies (Epstien and Freedman, 1994; Patten, 1992; and Gamble et al., 1995) reported that individual investors rely on the annual report for financial and non-financial information, as do environmental groups and government regulators. Benston (1982) argues that companies are seen as accountable to three increasingly inclusive groups: shareholders, stakeholders and society in general. Neu et al. (1998) point out that environmental disclosures in annual reports are a primary information source for investors, creditors, employees, environmental groups and government. Mastrandonas and Strife (1992) point out that for a subset of financial stakeholders, information on environmental liabilities and litigation becomes a priority in reading the annual report. Tilt (1994) discovered that members of environmental groups, such as, Greenpeace and the Australian Conservation Foundation, considered the annual report as the main source when seeking information about a corporation's environmental performance. Deegan and Rankin (1997) argue that groups who use published annual reports actually take environmental

performance into account and environmental information is material for them. Shane and Spicer (1983) investigated the market's response to environmental performance information. The authors found that companies with lower pollution control had significant negative security returns relative to companies with higher pollution control performance. The results indicated that environmental performance information helped investors to discriminate between companies with different pollution control performance records.

Tilt (1994) investigated the potential influence of pressure groups on corporate social disclosure. The author found that lobby groups were users of corporate social disclosure and annual reports were the most commonly used medium for corporate social information. Epstein and Freedman (1994) conducted a survey to determine whether individual investors need social information and the nature of this information. The authors found that 82 % of the investors wanted to see environmental and social disclosure included in the annual report such as, product safety, quality and environmental activities. These results indicate that investor interests and information requirements are more heterogeneous than is often assumed the implication being that such disclosures are of interest to at least a subset of financial stakeholders. Deegan and Rankin (1999) argue that providing environmental information to interested parties can provide them with a source of power to drive changes to corporate behavior. The authors presented some examples for using environmental information in determining a number of issues such as whether to invest or lend funds to an organization, whether to consume an organization's products, whether to use an organization's products in the production process and whether to supply labor or other resources to the entity environmental information may also be important in determining whether local communities will support the continued operation.

Consistent with the previous arguments, it can be argued that a number of groups in society may need environmental information to take their decisions. It is difficult to determine them exactly, but they can be categorized into:-

-internal stakeholders who work inside a company such as, management and employees,

-external stakeholders who are outside a company, such as, shareholders, investors, creditors and government agencies.

The CICA (1997) addresses the importance of environmental information for different stakeholders. It provides examples for users and their needs for information in the following Table (5.1):-

Table (5.1) category of internal users and their needs of environmental information

| Category of Internal User | Reasons for needing environmental information |
|---|---|
| -Boards of directors | -Approval of major capital investments, acquisitions and strategic plans, evaluating corporate performance and compliance with environmental policy. |
| -$CEO_s$ presidents chief administrative officers, etc. | -Developing and evaluating proposals for major capital investments and acquisitions, developing and evaluating strategic plans, evaluating corporate and business unit performance, and evaluating performance relative to environmental policy (including costs of environmental compliance) |
| Senior executives, operational and functional managers in areas of: | -Product mix decisions, evaluating pollution prevention and waste management programs, comparing costs across facilities (and within industry sectors), purchasing/procurement decisions |
| * Manufacturing, procurement. packaging, distribution | |
| * Marketing & sales | -Pricing decisions, deciding product mix, evaluating waste management options |
| * Product design & Development | -Deciding product mix, choosing manufacturing inputs, assessing pollution prevention technologies & projects, evaluating waste management options |
| * Legal, regulatory & government affairs | -Responding to/advocating public policy proposals repollution prevention & waste management laws, regulations, economic instruments, etc. |
| * Environment, health & safety | Evaluating pollution prevention & waste management programs, choosing manufacturing inputs, comparing costs (and benefits) across facilities |
| * Public relations & communications | -Evaluating pollution prevention and waste management programs, managing external stakeholder relations |
| * Finance & risk management | Product mix decisions, choosing manufacturing inputs, assessing capital projects and pollution prevention and waste management options, comparing financial performance across facilities and business units, improving financing and insurance arrangements |
| Source: The CICA, (1997), p. 28. | |

The users and their needs of environmental information are presented in Table (5 .2):-

Table (5.2) The users and their needs of environmental information

| User Category | Typical Interests/Information needs |
|---|---|
| Investment Community | Financial performance<br>Risk<br>Liabilities |
| Governments:<br>• Regulators (utilities, etc.)<br>• Policy developers | Return on assets, consumer interests<br>Public interest in economic development, protection of rights, "habitability" of environment |
| • Legislators<br>• National Accounts | As for regulators<br>Compilation of national economic performance measures based on conventional economics/formulae |
| Other interested parties:<br>• Employees | Workplace & community health and safety, future employment |
| • Industry Associations | Economic interests of members, compliance with industry codes |
| • Communities | Health and safety, future employment and economic activity |
| • Environmental Non-Government Organisations | Environmental issues, local and global health and safety |
| • Media | All of the above |
| Source: The CICA, (1997), p. 32. | |

The ICAEW (1992) points out that the reliability and usefulness of environmental disclosure can be improved by an independent audit opinion on the completeness, accuracy and fairness of this disclosure. Without such an opinion, the demands of accountability will not be met because the user of environmental disclosure generally has no way of knowing

whether to rely on the information provided. The auditor for this purpose will require both auditing and environmental expertise.

In a survey of the growth in the environmental consultancy market by ENDS (1991) Peter Jones of Rechem Environmental Services, states that:-

"it does not make sense to have your own environmental group carry them [audits] out because no one will believe your results".

It can be argued that environmental reporting should be prepared by an independent auditor (external to the company) for some reasons, such as:-

-preventing bias,

-eliminating of important or bad news events about management's behavior concerning environmental issue,

-improving credibility, and

-informing stakeholders who have a right to know about the impact of environmental issues on companies at all times.

## 8. Legitimizing the corporate environmental reports

In a world where economic activity systematically generates environmental harm, regulation is seen to offer a solution (Everett and Neu, 2000). Gray (1996) observes that if environmental reporting is to become systematic, widespread and useful, it must be covered by regulation. Deegan et al. (2000) argue that stakeholders have a right to know about environmental implications of company's operations at all times, not just when management has been shocked into action be legitimacy threatening events. Regulation might be necessary to ensure that this right to know is satisfied.

Gray (1992) points out that the information content in companies' statements is governed by the categories recognized in law and quasi-law can probably now be expanded to include, particularly, social and environmental impact information. Across time, laws and regulation related to environmental protection have increased in many countries. They impact on companies, therefore, many stakeholders would be wary of the potential financial risks associated with companies' activities. For example, the prosecution of

companies for environmental crime has increased steadily since the founding in 1982 of the environmental protection agency's office of criminal enforcement and penalties have escalated from an average fine of $ 48,000 in 1986 to $ 195,000 in 1988 (the Economist, 1990).

Epstein (1996) points out that in the US changes in environmental legislation have increased civil and criminal penalties and forced financial stakeholders to consider environmental issues in their rise/ return assessments.

Several countries have introduced legislation, which makes reporting of environmental information mandatory in some industries. For example, in the USA the securities and exchange commission (KPMG, 1996, 1997) requires all companies to make the following environmental disclosures in form 10-K:-

-Corporations must disclose material effects that compliance with federal, state and local environmental laws may have on the capital expenditures, earnings and competitive position.

-Existing estimates of current and future environmental expenditure must also be disclosed.

-Corporations must disclose any environmental, administrative or judicial proceeding, both contemplated and pending, that might have a material effect.

-Management are required to disclose any environmental problems likely to have a material effect and should quantify any liabilities as far as is reasonably practical. Relevant trends, demands, commitments, events or uncertainties should be addressed.

In the USA the Toxic Release Inventory (TRI), requires all companies with more than ten full time employees to submit data on their emissions of 307 different toxic chemicals to the Environmental Protection Agency. This information is publicly available. In addition to the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) which forces the present users of land to clean up contaminated sites, even though they may not be responsible for the contamination (Mathews, 1997). Also, the American Institute of Certified Public Accountants (AICPA) in its statement of position 96-1 requires corporations with environmental remediation liabilities to specifically disclose those items, as well as, other environmental cost information, in the annual report (Milne and Patten, 2002).

In Canada, the Securities Commission requires the public companies to report the current and future financial or operational effects of environmental protection requirements in an Annual Information Form (KPMG, 1996). In Australia the Urgent Issues Group (UIG) in August 1995, issued Abstract 4: Disclosure of Accounting Politics for Restoration Obligations in the Extractive Industries requires that reporting entities in the extractive industries shall disclose information about the amount of restoration obligation recognized as a liability in their financial reports, and the accounting methods adopted in determining the liability for restoration (Deegan and Rankin, 1996). In the UK, a register of contaminated land must be complied with provisions of the Environmental Protection Act 1990 (Mathews, 1997). In Egypt, the Ministry of the Environment has been required to carry the responsibility of environmental protection. As well as, the environmental law (1994) has been released to regulate the environmental issues (details about the Egyptian environmental law (1994), see appendix 4).

It can be argued that environmental laws impact on companies' activities and the auditing profession. There is a need for guidance and regulation, which is coming through the development of conceptual frameworks and standards by the accountancy bodies to help an independent auditor in reporting about the impact of environmental issues on companies. The increase of environmental legislation may force a number of companies to report upon their environmental performance.

## Summary

Legitimacy theory currently is the dominating perspective to explain the reasons for environmental disclosure. It concentrates on the concept of a social contract between companies and their society. This theory suggests that the increase of social and environmental disclosures represents strategy to alter the public's perception about the legitimacy of the company. Companies aim to produce congruence between the social values inherent in their activities and social norms in order to influence the public's perception. They seek to create a positive corporate image of companies' activities. Stakeholders need information about companies' environmental performance to help them in making their decisions. The credibility of this information will increase, if an independent auditor audits and reports upon this information.

# Part II

# The Empirical Study in Egypt

# Chapter 6

# Research Methodology and Legitimacy Theory

## 1. Introduction

This chapter examines the researcher's rationality for adapting a qualitative research methodology, which is based on conducting three types of questionnaires through applying legitimacy theory across the Egyptian community. Methodological foundations of research, which explain the relationship between legitimacy theory and the research method adapted, are presented. This chapter also includes details of questionnaire design. Limitations of the research and time frame are presented. A brief discussion of the analysis of findings is provided.

## 2. Methodological foundations and legitimacy theory

Methodological choice involves selection among methods, which embody a variety of assumptions about the nature and construction of knowledge. In deciding an appropriate and adequate research methodology, methodological foundations of research are based on the following steps:-

### *(a) Identifying the central proposal of research*

The main objective of this research is to describe the external auditor's role in environmental auditing and obstacles to extending this role in Egypt, as well as to recognize companies' motivations for environmental disclosure, which may impact on the level of demand for environmental auditing. As discussed in chapter 3, there are a number of obstacles, which limit auditors' involvement in environmental audits. These obstacles related to the qualification of auditors and the level of demand for environmental auditing, which may impact positively or negatively on auditors' participation in environmental auditing. If companies are willing to engage in environmental disclosure or environmental auditing, the auditors' opportunity to participate in an environmental auditing team may increase. Legitimacy theory was applied in this research to recognize companies'

motivations for environmental disclosure or conducting environmental auditing, thus understanding and identifying the factors, which can increase or decrease the demand for environmental auditing. Consistent with the previous discussion, the central proposal of the research is:- "the level of demand for environmental auditing may impact on auditors' participation in environmental auditing".

***(b) Suggesting the subsidiary hypotheses of research***

The purpose of these hypotheses is to help in explaining and investigating the central proposal. Therefore, the subsidiary hypotheses of research were suggested as follows:-

-Hypothesis (1): companies cannot ignore the impact of environmental issues on business, especially, in the light of the environmental laws and regulations.

-Hypothesis (2): legitimacy theory may help to explain companies' motivations for environmental disclosure in Egypt.

-Hypothesis (3): the current external auditor's role concerning environmental issues in Egypt is limited and there are some constraints on extending this role to encapsulate environmental issues.

***(c) Identifying the theoretical framework of research***

This framework is based on legitimacy theory to investigate companies' motivations for environmental disclosure in Egypt and to identify the impact of these motivations on the demand for environmental auditing. The idea of legitimacy theory is based on the premise that the sustainability of companies depend on their acting within the bounds of what society identifies as socially acceptable behavior (Mathews, 1993; Deegan and Gordon, 1996; Deegan and Rankin, 1996, 1997; Brown and Deegan, 1998; Adams et al., 1995; Hooghiestra, 2000; Gray et al., 1995; Neu et al., 1998; Honger, 1982; Deegan, 2002; Reich, 1998; Coopers and Lybrand, 1993; Oliver, 1991; O'Donovan, 1997). It discusses why companies engaged in social and environmental reporting and how they will be influenced by the social values of the community in which they exist. A company operates in society where it agrees to perform various socially desired actions in return for approval of its objectives, other rewards, and its ultimate survival. It therefore needs to

disclose enough social information for society to assess whether it is a good corporate citizen. Legitimacy theory (Patten, 2000; Deegan and Rankin, 1996, 1998, 1999; Deegan et al., 2000; Adams et al., 1998, O'Dwyer, 2001; KPMG, 1996, 1999; Rosthorn, 2000; Fombrun, 1996; Andreassen and Lindestad, 1998) argues that a number of factors motivate firms to take their responsibility towards the environment (such as, to gain competitive advantages from a clean public image, to limit environmental liabilities, to save costs from cleaner production and waste minimization, to comply with regulation and to guarantee survival). It can be argued that companies may seek to achieve legitimacy by appearing to be doing the right things or not be involved in doing the wrong things through using many ways such as:-

-to engage in separate environmental reporting,

-to disclose some environmental information in their financial statements,

-to disclose information about their environmental performance and their initiatives in their annual report to shareholders,

-to publicise their commitment to take their responsibility towards the environment in media,

-to publish a book, guide or magazine contains environmental information about their performance,

-to publish advertisements about their environmental activities in newspapers, and

-to write on their products some statements such as "this product is environmentally friendly".

As discussed in chapter 5, the literature, which embraces legitimacy theory, provides evidence that companies attempt to gain, maintain or repair their legitimacy by using social and environmental reporting. For example, companies increased environmental disclosure after environmental incidents because of public pressure and media attention. They attempt to offset or mitigate the negative impact of these incidents by increasing the disclosure of more positive environmental information. Corporate environmental reporting serves to legitimize corporate power and maintaining confidence of the public (Brown and Deegan, 1998; Lindblom, 1994; Title, 1994; Gray et al., 1995; Hooghiestra, 2000; Buhr, 1998; Deegan, 2002; Patten, 1992, 2000; Milne and Patten, 2002; O'Dwyer, 2001).

It can be argued that legitimacy theory can provide a foundation for understanding how and why companies use social and environmental reporting. Corporate environmental disclosure is provided in response to public pressure, regulation and external economic events. Therefore, legitimacy theory was used to identify companies' motivations for environmental disclosure in Egypt, consequently, to recognize the impact of these motivations on the level of demand for environmental auditing by companies.

***(d) Observing the nature and type of corporate environmental disclosure in Egypt***

Until now companies in Egypt do not engage in separate environmental reporting. This may be due to the interest of environmental matters in Egypt being still a relatively new action. The environmental law no. 4 of 1994 has been enacted for a short period (its executive regulation in 1995 and the law gave companies existing at the time of enhancing law three years to adjust their status according to the requirements of law) and it did not force companies to involve in publicly environmental reports. This law requires each company to keep an environmental record of its environmental activities and comply with other requirements (such as, the permissible levels of air pollutants, water...etc.) (see appendix 4).

After enacting law no. 4 of 1994, the Egyptian Environmental Affaires Agency (EEAA) imposed penalties and big fines on offending companies. Further the sustainability of a number of offending companies was threatened. For example, EEAA shut down a number of cement companies in Helwan area, some metals and steel companies, and also some chemical companies. However, a company, which has a clean public image arising from environmental protection, gains competitive advantages in international trade. The previous factors impact on companies in Egypt. A number of companies seek to have the ISO14000 certification and to conduct some types of environmental audits. These companies published information about their environmental performance in their annual report to shareholders, such as, Suez-Oil Company (SUCO), Halliburton Petroleum Company, Alexandria National Iron and Steel Company, National Cement Company, and Tourah Portland Cement Company (see appendix 5). Other companies published a book, guide or magazine about their environmental responsibility such as, Halliburton Petroleum Company and Subsidiary Companies published a guide about health, safety and

environment. In page 6 of this guide it states, "we recognize that we are responsible for protecting the environment and consistently meeting those responsibilities". As well as, SUCO published a magazine to publicise its environmental initiatives (see appendix 5). Some companies advertise their commitment to protect the environment in media and newspapers. Others are beginning to write on their products some statements such as, "this product is environmentally friendly". The most important question now is why these companies have conducted these actions?, and what motivates them to engage in some types of environmental disclosure?.

***(e) Determining research method***

The research method was based on conducting three types of surveys to elicit three groups (researchers- practitioners -a random sample of companies). Details about the sample frame of the research are presented in next chapter. The reasons for applying surveys are: -

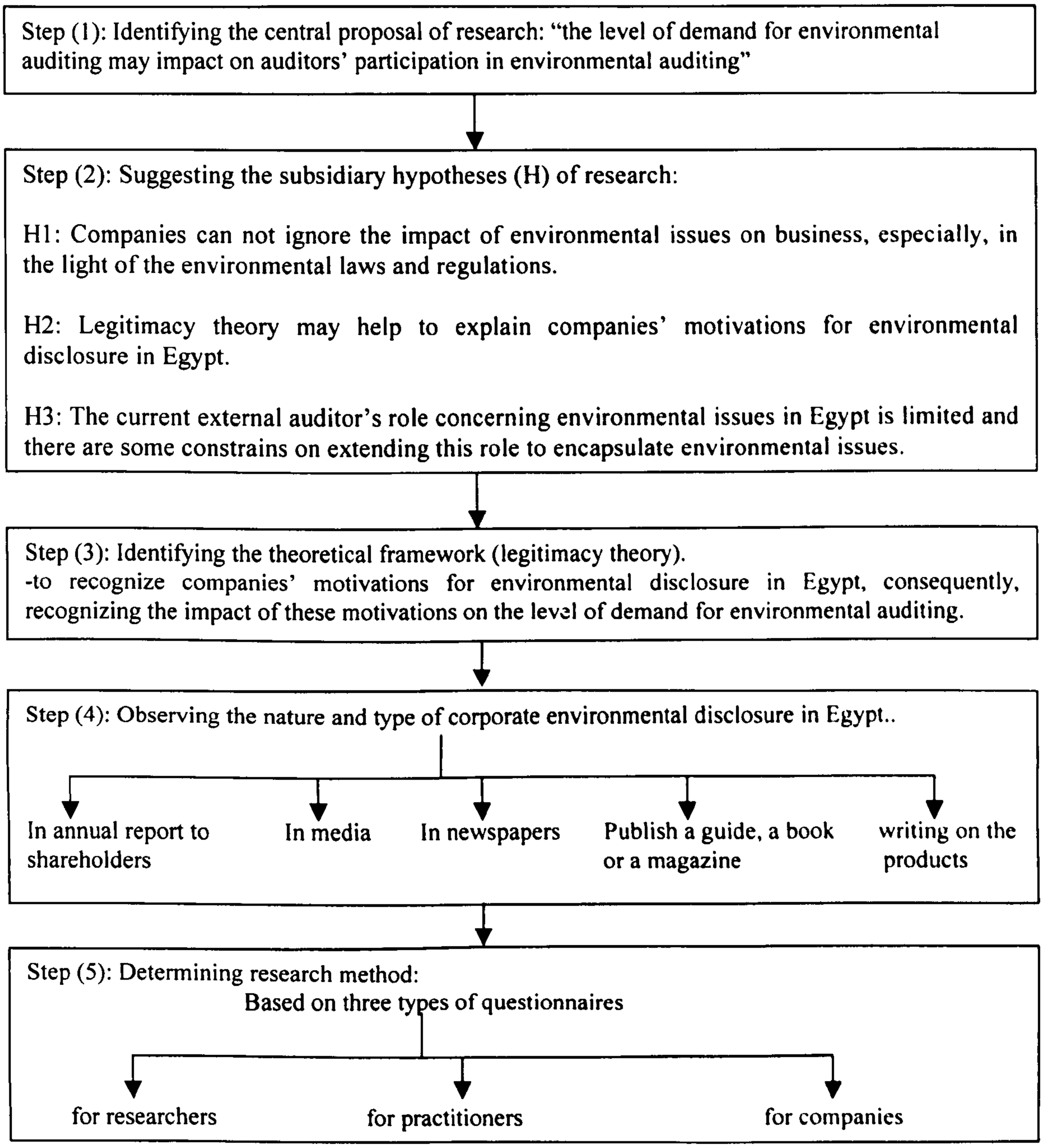
-The main objective of research is to describe the obstacles, which limit auditors' participation in environmental auditing in Egypt. Therefore, it is necessary to ask specialists in the auditing profession about these obstacles (such as, researchers and practitioners). These obstacles related to two dimensions. First is the qualification of the auditor and the role of the accountancy bodies. Second dimension is related to the level of demand for environmental auditing by companies, which may impact positively or negatively on auditors' participation in environmental auditing. Surveys therefore included some questions to identify companies' motivations for environmental disclosure, advantages and disadvantages of environmental auditing.

-The environmental law no. 4 of 1994 has been enacted for a short period and there is a need for time to measure the impact of this law on business and the auditing profession. In this stage, research is an attempt to describe the current environmental state in Egypt through surveying interested parties (researchers-auditors-companies).

-Questionnaires may be a suitable tool to recognize the level of environmental awareness among researchers, auditors and companies.

The methodological foundations of research can be summarized in the following Figure (6.1):-

Figure (6.1): Summary of the methodological foundations of research



## 3. Research method and questionnaire design

The views of researchers, practitioners and a random sample of companies concerning the involvement of the external auditor in environmental auditing in Egypt and the reasons, which may motivate companies to disclose about their environmental performance were elicited by using three questionnaires (one designed for researchers, one for practitioners and the third was designed for companies). A copy of surveys is presented in appendix (6).

### *Questionnaire design*

There is no specific scale to measure the involvement of the external auditor in environmental auditing aspects and to recognize companies' motivations for environmental disclosure. Therefore, the questionnaires were developed from previous surveys (such as Collison, 1996; Collison et al., 1996; Collison and Gray, 1997) on environmental accounting and auditing, as well as, from related non-empirical literatures. In designing the questionnaires, comments and feedback from my supervisors and colleagues were elicited in an endeavor to ensure that questions were clear and precise. The main elements of the questionnaires were chosen as a product of the theoretical framework, which is based on legitimacy theory to describe the linkages between obstacles to external auditors' participation in environmental auditing and companies' motivations for environmental disclosure to recognize the impact of these motivations on the demand for environmental auditing. The questionnaires were designed to collect data concerning specific attributes in the study. These attributes are environmental awareness, environmental auditing, and the external auditor's involvement in environmental auditing. The questionnaires have different types of questions. A number of the questions did provide a space for the respondent to provide additional information. Some questions on the surveys were designed to determine the presence or absence of a specific issue, others were concerned with the magnitude of certain issues. Each questionnaire was divided into a number of parts. The first segment in all questionnaires requests data concerning demographic characteristics in order to obtain a profile of respondents.

For first and second group, there are other three parts as follows:

***(a) Knowledge about environmental issues***

The purpose of this section is to recognize the level of environmental awareness among researchers and external auditors as well as their participation in environmental audits. In addition, their views concerning advantages and disadvantages of environmental auditing, as well as companies' motivations for environmental disclosure.

***(b) Views on environmental guidance and regulation***

The purpose of this section is to identify environmental auditing requirements such as separate standards related to environmental issues, a mandatory guidance from the professional accountancy bodies and environmental awareness among auditors.

***(c) Views on extending the auditing profession to encapsulate environmental issues***

The purpose of this section is to determine obstacles, which limit auditors' participation in environmental auditing.

For the third group, there are other two parts as follows:

***(d) Environmental auditing nature***

The purpose of this section is to provide information about environmental auditing inside a company such as the importance of environmental issues for a company, types of environmental auditing conducted, whether these audits conducted by internal or external personnel, the potential advantages and disadvantages of environmental auditing. In addition, it presents external auditor's involvement in environmental auditing in a company.

***(e) Current environmental issues within the company***

The purpose of this section is to recognize the level of environmental awareness among companies in Egypt.

## 4. Limitations of the research

A number of these limitations are based on the premise that the respondents' response in surveys cannot be separated from an individual's own beliefs and biased view of the world. The research was limited to 48 companies operating in four industries sectors (cement-chemical-pharmaceutical-petroleum). All other sectors were excluded from the research. Also, it was limited to 102 researchers from three universities and 20 external auditors. Therefore, further research is needed to see if the findings of this research would differ using other respondent groups. The results of the research also should not be

generalized to other industries. The practical limitations as a consequence of the chosen subject area are more restrictive on the research methodology and techniques adopted. In Egypt empirical studies undertaken with companies have revealed that research access is problematic. Companies have restricted access to their information, particularly policies and procedures, which they perceive, may be useful to their competitors. In a number of companies, access has been provided on the condition that the company's anonymity will be maintained in all research reference. In selecting a research design the potential posed by the nature of subject area also need to be considered. For example, the choice of the sample is dictated both by the specific aims of the study and the nature of Egyptian market as well as data availability.

## 5. Research time frame

The research programme was undertaken between July 2001 and December 2002. The timing of research was particularly opportune as changes in legislation in Egypt were taking place within companies. For example, research was undertaken in Egypt shortly after establishing the Environmental Law no. 4 of 1994, then its executive regulation in 1995. Further this law gave organizations existing at the time of enacting law three years to adjust their status according to the requirements of law (details about Environmental Law no. 4 of 1994 are in appendix 4).

## 6. Analysis of findings

The choice of research methodology and the nature of research area provide a multitude of starting points from which findings can be analyzed, such as researchers' views and external auditors' views concerning obstacles, which face auditors' involvement in environmental audits. The theoretical framework of the research adapted legitimacy theory to identify companies' motivations for environmental disclosure in Egypt, consequently, recognizing the impact of these motivations on the level of demand for environmental auditing. The analysis of these findings has been addressed in next chapters.

Chapter 7 presents the descriptive analysis of questionnaires and examines the subsidiary hypotheses of the research. Chapter 8 provides further analysis for the findings of the research, such as, factor analysis, the correlation and regression analysis. Factor

analysis was used to reduce a large number of variables to a smaller number of composite factors and to describe interrelationships within these factors. Correlation analysis was conducted to present the direction and the strength of the associations between the obstacles to external auditor's involvement in environmental auditing (in both survey 1 and survey 2) and other variables, which represent environmental awareness and environmental auditing. In survey 3 the relationship between external auditor's involvement in environmental auditing and other variables, which represent environmental awareness and environmental auditing, were examined. Regression analysis was conducted for the purpose of additional description of the external auditor's involvement in environmental auditing.

## Summary

This chapter has outlined the methodology undertaken to empirically examine the external auditors' participation in environmental auditing and obstacles to their participation. Legitimacy theory utilizes to explain companies' motivations for environmental disclosure in Egypt to identify the level of demand for environmental auditing. The chosen methodology takes into account practical research limitations. The methodology selected was based on surveying three groups (researchers-practitioners- a random sample of companies). The choice of appropriate methodology is dictated by the specific objectives of the study and the nature of Egyptian market, as well as data availability. The analyses of findings drawn from the research are outlined in next chapters.

# Chapter 7

# The Statistical Methodology of Research

## 1. Introduction

The main objective of this study is to describe the external auditor's role in environmental audits and obstacles to extending this role in Egypt, as well as, to recognize companies' motivations for environmental disclosure, which may impact on the demand for environmental auditing. The research methodology is primarily an empirical study surveying the views of three groups (researchers, practitioners and companies) concerning external auditors' involvement in environmental audits and companies' motivations for environmental disclosure.

This chapter includes the sample frame and the statistical methodology. The results of descriptive analysis of questionnaires are presented.

## 2. The sample frame

The choice of the sample is dictated both by the specific objectives of the study and the nature of Egyptian market as well as data availability. The sampling frame consists of three groups. The first group is a random sample of researchers selected from the largest three Egyptian universities. The sample size is approximately 20 percent of the total number of researchers from the selected universities equaling 102 researchers. The second group is 20 practitioners (external auditors), 10 from big audit firms and other 10 from small audit offices.

The aim of surveys is to elicit the views of these groups in matters concerning external auditors and environmental issues, as well as companies' motivation for environmental disclosure by collecting data about three attributes (environmental awareness, environmental auditing and the obstacles to external auditor's involvement in environmental auditing).

Third group is a random sample of companies. The total numbers are 48 companies, which split into four industrial sectors (12 cement-12 chemicals-12 pharmaceutical-12 petroleum

companies). These four sectors of companies are selected because their activities have a strong impact on the environment and the government in Egypt is beginning to pay attention to these activities.

The choice of sample in the third group was based on the nature and conditions of the Egyptian market. The numbers of working companies in any industrial sectors are very small, especially if it is compared with the same industrial activities in European countries or USA. For example, the total number of cement companies in Egypt is 12 companies, if the study includes 20 % of these companies, this will mean that only two companies will be in the study. Also, the total numbers of pharmaceutical companies in Egypt is 30. These numbers are not sufficient to conduct a balanced sample frame. Therefore, it was decided that the sample size would be restricted to 12 companies in each of four sectors.

The aim of survey 3 is to recognize the current environmental issues within companies in Egypt by collecting data about three attributes (environmental awareness-environmental auditing – external auditor's involvement in environmental auditing).

## 3. The statistical methodology

The general aim of this study is to describe the involvement of external auditors in environmental auditing in Egypt by conducting three surveys. The purpose of using these surveys is to collect data concerning specific attributes (environmental awareness, environmental auditing and the external auditor's involvement in environmental auditing and obstacles, which limit this). Therefore, the primary methods of analysis were descriptive analysis. The purpose of conducting the descriptive analysis is to describe the characteristics of certain groups of subjects. (Norusis, 2000; Connolly and Sluckin, 1971; Bowen and Starr, 1982).

The steps of the statistical analysis as follows:-

***Step (1): the descriptive analysis includes:***

-***Frequencies*** or counts for data collected from surveys,

-***Mean*** is a simple measure of central tendency that represents all the measures in a sample and it helps to compare two or more distributions, also it is essential in describing data sets. It represents the value that every member of the distribution would have if the aggregate of

the distribution were spread evenly among the members. (Connolly and Sluckin, 1971; Weiss, 1968; Walpole, 1976; Norusis, 2000).

-***Standard deviation (SD)*** is a measure of variability around the mean. It gives an indication of how dispersed the probability distribution is about its center and of how spread out on the average are the values of the random variable about its expectation. (Rice, 1995; Conway, 1963; Mood et al., 1963)

-***Coefficient of variation*** is a measure of variability. It expresses the standard deviation as a percentage of the mean values. It is used to describe the amount of variation in a sample and compare two or more data sets. (Norusis, 2000; Snedecor and Cochran, 1967)

***Steps (2): Factor analysis***

The data were examined using factor analysis. It is a statistical approach that can be used to analyze interrelationships among a large number of variables and to explain these variables in terms of their common underlying factors. The statistical approach involving finding a way of condensing the information contained in a number of original variables into a smaller set of factors with a minimum loss of information. (Stapleton, 2002; Rowe, 2002; Truker and Maccallum, 2002; Darligton; 2002; Gorsuch, 1983; Morrison, 1990; Kim and Mueller, 1987; Kline, 1994; Stevens, 1992; Reymontand and Joreskog, 1993).

Thus, factor analysis was used in this study for three purposes as follows:-

-to select a subset of variables from a larger set, based on which original variables have the highest correlations with the principle component factors,

-to describe and analyze interrelationships within a set of variables or composite factors, and

-to reduce a large number of variables to a smaller number of composite factors. (Rowe, 2002; Darlington; 2002; Stapleton, 2002).

Composite factors obtained in the factor analysis were included in correlation and regression analysis. Factor analysis attempts to simplify the correlation matrix by accounting for a large number of relationships with a smaller number of factors.

***Step (3): Correlation and Regression analysis***

Correlation and regression analysis is an important tool for social sciences in the analysis of non-experimental data (Berry and Feldman, 1985). The relationships between the external auditor's involvement in environmental auditing and obstacles, which limit that, and other variables were examined by the means of correlation analysis. Pearson-correlations were presented to show the direction and the strength of the associations between the obstacles to external auditor's involvement in environmental auditing (third attribute in both survey 1 and survey 2) and other variables, which represent first attribute (environmental awareness), and second attribute (environmental auditing). In survey 3 the relationship between external auditors' involvement in environmental auditing (third attribute) and other variables were examined. Regression analysis was conducted for the purpose of additional description of the external auditor's involvement in environmental auditing rather than for the purpose of prediction (Feiring, 1986; Schroeder et al., 1986; Jaccard et al., 1990). Stepwise regression was used to select the independent variables for the descriptive regression models. These models aim to describe the role of financial auditors in environmental auditing and obstacles to extending this role.

## 4. The descriptive analysis of questionnaires

The descriptive analysis of surveys is presented as follows:-

***Firstly the descriptive analysis of survey 1 (Researchers)***

***(a) First attribute: environmental awareness***

The researchers' descriptions of the first attribute (environmental awareness) are summarized in Table (7.1) and (7.1a in appendix 7). Researchers were asked to assess the magnitude of the actual and potential impact of environmental issues on the companies' statements. As well as, the impact of these issues on some areas of financial statements such as, valuation of land and fixed assets. They used a 5-point scale, with 1 representing no impact and 5 representing maximum impact.

Table (7.1): The impact of environmental issues on the financial statements of companies

| Question | *N* | *Mean* | *SD* | *Coefficient of Variation (SD/Mean) (%)* |
|---|---|---|---|---|
| -Do you think environmental issues have an actual impact on the financial statements of companies? | 102 | 1.96 | 0.92 | 47.0178 |
| -Do you think environmental issues have a potential impact on the financial statements of companies? | 102 | 3.08 | 0.85 | 27.687 |
| -Do you think environmental issues impact on financial statements of a company in any of the following areas:- valuation of land, contingent liabilities, valuation of fixed assets, valuation of stock, and depreciation policy? | 102 | 2.59 | 0.88 | 34.1067 |

Researchers indicated that environmental issues have a small (actual) impact on the financial statements of companies and also on some areas of financial statements. They were more likely to agree with environmental issues have a moderate potential impact on companies' statements (see Table (7.1a) in appendix 7).

***(b) Second attribute: environmental auditing***

This attribute is presented from Table (7.2) to (7.5). Researchers were asked about the following matters:

-The types of environmental audits, which they conducted.

-The potential advantages of environmental audits.

-The potential disadvantages of environmental audits.

-Companies' motivations for environmental disclosure.

Table (7.2) Types of environmental audits conducted

| Area audited | N | % |
|---|---|---|
| -Compliance with environmental laws and reporting requirements | 12 | 11.8 |
| -Compliance with company environmental policies and procedures | - | - |
| -Environmental management systems | 10 | 9.8 |
| -Financial accounting for environmental risks and liabilities | 3 | 2.9 |
| -The company's program for the treatment, storage or disposal of hazardous wastes or pollution prevention | - | - |
| -Transactional audits | - | - |
| -None | 86 | 84.3 |
| N: number of environmental audits conducted.<br>N.B: some researchers reported more than one type of environmental auditing. | | |

As shown in Table (7.2), researchers were asked to identify the types of environmental audits, which they conducted. Most researchers did not conduct any types of environmental audits. A small percent of researchers conducted three types of environmental audits, which were in the area of compliance with environmental laws and reporting requirements, environmental management systems and financial accounting for environmental risks and liabilities.

Table (7.3): The potential advantages of environmental audits

| The potential advantages of environmental audits | *N* | *Mean* | *SD* | *Coefficient of Variation (SD/Mean) (%)* |
|---|---|---|---|---|
| -Create a good corporate image | 102 | 3.88 | 0.85 | 21.8362 |
| -Publicise the commitment to environmental regulation | 102 | 3.75 | 0.84 | 22.4461 |
| -Demonstrate that a company is operating according to the requirements of environmental laws | 102 | 3.74 | 0.90 | 24.1008 |
| -Reduction of long term environmental risks | 102 | 3.51 | 1.01 | 28.8407 |
| -Reduction of fines for non-compliance with environmental regulations | 102 | 3.49 | 0.81 | 23.0716 |
| -Increased assurance of the adequacy of financial accruals for environmental liabilities | 102 | 3.43 | 0.96 | 27.9678 |
| -Cost savings from waste minimization and pollution prevention | 102 | 2.74 | 1.04 | 38.1277 |
| - Increased early identification of issues and problems | 102 | 2.67 | 1.28 | 48.172 |
| -Increased company awareness of environmental issues | 102 | 2.46 | 1.08 | 43.8021 |
| -Increased environmental protection | 102 | 1.99 | 0.94 | 47.1644 |

A summary of the researchers' perceptions of the magnitude of the potential advantages of environmental audits is presented in Table (7.3).

Researchers used a 5-point scale with the value of 1 indicating no advantage and the value of 5 indicating maximum advantage. The list of 10 potential advantages are presented in descending order based on the mean scores, which ranged from 3.88 to 1.99. Three potential advantages of environmental auditing had a mean exceeding the value of 3.70: - create a positive corporate image, publicise the commitment of environmental regulation and company's operations are performed according to the requirements of environmental laws. Researchers reported that companies might seek to avoid the public attention and government actions by conducting environmental auditing. There were three potential

advantages of environmental auditing had a mean exceeding the value of 3.42. These advantages related to reduce financial risks of environmental issues.

Table (7.4): The potential disadvantages of environmental audits

| The potential disadvantages of environmental audits | *N* | *Mean* | *SD* | *Coefficient of Variation (SD/Mean) (%)* |
|---|---|---|---|---|
| -Lack of Financial and /or technical ability to solve environmental problems | 102 | 4.21 | 0.78 | 18.4286 |
| -Use of environmental auditing reports against the company in regulatory enforcement action | 102 | 4.15 | 0.85 | 20.4714 |
| -Loss of public trust if environmental problems are discovered | 102 | 3.56 | 0.85 | 23.9128 |
| -Decreased market share of the company if environmental problems are discovered | 102 | 3.35 | 0.94 | 28.0430 |
| -Increase the cost of auditing processes | 102 | 3.20 | 1.19 | 37.3699 |

A summary of the researchers' assessment of the magnitude of the potential disadvantages of environmental audits is shown in Table (7.4). They used a 5-point scale with the value of 1 representing no disadvantage and the value of 5 representing maximum disadvantage. Only two potential disadvantages had an average score, which exceeded the value of 4: - lack of financial and/or technical ability to solve environmental problems, use of environmental auditing reports against the company in regulatory enforcement action. It can be observed that researchers indicated that companies' lack of financial and technical ability to solve environmental problems considers limiting factors for conducting environmental auditing. A number of companies also may fear of the negative impact (such as a bad corporate image), which may happen as a result of using their environmental reports against them.

Table (7.5) companies' motivations for environmental disclosure

| Companies' motivations for environmental disclosure | *N* | *Mean* | *SD* | *Coefficient of Variation (SD/Mean) (%)* |
|---|---|---|---|---|
| -To differentiate the organization from its competitors. | 102 | 4.02 | 0.97 | 24.2495 |
| -To improve the image or reputation of the company | 102 | 3.89 | 0.83 | 21.3609 |
| -To publicise the commitment to environmental regulation | 102 | 3.75 | 0.87 | 23.2341 |
| -To confirm the operating practices are performed according to environmental laws | 102 | 3.73 | 0.87 | 23.3323 |
| -To reduce long-term environmental risks | 102 | 3.52 | 0.89 | 25.2012 |
| -To gain the marketing benefits arising from reputation for environmental protection. | 102 | 3.43 | 0.93 | 27.050 |
| -To publicise their commitment to improving environmental performance. | 102 | 2.91 | 1.06 | 36.5197 |
| -To communicate information on company's behavior towards environmental issues. | 102 | 2.43 | 1.11 | 47.759 |
| -To demonstrate regulatory compliance. | 102 | 2.40 | 1.04 | 43.1546 |

A summary of the researchers' perceptions of the magnitude of companies' motivations for environmental disclosure is presented in Table 7.5. Researchers used a 5-point scale with the value of 1indicating no motivations and the value of 5 indicating maximum motivations. The list of 9 motivations is presented in descending order based on the mean scores, which ranges from 4.02 to 2.40. Three reasons had a mean exceeding the value of 3.74:- to differentiate the organization from its competitors, to improve the corporate image, and to publicise the commitment of environmental regulation. Researchers indicated that the most important motivation of the company to disclose about its environmental performance is to get an advantage over other companies. A company seeks to create a positive image by announcing its commitment to protect the environment.

It can be observed that researchers reported that the main potential advantage of environmental audits is the desire of a company to create a positive image and confirm its legitimacy. They indicated that the most important disadvantage for conducting environmental audits is companies' lack of financial and technical ability to solve

environmental problems. Researchers referred that the most important motivations for companies to engage in environmental disclosure are competitive factors, and corporate image or reputation.

***(c) The third attribute: obstacles to external auditor's involvement in environmental auditing***

This attribute is presented from Table (7.6) to (7.10). Researchers were asked about the following matters:-

- Their views concerning environmental guidance and regulation.
- Their views on extending the auditing profession to encapsulate environmental issues.
- The role of audit firms in verifying environmental reports.
- External auditor's ability to involve in environmental issues.
- Factors which limit external auditors to involve in environmental auditing.

Table (7.6): Views on environmental guidance and regulation

| Views on environmental guidance and regulation | *N* | *Mean* | *SD* | *Coefficient of Variation (SD/Mean) (%)* |
|---|---|---|---|---|
| -There is a need for separate auditing standards for environmental issues | 102 | 1.02 | 0.20 | 19.4221 |
| -There is a need for separate financial reporting standards on environmental issues | 102 | 1.02 | 0.20 | 19.4221 |
| -There is a need for a mandatory guidance from the professional accountancy bodies concerning environmental issues | 102 | 1.00 | 0.00 | 0.00 |
| -The professional accountancy bodies exams should include subjects to enhance environmental awareness | 102 | 1.27 | 0.60 | 47.047 |
| -The professional accountancy bodies should require environmental disclosure by companies | 102 | 1.76 | 0.92 | 52.3969 |

A summary of researcher's views concerning environmental guidance and regulation is presented in Table (7.6) (see Table 7.6a in appendix 7). Researchers used a 3-

point scale with the value of 1 indicating agree, the value of 2 neutral and the value of 3 indicating disagree. They were more likely to agree with the importance of auditing standards, reporting standards and a mandatory guidance related to environmental issues.

Approximately 80 % of researchers reported that the accountancy bodies should play an important role to raise environmental awareness among their members by conducting exams, which should include environmental subjects. 56.9 % of researchers indicated that the accountancy bodies should force companies to disclose about their environmental performance.

Table (7.7): Views on extending the auditing profession to encapsulate environmental issues

| Views on extending the auditing profession | *N* | *Mean* | *SD* | *Coefficient of Variation (SD/Mean) (%)* |
|---|---|---|---|---|
| -The professional skills of external auditor can be raised to involve in environmental issues | 102 | 1.72 | 0.95 | 55.2505 |
| -There is a need for external auditors' awareness of environmental issues to be raised | 102 | 1.10 | 0.41 | 37.3849 |
| -There is a need for making changes in auditors' education to be able to cope with environmental issues | 102 | 1.14 | 0.37 | 32.8291 |
| -The accountancy bodies should provide a certification and appropriate training to to qualify external auditor to conduct environmental auditing | 102 | 1.32 | 0.62 | 46.5413 |

A summary of the researchers' views concerning the extent of the auditing profession to encapsulate environmental issues is presented in Table (7.7) and (Table 7.7a in appendix 7). Researchers used a 3-point scale with the value of 1 indicating agree, the value of 2 neutral and the value of 3 indicating disagree. They were asked if external auditors' skills can help them to contribute environmental issues.

Approximately 62 % of researchers indicated that external auditors can involve in environmental issues. Approximately 38 % of the researchers were more likely to disagree with this view. About 94 % of researchers indicated that auditor's awareness of environmental issues is limited and should be raised. 87.3 % of researchers reported that auditor's education needs to be changed to encapsulate the environmental issues. 75.5 % of researchers indicated that the accountancy bodies should play an effective role to qualify auditors to be able to participate in environmental auditing by providing a certification and training related to environmental issues.

Table (7.8): Audit Firms and environmental issues

| Audit Firms and environmental issues | *N* | *Mean* | *SD* | *Coefficient of Variation (SD/Mean) (%)* |
|---|---|---|---|---|
| -There is a role for large audit firms, which have environmental specialists in verifying environmental reports | 102 | 1.50 | 0.73 | 48.5205 |
| -There is a role for small audit firms in verifying environmental reports in liaison with environmental specialists | 102 | 1.74 | 0.82 | 47.2335 |

As shown in Table (7.8) and (Table 7.8a in appendix 7). Researchers used a 3-point scale with the value of 1 indicating agree, the value of 2 neutral and the value of 3 indicating disagree. Researchers were asked about the ability of both large and small audit firms to verify environmental reports. 63.7 % of them indicated that large audit firms can play a role in verifying environmental reports by cooperating with the environmental specialists. 50 % of them indicated that small audit firms can participate in verifying environmental report, if they have or appoint environmental specialists to work with them.

Table (7.9): The external auditor and environmental issues

| The external auditor and environmental issues | *N* | *Mean* | *SD* | *Coefficient of Variation (SD/Mean) (%)* |
|---|---|---|---|---|
| -If environmental reports are inevitable, the external auditor should participate in verifying them | 102 | 1.77 | 0.97 | 54.8877 |
| -The public has a fundamental right to information about the environmental impact of companies | 102 | 1.14 | 0.35 | 30.4079 |
| -The external auditor should involve in the preparation of environmental information for public disclosure | 102 | 1.78 | 0.97 | 54.4267 |

As shown in Table (7.9) and (Table 7.9a in appendix 7). Researchers used a 3-point scale with the value of 1 indicating agree, the value of 2 neutral and the value of 3 indicating disagree. They were asked about the importance of the external auditor's participation in verifying environmental reports if these reports are inevitable. Approximately 60 % of researchers agreed with the importance of this participation. About 39 % of researchers were more likely to disagree with that view. 86.3 % of the researchers reported that the public has a right to information about the environmental impact of companies. Also, they were asked about the external auditor's involvement in preparing environmental information for public disclosure. 59.8 % of researchers reported that an external auditor should be involved in preparing this information, while, about 40 % of researchers were more likely to disagree with this view.

Table (7.10): Factors which limit external auditors' involvement in environmental auditing

| Factors which limit external auditors' involvement in environmental auditing | *N* | *Mean* | *SD* | *Coefficient of Variation (SD/Mean) (%)* |
|---|---|---|---|---|
| -The current qualification of external auditor is not appropriate and sufficient to cope with environmental problems | 102 | 4.38 | 0.70 | 16.0694 |
| -Lack of professional guidance concerning environmental issues | 102 | 4.20 | 0.87 | 20.6836 |
| -Lack of suitable training in the field of environmental auditing | 102 | 3.84 | 0.66 | 17.0745 |
| -Lack of technical ability to solve environmental problems | 102 | 3.79 | 0.84 | 22.0478 |
| -Lack of experience in environmental field | 102 | 3.65 | 0.85 | 23.3578 |
| -Lack of knowledge of environmental regulations | 102 | 2.83 | 1.21 | 42.7481 |
| -Defined role of external auditor does not include environmental auditing | 102 | 2.32 | 1.21 | 52.155 |

As shown in Table (7.10), researchers were asked to indicate the factors, which limit the external auditor to involve in environmental auditing. They used a 5-point scale, with 1 representing no limitations and 5 representing the maximum limitations. The greatest two limiting factors (mean score exceeding the value of 4) reported were those related to the current qualification of the external auditors is not appropriate and not sufficient to make them involve in environmental problems, as well as, lack of professional guidance concerning environmental issues. The accounting education in business schools is not suitable to qualify auditors to meet environmental challenges.

It can be observed that a number of barriers face financial auditors to participate in environmental auditing, such as the qualification, experience, skills, professional guidance and standards for environmental reports.

***Secondly the descriptive analysis of survey 2 (practitioners)***

***(a) First attribute: environmental awareness***

The practitioners' description of the first attribute (environmental awareness) is summarized in Table (7.11) and (Table 7.11a in appendix 7). Practitioners were asked to assess the magnitude of the actual and potential impact of environmental issues on companies' statements, as well as, the impact of these issues on some areas of financial statements. They used a 5-point scale, with 1 representing no impact and 5 representing maximum impact. 80 % of practitioners in big firms reported that environmental issues have a small (actual) impact on companies' statements, 60 % of practitioners in small firms indicated that these issues have no actual impact on companies' statements. 60 % of practitioners in big firms indicated that environmental issues have a great (potential) impact on companies' statements, 50 % of small firms reported that these issues have a small potential impact. 60 % of practitioners in big firms indicated that environmental issues may have a moderate impact on the financial statements in different areas and 40 % of practitioners in small firms indicated that these issues may have a small impact.

Table (7.11): The impact of environmental issues on the financial statements of companies

| Questions | Big Firms | | | | Small Firms | | | |
|---|---|---|---|---|---|---|---|---|
| | N | Mean | SD | Coefficient of Variation (SD/Mean) (%) | N | Mean | SD | Coefficient of Variation (SD/Mean) (%) |
| - Do you think environmental issues have an actual impact on the financial statements of companies? | 10 | 2.20 | 0.42 | 19.0909 | 10 | 1.40 | 0.52 | 37.1429 |
| -Do you think environmental issues have a potential impact on the financial statements of companies? | 10 | 3.50 | 0.71 | 20.2857 | 10 | 2.30 | 0.67 | 29.1304 |
| -Do you think environmental issues may impact on the financial statements of a company in any of the following areas:- valuation of land, contingent liabilities, valuation of fixed assets, valuation of stock, and depreciation policy? | 10 | 3.40 | 0.52 | 15.2941 | 10 | 2.30 | 0.67 | 29.1304 |

Table (7.12): The external auditor's practicing and environmental issues

| Questions | Big firms | | Small firms | |
|---|---|---|---|---|
| | Number Cases | Percentage (%) | Number Cases | Percentage (%) |
| -Did you attend a course concerning the environmental accounting or auditing ? | | | | |
| - Yes | 1 | 10.0 | 1 | 10.0 |
| - No | 9 | 90.0 | 9 | 90.0 |
| -Did you provide advice on environmental issues to any client? | | | | |
| - Yes | - | - | - | - |
| - No | 10 | 100.0 | 10 | 100.0 |
| -Have you taken training concerning the accounting or auditing implications of environmental issues ? | | | | |
| - Yes | 1 | 10.0 | 1 | 10.0 |
| - No | 9 | 90.0 | 9 | 90.0 |
| -How long was the training? | | | | |
| - Less than a month | 1 | 10.0 | 1 | 10.0 |
| - More than a month but less than three months | - | - | - | - |
| - More than three months | - | - | - | - |
| -Was the training useful? | | | | |
| - Yes | - | - | - | - |
| - No | 1 | 10.0 | 1 | 10.0 |

As shown in Table (7.12), environmental experience of practitioners in both big and small firms is limited. Only 10 % of practitioners attended a course concerning environmental accounting and auditing. Neither practitioners in big nor small firms provided an advice on environmental issues to any client. 10 % of practitioners in big firms and 10 % of small firms had taken training related to the environmental implications on the profession.

*(b) Second attribute: environmental auditing*

This attribute is presented from Tables (7.13) to (7.16). Practitioners were asked about the following matters:-

- The types of environmental audits, which they conducted.
- The potential advantages of environmental audits.
- The potential disadvantages of environmental audits.
- Companies' motivations for environmental disclosure.

Table (7.13): Types of environmental audits conducted

| Areas audited | Big Firms (N) | Big Firms Percentage (%) | Small Firms (N) | Small Firms Percentage (%) |
|---|---|---|---|---|
| -Compliance with environmental laws and reporting requirements | 3 | 30.0 | - | - |
| -Compliance with company environmental policies and procedures | 1 | 10.0 | - | - |
| -Environmental management systems | 4 | 40.0 | - | - |
| -Financial accounting for environmental risks and liabilities | 5 | 50.0 | - | - |
| -The company's program for the treatment, storage or disposal of hazardous wastes or pollution prevention | 1 | 10.0 | - | - |
| -Transactional audits | 1 | 10.0 | - | - |
| - None | 1 | 10.0 | 10 | 100.0 |

N: number of environmental audits conducted.

N.B: some practitioners reported more than one type of environmental auditing.

As shown in Table (7.13), practitioners were asked about types of environmental audits, which they conducted. The practitioners in small firms did not conduct any types of the environmental audits. In big firms, financial accounting for environmental risks and liabilities, environmental management system audits, compliance with environmental laws and reporting requirements were mostly types of environmental audits conducted. This may be due to a number of companies in Egypt having an environmental budget, which includes environmental costs, benefits and liabilities. Therefore, it may be audited by external

auditors, but as a part of auditing the companies' financial statements and according to financial auditing principles. Other companies have environmental management systems department and external auditors audit all departments in the companies included this department. They audit this department without using specific procedures. Furthermore, according to environmental laws in Egypt all companies should have environmental records. These records are legal records now and the external auditors should mention when they audit any company whether it has all legal records or not.

Table (7.14): The potential advantages of environmental audits

| The potential advantages of environmental audits | Big Firms | | | | Small Firms | | | |
|---|---|---|---|---|---|---|---|---|
| | N | Mean | SD | Coefficient Variation (SD/Mean) (%) | N | Mean | SD | Coefficient Variation (SD/Mean) (%) |
| -Reduction of fines for non- compliance with environmental regulations | 10 | 4.50 | 0.71 | 15.7778 | 10 | 4.20 | 1.03 | 24.5238 |
| -Reduction of long-term environmental risks | 10 | 4.30 | 0.82 | 19.0698 | 10 | 3.90 | 1.29 | 33.0769 |
| -Cost savings from waste minimisation and pollution prevention | 10 | 3.90 | 0.99 | 25.3846 | 10 | 3.70 | 1.06 | 28.6487 |
| -Increased early identification of issues and problems | 10 | 3.80 | 1.14 | 30.00 | 10 | 4.10 | 1.29 | 31.4634 |
| -Create a good corporate image | 10 | 3.70 | 0.95 | 25.6757 | 10 | 4.20 | 0.92 | 21.9048 |
| -Demonstrate that a company is operating according to the requirements of environmental laws | 10 | 3.60 | 0.84 | 23.3333 | 10 | 3.50 | 1.08 | 30.8571 |
| -Increased assurance of the adequacy of financial accruals for environmental liabilities | 10 | 3.60 | 1.35 | 37.50 | 10 | 3.50 | 1.51 | 43.1429 |
| -Increased environmental protection | 10 | 3.40 | 1.07 | 31.147 | 10 | 3.30 | 0.82 | 24.8484 |
| -Increased company awareness of environmental issues | 10 | 3.10 | 1.10 | 35.4839 | 10 | 3.80 | 0.79 | 20.7895 |
| -Publicise the commitment to environmental regulation | 10 | 3.00 | 0.47 | 15.6667 | 10 | 3.70 | 0.67 | 18.1081 |

A summary of practitioners' perceptions of the magnitude of the potential advantages of environmental audits is shown in Table (7.14). The practitioners used a 5-point scale with the value of 1 indicating no advantage and the value of 5 indicating maximum advantage. The list of 10 potential advantages is presented in descending order for the big firms based on the mean scores, which ranged from 4.50 to 3. For practitioners

in the big firms, two potential advantages had a mean exceeding the value of 4:- reduction of fines for non-compliance with environmental regulations and reduction of the long-term environmental risks. Practitioners indicated that the greatest advantages of conducting environmental audits are related to financial reasons. For practitioners in small firms, two potential advantages had a mean exceeding the value of 4:- reduction of fines for non-compliance with environmental regulations and create a good corporate image. Practitioners in small firms reported that financial reasons and corporate image are the greatest advantages of conducting environmental audits.

Table (7.15): The potential disadvantages of environmental audits

| The potential disadvantages of environmental audits | Big Firms | | | | Small Firms | | | |
|---|---|---|---|---|---|---|---|---|
| | N | Mean | SD | Coefficient Variation (SD/Mean) (%) | N | Mean | SD | Coefficient Variation (SD/Mean) (%) |
| -Loss of public trust if environmental problems are discovered | 10 | 4.00 | 1.05 | 26.25 | 10 | 3.70 | 1.16 | 31.3514 |
| -Lack of financial and /or technical ability to solve environmental problems | 10 | 3.60 | 1.07 | 29.7222 | 10 | 4.00 | 0.82 | 20.05 |
| -Decreased market share of company if environmental problems are discovered | 10 | 3.50 | 0.85 | 24.2857 | 10 | 3.10 | 1.10 | 35.4839 |
| -Increase the cost of auditing processes | 10 | 3.40 | 1.17 | 34.4118 | 10 | 3.70 | 0.67 | 18.1081 |
| -Use of environmental auditing reports against the company in regulatory enforcement action | 10 | 3.30 | 1.42 | 43.0303 | 10 | 3.60 | 1.58 | 43.8889 |

A summary of the practitioners' assessment of the magnitude of the potential disadvantages of environmental audits is presented in Table (7.15). The practitioners used a 5-point scale with the value of 1 representing no disadvantage and the value of 5 representing maximum disadvantage. Only one potential disadvantage had an average score, which exceeded the value of 4 for practitioners in big firms. They indicated that loss of the public trust if environmental problems are discovered (mean score of 4) is the greatest disadvantages of environmental audits. On the other hand, practitioners in small firms indicated that lack of financial and/or technical ability to solve environmental problems is the greatest disadvantages of environmental auditing.

Table (7.16) companies' motivations for environmental disclosure

| Companies' motivations for environmental disclosure | Big Firms | | | | Small Firms | | | |
|---|---|---|---|---|---|---|---|---|
| | N | Mean | SD | Coefficient Variation (SD/Mean) (%) | N | Mean | SD | Coefficient Variation (SD/Mean) (%) |
| -To improve the image or reputation of the company | 10 | 4.60 | 0.52 | 11.3043 | 10 | 4.30 | 0.48 | 11.1628 |
| -To gain the marketing benefits arising from reputation for environmental protection | 10 | 4.50 | 0.71 | 15.7778 | 10 | 4.00 | 0.94 | 23.5 |
| -To differentiate the organisation from its competitors | 10 | 4.30 | 1.06 | 24.6512 | 10 | 4.80 | 0.42 | 8.75 |
| -To publicise the commitment to environmental regulation | 10 | 4.20 | 0.79 | 18.8096 | 10 | 4.30 | 0.67 | 15.5814 |
| -To reduce long-term environmental risks | 10 | 3.80 | 1.23 | 32.368 | 10 | 4.20 | 1.23 | 29.2858 |
| -To demonstrate regulatory compliance | 10 | 3.70 | 0.48 | 12.9729 | 10 | 3.70 | 0.82 | 22.1622 |
| -To publicise their commitment to improving environmental performance | 10 | 3.60 | 0.70 | 19.4444 | 10 | 3.50 | 0.97 | 27.7142 |
| -To confirm the operating practices are performed according to environmental laws | 10 | 3.60 | 0.70 | 19.4444 | 10 | 3.60 | 0.84 | 23.3333 |
| -To communicate information on company's behaviour towards environmental issues | 10 | 2.80 | 1.23 | 43.9286 | 10 | 3.10 | 1.20 | 38.7097 |

A summary of the practitioners' perceptions of the magnitude of companies' motivations for environmental disclosure is presented in Table (7.16). Practitioners used a 5-point scale with the value of 1 indicating no motivations and the value of 5 indicating maximum motivations. The list of 9 motivations is presented based on the descending order of the mean scores for big audit firms, which ranged from 4.60 to 2.80.

Practitioners in big firms reported that the greatest motivation of a company to involve in environmental issues is to improve its image (mean score 4.60) and the second

motivation is to gain the marking benefits arising from reputation for environmental protection (mean score of 4.50). Practitioners in small firms indicated that the greatest motivation of a company to disclose about its environmental performance is to differentiate itself from its competitors (mean score of 4.80), the second greatest motivation (mean score of 4.30) is to improve the corporate image and to publicise the commitment of environmental regulation.

It can be argued that a number of companies aware that a good reputation arising from environmental protection can help them to achieve many benefits, avoid environmental risks and, also, guarantee their sustainability. They may seek to engage in environmental disclosure by conducting environmental audits to publicise their commitment to environmental protection and compliance with regulation. Both big and small audit firms reported that the most important potential advantage of environmental auditing is related to financial reasons. While, companies' motivations for environmental disclosure are related to competitive factors.

***(c) Third attribute: obstacles to external auditor's involvement in environmental auditing***

Third attribute is presented from Table (7.17) to (7.21). Practitioners were asked about the following matters:-

- Their views concerning environmental guidance and regulation.
- Their views on extending the auditing profession to encapsulate environmental issues.
- The role of audit firms in verifying environmental reports.
- External auditor's ability to involve in environmental issues.
- Factors, which limit the external auditors' involvement in environmental auditing.

Table (7.17): Views on environmental guidance and regulation

| Views on environmental guidance and regulation | Big Firms | | | | Small Firms | | | |
|---|---|---|---|---|---|---|---|---|
| | N | Mean | SD | Coefficient Variation (SD/Mean) (%) | N | Mean | SD | Coefficient Variation (SD/Mean) (%) |
| -There is a need for separate auditing standards for environmental issues | 10 | 1.00 | 0.00 | 0.00 | 10 | 1.60 | 0.70 | 43.75 |
| -There is a need for separate financial reporting standards on environmental issues | 10 | 1.00 | 0.00 | 0.00 | 10 | 1.60 | 0.70 | 43.75 |
| -There is a need for a mandatory guidance from the professional accountancy bodies concerning environmental issues | 10 | 1.00 | 0.00 | 0.00 | 10 | 1.60 | 0.70 | 43.75 |
| -The professional accountancy bodies exams should include subjects to enhance environmental awareness | 10 | 1.30 | 0.67 | 51.5385 | 10 | 1.60 | 0.70 | 43.75 |
| -The professional accountancy bodies should require environmental disclosure by companies | 10 | 1.80 | 0.92 | 51.111 | 10 | 1.80 | 0.79 | 43.8889*(%)* |

A summary of the practitioners' views concerning environmental guidance is presented in Table (7.17) and Table 7.17a in appendix 7. They used a 3-point scale with the value of 1 indicating agree, 2 neutral and the value of 3 indicating disagree. All auditors in big firms agreed with the need for separate auditing standards and financial reporting standards for environmental issues, as well as mandatory environmental guidance. 50 % of auditors in small firms agreed with these issues.

Table (7.18): Views on extending the auditing profession to encapsulate environmental issues.

| Views on extending the auditing profession | Big Firms | | | | Small Firms | | | |
|---|---|---|---|---|---|---|---|---|
| | N | Mean | SD | Coefficient of variation (SD/Mean) (%) | N | Mean | SD | Coefficient of variation (SD/Mean) (%) |
| -The professional skills of external auditor can be raised to involve in environmental issues | 10 | 1.50 | 0.85 | 56.6667 | 10 | 2.00 | 0.67 | 33.5 |
| -There is a need for external auditors' awareness of environmental issues to be raised | 10 | 1.00 | 0.00 | 0.00 | 10 | 1.60 | 0.70 | 43.75 |
| -There is a need for making changes in auditors' education to be able to cope with environmental issues | 10 | 1.00 | 0.00 | 0.00 | 10 | 1.60 | 0.70 | 43.75 |
| -The accountancy bodies should provide a certification and appropriate training to qualify external auditor to conduct environmental auditing | 10 | 1.20 | 0.63 | 52.5 | 10 | 1.90 | 0.57 | 30 |

A summary of the practitioners' views concerning the extent of the auditing profession to encapsulate environmental issues is presented in Table (7.18) and Table 7.18a in appendix 7. Practitioners used a 3-point scale with the value of 1 indicating agree, the value of 2 neutral and the value of 3 indicating disagree. Practitioners were asked if the external auditors' skills can help them to involve in environmental issues. 70 % of practitioners in big firms indicated that external auditors can involve in environmental issues, only 20 % of practitioners in small firms agreed with this view. All practitioners in big firms agreed strongly with the need for increasing auditors' awareness of environmental issues and making changes in auditors' education. Only 50 % of practitioners in small firms agreed with these views. 90 % of the practitioners in big firms reported that the accountancy bodies should play a role in qualifying external auditors to conduct environmental auditing by providing a certification and appropriate training. Only 20 % of the practitioners in small firms agreed with this view. It can be argued that environmental awareness of practitioners in small firms is limited. They may not able to

recognize clearly environmental problems and their implications on the profession. Therefore, they are more likely to refuse any role for accountancy bodies concerning environmental issues because they may fear to be forced to deal with environmental issues, while they are not qualified to cope with environmental problems.

Table (7.19): Audit Firms and environmental issues

| Audit Firms and environmental issues | Big Firms | | | | Small Firms | | | |
|---|---|---|---|---|---|---|---|---|
| | N | Mean | SD | Coefficient of variation (SD/Mean) (%) | N | Mean | SD | Coefficient of variation (SD/Mean) (%) |
| -There is a role for large audit firms, which have environmental specialists in verifying environmental reports | 10 | 1.0 | 0.00 | 0.00 | 10 | 1.90 | 0.32 | 16.8421 |
| -There is a role for small audit firms in verifying environmental reports in liaison with environmental specialists | 10 | 1.7 | 0.67 | 39.4118 | 10 | 2.00 | 0.47 | 23.5 |

As shown in Table (7.19) and Table (7.19a) in appendix 7. Practitioners used a 3-point scale with the value of 1 indicating agree, the value of 2 neutral and the value of 3 indicating disagree. Practitioners were asked about the ability of both large and small audit firms to verify environmental reports. All practitioners in big firms agreed with the view that large audit firms have the ability to verify environmental reports, while, 10 % only of practitioners in small firms agreed with this view. 40 % of practitioners in big firms indicated that small firms, which have environmental specialist, could be able to verify environmental reports. Only 10 % of practitioners in small firms agreed with this view.

Table (7.20): The external auditor and environmental issues

| The external auditor and environmental issues | Big Firms | | | | Small Firms | | | |
|---|---|---|---|---|---|---|---|---|
| | N | Mean | SD | Coefficient variation (SD/Mean) (%) | N | Mean | SD | Coefficient variation (SD/Mean) (%) |
| -If environmental reports are inevitable, the external auditor should participate in verifying them | 10 | 1.60 | 0.97 | 60.625 | 10 | 2.40 | 0.7 | 29.1667 |
| -The public has a fundamental right to information about the environmental impact of companies | 10 | 1.10 | 0.32 | 29.0909 | 10 | 1.60 | 0.52 | 32.5 |
| -The external auditor should involve in the preparation of environmental information for public disclosure | 10 | 1.50 | 0.85 | 56.6667 | 10 | 2.40 | 0.70 | 29.1667 |

A summary of practitioners' views concerning the role of external auditors in environmental issues is presented in Table (7.20) and Table (7.20a) in appendix 7. Practitioners used a 3-point scale with the value of 1 indicating agree, the value of 2 neutral and the value of 3 indicating disagree. Practitioners were asked about the importance of the external auditor's participation in verifying environmental reports if these reports are inevitable. 70 % of the practitioners in big firms reported that this participation is necessary, while, 10 % of practitioners in small firms agreed with this view. 90 % of practitioners in big firms indicated that the public has a right to information about the environmental performance of companies. Only 40 % of practitioners in small firms agreed with this view. 70 % of practitioners in big firms reported that external auditors should be involved in the preparation of environmental information for the public. In small firms 10 % of the practitioners agreed with this view. It can be argued that practitioners in big firms are more enthusiastic to deal with the environmental issues than practitioners in small firms. This may be due to big firms having many resources, such as financial ability to appoint environmental specialists and other specialists, which may help them to participate in environmental issues.

Table (7.21): Factors, which limit external auditors' involvement in environmental auditing

| Factors which limit external auditors' involvement in environmental auditing | Big Firms | | | | Small Firms | | | |
|---|---|---|---|---|---|---|---|---|
| | N | Mean | SD | Coefficient Variation (SD/Mean) (%) | N | Mean | SD | Coefficient Variation (SD/Mean) (%) |
| -Lack of experience in environmental field | 10 | 4.20 | 0.92 | 21.9048 | 10 | 4.00 | 0.67 | 16.75 |
| -Lack of technical ability to solve environmental problems | 10 | 3.90 | 0.88 | 22.5641 | 10 | 4.00 | 1.25 | 31.25 |
| -The current qualification of external auditor is not appropriate and sufficient to cope with environmental problems | 10 | 3.90 | 0.74 | 18.9744 | 10 | 4.30 | 0.82 | 19.0698 |
| -Lack of professional guidance concerning environmental issues | 10 | 3.90 | 0.99 | 25.3846 | 10 | 4.10 | 0.74 | 18.0488 |
| -Defined role of external auditor does not include environmental auditing | 10 | 3.80 | 1.03 | 27.1053 | 10 | 3.80 | 0.79 | 20.7895 |
| -Lack of suitable training in the field of environmental auditing | 10 | 3.80 | 0.63 | 16.5789 | 10 | 4.60 | 0.70 | 15.2174 |
| -Lack of knowledge of environmental regulations | 10 | 3.30 | 1.49 | 45.1515 | 10 | 3.90 | 1.10 | 28.2052 |

As shown in Table (7.21), practitioners were asked to point the factors, which limit external auditors to involve in environmental auditing. They used a 5-point scale, with 1 representing no limitations and 5 representing maximum limitations. For practitioners in big firms, the highest mean score (4.20) of limiting factors was lack of experience in environmental field. There are three factors, which have the same mean score (3.90). These factors related to auditors' qualification and their technical ability, as well as,, lack of professional guidance related to environmental issues. For practitioners in small firms, the highest mean score (4.60) of limiting factors was lack of suitable training in environmental auditing. The second factor (mean score 4.30) was the current qualification of auditors is not sufficient to cope with environmental problems. It can be detected that there are some

differences in factors order, which limit the involvement of external auditors in environmental issues, among practitioners in both big and small audit firms, but there is a great consensus on existing these factors (as discussed in chapter 3).

***Thirdly the descriptive analysis of survey 3 (companies)***

48 companies conducted this survey. A background about respondents is presented in Table (7.22) (see appendix 7). Types of industry and companies' activities, which impact on the environment, are presented in Tables (7.23) and (7.24) (see appendix 7).

***(a)First attribute: environmental awareness in companies***

This attribute is presented from Table (7.25) to (7.29). Respondents were asked about the following matters:-

- The impact of environmental issues and regulation on companies.
- The group which is responsible for environmental issues in the company.
- The importance of the environmental issues today and from six years ago.
- The current environmental issues in companies.

Table (7.25): The impact of environmental issues and regulation on companies

| Companies make changes to protect the environment and compliance with regulation | Total | | Chemical | | Pharmacy | | Cement | | Petroleum | |
|---|---|---|---|---|---|---|---|---|---|---|
| | N | % | N | % | N | % | N | % | N | % |
| -Fixing filters | 19 | 39.6 | 1 | 2.1 | 3 | 6.3 | 12 | 25.0 | 3 | 6.3 |
| -Adding new equipment and replacing the old | 28 | 58.3 | 6 | 12.5 | 7 | 14.6 | 8 | 16.7 | 7 | 14.6 |
| -Putting in systems to treat waste | 24 | 50.0 | 6 | 12.5 | 6 | 12.5 | 4 | 8.3 | 8 | 16.7 |
| -None | 6 | 12.5 | 4 | 8.3 | 1 | 2.1 | - | - | 1 | 2.1 |
| * Some companies reported more than one change to protect the environment | | | | | | | | | | |

In Table (7.25), respondents were asked about if their companies made any changes to protect the environment and compliance with environmental laws. A number of companies made changes such as, fixing filters and adding new equipment and replacing

the old (especially, cement companies). The government actions in Egypt against these companies (e.g. fines and shut down) force them to do such changes.

Only 12.5 % of companies did not make any changes on their operations to protect the environment and compliance with laws.

Table (7.26): The group, which is responsible for environmental issues in the company

| What groups of your company are responsible for environmental issues? | Total | | Chemical | | Pharmacy | | Cement | | Petroleum | |
|---|---|---|---|---|---|---|---|---|---|---|
| | N | % | N | % | N | % | N | % | N | % |
| -Environmental committee | - | - | - | - | - | - | - | - | - | - |
| -Environmental affairs department | 33 | 68.8 | 5 | 10.4 | 9 | 18.8 | 7 | 14.6 | 12 | 25.0 |
| -Legal department | 1 | 2.1 | - | - | 1 | 2.1 | - | - | - | - |
| -Finance department | - | - | - | - | - | - | - | - | - | - |
| -Accounting and auditing department | - | - | - | - | - | - | - | - | - | - |
| -Management systems department | 10 | 20.8 | 3 | 6.3 | 2 | 4.2 | 5 | 10.4 | - | - |
| -None | 4 | 8.3 | 4 | 8.3 | - | - | - | - | - | - |
| *Some companies reported that responsibility for environmental issues is shared by more than one group | | | | | | | | | | |

As shown in Table (7.26), approximately 68.8 % of the respondents indicated that environmental affairs department was charged with the responsibility of environmental issues in their companies. 20.8 % of the respondents indicated that management systems department was responsible for these issues.

Table (7.27): The importance of the environmental issues

| -How are important environmental issues for companies? | *N* | *Mean* | *SD* | *Coefficient of Variation (SD/Mean) (%)* |
|---|---|---|---|---|
| -Importance of environmental protection issues today | 48 | 3.54 | 0.92 | 26.0208 |
| -Importance of environmental protection from six years ago | 48 | 1.58 | 0.79 | 50.1780 |

Respondents were asked how important they considered environmental issues to their companies today, as well as, how important the environmental issues were from six years ago. A 5-point scale was used, where 1 indicated of no importance and 5 indicated of maximum importance. As shown in Table (7.27), respondents were more likely to agree that environmental issues have a great importance now (mean score 3.54), they were more likely to agree that these issues had a small importance from six years ago (mean score 1.58).

Table (7.28): Current environmental issues in companies

| Questions | N | Percentage (%) |
|---|---|---|
| Does your company have a written environmental policy statement? | | |
| -Yes | 29 | 60.4 |
| -No | 19 | 39.6 |
| -When was the environmental policy statement issued? | | |
| -This year | 8 | 16.7 |
| -From two years | 9 | 18.8 |
| -More than two years but less than ten | 12 | 25.0 |
| -More than ten years | - | - |
| Who set environmental statement inside your company? | | |
| -Board of directors | 28 | 58.3 |
| -Management systems department | - | - |
| -Environmental affairs department | 15 | 31.3 |
| -Legal department | - | - |
| -Finance department | 1 | 2.1 |
| -Accounting and auditing department | - | - |
| Is there a separate budget for environmental issues in your company? | | |
| -Yes | 17 | 35.4 |
| -No | 31 | 64.6 |
| How much is this budget, annually? | | |
| -10000 but less than 100000 Egyptian Pounds(EP) | 17 | 35.4 |
| -100 000 but less than one million EP | - | - |
| - More than one million EP | - | - |
| Have any of the following staff appointments been made or planned in connection with environmental audits? | | |
| -The environmental consultancy firms | 2 | 4.2 |
| -Environmental specialists | 6 | 12.5 |
| -External auditor | - | - |
| -Internal auditing staff | - | - |
| -Researcher | - | - |
| -Manager of management systems department | 2 | 4.2 |
| -No new appointments | 39 | 81.3 |

As shown in Table (7.28) respondents were asked about the current environmental issues in their companies. Approximately 60 % of companies have issued written environmental policy statements. 25 % of companies with written environmental policy statements issued the statements from more than two years but less than ten years. 58.3 % of respondents reported that the board of directors set environmental statement in their companies and 31.3 % the statement was stated by environmental affaires department.

35 % of respondents indicated that their companies have a separate budget for environmental issues. Respondents were asked whether their companies have been made any appointments in connection with environmental audits. 81.3 % of respondents reported that no new appointments. The external auditor has not been chosen by any respondents to participate in planning environmental audits in companies.

It can be reported that a number of companies made changes in their operations to comply with environmental law and they provide a sign for the increase of their awareness towards the environment. The environmental awareness of companies still needs to be raised.

***(b) Second attribute: environmental auditing***

This attribute is presented from Table (7.29) to (7.34). Respondents were asked about the following matters:-

- The types of environmental audits, which their companies conducted.
- Personnel conducting environmental audits (internal - external - both).
- External personnel who conducts environmental audits in their companies.
- Internal personnel who conducts environmental audits in their companies.
- The potential advantages of environmental audits.
- The potential disadvantages of environmental audits.

Table (7.29): Types of environmental audits conducted

| Areas Audited | N | Percentage (%) |
|---|---|---|
| -Compliance with environmental laws and reporting requirements | 28 | 58.3 |
| -Compliance with company environmental policies and procedures | 9 | 18.8 |
| -Environmental management systems | 23 | 47.9 |
| -The company's programs for the treatment, storage or disposal of hazardous wastes or pollution prevention | 19 | 39.6 |
| -Transactional audits | - | - |
| -Financial accounting for environmental liabilities | 7 | 14.6 |
| -None | 7 | 14.6 |

N: numbers of environmental audits conducted.

N.B: Some companies reported more than one type of environmental auditing

As shown in Table (7.29), respondents were asked if their companies conducted any types of environmental audits. 58.3 % of companies indicated that their companies conducted environmental auditing in area of compliance with environmental laws and reporting requirements. Approximately, 15 % of respondents indicated that their companies did not conduct any type of environmental audits.

Table (7.30): Personnel conducting environmental audits (Internal-External- Both)

| Personnel conducting environmental audits | Total | External | | Internal | | Both | |
|---|---|---|---|---|---|---|---|
| | N | N | % | N | % | N | % |
| -Compliance with environmental laws and reporting requirements | 28 | 9 | 18.8 | - | - | 19 | 39.6 |
| -Compliance with company environmental policies and procedures | 9 | - | - | 5 | 10.4 | 4 | 8.3 |
| -Environmental management systems | 22 | 2 | 4.2 | 7 | 14.6 | 13 | 27.1 |
| -The company's programs for the treatment, storage or disposal of hazardous wastes or pollution prevention | 19 | 5 | 10.4 | 3 | 6.3 | 11 | 22.9 |
| -Transactional audits | - | - | - | - | - | - | - |
| -Financial accounting for environmental liabilities | 7 | - | - | 1 | 2.1 | 6 | 12.5 |

As shown in Table (7.30), respondents were asked about whom conducted environmental audits in their companies. Respondents indicated that both internal and external personnel participated in environmental audits. Then, in Table (7.31), respondents were asked to determine external personnel who conducted environmental audits in their companies.

Table (7.31): External personnel conducts environmental audits

| **External personnel who conducts environmental audits in companies** | N | Percentage (%) |
|---|---|---|
| - The environmental consultancy firms | 3 | 6.3 |
| - External auditor | 12 | 25.0 |
| - Governmental agencies | 35 | 72.9 |
| - Environmental protection agencies | - | - |
| - Environmental specialist | 4 | 8.3 |
| **To whom do external personnel report upon environmental issues** | N | Percentage (%) |
| - Board of directors | 37 | 77.1 |
| - Senior managers | - | - |
| - Manager of environmental health and safety department | - | - |
| - Legal department | - | - |
| - The public | - | - |
| - Chief executive officer | 1 | 2.1 |
| - The director of finance | - | - |
| *Some companies reported more than external personnel conducted environmental audits | | |

Approximately 73 % of respondents indicated that governmental agencies conducted environmental audits in their companies. As well as, 25 % of respondents indicated that external auditor participated in environmental audits in their companies. Respondents were asked to identify to whom external personnel reported upon environmental issues. Approximately 77 % of respondents indicated that external personnel provided their report to the board of directors in their companies.

Table (7.32): Internal personnel conducts environmental audits

| Internal personnel who conducts environmental audits in companies | N | Percentage (%) |
|---|---|---|
| - Group of internal auditors | 15 | 31.3 |
| - Legal department | - | - |
| -The accounting and auditing staff inside the company | 7 | 14.6 |
| - The environmental management systems staff | 29 | 60.4 |
| - The management system departments | 7 | 14.6 |
| *Some companies reported more than internal personnel conducted environmental audits. | | |

As shown in Table (7.32), respondents were asked to identify internal personnel who conducted environmental audits in their companies. 60. 4 % of companies reported that the environmental management systems staff conducted environmental audits in their companies. Approximately 31 % of respondents reported that group of internal auditors conducted environmental audits in their companies

Table (7.33): The potential advantages of environmental auditing

| The potential advantages of environmental auditing | *N* | *Mean* | *SD* | *Coefficient of Variation (SD/Mean) (%)* |
|---|---|---|---|---|
| -Reduction of fines for non-compliance with environmental regulations | 48 | 3.75 | 0.98 | 26.0931 |
| -Demonstrate that a company is operating according to the requirements of environmental laws | 48 | 3.71 | 0.85 | 22.9076 |
| -Create a good corporate image | 48 | 3.65 | 1.06 | 29.1210 |
| -Increased assurance of the adequacy of financial accruals for environmental liabilities | 48 | 3.48 | 1.03 | 29.6395 |
| -Publicise the commitment to environmental regulation | 48 | 3.40 | 0.89 | 26.2966 |
| -Increased early identification of issues and problems | 48 | 3.40 | 1.09 | 31.9941 |
| -Reduction of long term environmental risks | 48 | 3.38 | 0.98 | 29.0728 |
| -Increased company awareness of environmental issues | 48 | 3.19 | 1.27 | 39.7132 |
| -Cost savings from waste minimisation and pollution prevention | 48 | 2.92 | 0.94 | 32.2819 |
| -Increased environmental protection | 48 | 2.56 | 0.99 | 38.5282 |

A summary of the respondents' perceptions of the magnitude of the potential advantages of environmental auditing is presented in Table (7.33). The respondents used a 5-point scale, with the value of 1 indicating no advantage and the value of 5 indicating maximum advantage. The list of 10 potential advantages is presented in descending order based on the mean scores, which ranged from 3.75 to 2.56. Three potential advantages had a mean exceeding the value 3.60. Reduction of fines for non-compliance with environmental regulations was reported as the greatest potential advantages (mean score is 3.75).

Companies may seek to avoid regulatory action and financial losses by conducting these audits. Demonstrating that a company is operating according to the requirements of environmental laws was reported as the second greatest potential advantages (mean score is 3.71). Companies may attempt to affect community perceptions about their operations by confirming these operations are environmentally friendly. Create a positive image was the

third greatest potential advantages (mean score is 3.65). The lowest potential advantage of environmental audits was the increase of environmental protection (mean score is 2.56).

It can be argued that companies may not really care about the environment, but they are forced by regulations in Egypt to do so. They fear from regulatory actions and loss of the public trust, therefore, they may take some steps to protect the environment.

Table (7.34): The potential disadvantages of environmental audits

| The potential disadvantages of environmental auditing | *N* | *Mean* | *SD* | *Coefficient of Variation (SD/Mean) (%)* |
|---|---|---|---|---|
| - Lack of Financial and /or technical ability to solve environmental problems | 48 | 4.02 | 0.96 | 23.7829 |
| - Use of environmental auditing reports against the company in regulatory enforcement action | 48 | 3.98 | 0.84 | 21.0513 |
| - Loss of public trust if environmental problems are discovered | 48 | 3.31 | 0.95 | 28.6437 |
| - Decreased market share of company if environmental problems are discovered | 48 | 3.10 | 0.95 | 30.6263 |
| - Increase the cost of auditing processes | 48 | 3.00 | 1.09 | 36.3851 |

A summary of the respondents' assessment of the magnitude of the potential disadvantages of environmental audits is presented in Table (7.34). The respondents used a 5-point scale with the value of 1 representing no disadvantages and the value of 5 representing maximum disadvantages. Only two potential disadvantages had a mean score exceeded the value of 3.90. Lack of financial and/or technical ability to solve environmental problems was the greatest disadvantages (mean score is 4.02). Use of environmental auditing reports against the company in regulatory enforcement action was the second mean score of 3.98.

It can be argued that companies face a number of barriers to conduct environmental auditing, because their lack of the requirements of environmental reports (these requirements were discussed in chapter 4). Respondents reported that the largest potential advantage of an environmental audit is a reduction in fines for non-compliance with environmental regulation. The greatest disadvantage of environmental audits is the lack of financial and technical ability to solve environmental problems.

*(c) Third attribute: the external auditor's involvement in environmental auditing*

This attribute is presented in Table (7.35). Respondents were asked about the following matters:-

- The extent of external auditor's role in environmental auditing in their companies.
- Their expectation concerning the involvement of external auditor in environmental auditing in their companies in the future.
- Their views concerning who should perform environmental auditing.

Table (7.35): The financial auditor's role in environmental auditing

| Questions | N | Percentage (%) |
|---|---|---|
| - What is the extent of external auditor's role in environmental auditing in your company? | | |
| - No involvement | 35 | 72.9 |
| - Small involvement | 9 | 18.8 |
| - Moderate involvement | 4 | 8.3 |
| - Great involvement | - | - |
| - Maximum involvement | - | - |
| - Do you expect external auditor to become more involved in environmental auditing in your company in the future? | | |
| - Yes | 29 | 60.4 |
| - No | 19 | 39.6 |
| - Do you think environmental audits should be conducted using:- | | |
| - Existing staff | 11 | 22.9 |
| - New specialist staff | 11 | 22.9 |
| - External auditor | - | - |
| - A combination of the above | 28 | 58.3 |

The respondents' descriptions of the third attribute of research (the external auditor's involvement in environmental auditing) are summarized in Table (7.35). Respondents were asked about the extent of external auditor's role in environmental auditing in their companies. Approximately, 73 % of respondents reported that external

auditor did not involve in environmental audits in their companies. 18.8 % of respondents indicated that there was small involvement of the external auditor in environmental audits in their companies. Respondents were asked about their views concerning whether they expect an external auditor to become more involved in environmental audits in their companies in the future. Approximately, 60 % of respondents expected external auditor to become more involved in environmental audits in their companies. About 40 % of respondents expected that no extent of external auditor's role in environmental audits. Finally, respondents were asked about their views concerning who should perform environmental auditing. 58.3 % of respondents reported that environmental auditing should be conducted by using a combination of existing staff in companies, new specialist staff in environmental matters, and an external auditor. In other words, respondents indicated that environmental auditing needs a multidisciplinary team (as discussed in chapter 3). External auditor was not selected alone to perform environmental auditing by any respondents. The above results indicated that the current role of the external auditor concerning environmental issues in Egypt is limited. Consistent with the results of the descriptive analysis of surveys, it can be argued that these results support the subsidiary hypotheses of the research, as presented in Table (7.36).

Table (7.36): A summary of the results of the descriptive analysis of surveys

| *The hypotheses of research (H)* | *Survey 1 Researchers* | *Survey 2 Practitioners* | *Survey 3 Companies* |
|---|---|---|---|
| ***$H_1$: Companies cannot ignore the impact of environmental issues on business, especially in the light of the environmental laws and regulations*** | | | Table (7.25)<br>Table (7.26)<br>Table (7.27)<br>Table (7.28) |
| ***$H_2$: Legitimacy theory may help to explain companies' motivations for environmental disclosure*** | Table (7.3)<br>Table (7.4)<br>Table (7.5) | Table (7.14)<br>Table (7.15)<br>Table (7.16) | Table (7.33)<br>Table (7.34) |
| ***$H_3$: The current external auditor's role concerning environmental issues in Egypt is limited and there are some constraints on extending this role to encapsulate environmental issues.*** | Table (7.1)<br>Table (7.2)<br>Table (7.6)<br>Table (7.7)<br>Table (7.8)<br>Table (7.9)<br>Table (7.10) | Table (7.11)<br>Table (7.12)<br>Table (7.13)<br>Table (7.17)<br>Table (7.18)<br>Table (7.19)<br>Table (7.20)<br>Table (7.21) | Table (7.30)<br>Table (7.31)<br>Table (7.32)<br>Table (7.35) |

These hypotheses can help to support the central proposal of research, which is "the level of demand for environmental auditing may impact on auditors' participation in environmental auditing". Additional statitistical analysis (factor analysis-correlation and regression analysis) is presented in the next chapter to examine the central proposal.

## Summary

This chapter included a discussion about the results of descriptive analysis of surveys. A number of companies made changes in their operations to protect the environment and comply with environmental laws in Egypt. They cannot ignore the impact of environmental issues on their business. However, Environmental audits in companies are limited and the involvement of external auditors is also limited. Researchers and practitioners indicated that external auditors face constrains to participate in environmental auditing. They perceived that legitimacy theory may help to explain companies' motivations for environmental disclosure.

# Chapter 8

# Further Analysis of Surveys (Factor Analysis- Correlation and Regression Analysis)

## 1. Introduction

This chapter is devoted to present additional statistical analysis of surveys. The factor analysis was employed to reduce variables. Then, the relationship between obstacles to the external auditor's involvement in environmental auditing and other variables (first attribute: environmental awareness and second attribute: environmental auditing) were examined by a means of correlation analysis of first and second surveys. Survey 3 examines the relationship between the external auditor's involvement in environmental auditing and other variables.

The Pearson correlation coefficient is a measure of the degree of closeness of the linear relationship between two variables (Snedecor and Cochran, 1971; Weisberg, 1985; Rice, 1995). It determines how much does variation in one variable relates to variation in another variable and what is the shape of the relation between the two variables. These aspects are handled by regression analysis (Rice, 1995; Snedecor and Cochran, 1971; Bowen and Starr, 1982; Jaccard et al., 1990). The purpose of the regression analysis is further description not prediction, for the relationship between the third attribute in surveys and other variables. Stepwise regression analysis was used as a tool to assist in selecting the independent variables for the models.

This chapter includes the results of factor analysis of surveys. The correlation analysis of surveys is presented. The descriptive regression models of surveys were designed.

## 2. The results of factor analysis of surveys

### *The factor analysis of survey 1*

The purpose of factor analysis is to discover simple patterns of relationships among the variables. In particular, it seeks to discover if the observed variables can be explained in terms of a smaller number of variables called factors (Stapleton, 2002; Rowe, 2002; Morrison, 1990; Truker and Maccallum, 2002; Kim and Mueller, 1978; Kline, 1994; Reymont and Joreskog, 1993; Stevens; 1992). Gorsuch (1983) argues that factor analysis is used to show how the variables cluster together, i.e., the variables are correlated with one another. It attempts to simplify the correlation matrix by accounting for a large number of relationships with a smaller number of explanatory constructs (i.e., factors) (Hetzel (1995) as quoted Stapleton, 2002).

"Factor analysis attempts to express each variable as the sum of common and unique portions. The common portions of all the variables are by definition fully explained by the common factors, and the unique portions are ideally perfectly uncorrelated with each other" (Darlington, 2002, p. 5). The aim of using factor analysis in this study was mentioned in chapter 7.

Factor analysis was used to reduce the sets of variables in the following matters of researchers' responses as follows:-

*(a) Types of environmental audits conducted by researchers.*

*(b) The potential advantages of environmental auditing.*

*(c) The potential disadvantages of environmental auditing.*

*(d) Companies' motivations for environmental disclosure.*

*(e) Factors limit external auditor's involvement in environmental audits.*

The results of factor analysis of survey 1 are presented from Table (8.1) to (8.5).

***(a) Types of environmental audits conducted by researchers.***

Researchers were asked to indicate the types of environmental audits, which they conducted. Factor analysis was used to reduce the set of 6 types of audits into three composite factors. The results are presented in Table (8.1).

Table ( 8.1): Types of environmental audits

| Areas audited (variables) | ***Factor 1*** | ***Factor 2*** | ***Factor 3*** |
|---|---|---|---|
| | ***Environmental liabilities*** | ***Compliance with regulation*** | ***Environmental systems*** |
| Financial accounting for environmental risks and liabilities | 0.9971 | | |
| Compliance with environmental laws and reporting requirements | | 0.94865 | 0.31186 |
| Environmental management systems | | 0.31298 | 0.94739 |
| Eigenvalue | 1.64597 | 0.95034 | 0.40370 |
| Percent of variance | 54.9 | 31.7 | 13.5 |
| Percent of total variance | 54.9 | 86.5 | 100.0 |

Types of environmental audits were loaded on three factors. Factor 1 represents environmental liabilities, which reflects how to recogise, quantify and report liability accruals for environmental issues. Factor 2 represents compliance with regulation, which reflects the most common type of environmental audits because of the potential liabilities of environmental violations. Factor 3 represents environmental systems, which explains environmental management system auditing reflecting whether a company's systems operate properly to manage future environmental risks. The loading listed under the factor headings represent a correlation between that item and the overall factor. Like Pearson correlations, they range from -1 to 1 (Darlington, 2002; Rowe, 2002). The number (0.9971) in the first column express the correlation between the variable "financial accounting for environmental risks and liabilities" and factor 1 (environmental liabilities). It can be observed that the variable "compliance with environmental laws and reporting requirements" has two correlations with factor 2 (0.94865) and factor 3 (0.31186). Because this variable is closely related to factor 2 (0.94865 > 0.31186), it is loaded on factor 2. Also, the variable "environmental management systems" loaded on factor 3 (0.94739 > 0.31298). An Eigenvalue is the amount of variance explained by factors (Stapleton, 2002; Morrison, 1990; Truker and Maccallum, 2002; Darlington, 2002). The Eigenvalue (1.64597) in the first column represents the amount of variance explained by factor 1, which accounted for 54.9 % of the variance in the original set of variables.

***(b) Potential advantages of environmental audits***

Researchers were asked to indicate the potential advantages of conducting environmental audits. The results of the factor analysis of the variables measuring the magnitude of the potential advantages of conducting environmental audits are presented in Table (8.2).

Table (8.2): The potential advantages of environmental auditing

| The potential advantages of environmental auditing (Variables) | ***Factor 1*** ***Protection and benefits*** | ***Factor 2*** ***Environmental risks*** | ***Factor 3*** ***Legitimacy of a company*** |
|---|---|---|---|
| -Increased environmental protection | 0.81800 | | |
| -Cost savings from waste minimization and pollution prevention | 0.76802 | | |
| -Increased early identification of issues and problems | 0.72638 | 0.38072 | |
| -Increased assurance of the adequacy of financial accruals for environmental liabilities | | 0.83813 | |
| -Reduction of fines for non-compliance with environmental regulations | | 0.81248 | |
| -Reduction of long-term environmental risks | | 0.54369 | |
| -Increased company awareness of environmental issues | 0.48713 | 0.49858 | |
| -Publicise the commitment to environmental regulation | | | 0.78693 |
| -Demonstrate that a company is operating according to the requirements of environmental law | 0.32996 | | 0.77284 |
| -Create a good corporate image | | | 0.66792 |
| Eigenvalue | 3.82897 | 1.40560 | 1.10674 |
| Percent of Variance | 38.3 | 14.1 | 11.1 |
| Percent of total Variance | 38.3 | 52.3 | 63.4 |

Factor analysis was used to reduce the set of advantages of environmental auditing into three composed factors. Using the minimum Eigenvalue of one criterion,

three factors were retained according to Kaiser criterion (Stapleton, 2002; Kim and Muller, 1978; Stevens, 1992).

The first factor is marked by high loadings on "protection and benefits" items, the second factor is marked by high loadings on "environmental risks" items and the third factor loaded on "legitimacy of a company" items. The numbers of columns (such as, 0.81800, 0.76802 and 0.72638) in first column represent the correlation between factor 1 and each variable loaded on this factor. It can be observed that the variable "increased company awareness of environmental issues" is related to factor 1 (0.48713) and factor 2 (0.49858) but it has high factor loading on the factor 2.

### *(c) Potential disadvantages of environmental audits*

Researchers were asked to indicate the potential disadvantages of conducting environmental audits. The list of 5 disadvantages was used. The results of the factor analysis of the variables measuring the magnitude of these disadvantages are presented in Table (8.3). Using the minimum Eigenvalue of one criterion, two factors were retained.

Table (8.3): The potential disadvantages of environmental audits

| Potential disadvantages of environmental auditing | ***Factor 1*** ***The sustainability of a company*** | ***Factor 2*** ***The limited demand for environmental auditing*** |
|---|---|---|
| -Loss of public trust if environmental problems are discovered | 0.89436 | |
| -Decrease market shares of company if environmental problems are discovered | 0.82428 | |
| -Increased the cost of auditing processes | 0.41106 | |
| -Use of environmental auditing reports against the company in regulatory enforcement action | | 0.82200 |
| -Lack of financial and/or technical ability to solve environmental problems | | 0.78456 |
| Eigenvalue | 1.68220 | 1.34042 |
| Percent of Variance | 33.6 | 26.8 |
| Percent of total Variance | 33.6 | 60.5 |

The potential disadvantages of environmental auditing are composed into two aspects. "the sustainability of a company" is factor 1 and "the demand for environmental auditing" is factor 2. The Eigenvalue of factor 1 (1.6822) represents 33.6 % of the variance in the original set of variables. Factor 1 reflects aspects relating to corporate image or reputation. Factor 2 reflects the reasons, which make company prefers not to conduct environmental auditing.

***(d) Companies' motivations for environmental disclosure***

Researchers were asked to indicate companies' motivations for environmental disclosure. The results of the factor analysis of the variables measuring the magnitude of these motivations are presented in Table (8.4). Using the minimum Eigenvalue of one criterion, three factors were retained.

Table (8.4): Companies' motivations for environmental disclosure

| Companies' motivations for environmental disclosure | ***Factor 1*** ***Publicising regulatory compliance*** | ***Factor 2*** ***The corporate image*** | ***Factor 3*** ***Marketing benefits*** |
|---|---|---|---|
| -To demonstrate regulatory compliance<br>-To communicate information on company's behavior towards environmental issues.<br>-To publicise their commitment to improving environmental performance. | 0.83376<br>0.76611<br>0.55425 | | 0.45864 |
| -To publicise the commitment to environmental regulation<br>-To improve the image or reputation of the company<br>-To confirm the operating practices are performed according to environmental laws.<br>-To differentiate the organization from its competitors. | 0.39246 | 0.81382<br>0.68484<br>0.56754<br>0.55394 | 0.45235 |
| -To reduce long-term environmental risks.<br>-To gain the marketing benefits arising from reputation for environmental protection. | 0.48720 | | 082152<br>0.59484 |
| Eigenvalue | 2.44445 | 1.65294 | 1.23058 |
| Percent of Variance | 27.2 | 18.4 | 13.7 |
| Percent of total Variance | 27.2 | 45.5 | 59.2 |

Factor 1 represents publicising regulatory compliance, factor 2 represents the corporate image and factor 3 represents marketing benefits. The numbers in columns express the correlation between variables and factors. A number of variables have correlation with more factor. For example, the variable "to publicise their commitment to improving environmental performance" relates to factor 1 (0.55425) and factor 3 (0.45864) but it loaded on factor 1. Factor 1 explains a company's actions to avoid regulatory actions by governmental agencies. Factor 2 reflects companies' motivations to create a positive image. Factor 3 reflects the benefits, which a company can gain by its commitment to improve environmental performance.

***(e) Factors limit the external auditors' involvement in environmental audits***

Researchers were asked to indicate factors limit an external auditor's participation in environmental audits. The list of 7 factors was used. The results of factor analysis of the variables measuring the magnitude of these factors are presented in Table (8.5). Using the minimum Eigenvalue of one criterion, two factors were retained.

Table (8.5): Factors limit the external auditors' involvement in environmental audits

| Factors limit external auditor's involvement in environmental audits | ***Factor 1*** ***Lack of environmental audits requirements*** | ***Factor 2*** ***The qualification of auditors*** |
|---|---|---|
| -Lack of experience in environmental field. | 0.82623 | |
| -Defined role of external auditor does not include environmental auditing. | 0.69617 | |
| -Lack of technical ability to solve environmental problems. | 0.60603 | 0.57295 |
| -Lack of knowledge of environmental regulations. | 0.51783 | 0.41475 |
| -Lack of professional guidance concerning environmental issues. | 0.38975 | 0.36655 |
| -The current qualification of external auditor is not appropriate and sufficient to cope with environmental problems. | | 0.81250 |
| -Lack of suitable training in the field of environmental auditing. | | 0.68924 |
| Eigenvalue | 2.50909 | 1.26836 |
| Percent of Variance | 35.8 | 18.1 |
| Percent of total Variance | 35.8 | 54.0 |

Lack of environmental audits requirements items loaded on factor 1 and the qualification of auditors items loaded on factor 2. It can be observed that three variables have to correlations with factor 1 and factor 2 but they loaded on factor 1 (0.60603 > 0.57295; 0.51783 > 0.41475; 0.38975 > 0.36655). Both factor 1 and factor 2 reflects obstacles to auditors' participation in environmental auditing as discussed in chapter (3).

It can be observed that the factor analysis of survey 1 reduced the original set of variables from 37 variables into 11 composite factors, which will be used in the correlation and regression analysis of survey 1.

It can be observed that Tables (8.1) to (8.5) attempt to reduce the number of variables in specific questions, which are used in correlation analysis to describe barriers face auditors to take part in environmental auditing.

***The factor analysis of survey 2***

The results of factor analysis of survey 2 are presented in appendix 8 (Table 8.6 to 8.10). The results show that the factor analysis of survey 2 reduced the original set of variables from 37 variables into 13 composite factors, which were used in the correlation and regression analysis of survey 2. These factors are:-

-Types of environmental audits: factor 1 (environmental systems and compliance), factor 2 (environmental liabilities), and factor 3 (environmental policies).

-Potential advantages of environmental auditing: factor 1 (environmental risks), factor 2 (legitimacy of a company), factor 3 (the corporate image).

-Potential disadvantages of environmental auditing: factor 1 (the limited demand for environmental auditing), and factor 2 (the sustainability of a company).

-Companies' motivations for environmental disclosure: factor 1 (publicising regulatory compliance), factor 2 (competitive advantages), and factor 3 (environmental awareness).

-Factors limit external auditor's involvement in environmental audits: factor 1 (expertise in environmental areas), and factor 2 (lack of environmental audits requirements).

***The factor analysis of survey 3***

The results of factor analysis of survey 3 are presented in appendix 8 (Table 8.11 to 8.13). The results show that the factor analysis of survey 3 reduced the original set of variables from 21 variables into 8 composite factors, which were used in the correlation and regression analysis of survey 3. These factors are:-

-Types of environmental audits: factor 1 (compliance with regulation), factor 2 (environmental liabilities and systems), and factor 3 (the company's environmental program).

-Potential advantages of environmental auditing: factor 1 (the corporate image), factor 2 (environmental risks), and factor 3 (legitimacy of a company).

-Potential disadvantage of environmental auditing: factor 1 (the sustainability of a company), and factor 2 (the limited demand for environmental auditing).

## 3. The Correlation and regression analysis of surveys

***The correlation and regression analysis of survey 1 (researchers)***

***The correlation analysis of survey 1***

The Pearson correlation focused on the relationship presented in the first column of each of the matrices (the dependent variable), which is the researchers' evaluation of the external auditor's role in environmental auditing and obstacles to the extent of this role, and other variables. Correlation coefficient is used to describe the strength of the relationship between two variables. It is a number between –1 and 1 (inclusive) that measures how closely a set of data points tends to cluster about the regression line. If the correlation coefficient is close to + 1, then the variables have a strong positive relationship. If it is close to – 1, then there exists a strong negative relationship. If it is near 0, then little or no relationship exists (Mendenhall and Sincich, 1992). The analysis included two matrices as follows:-

(a)The first matrix presents the relationship between the dependent variable in the first column of matrix and the independent variables, which are researchers' awareness of the impact of environmental issues on the financial statements of companies.

Table (8.14) Correlation between the obstacles to the external auditor's involvement in environmental auditing and the environmental awareness of researchers

| First attribute: environmental awareness | Obstacles to the external auditor's involvement in environmental auditing | Actual impact on financial statements | Potential impact on financial statements | Affected areas of financial statements , e.g., valuation of land |
|---|---|---|---|---|
| -Environmental issues have an actual impact on the financial statements of companies. | -0.449** | | | |
| -environmental issues have a potential impact on the financial statements of companies. | -0.384** | 0.672** | | |
| -Environmental issues impact on some areas of financial statements e.g., valuation of land, fixed assets, stock and depreciation policy. | -0.402** | 0.807** | 0.807** | |
| *Significance level of ** P = 0.01, * P= 0.05* | | | | |

The correlation coefficients indicating the association between the dependent variable and the independent variables are presented in Table (8.14). The strongest association with the dependent variable was researchers' awareness of the actual impact of environmental issues on companies' statements, with a correlation of 0.449. There is a negative association between environmental awareness of auditors and obstacles to their participation in environmental auditing. This due to the environmental awareness of auditors is limited. The increase environmental awareness of auditors the decrease obstacles to their involvement in environmental auditing. Environmental awareness of auditors should be raised to solve one of problems, which limit their roles in environmental auditing.

***(b) The second matrix***

The matrix presents of the correlation between the obstacles to the external auditor's involvement in environmental auditing (third attribute), which represents the dependent variable in the first column of the matrix, and environmental auditing variables (second attribute), which represent the independent variables, as in Table (8.15).

| Table (8.15) Correlation between the obstacles to external auditor's involvement in environmental auditing and environmental auditing variables (second attribute) | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Second attribute:- Environmental auditing | Obstacles to external auditors' involvement in environmental auditing | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) |
| -Types of environmental audits (factor scores):- (1) Environmental liabilities | -0.361** | | | | | | | | | | | |
| (2) Compliance with regulation | -0.309** | 0.596** | | | | | | | | | | |
| (3) Environmental systems | -0.210* | 0.117 | 0.138 | | | | | | | | | |
| -Potential advantages of environmental auditing (factor scores):- (4) Protection and benefits | 0.372** | -0.054 | -0.123 | -0.113 | | | | | | | | |
| (5) Environmental risks | 0.183* | -0.008 | 0.013 | 0.109 | 0.52** | | | | | | | |
| (6)Legitimacy of a company | 0.189* | 0.056 | 0.039 | 0.114 | 0.32** | 0.457** | | | | | | |
| -Potential disadvantages of environmental auditing (factor scores):- (7) The sustainability of a company | 0.159 | 0.039 | -0.032 | 0.018 | 0.055 | 0.158 | 0.108 | | | | | |
| (8) The demand for environmental auditing | -0.216* | -0.052 | 0.062 | -0.003 | -0.283** | -0.166* | -0.134 | -0.062 | | | | |
| -Companies' motivations for environmental disclosure (factor scores):- (9) Publicising regulatory compliance | 0.043 | -0.122 | -0.166* | -0.076 | 0.211* | 0.419** | 0.226* | 0.059 | -0.092 | | | |
| (10) The corporate image | -0.047 | 0.138 | 0.197* | 0.089 | -0.033 | 0.013 | 0.141 | 0.049 | 0.062 | 0.136 | | |
| (11) Marketing benefits | -0.283** | 0.138 | 0.169* | 0.165* | -0.025 | 0.146 | 0.046 | 0.049 | -0.047 | 0.357* | 0.14 | |
| *Significance level of ** P = 0.01, * P = 0.05* | | | | | | | | | | | | |

As shown in Table (8.15), the factor scores reflecting the types of environmental audits reported negative correlations with the dependent variable. The external auditors' lack of expertise in environmental areas is an essential barrier limiting the auditor from being involved in environmental audits. Consequently, if auditors' experience of environmental issues increases, this may reduce obstacles to their contribution in these audits.

On the other hand, positive correlations were reported between the factor scores reflecting the potential advantages of environmental auditing and the dependent variable. Despite environmental audits' benefits of companies, a number of companies are still unwilling to conduct these audits. They think that the best way to keep their reputation, and avoid environmental risks, is to ignore environmental issues, which may reduce the level of demand for environmental auditing.

The factor scores reflecting the potential disadvantages of environmental auditing had two different correlations as follows:-

-The first factor, the sustainability of a company, reported a positive correlation with the dependent variable. As previously discussed, some companies prefer not to engage in environmental audits.

-The second factor, the limited demand for environmental auditing, reported a negative correlation with the dependent variable. One of the most important problems, which face companies in conducting environmental audits, is their lack of financial and technical ability to solve environmental problems. These problems may need a multidisciplinary team, such as, environmental specialist, engineer, accountant, and external auditors. If the demand for environmental audits increases, this may help to reduce one of the most barriers limiting auditors' contribution in environmental auditing.

The factor scores reflecting companies' motivations for environmental disclosure had two different correlations as follows:-

-The first factor, publicising regulatory compliance, reported a positive correlation with the dependent variable. This may be due to some companies announce their compliance with regulations, but the regulations in Egypt, which are recently constructed, (see Appendix 4), still cannot force all companies to conduct environmental audits. These companies may

prefer not to conduct these audits to avoid regulatory action, if environmental problems are discovered.

-The other two factors, the corporate image and marketing benefits, reported negative correlations with the dependent variable. A number of companies are aware of the importance of publicising their responsibility towards the environment and the benefits, which they may gain from that. They may publicise their commitment to improve environmental performance by conducting environmental auditing. These companies seek to create a positive image by differentiating themselves against their competitors to get marketing benefits. This may increase the demand for environmental auditing services.

Table (8.14) and (8.15) describe the impact of environmental awareness and the nature of environmental auditing on auditors' participation in environmental auditing.

***The regression model of survey 1***

Designing the descriptive model of survey 1 was based on the following procedures:-

The variables presented in the two correlation matrices in Table (8.14) and (8.15) comprised the initial set of potential independent variables. These variables included the first attribute environmental awareness and second attribute environmental auditing. In the selection of the independent variables for the regression model, stepwise regression was used. The missing values for any variable in the model were omitted from the analysis. Variables with a low number of responses were eliminated from the independent variables set. Also, variables with quite low correlation with the dependent variables were eliminated from the model. The significance level for including a variable in the model was the 0.05 level. After the previous elimination, four variables remained in the independent variables set. The regression model of researchers is presented in Table (8.16).

Table (8.16) the regression model of survey 1 (researchers)

| Variables | *Coefficient of variance* | *Standard error* | *T-test* | |
|---|---|---|---|---|
| | | | *Value* | *Significance* |
| -Compliance with regulation (factor score) (A) | -0.288229 | 0.08836 | -0.3.262 | -0.0015 |
| -Protection and benefits (factor score) (B) | 0.102311 | 0.03304 | 3.096 | 0.0026 |
| -Marketing benefits (factor score) (D) | -0.094204 | 0.03883 | -2.426 | 0.0171 |
| -Environmental issues have an actual impact on the financial statements of companies (E) | -0.109661 | 0.03269 | -3.355 | 0.0011 |
| Constant (C) | 1.96639 | | | |
| Dependent variable:- obstacles to the external auditor's involvement in environmental auditing.<br>F- value for model: 14.80737 F-significance: 0.000 | | | | |
| Model equation:-<br>Dependent variable = C – 0.288229 A + 0.102311 B – 0.094204 D- 0.109661 E<br>Dependent variable = 1.96639 – 0.288229 A + 0.102311 B – 0.094204 D- 0.109661 E | | | | |

The variable compliance with regulation was the researchers' factor scores for the factor 2 extracted in the factor analysis of the types of environmental audits conducted by researchers. This variable represented the environmental auditing in the area of compliance with environmental laws and reporting requirements. It was significant in the model at the P- value of 0.0015. Since auditors expertise in environmental areas are low, which make them unqualified to participate in environmental auditing, they may not be able to compete on providing environmental services. The external auditors' participation in environmental audits can help them to gain more knowledge about environmental areas, which may help to reduce obstacles to their participation in environmental auditing.

On the other hand, the composite variable, protection and benefits, was significant in the model at the P-value of 0.0026. The variables were the researchers' factor scores for the first factor extracted in the factor analysis of the potential advantages of environmental auditing. It was interpreted as representing the advantages of increased environmental protection and cost savings, which a company can achieve from waste minimization and pollution prevention. A number of companies may not really care about the increasing of environmental protection. They may prefer not to conduct environmental audits, which may explain the positive association with the dependent variable (obstacles to external auditors' involvement in environmental auditing). The composite variables, marketing benefits, was significant in the model at the P-value of 0.0171. The variable was the researchers' factor scores for the factors extracted in the factor analysis of the companies' motivations for environmental disclosure. It was interpreted as representing the marketing benefits, which a company can gain from a good reputation for environmental protection and also reduce environmental risks. This may encourage a company to bear its social responsibility towards society by conducting environmental audits, which may increase the demand for environmental auditing.

One variable, environmental issue, which has an actual impact on financial statements of companies, was included in the first attribute variables representing environmental awareness of researchers. It was an original variable, rather than a factor score. It was significant in the model at the P-value 0.0011. The environmental awareness of auditors is limited, which may reduce their opportunities to participate in environmental auditing. If environmental awareness of auditors increases, this may help to increase their opportunity to take part in environmental auditing. Therefore, it is reasonable that environmental awareness of researchers would be negatively related to obstacles to external auditors' involvement in environmental auditing.

## *The correlation and regression analysis of survey 2 (practitioners)*

### *The correlation analysis of survey 2*

It presents the relationship in the first column of each of the matrices (the dependent variable), which is practitioners' assessment of the external auditors' role in environmental auditing and obstacles to the extent of this role, and other variables. The analysis included two matrices as follows:-

#### *(a) The first matrix*

The correlation coefficients indicating the association between the dependent variable in the first column and the independent variables, which are practitioners' awareness of the impact of environmental issues on companies' statements, are presented in Table (8.17).

Table (8.17) Correlation between the obstacles to external auditor's involvement in environmental auditing and the environmental awareness of practitioners.

| First attribute: environmental awareness | Obstacles to the external auditor's involvement in environmental auditing | Actual impact on financial statements | Potential impact on financial statements | Affected areas of financial statements e. g., valuation of land |
|---|---|---|---|---|
| -Environmental issues have an actual impact on the financial statements of companies | -0.361 | | | |
| -Environmental issues have a potential impact on the financial statements of companies | -0.461* | 0.713** | | |
| -Environmental issues impact on some areas of financial statements, e.g., valuation of land, fixed assets, stock and depreciation policy | -0.373* | 0.673** | 0.760** | |
| **Significance level of ** P = 0.01, * P = 0.05** | | | | |

Negative correlation was reported between the dependent variable and practitioners' awareness of the environmental impacts on companies' statements. The increase the environmental awareness of auditors, the decrease the barriers which face auditors to participate in environmental audits. The strongest association with the dependent variables was the practitioner's awareness of the potential impact of environmental issues on companies' statements with a correlation of 0.461.

***(b) The second matrix***

The correlation coefficients indicating the association between obstacles to external auditor's involvement in environmental auditing (the dependent variable) and environmental auditing variables (second attribute) are presented in Table (8.18).

Table (8.18) Correlation between the obstacles to external auditor's involvement in environmental auditing and environmental auditing variables (second attribute)

| Second attribute:- Environmental auditing | Obstacles to external auditors' involvement in environmental auditing | (1) Environmental systems and compliance | (2) Environmental liabilities | (3) Environmental policies | (4) Environmental risks | (5) Legitimacy of a company | (6) The corporate image | (7) The demand for environmental auditing | (8) The sustainability of a company | (9) Publicizing regulatory compliance | (10) Competitive advantages | (11) Environmental awareness |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -Types of environmental audits (factor scores):- (1) Environmental systems and compliance | -0.302 | | | | | | | | | | | |
| (2) Environmental liabilities | -0.004 | -0.076 | | | | | | | | | | |
| (3) Environmental policies | -0.118 | 0.459* | -0.123 | | | | | | | | | |
| -Potential advantages of environmental auditing (factor scores):- (4) Environmental risks | 0.016 | -0.226 | 0.062 | -0.229 | | | | | | | | |
| (5) Legitimacy of a company | -0.443* | 0.048 | 0.088 | -0.088 | 0.118 | | | | | | | |
| (6) The corporate image | 0.190 | -0.281 | -0.119 | -0.277 | 0.289 | 0.199 | | | | | | |
| -Potential disadvantages of environmental auditing (factor scores):- (7) The limited demand for environmental auditing | -0.131 | 0.000 | -0.323 | 0.194 | -0.143 | -0.104 | -0.250 | | | | | |
| (8) The sustainability of a company | -0.569** | 0.200 | 0.157 | 0.149 | 0.103 | 0.679** | -0.035 | 0.102 | | | | |
| -Companies' motivations for environmental disclosure (factor scores):- (9) Publicising regulatory compliance | 0.080 | 0.094 | 0.091 | -0.173 | 0.138 | -0.405* | -0.168 | 0.104 | -0.506** | | | |
| (10) Competitive advantages | 0.059 | 0.151 | -0.438* | 0.208 | 0.169 | -0.217 | -0.130 | 0.284 | -0.211 | 0.146 | | |
| (11) Environmental awareness | -0.075 | 0.227 | -0.162 | 0.104 | 0.028 | -0.025 | -0.138 | 0.000 | 0.159 | 0.119 | 0.389* | |

*Significance level of ** P = 0.01, * P = 0.05*

Types of environmental audits (factor scores) reported negative correlations with the dependent variables. The external auditors' expertise of environmental areas will increase, if they engage in environmental audits. Therefore, obstacles to their involvement in environmental auditing will be reduced. The factor scores reflecting the potential advantages of environmental audits are as follows:-

-The two factor scores, environmental risks and legitimacy of a company, reported negative correlations with the dependent variable. This may be due to these advantages include increased companies' awareness of environmental issues. Companies may seek to avoid environmental risks and confirm their legitimacy by conducting environmental audits, which may increase the demand for environmental auditing. The last factor, the corporate image reported a positive correlation with the dependent variables. A number of companies seek to keep their reputation and avoid attracting the public attention or government agencies by ignoring environmental issues. This reason considers one of the problems, which may reduce the demand for environmental auditing.

On the other hand, the factor scores reflecting the potential disadvantages of environmental auditing reported negative correlations with the dependent variable. Companies' inability to perform environmental auditing by themselves may make them to ask other parties, such as, engineer, external auditor and environmental specialists to perform it, especially, if these companies are seriously affected by environmental issues or their sustainability are threaten. They may conduct environmental audits to improve their environmental performance. The factor scores reflecting companies' motivations for environmental disclosure reported two different correlations as follows:-

-The two factors, publicising regulatory compliance and competitive advantages, reported positive correlations with the dependent variable. This may be due to a number of companies may seeking to keep their reputation by avoiding environmental audits, especially, as there is no legal obligation forces companies to conduct these audits in Egypt.

-The last factor, environmental awareness, reported a negative correlation with the dependent variable. The increase the environmental awareness of companies, the increase the demand for environmental auditing.

Table (8.17) and (8.18) recognise the relationship between environmental awareness, environmental auditing requirements and auditors' involvement in environmental auditing.

***The regression model of survey 2***

Designing the descriptive model of survey 2 was based on the following procedures:- the variables presented in the two correlations matrices in Table (8.17) and (8.18) comprised the initial set of potential independent variables. These variables included the first attribute environmental awareness and second attribute environmental auditing. As stated previously, stepwise regression was conducted to select the independent variables of the model. The missing values for any variable were omitted from the analysis. Variables with a low number of responses were eliminated from the independent variables set. Also, variables with quite low correlations with the dependent variable were eliminated from model. The significance level for including a variable in the model was the 0.05 level. After the previous elimination, two variables remained in the independent variables set. The regression model of practitioners is presented in Table (8.19).

Table (8.19): The regression model of survey 2 (Practitioners)

| Variables | ***Coefficient of variance*** | ***Standard error*** | ***T-test*** | |
|---|---|---|---|---|
| | | | ***Value*** | ***Significance*** |
| -The sustainability of company (factor score) (A) | -0.190364 | 0.06027 | -03.158 | -0.0057 |
| -Environmental issues have a potential impact on the financial statements of companies (B) | -0.112197 | 0.04527 | -2.479 | 0.0240 |
| Constant ( C ) | 2.541835 | | | |
| Dependent variable:- obstacles to the external auditor's involvement in environmental auditing.<br>F- value for model : 8.6266 F-significance: 0.0026 | | | | |
| Model equation:-<br>Dependent variable = C – 0.190364 A - 0.112197 B<br>Dependent variable = 2.541835 – 0.19036 A - 0.112197 B | | | | |

The composite variable, the sustainability of a company, was significant in the model at the P-value of 0.057. The variable was the practitioners' factor scores for the factor 2 extracted in the factor analysis of the potential disadvantages of environmental auditing. It was interpreted as representing the impact of environmental issues on a

company reputation or its market share, if environmental problems are discovered. Although, this matter can make a number of companies seek to avoid environmental audits to keep their reputation, others may behave a different way. For example, they may think that the best way to guarantee their sustainability is to face environmental problems and resolve them. Therefore, they may conduct environmental audits to publicise their commitment to protect the environment, which can increase the demand for environmental auditing.

One variable, environmental issue, which has a potential impact on financial statements of companies, was included in the first attribute variables representing environmental awareness of practitioners. It was an original variable, rather than factor scores. It was significant in the model at the P-value of 0.024. As previously stated, the increase of environmental awareness of auditors can help to reduce obstacles to auditors' participation in environmental auditing, which explains the negative association between the dependent variable and this variable in the model.

## *The correlation and regression analysis of survey3 (companies)*

### *The correlation analysis of survey 3*

The Pearson correlations focused on the relationship presented in the first column of each of the matrices (the dependent variable), which is the respondents' evaluation of the external auditor's involvement in environmental auditing and other variables. The analysis included two matrices as follows:-

***(a)The first matrix*** presents the relationship between the dependent variable in the first column of matrix and the independent variables, which describe environmental awareness of companies (first attribute), Table (8.20).

Table (8.20): Correlation between the external auditors' involvement in environmental auditing and the environmental awareness of companies (Significance level of ** P = 0.01, * P = 0.05)

| The first attribute: environmental awareness | The external auditor's involvement in environmental auditing | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A company made changes to environmental protection and to compliance with law:- 1- Fixing filters | 0.048 | | | | | | | | | | | | | | | | | | |
| 2-Adding new equipment | 0.304* | 0.079 | | | | | | | | | | | | | | | | | |
| 3-Putting in systems to treat waste | 0.332* | -0.213 | 0.169 | | | | | | | | | | | | | | | | |
| The groups are responsible for environmental issues:- 4-Environmental affairs department | 0.599** | -0.006 | 0.342* | 0.225 | | | | | | | | | | | | | | | |
| 5-Legal department | -0.187 | 0.180 | -0.173* | -0.146* | -0.216 | | | | | | | | | | | | | | |
| 6-Management systems department | -0.354* | 0.109 | -0.087 | 0.00 | -0.761* | -0.075 | | | | | | | | | | | | | |
| 7-The importance of environmental issues today | 0.501** | 0.267 | 0.178 | 0.228 | 0.499 | -0.087 | -0.136 | | | | | | | | | | | | |
| 8-The importance of environmental issues from four years ago | 0.358* | -0.005 | -0.018 | 0.00 | 0.386* | -0.108 | -0.25* | -0.547* | | | | | | | | | | | |
| 9-A company has a written environmental policy statement | 0.591** | 0.011 | 0.306 | 0.172 | 0.499 | -0.188 | -0.344* | 0.413* | 0.411* | | | | | | | | | | |
| 10-When the environmental policy statement issued | 0.421* | -0.227 | -0.160* | 0.483 | 0.334** | 0.00 | -0.212 | 0.266 | 0.314* | 0.00 | | | | | | | | | |
| Who set environmental policy:- 11-Board of directors | 0.751** | 0.079 | 0.314 | 0.169 | 0.524** | -0.173 | -0.399* | 0.456* | 0.466** | 0.917 | 0.009 | | | | | | | | |
| 12-environmental affairs department | 0.500** | 0.281* | 0.114* | 0.045* | 0.455* | -0.098 | -0.346* | 0.339 | 0.186 | 0.522** | -0.005 | 0.479** | | | | | | | |
| 13-Finance department | 0.145 | 0.044 | -0.035 | -0.209 | 0.141 | -0.30 | -0.107 | 0.105 | 0.243* | 0.162 | -0.209 | 0.176 | 0.309* | | | | | | |
| 14-A separate budget for environmental issues | 0.575** | -0.243* | 0.184 | 0.392* | 0.405* | -0.108 | -0.273* | 0.420* | 0.448* | 0.574** | 0.455** | 0.538** | 0.441** | 0.064 | | | | | |
| 15-The amount of the budget | 0.575** | -0.243* | 0.184 | 0.392* | 0.405* | -0.108 | -0.273* | 0.420* | 0.448* | 0.574** | 0.455** | 0.538** | 0.441** | 0.064 | 0.00 | | | | |
| Staff appointments for planning to environmental audits:-16-The environmental consultancy firms | -0.061 | -0.169 | 0.176 | 0.00 | 0.141 | -0.030 | -0.107 | -010 | -0.022 | -0.054 | 0.141 | -0.035 | 0.084 | 0.043 | 0.064 | 0.064 | | | |
| 17-environmental specialist | 0.338* | -0.306* | -0.192 | 0.252* | 0.255* | -0.055 | -0.194 | 0.259* | 0.280 | 0.293* | 0.122* | 0.192 | 0.289* | 0.236 | 0.510 | 0.510 | -0.079 | | |
| 18-Manager of management systems department | -0.061 | -0.169 | -0.035 | 0.00 | -0.309* | -0.030 | 0.150 | -0.238 | -0.022 | -0.054 | -0.023 | -0.035 | -0.141 | -0.043 | 0.064 | 0.064 | -0.043 | -0.079 | |

It can be observed that most of the independent variables in matrix, which reflected the companies' interest towards the environment, were positively correlated with the dependent variable. For example, a number of companies made some changes to their operations for environmental protection and compliance with law, such as, fixing filters, and adding new equipment. Furthermore, other companies had environmental policy statements, separate budgets for environmental issues and environmental affairs departments. The existences of such matters indicate the increase companies' awareness towards the environment, which may be reflected positively on the demand for environmental auditing.

On the other hand, the other independent variables in the matrix, which explored the deficiency of environmental awareness of companies, reported negative correlations with the dependent variable, such as, a number of companies did not make any changes in their operations to protect the environment. Companies' agreements with the environmental consultancy firms to perform environmental audits reported a negative association with the dependent variable. Consultancy firms dominate the environmental services market. At the same time, the current qualification and experience of external auditors are insufficient to be able to compete with these firms (as discussed in chapter 3).

The absence of professional guidance related to environmental issues limits the auditors' participation in environmental auditing. The variable relating to an environmental specialist reported a positive correlation with the dependent variable, which may be explained on the basis that environmental auditing needs a multidisciplinary team and one of this team is the environmental specialist who will be responsible for environmental techniques. It can be argued that a good opportunity is still available for auditors to be among members of environmental auditing team. They can make a contribution to that team by interpreting environmental measurements into financial numbers, which can help different users of financial statements to take their decisions.

***(b)The second matrix***

It sets out the correlation between the external auditor's involvement in environmental auditing (the third attribute), which represents the dependent variable in the first column of matrix, and environmental auditing variables (the second attribute), which represent the independent variables.

Table (8.21): Correlations between the external auditor's involvement in environmental auditing and environmental auditing variables (second attribute).

| **Second attribute:- Environmental auditing** | **The external auditor's involvement in environmental auditing** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** |
|---|---|---|---|---|---|---|---|---|---|
| **-Types of environmental audits(factor score):-** **1**-compliance with regulation | 0.124 | | | | | | | | |
| **2**-environmental liabilities and systems | 0.526** | 0.152 | | | | | | | |
| **3**-the company' environmental program | 0.183 | -0.180 | -0.021 | | | | | | |
| **-Potential advantages of environmental auditing (factor score)** **4**-the corporate image | 0.192 | 0.179 | 0.182 | 0.170 | | | | | |
| **5**-environmental risks | 0.342* | 0.000 | 0.216 | 0.920 | 0.136 | | | | |
| **6**-legitimacy of a company | 0.254* | -0.063 | 0.358* | 0.236* | 0.351* | 0.449** | | | |
| **-Potential disadvantages of environmental auditing (factor score)** **7**-The sustainability of a company | 0.202 | 0.127 | 0.234 | -0.05 | 0.233 | 0.052 | 0.078 | | |
| **8**-The demand for environmental auditing | -0.033 | 0.238* | 0.056 | -0.103 | 0.149 | 0.303* | 0.366** | 0.248* | |
| **Significance level of ** P = 0.01, * P = 0.05** | | | | | | | | | |

As shown in Table (8.21), positive correlations were reported between the factor scores reflecting the types of environmental audits and the dependent variable. The auditors' involvement in environmental auditing may increase if the demand of companies for environmental audits increases. The factor, environmental liabilities and system, had

the strongest association with dependent variable with a correlation of 0.526 and high significance of 0.01. This due to a number of companies in Egypt, particularly within petroleum and pharmaceutical have environmental budget and also, environmental management department, which are audited by external auditors.

The factor scores reflecting the potential advantages of environmental auditing reported positive correlations with the dependent variable. Since these advantages include increased companies' awareness of environmental issues. Companies may seek to conduct environmental auditing to gain its benefits, which may increase the external auditors' opportunity to participate in environmental audits.

However, the factor scores reflecting potential disadvantages of environmental auditing had two different correlations as follows:-

-The first factor, the sustainability of a company, reported a positive correlation with the dependent variable. This may be due to the fact that environmental impacts on business beginning more serious. If a company does not bear its responsibility towards the environment and non-compliance with regulation, it may be fined, lose its reputation or shut down. Therefore, a company may seek to create a positive image by conducting environmental auditing, which can help to increase the demand for environmental audits.

-The second factor, the demand for environmental auditing, reported a negative correlation with the dependent variable. It can be explained that some companies may prefer not to engage in environmental audits because they fear a loss of reputation or exposure to regulatory actions if the environmental problems are discovered. As well as, other companies may not have the financial and technical ability to solve environmental problems. They ignore environmental issues, which may impact negatively on external auditors' opportunity to participate in environmental auditing.

Table (8.20) and (8.21) provide an overview on the current environmental state in Egypt and the impact of this matter on the external auditors' participation in environmental auditing.

***The regression model of survey 3***

Designing the descriptive model of survey 3 was based on the following procedures:- the variables presented in the two correlations matrices in Table (8.20) and (8.21) comprised the initial set of potential independent variables. These variables included environmental awareness (first attribute) and environmental auditing (second attribute). The stepwise regression was used to select independent variables for the regression model. The missing values for any variables in the model were omitted from the analysis. Variables with a low number of responses were eliminated from the independent variables set. Also, variables with quite low correlations with the dependent variable were eliminated from the model. The significant level for including a variable in the model was the 0.05 level. As a result of the elimination, two variables remained in the independent variables set. The regression model of companies is presented in Table (8.22).

Table (8.22): The regression model of survey 3 (Companies)

| Variables | ***Coefficient of variance*** | ***Standard error*** | ***T-test*** | |
|---|---|---|---|---|
| | | | ***Value*** | ***Significance*** |
| -Environmental affaires department (A) | 1.11008 | 0.33609 | 3.303 | 0.0028 |
| -The limited demand for environmental auditing (factor score) (B) | -0.63819 | 0.20782 | -3.071 | 0.0050 |
| Constant (C) | 3.43942 | | | |
| Dependent variable:- the external auditor's involvement in environmental auditing. F- value for model : 9.60049 F-significance: 0.0008 | | | | |
| Model equation:- Dependent variable = C + 1.11008 A - 0.63819 B Dependent variable = 3.43942 + 1.11008 A - 0.63819 B | | | | |

One variable, environmental affairs department, was included in the first attribute variables representing environmental awareness of companies. It was an original variable and was significant in the model at the P-value of 0.028. It can be argued that the increase

environmental awareness of companies may help to increase the importance of environmental audits, which can increase the demand for environmental auditing. The existence of an environmental affairs department in any company could be considered as a sign of environmental awareness. This department can inform management of a company about environmental issues related to company's operations. Also, it can inform or train employees of the company to perform their activities in an environmentally responsible way. Perhaps, it is a means of expressing the commitment of top management regarding environmental protection.

On the other hand, the composite variable, which is the demand for environmental auditing, was significant in the model at the P-value of 0.005. The variable was the respondents' factor scores for the factor 2 extracted in the factor analysis of the potential disadvantages of environmental auditing. It was interpreted as representing companies who prefer not to conduct environmental auditing because they fear from using environmental reports against them, which may expose them to regulatory actions. A company's lack of technical and financial ability is one of barriers, which limit a company to conduct this audit (as discussed in chapter 4). In other words, this compositive variable represents aspects, which reduce or make the demand for environmental auditing is limited. Therefore, this composite variable indicated a negative association with external auditors' involvement in environmental auditing (the dependent variable).

It can be argued that, according the results of the model, auditors' contribution in environmental auditing depends on environmental awareness of companies and the limited demand for environmental auditing.

## 4. The findings of the empirical study

The findings of the research can be summarized as follows:-

### *(a) First attribute (environmental awareness)*

**(1)-The data analysis of survey1** indicated that researchers believed that the actual impact of environmental issues on the financial statements of companies or on some areas of financial statements, such as, valuation of land and assets, and contingent liabilities, is small. They reported that the potential impact of environmental issues on companies' statements is moderate.

***(2)-The data analysis of survey2*** reported that most external auditors in small audit firms indicated there is no actual impact of environmental issues on companies' statements, while the potential impact of these issues is small. Auditors in big firms indicated that the actual impact of these issues is small. The potential impacts of environmental issues are great.

It can be argued that auditors' awareness of environmental impacts on companies' statements in big audit firms is better than auditors' awareness in small audit firms. This may be due to big firms having the financial and technical ability to raise environmental awareness of their auditors and also co-operate with environmental specialists.

***(3)-The data analysis of survey3*** indicated that environmental issues have a strong impact on business in Egypt. Approximately 87.5 % of companies have made many changes in their operations to protect the environment and comply with environmental laws, such as fixing filters, adding new equipment and replacing the old, and putting in systems to treat waste.

Moreover, nearly 63.5% of respondents reported the importance of environmental issues now is greater than six years ago. Over 60% of companies reported the existence of a written corporate environmental policy statement. In 58% of these companies, the Board of Directors set this statement and in 31% of companies, environmental affairs department issued it. 35% of them had a separate environmental budget. Only 12.5 % of companies had made appointments with environmental specialists to plan for environmental audits.

It can be argued that companies in Egypt are beginning to take steps towards environmental protection, but their environmental awareness may need to be raised.

### *(b)Second attribute (environmental auditing)*

***(1)-The data analysis of survey1*** indicated that only 15.7 % of researchers conducted three types of environmental audits. These types are compliance with environmental laws, environmental management systems, and financial accounting for environmental risks and liabilities.

***(2)-The data analysis of survey2*** indicated that external auditors in small audit firms did not conduct any types of environmental audits. Auditors in big audit firms conducted some types of environmental audits. These types were the same as those conducted by researchers. This may be due to all companies in Egypt now are forced by environmental law no. 4 of 1994 to keep environmental records. These records became legal records. Auditors when auditing any company should check whether a company keeps environmental records or not. A number of companies have environmental management systems and a budget for environmental issues. Auditors, when auditing these companies, audit environmental systems according to conventional audit without using specific procedures or disclosing an opinion concerning environmental issues in the audit report.

It can be argued that external auditors in Egypt may become involved in some aspects of environmental problems. They may prefer to ignore these issues to avoid any risks or legal responsibility in the absence of professional guide, and the negative role of the Egyptian accountancy bodies concerning environmental issues.

-Auditors in small and big audit firms in survey 2 indicated that the most important potential advantage of environmental auditing is the financial advantages such as, reduction of fines and environmental risks.

-Auditors in big firms reported that the most important disadvantage of environmental audits is the loss of the public trust if environmental problems are discovered, auditors in small audit firms reported that companies' lack of financial and technical ability to solve environmental problems is the most important disadvantage of environmental auditing.

-Both big and small audit firms indicated that companies' motivations for environmental disclosure are due to competitive factors, reputation, and then the financial factors.

***(3)-The data analysis of survey3*** indicated that nearly 85 % of companies conducted some types of environmental audits. The most common types of environmental audits were compliance with environmental laws, environmental management systems and the company's programs for the treatment, storage or disposal of hazardous wastes. In most of these types, both internal and external personnel conducted these audits. Approximately 73 % of companies indicated that governmental agencies performed environmental audits of their companies, 25 % of them reported external auditors participated in environmental audits. 77 % of companies indicated that external personnel provided the report to the Board of Directors. The environmental management system staff was reported (60.4 %) as internal personnel who conducted environmental audits in companies.

### *(c)-Third attribute in survey1 and survey2 (obstacles to external auditors' involvement in environmental auditing)*

***(1)-The data analysis of survey 1*** indicated that researchers strongly agreed with the need for separate auditing standards and financial standards for reporting, and mandatory guidance related to environmental issues. Approximately 63 % of researchers indicated that external auditors can take part in environmental issues. 94 % of researchers reported that environmental awareness of auditors is low and it should be raised. 87 % of researchers reported that education in universities needs to be changed to graduate auditors who be able to participate in solving environmental problems. 75.5 % of researchers believed that the accountancy bodies should play an important role to qualify auditors to conduct environmental auditing such as , providing a professional certification and appropriate training for environmental issues. 60.8 % of researchers reported that external auditors should participate in verifying environmental reports, if these reports are inevitable. 59.8 % of researchers indicated that external auditors should be involved in preparing environmental information for the public disclosure. Researchers believed that the insufficient qualification of auditors and the absence of professional guidance are the greatest barriers limiting auditors' participation in environmental auditing.

***(2)-The data analysis of survey2:*** Auditors in big audit firms confirmed the importance of auditing standards and the mandatory guidance for environmental issues, 50 % of auditors in small firms agreed with this view. 70 % of auditors in big firms believed that external auditors' skills can be raised to involve in environmental issues and only 20 % of small

firms agreed with that. Auditors in big firms indicated that big audit firms can participate in environmental auditing by co-operating with environmental specialists, in contrast 90 % of auditors in small firms thought that external auditors unable to participate in environmental auditing. 70 % of auditors in big audit firms reported that external auditors should participate in preparing environmental information for public disclosure and 10 % of small audit firms agreed with that view. The big firms reported that the lack of experience in the environmental field was the most important barrier limiting external auditors' involvement in the environmental issues. The small firms reported that lack of suitable training concerning environmental issues limits auditors' participation in these issues.

***(d)-The third attribute of survey3 (the external auditors' involvement in environmental auditing)***

Approximately 73 % of companies indicated that external auditors were not involved in environmental audits. 60 % of respondents expect that external auditors will be involved in environmental auditing in the future. 58 % of respondents thought that environmental auditing should be performed by a combination of existing staff, new specialist staff, and external auditor.

The findings of this study are presented in Table (8.23).

Table (8.23): A brief summary of the research findings and previous studies.

(Table continues to next page)

| **The results of this study** | **Previous studies** |
|---|---|
| -The environmental awareness of financial auditors in Egypt is limited and also their participation in environmental auditing | -In the UK, (Collison et al., 1996; Collison and Gray, 1997) the environmental awareness of the statutory financial auditors is limited and it should be raised. |
| -Financial auditors lack experience in environmental field and technical ability to solve environmental problems. There is a crucial need to make fundamental changes in accounting education in universities. The curricula should encapsulate environmental issues and their impacts on the profession to qualify students to be aware of the potential environmental problems and how to cope with them. | -Attempts have been recently made to argue the case for a limited social and environmental accounting education programme as a part of other conventional accounting (Gordon, 1998, 2001; Grinnell and Hunt, 2001; Booth, 2001; Lockhart and Mathews, 2000; Milne, 2001).<br>The weakness of the educational component of university accounting teaching makes the current qualification of auditors is unsatisfactory to make them able to compete in environmental field. (Mathews, 1997; McPhail and Gray, 1996; Gibson, 1997; Geary and Sims, 1994; Lehman, 1995, 1995, 1999; Milner et al., 1999; Puxty et al., 1994; Brinkmann and Sims, 2001; Lewis et al., 1992). |
| -The absence of professional guidance limits auditors' involvement in environmental audits.<br>-The lack of environmental guidance and the auditors' qualification are the most important barriers, which limit auditors to take part in environmental audits. | -A number of empirical studies (Collison and Gray, 1997; Collison, 1996; Collison et al., 1996; Rezaee et al., 1995) provide a strong evidence that without the professional guidance auditors will not make progress until there are rules and guidance on environmental issues. |

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|---|---|
| -Financial auditors may participate with other parties, such as environmental specialists, governmental agencies…etc, in performing environmental auditing. Auditors are not the only choice for performing environmental audits. There are lawyers, environmental specialists, engineers, chemists…etc. | -A number of studies (Stittle, 1992; Collison et al., 1996; ENDS, 1991; Gray, 1993; Steadman et al., 1995; Power, 1997) point out that there are many different disciplines and many specialists compete auditors in performing environmental audits. |
| -There is a need for multidisciplinary teams to perform environmental auditing. | -A number of studies (Colbert and Scarbrough, 1993; FEE, 1993; ICAEW, 1992, 2000; Salter, 1992; Hillary, 1993; Maltby, 1995; Huizing and Dekker, 1992) argue that financial auditors can use the work of environmental specialists as using any other specialist's work such as lawyers, engineers, appraisers and others. |
| -Companies' motivations for environmental disclosure are due to competitive advantages and corporate image arising from reputation for environmental protection. However, companies have different behavior in dealing with environmental issues. For example, a number of companies may prefer not to engage in environmental disclosure and ignore environmental issues to keep their reputation and avoid the public attention if environmental problems are discovered. Others may prefer to disclose about their environmental performance and solve environmental problems to create a positive image and differentiate themselves from their competitors. | -Similar results are shown by Zadek et al., 1997, Hoogheimstra, 2000; Rosthorn, 2000; Herremans et al., 1993; Fombrun, 1996; Naj, 1996; Andreassen and Lindestad, 1998; KPMG, 1997; Deegan and Rankin, 1996, 1998, 1999; Patten, 1992, 2000 and Tilt, 1994. These studies indicate that the sustainability of a company depends on its behavior towards the environment. A company may lose its reputation; consequently, its sustainability is threatened if it has a bad environmental behavior. |

# Chapter 9

# The Theoretical Framework and Results of the Research

## 1. Introduction

This chapter aims to introduce linkage between the theoretical framework of the research, which is based on adapting legitimacy theory and the results of the research. The chapter describes the relationship between the theoretical framework and findings of the research, and presents the implications of the findings. Suggestions for future research are provided.

## 2. Legitimacy theory and findings of the research

The general objective of this research is to describe the external auditor's role in environmental auditing and obstacles to its development, as well as to recognize companies' motivations for environmental disclosure in Egypt, which may impact on the demand for environmental auditing, consequently, auditors' opportunity to contribute in this audit may be affected. Legitimacy theory is adopted to explore these motivations.

The empirical study was conducted to survey three groups (companies, researchers, and external auditors). The aim of these surveys is to collect data through specific attributes (environmental awareness, environmental auditing and obstacles, which limit auditor's involvement in environmental auditing).

The relationship between the theoretical framework and findings of the research can be presented in the following Table (9.1).

Table (9.1): The relationship between the theoretical framework and findings of the research. (Table continues to page 224)

| ***Legitimacy theory*** | ***Hypotheses of the research*** | ***Findings of the research*** |
|---|---|---|
| A number of studies have focused on the relationship between environmental disclosure and the possible motivation underlying decisions to disclose environmental information.<br>There could be several motivations simultaneously driving companies to voluntary environmental disclosure. One such motivation might be the legitimation motive, such as emphasizing survival, complying with regulation, and creating a positive image.<br><br>Examples of legitimation include establishing an environmental committee or department and conducting environmental audits. | Subsidiary hypotheses ***(H)*** are suggested as follows:-<br><br>***H1:*** *companies can not ignore the impact of environmental issues on business, especially in the light of the environmental laws and regulations.* | Environmental issues have a strong impact on business and their importance is increasing.<br><br>A number of companies have made many changes on their operations to protect the environment and to comply with environmental laws.<br><br>A number of companies provided examples of legitimation, such as a written environmental policy statement, environmental management system and environmental audits.<br><br>It can be argued that it is difficult for business to ignore environmental issues. |

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|---|---|---|
| Legitimacy theory provides a linkage between companies and their society. It may consider a useful means to examine companies' behaviour with respect to their environment.<br><br>Legitimacy theory may help to explore companies' motivations for environmental disclosure or conducting environmental audits as an example of legitimation.<br><br>It provides a foundation for understanding how and why companies may use environmental disclosure to gain a number of benefits, such as competitive advantages. The desire of companies to alter the public's perception about their legitimacy may make companies conduct environmental auditing as an example of legitimation to present their environmental accountability. | ***H2:*** *legitimacy theory may help to explain companies' motivations for environmental disclosure in Egypt.* | The most important motivations for companies to engage in environmental disclosure are due to competitive factors and corporate image or reputation.<br><br>The main potential advantages of environmental audits are the desire of a company to create a positive image and the financial advantages such as, reduction in fines and environmental risks.<br>The most important disadvantages of environmental auditing are due to companies' lack of financial and technical ability to solve environmental problems, as well as the loss of the public trust if environmental problems are discovered.<br><br>It can be argued that legitimacy theory provides an idea about the reasons, which make a number of companies take a decision |

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|---|---|---|
| The increase in companies willing to conduct environmental audits, the increase the level of demand for these audits.<br>The limited demand for environmental auditing is considered one of barriers, which limits auditors' participation in this audit.<br><br>Auditors' participation in environmental auditing depend not only on their ability to perform this audit but also the desire of companies to conduct environmental auditing, in other words the level of demand for this audit.<br><br>Therefore, legitimacy theory can help to identify factors, which may impact on the demand for environmental auditing by exploring companies' motivations for environmental disclosure. | | to disclose details of their environmental performance and at the same time legitimacy theory gives an explanation for why other companies prefer not to engage in environmental disclosure. Companies, which take the disclosure decision, seek to create a positive image and impact on the public's perception by using environmental information. In contrast others prefer to ignore environmental issues to avoid regulatory actions and loss of the public trust if environmental problems are discovered.<br>The findings of the research support legitimacy theory as an explanatory factor for environmental disclosure. It can help to recognize some factors, which impact on the level of demand for environmental auditing. |

| | | |
|---|---|---|
| | *H3: the current external auditors' role concerning environmental issues in Egypt is limited and there are a number of constrains on extending this role to encapsulate these issues.* | Financial auditors' participation in environmental auditing and their environmental awareness are limited.<br>A number of obstacles limit auditors' contribution in environmental auditing, such as, there is a need for:<br>*Separate standards for reporting on environmental issues.<br>*A mandatory professional guidance concerning environmental issues.<br>*An active role for the accountancy bodies to qualify auditors to cope with environmental issues.<br>*Changes in auditors' education.<br>*Suitable training and experience in the area of environmental issues.<br>*New skills and technical ability to solve environmental problems. |

| | | |
|---|---|---|
| | *The central hypothesis is "the level of demand for environmental auditing may impact on auditors' participation in environmental auditing".* | It can be argued that there are two groups of factors limit auditors' participation in environmental auditing.<br>-The first is related to the qualification of auditors and the auditing profession.<br>-The second is related to the level of demand for environmental auditing, which depends on companies' motivations for environmental disclosure and companies' lack of requirements for environmental reports.<br>Although different disciplines and many specialists, such as engineers, lawyers, compete with auditors in performing environmental audits, auditors still have the chance to contribute in these audits (if obstacles, which limit this contribution are solved by developing the qualification of auditors, the existence of professional guidance for environmental issues and the increase of demand for environmental auditing). |

## 3. Limitation and implication of the findings

Limitations of the research were discussed in chapter 6. A number of these limitations impact on the implications of the research. For example, the research was limited to 48 companies operating in four industrial sectors (cement-chemical-pharmaceutical-petroleum), therefore its results should not be generalized beyond the responding companies. Also, the research was limited to 102 researchers from three universities and 20 practitioners. There is a need for further research to see if the results would change using different groups and to verify whether these results can be generalized.

However, the research has a number of implications. External auditors' contribution in environmental auditing is limited in Egypt. There are a number of obstacles limiting their participation in environmental audits. Some of these obstacles are related to auditors' qualification and others related to the level of demand for environmental auditing by companies. These obstacles and their implications are presented as follows:-

***-The current qualifications of auditors are not sufficient to cope with environmental problems.*** The demand and need for education in environmental auditing for accountants and auditors is essential. Business schools and the professional organizations have the opportunity to play an important role in environmental protection. The professional organizations should address the profession's educational needs. Business Schools should modify and change their curricula to encapsulate environmental issues and their impact on the profession. Business Schools should conduct programs to qualify students at least to be aware of potential environmental liabilities, and risks. The topic of environmental auditing may be addressed with case study materials. Education in business schools should help students to deal with companies' problems in real life. Students may be given opportunities to think creatively to develop possible solutions to environmental challenges.

***-Auditors' lack of experience and expertise in environmental areas, as well as, lack of knowledge about environmental laws.*** The professional bodies should play an important role in that matter, such as providing a suitable training, courses, and a specific certification related to environmental auditing to help auditors in dealing with environmental issues.

***-The absence of professional guidance concerning environmental issues.*** The accountancy bodies must become proactive in respect to potential environmental problems and their solutions. It is necessary for these bodies to develop guidance on how to address environmental issues in their accounting and auditing services.

***-The environmental awareness of external auditors in Egypt is low.*** There is a crucial need to increase their awareness. The professional organizations can provide environmental seminars, environmental management and auditing courses, and training on some environmental areas, which related to the profession for auditors.

***-The voluntary nature of environmental reporting*** means that a number of companies may prefer not to engage in environmental disclosure to avoid the public attention or regulatory action. This may lead to a reduction in the demand for environmental auditing; consequently, the opportunity of auditors to participate in this audit may decrease. Compulsory regulation to perform environmental auditing may play an active role in developing the profession.

***-Companies willing to engage in environmental reporting face many problems*** such as, lack of environmental data and indicators (as discussed in chapter 4), consequently, these companies may prefer not to engage in environmental reports and the demand for environmental auditing may decrease. The accountancy bodies should contribute in addressing and solving these problems to encourage companies to produce these reports.

-The results of the empirical study indicate that ***legitimacy theory may help to explain companies' motivations for environmental disclosure***, which may impact on the level of demand for environmental auditing. In Egypt, there are no mandatory requirements pertaining to corporate environmental disclosure. There is a need for legislation to enforce these requirements, which can protect the environment and increase the importance of environmental auditing. Also, the public has a right to know about the environmental implications of an organization's operations. Regulation might be necessary to ensure that this right to know is satisfied.

Finally, obstacles, which limit auditors' participation in environmental auditing can be outlined in the following Figure (9.1):-

Figure (9.1): obstacles limiting auditors' participation in environmental auditing

First group: factors related to auditors and the auditing profession (as discussed in chapter 3)

- Accounting education
- The ethical and social aspects in accounting education
- Research in the accounting and auditing profession
- The experience, skills and training of financial auditors
- Professional guidance for environmental matters
- Auditors' view towards performing environmental audits

Second group: factors related to the level of demand for environmental auditing, which depends on two aspects:-

-Companies' lack of requirements for environmental reporting (see chapter 4)

- Environmental data and information
- Environmental indicators
- The contents of environmental reporting
- The independent verification
- Professional standards and principles of environmental reports
- Limited public demand for environmental reports
- The voluntary nature of environmental reporting

-Companies' motivations for environmental disclosure. Legitimacy theory may help to explain these motivations (see chapter 5)

- To create a positive image or reputation
- To confirm the legitimacy of a company's operations
- To demonstrate regulatory compliance
- To gain marketing benefits
- To differentiate a company from its competitors
- To guarantee a company's sustainability
- Others

## 4. Suggestions for future research

There has been limited empirical research in Egypt on the external auditors' involvement in environmental auditing and limiting obstacles. Also, the problems, which face companies engaging in environmental reporting, need more study. Numerous opportunities exist for additional research in these areas. This research included only four types of industries. It may be extended by surveying other types of industries. This research considered the role of external auditors in environmental auditing. However, there is still a crucial need to address a number of matters in future research such as:-

-The role of internal auditors and accountants in environmental auditing.

-The relationship between external auditors and environmental specialists.

-The impact of environmental issues on the auditing profession and business.

-The importance of environmental information for different groups of stakeholders.

-The requirements of environmental reports.

-The independent verification for environmental reports.

Although, legitimacy theory can help to explain companies' motivations in Egypt for environmental disclosure, there is still a need for future research to recognize more about these motivations and also how environmental disclosure impacts on community concerns. Within the broad area of research into social and environmental disclosures, several of research questions still need to be addressed such as, the relationship between social and environmental disclosure practices and economic performance or political factors. Also, what are the roles of taxation instruments in relation to environmental protection?. Accountants' attitudes towards social and environmental accounting need more research to identify how is accounting education embracing the area, and what are some of the impediments to including social and environmental issues with the accounting education programs of universities and professional accounting bodies?. The scope of social and environmental verifications or audits can be addressed. There is still much debate on various issues. For example, there is a lack of consensus on the objectives of social and environmental reports, the qualitative characteristics the information should possess and the audience of these reports.

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# *List of Appendices*

## *Appendix 1: Fines and Imprisonment in the UK (according to the Environmental Act 1990)*

| Appendix 1 | | |
|---|---|---|
| Fines and Imprisonment in the UK (according to the Environmental Act 1990)* | | |
| Offence | Magistrates' Court | Crown Court |
| Unlicensed depositing of waste on land | £20,000<br>6 months | Unlimited fine<br>5 years |
| Failure to remove waste illegally deposited | £5,000 and<br>£500 a day | - |
| Failure to comply with the duty of care in respect of waste under the EPA 1990 | £5,000 | Unlimited fine |
| Polluting inland or coastal waters or ground water without or in breach of a consent | £2,000<br>3 months | Unlimited fine<br>2 years |
| Discharging trade effluent without consent into the sewers | £5,000 | Unlimited fine |
| Unlicensed deposits of substances into the sea | £50,000 | Unlimited fine<br>2 years |
| Failure to comply with IPC or air pollution controls under the EPA 1990 | £20,000 | Unlimited fine<br>2 years |
| Causing noise nuisance, including on construction sites, or failing to comply with an abatement notice | £20,000 and<br>£500 a day | - |
| Keeping, using or disposing of radioactive materials without or in breach of the requisite authorisation | £5,000<br>3 months | Unlimited fine<br>5 years |
| Storing or using hazardous substances requiring hazardous substances consent without or in breach of a consent | £20,000 and<br>£200 a day | Unlimited fine |
| Non-compliance under the Town and Country Planning Act 1990 enforcement or stop notices | £5,000 and<br>£200 a day | Unlimited fine |
| Offences under the Health and Safety at Work legislation | £5,000 | Unlimited fine<br>2 years |

- Source: Burnett-Hall, R. (1994), "Directors' Liabilities: The Environmental Element", Accountancy, March, p. 131.

## *Appendix 2: Fiscal year 1991 the U.S. EPA Civil Penalty Statistics*

| Appendix 2 | | |
|---|---|---|
| Fiscal year 1991 the U.S. EPA Civil Penalty Statistics * | | |
| Program | Total Cases ** (%) | Penalty Dollars (%) |
| Clean Water Act | 12 | 36 |
| Clean Air Act | 4 | 10 |
| Toxic Release Inventory(TRI) | 22 | 5 |
| The Resource Conservation and Recovery Act (RCRA) | 8 | 24 |
| Toxic Substances Control Act (TSCA) | 20 | 15 |
| Safe Drinking Water Act | 10 | 3 |
| All Other Programs | 24 | 7 |

* Source: U.S. EPA, office of enforcement, National Penalty Report, Overview of EPA Federal Penalty Practices, Fy 1991, March 1992.

** A total of 1,664 enforcement cases were initiated of these, 1,419 resulted in a total of $ 73.1 million in penalties.

## *Appendix 3: Brief summary of the 17 major Federal Environment Regulations in U.S.*

| Appendix 3 |
|---|
| Brief summary of the 17 major Federal Environment Regulations in U.S. |
| 1- National Environmental Policy Act(NEPA)-1969 |
| 2- The clean Air Act(CAA)-1970 |
| 3- The Clean Water Act(CWA)-1972 |
| 4- Safe Drinking Water Act(SDWA)-1974 |
| 5- The Resource Conservation and Recovery Act(RCRA)-Subtitle C-1976 |
| 6- (RCRA) subtitle D |
| 7- (RCRA) subtitle I |
| 8- The Toxic Substances Control Act (TSCA)-1978 |
| 9- The Congressional Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)-1980 |
| 10- The Superfund Amendment and Reauthorization Act-1986 |
| 11- The Clean Air Act-1990 |
| 12- Federal Insecticide, fungicide, and Rodenticide Act |
| 13- National Historic Preservation Act-1966 |
| 14- Noise Control Act-1972 |
| 15- Pollution Prevention Act-1990 |
| 16- Asbestos Management Program |
| 17- Radon Abatement |
| In addition, most states in U.S. have enacted their own versions of these acts. |

* Source: (1) Roussey, R. (1992) "Auditing Environmental Liabilities", Auditing A Journal of Practice & Theory, vol. 11, no.1, Spring, p. 48.

(2) $CH_2$MHILL, Atlanta, Georgia, (1993), "The Role of Internal Auditors in Environmental Issues", Altamonte Springs, Florida, The Institute of Internal Auditors Research Foundation, pp. 85-105.

## *Appendix (4): Background about the Environment in Egypt*

### *Introduction*

The environmental situation in Egypt seriously constrains the national drive towards sustainable development. Degradation of natural resources is a significant threat to agriculture and tourism, as well as to continued economic growth. Air and water pollution, as well as improper waste disposal, furthermore, cause significant health problems, lowers the quality of life, and even lead to increase mortality rates.

The protection of the environment, in the sense of ecologically rational management of natural resource, is perceived today as a necessary condition for social and economic development. Therefore, the Egyptian government established in 1994 the Ministry of State for Environmental Affairs (MSEA) and its executive arm, the Egyptian Environmental Affairs Agency(EEAA) with the objective of integrating the environmental dimension into the national policies, plans, programs and projects and an immediate focus on the reduction of pollution rates for the protection of natural resources, biodiversity and the historical and cultural heritage, within the framework of sustainable development. The Egyptian government established the environmental law no. 4 of 1994 then its executive regulation in 1995. (EEAA, 2002).

### *The Environmental Legislation in Egypt*

#### *National Legislation*

The legislative tools for biodiversity conservation and sustainable development in Egypt pre-date the ratification of the Convention on Biological Diversity. They were issued as laws and ministerial decrees and can be summed up in chronological order as follows (MSEA-EEAA, 1997):-

1- Law no. 53 of 1966.
2- Ministerial decree no. 28 of 1967 specified the species of birds and other wild animals under protection.
3- Law no. 72 of 1968 concerning the prevention of pollution of sea water by oil.
4- Ministerial decree no. 349 of 1979 established the Egyptian Wildlife Service.
5- Ministerial decree no. 66 of 1982 prohibited hunting all species of birds and other animals in certain areas of the Sinai Peninsula.

6- Law no. 48 of 1982 for the protection of the River Nile and other water courses against pollution. It prohibits the discharge of solid, liquid and gaseous wastes with certain levels of pollutants into the Nile and all freshwater bodies; while the Ministry of Irrigation determined the maximum allowable levels of polluting elements in such wastes, the Ministry of Health is empowered to carry out the required analysis of samples of these wastes.

7- Law no. 102 of 1983 set up the legal framework for the declaration and management of protected areas and regulates the conservation of natural resources.

8- Law no. 101 of 1985, levied an additional tax on aeroplane tickets issued locally, in order to secure a suitable source of funding to finance programmes for developing tourism and environmental protection.

9- Law no. 4 of 1994 is by far the most comprehensive environmental legislation to date. It defines (in articles 2-13) the scope and responsibilities of EEAA, establishes (in articles 14-16) the Environmental Protection Fund(EPF), provides for the setting up of a system of environmental incentive (articles 17-18), spells out the necessity of environmental impact assessments as a pre-requisite of development projects (articles 19-23), establishes environmental monitoring networks with their stations and working units (article 24), authorises the EEAA to prepare an environmental contingency plan (article 25), and forbids the hunting of specified types of wild birds and animals (article 28), as well as the destruction of their natural habitats. Articles 29-83 cover the protection of air, water and land from all sources of pollution. Articles 84-101 deal with the penal code for violation of articles 1-83. It is important to refer that article no. 1 in this law gave organisations existing at the time of enacting law three years to adjust their status according to the requirements of law.

**Conventions and Agreements**

Since 1936, Egypt is party to a large number of regional and international conventions, treaties and agreements dealing with the conservation of nature in general and biodiversity in particular. According to article 151 in the Egyptian Constitution, any international convention to which Egypt is a party, becomes the law of the land in Egypt and takes precedence over Egyptian law (MSEA, 2002).

It can be summarized these conventions in chronological order as follows:-

- Convention relative to the preservation of Fauna and Flora in their natural state. London, 1933 (ratified in 1936).
- Agreement for the establishment of a General Fisheries Council for the Mediterranean. Rome, 1951).
- International Plant Protection Convention. Rome, 1953.
- International Convention for the Prevention of Pollution of the Sea by Oil. London, 1963.
- Phy to-Sanitary Convention for Africa. Kinshasa, 1968.
- African Convention. Algeria, 1968 (ratified in 1972)
- Convention for the Protection of the Mediterranean Sea Against Pollution. Barcelona, 1976 (ratified in 1978).
- Convention of International Trade in Endangered Species of Wild Fauna and Flora. Washington, 1978.
- Convention of International for regulation of Whaling. Washington, 1981 (ratified in 1989).
- Convention on the Conservation of Migratory species of Wild Animals. Bonn, 1979 (ratified 1982).
- United Nations Convention on the Law of the Sea. Montego Bay, Jamaica, 1982 (ratified in 1983).
- Protocol Concerning Mediterranean Specially Protected Areas. Geneva, 1983 (ratified in 1986).
- Convention on Wetlands of International Importance Especially as Waterfowl Habitat. Ramsar, Iran, 1971 (1975), (ratified in 1988).
- Regional Convention for the Conservation of the Red Sea and Gulf of And Environment. Jeddah, 1990.
- Convention of Biological Diversity, Rio de Janeiro, 1992 (ratified in 1994).
- Agreement for the Establishment of the Near East Plant Protection Organisation. Rabat, Morocco, 1993 (ratified in 1995).
- International Tropical Timber Agreement. Geneva, 1994 (ratified in 1996).
- Protocol Concerning Specially Protected Areas and Biological Diversity in the Mediterranean. Barcelona, 1995.

***Establishments subject to Law 4 of 1994***

The Law no. 4 of 1994 determines establishments, which will follow this law. They are classified according to the following criteria:

First: Type of activity.

Second: Extent of depletion of natural resources, especially water, agricultural land and mineral wealth.

Third: Location

Fourth: Type of energy used in operating the establishment.

***FIRST: TYPE OF ACTIVITY:***

1. Industrial establishments subject to the provisions of Law No. 21 of 1985 concerning the Organization and Encouragement of Industry and Law No. 55 of 1977 concerning the Establishment and Operation of Thermal Machines and Steam Boilers.
2. Tourist Establishments subject to the provisions of:
   * Law No. 1 of 1973 concerning Hotel Establishments.
   * Law No. 38 of 1977 concerning the Organization of Tourist Companies.
   * Law No. 117 of 1983 concerning the Protection of Monuments.
   * Law No. 1 of 1992 concerning Tourist Establishments
3. Companies operating in the field of oil exploration, extraction, refining, storage, and transport and subject to the provisions of:

* Law No. 6 of 1974 authorizing the Minister of Petroleum to sign Petroleum Concession Agreements.

   * Law No. 4 of 1988 concerning Petroleum Pipelines.
4. Electricity production and generation establishments subject to the provisions of:
   * Law No. 145 of 1948 establishing the Cairo Electricity and Gas Department.
   * Law No. 63 of 1974 concerning Establishments of the Electricity Sector.
   * Law No. 12 of 1976 establishing the Egyptian Electricity Authority.
   * Law No. 13 of 1976 establishing the Nuclear Electricity Generating Plants Authority.
   * Law No. 27 of 1976 establishing the Rural Electricity Authority.

* Law No. 102 of 1986 establishing the Authority for the Development and Utilization of New and Renewable Energy.

5. Companies operating in mines and quarries, and in the production of building materials, which are subject to the provisions of:
   * Law No. 66 of 1953 concerning Mines and Quarries.
   * Law No. 86 of 1956 concerning Mines and Quarries.
6. All infrastructure projects, including plants for the treatment and recycling of waste water or agricultural drainage water, irrigation projects, roads, bridges, barrages, tunnels, airports, sea ports, railway stations, and others.
7. Any other establishment, activity or project liable to have a noticeable impact on the environment and for which a decree shall be issued by the EEAA with the agreement of the competent administrative body.

***SECOND: LOCATION:***

These include establishments set up on the banks of the Nile, its branches or the main canals, as well as those operating in touristic areas and antiquities sites, in densely-populated areas, on the shores of seas and lakes or in the nature reserves.

***THIRD: EXTENT OF DEPLETION OF NATURAL RESOURCES***

These include establishments, which cause the denudation of agricultural land, desertification, destruction of trees and palm trees, or the pollution of water resources, especially the River Nile, its branches, the lakes, or underground water.

***FOURTH: TYPE OF ENERGY USED***

1. Fixed establishments, which use thermal fuel and whose emissions exceed the permissible levels.
2. Establishments using nuclear fuel for their operation. (Law 4, 1994, Annex no. 2)

***Environmental Impact Assessment (EIA)***

The Purpose of EIA is to ensure the protection and conservation of the environment and natural resources including human health aspects against uncontrolled development. EIA must be performed for new establishments or projects and for expansions or renovations of

existing establishments according to the law no. 4 of 1994. All projects including the EIA studies divide into three groups which require different levels of EIA according to the severity of possible environmental impacts as follow:- (EEAA, 2000, pp. 3-7).

Table (1): Three groups of the projects are categorized according to the severity of possible environmental impacts..

| | |
|---|---|
| 1-White Projects | Projects with minor environmental impacts and can normally be approved on the basis of a simple Environmental Screening (Form A) |
| 2-Grey Projects | Projects which may cause important environmental impact. The applicant must carry out a more elaborate Environmental Screening (Form B). For some cases a scooped EIA study of certain identified impacts / processes may be requested. |
| 3-Black Projects | Projects, which due to their potentially severe environmental impacts need a full EIA study. Such as, Oil, Cements and Chemical Companies |

***The Environmental Condition Register***

According to law 4 of 1994, the establishment owner shall keep a register indicating the environmental impact of the establishment activities in which the following data shall be recorded:

Emissions put out thereby or discharged there from.

Specifications of discharges after the treatment process, and the efficiency of the treatment units used.

Follow-up and environmental safety procedures applied in the establishment.

Periodical tests and measures and their results.

The name of the person in charge of follow-up.

The establishment owner or his / or her representative shall be notify the EEAA immediately, by means of registered letter with return receipt requested, of any deviation in the criteria and specifications of emitted or discharged pollutants and the procedures taken to rectify such deviations. (Law 4, 1994, Article no. 17).

Furthermore, the EEAA shall be competent to follow-up the data recorded in the register to ascertain its conformity with the facts, as well as to take the necessary samples and conduct the appropriate tests to determine the environmental impact of the establishment activity

and the extent of its adherence to the criteria laid down for the protection of the environment. Such follow-up shall be regularly conducted every year and a report thereon deposited with the competent department in the EEAA. The report shall be signed by the officer in charge of follow-up and tests and shall indicate the date on which the follow-up was conducted. If any violations are discovered, the EEAA shall notify the competent administrative body, which shall instruct the establishment owner, to rectify such violations. If he /or she fails to do so within 60 days, the competent administrative body, shall be entitled to take the following procedures:-

Shut down the establishment.

Suspend the contravening activity.

Claim adequate compensation through the courts to remedy the damage resulting from the violation (Law 4, 1994, Article no. 18).

Also, the executive regulation of the law 4 provides model form shown in annex no. 3 to estimate the impact of establishment's activities on environment. The contents of the model as follows:-

| **Table (2): Model of environmental condition register** |
|---|
| 1. Name and address of establishment |
| 2. Name and job title of person in charge of filling in the Register. |
| 3. Period covered by the current data. |
| 4. Type of activity and nature of raw materials and production during the corresponding time period. |
| 5. Laws governing the establishment. |
| 6. Special conditions set by the EEAA for the establishment. |
| 7. Statement of the types of emissions, the rates of discharge (per hour/ day/ month/ year), and method of disposal thereof. |
| 7/1 - Gaseous |
| 7/2 - Liquid |
| 7/3 - Solid |
| 7/4 - Others |

8. Rates at which tests are conducted on each type of emission emanating from the establishment.

8/1 Random samples [experimental]

* Date, time and place of each sample.
* Rate of sample collection.
* Indicators requiring to be measured (daily/ weekly/ monthly).

8/2 Samples of compound wastes

* Date and time of sample collection.
* Places of mixing and percentages of mixture in the compound sample.
* Indicators requiring to be measured (daily/ weekly/ monthly).

9. Extracted materials after treatment processes.

10. Extent of efficiency of treatment method.

11. Date and signature of officer in charge.

It can be argued that environmental record or register now becomes formal and legal record for any company in Egypt (according to law no. 4 of 1994). Therefore, in any audit process, the independent auditor should ensure that the auditee has environmental record and audits it. Consistent with generally accepted auditing principles, the auditor shall mention in his/ or her report whether the auditee keeps legal records or not.

***Some Important Articles and Penalties in Law 4 of 1994***

Articles no. 34, 35, 36, 40, 42, 43, 44, and 47 point out that:-

The site on which a project is established must be suitable for the project activity to ensure that the permissible levels of air pollutants are not overstepped, and that the total pollution emitted by all the establishments in one area is within the permissible levels. The executive regulation of this law determines the permissible levels of air pollutants and noise (annex no. 5, 6, and 7 in law 4 of 1994).

Establishments in carrying out their activities must ensure that emissions or leakage of air pollutants do not exceed the maximum levels permitted by law. Also, it is prohibited to use machines, engines or vehicles whose exhaust emissions exceed the limits set by law. Furthermore, it is mandatory when burning any type of fuel or otherwise, whether for industrial, energy production, construction or other commercial purpose, that the harmful smoke, gases and vapors resulting from the combustion process are within the permissible limits. The person responsible for such activity shall be held to take all persecutions necessary to minimize the pollutants in the combustion products.

The level of radioactivity or concentration of radioactive substances in the air shall not exceed the permissible limits as determined by the competent authorities in accordance with law.

The owner of an establishment is held to take all persecutions and procedures necessary to prevent the leakage or emissions of air pollutants inside the work premises except within the permissible limits. Also, he /or she should take the necessary procedures to maintain temperature and humidity in a permissible limits.

- ***Penalties***

1- Whoever violates the provisions of article 36 of the law 4 shall be fined. The court may order the suspension of the license for a period of not less than week and not more than six months, and in case of recidivism, the court may revoke the license.
2- The fines imposed on those who violate the provisions of articles 35, 40, 43, and 44 of this law shall be not less than thousand Egyptian Pounds and not more than twenty thousand Egyptian Pounds.
3- Any person who violates the provisions of article 47 of the present law shall be punished by imprisonment for a term of not less than five years and a fine of twenty thousand Egyptian Pounds to forty thousand Egyptian Pounds.

In all cases, the violator shall be held to remove or rectify the violating works by the date determined by Ministry of Environment. If the violating works are not removed or rectified by due date, the Ministry shall have the right to take procedures to remove or rectify the violation by administrative means, at the expense of the violator, without prejudice to the right of the Ministry to revoke the license.

Article no. 29, 30, 31, 32, and 33 point out that:-

- It is forbidden to displace hazardous substances and waste without a license from the competent administrative authority. The executive regulation of this law shall determine the procedures and conditions for license. It is forbidden to construct any establishment for the treatment of hazardous waste or import without a license issued by the competent authority after consulting the EEAA.
- Establishments which engaged in the production or circulation of hazardous materials, either in gas, liquid or solid form, are held to take all precautions to ensure that no environmental damage shall occur.
- The owner of an establishment whose activities produce hazardous waste pursuant to the provisions of this law shall be held to keep a register of such waste indicating the method of disposing thereof, and the agencies contracted with to receive the hazardous waste. The executive regulation shall determine the data to be recorded in the register and the EEAA shall be responsible for following up the register to ensure its conformity with the facts.

- ***Penalties***

1- Any person who violates the provisions of articles 29 and 32 of law shall be punished by imprisonment for a term of not less than five years and a fine of twenty thousand Egyptian Pounds to forty thousand Egyptian Pounds.
2- Whoever violates the provisions of articles 30, 31 and 33 of the law shall be imprisoned for a period of not less than one year and /or fined ten to twenty thousand Egyptian Pounds.

In all cases, the Ministry has the right to revoke the license of offending establishments.

Articles 49, 50, 51, 52, and 56 point out that:-

-National and foreign companies and organizations licensed to explore, extract or exploit off-shore oil fields and other marine natural resources, including oil transport facilities, are forbidden to discharge any polluting substances resulting from drilling, exploration, testing of wells or production in the territorial sea of Egypt. They are held to use safe measures not liable to harm the water environment and to treat any discharged waste or polluting

substance according to the available technical methods and in accordance with the regulations of international conventions.

***-Penalties***

Whoever commits one of the following acts shall be fined a sum of not less than one hundred and fifty thousand Egyptian Pounds, as the following:

1- Discharges oil or oily mixtures or harmful substances in the territorial sea or the exclusive economic zone in violation of articles 49, 50 and 56 of this law.
2- Fails to comply with the requirement to treat the wastes and polluting substances discharge, or fails to use safe procedures, which prevent damage to the water environment in violation of article 52.
3- Discharges any other substances that pollute the environment.

In case of recidivism, the penalty shall be both imprisonment and the fine provided for in the preceding paragraph.

In all cases, the violator shall be held to remove the effects of the violation within the time frame determined by the competent administrative authority, otherwise the administrative authority shall proceed with the removal at his /or her expense. Also, the ministry has the right to revoke the license of offending establishments.

***The Egyptian Environmental Affaires Agency (EEAA)***

The EEAA established by law 4 of 1994. It follows the Minister of State for Environmental Affairs and is the agency responsible for implementing law 4 of 1994. The principle functions of EEAA such as:-

Formulating environmental policies.

Preparing the necessary plans for environmental protection and environment development projects.

- Setting the standards and conditions, which should follow by organizations.
- Setting the principles and procedures for mandatory Environment Impact Assessment (EIA) of projects.
- Monitoring programs and employing data and information.
- Establishing public environmental education programs and assisting in their implementation.

- Implementing pilot projects for the preservation of natural resources.
- Participating in the preparation of a plan to prevent illegal acts by organizations.
- Preparing an annual report on the state of the environment to be submitted to the Cabinet of Ministers.
- Establishing a National Biodiversity Unit (NBU) that set: (1) a national study of the Egyptian biodiversity, (2) a national biodiversity data bank (to be linked with a national biodiversity data network), (3) a national strategy for biodiversity conservation and a national plan of action (EEAA, 2000.)

***Egypt: National Strategy for Biodiversity Conservation***

Egyptian government established an environmental action plan. One of its aims is to strengthen the role of EEAA as an agency responsible for facilitating the development of national strategy for the environment. The strategy aims at setting in clear terms the limits of social responsibility of the present generation. Sustainable development requires justice in sharing the resources and maintenance of social peace and setting ethical responsibility towards future generations. This may be achieved through the following six goals:-

-Management of natural resources protection of ecosystems against degradation.

-Development of Egyptian scientific and technological capabilities in fields of conservation and development of natural resources to be able to implement programs of action in the fields of research, monitoring and inventories and management of projects.

-Mobilize national capacities and resources to conserve biodiversity with its ecological and genetical elements; to ensure the sustainability and national use of these elements.

-Set programs of actions that ensure the positive participation of people, as individuals and as organizations, in the implementation of biodiversity conservation programs.

-Establishment of legal instruments and economic and social incentives that support conservation and sustainable use of natural resources.

-National actions should complement regional and international actions in fields of biodiversity conservation, exchange equitable available scientific information related to conservation of biodiversity resources including genetic resources (EEAA, 2000).

***The Environmental Projects in Egypt***

In recent years, there has been a growing awareness of the need to address the public concern over environmental pollution in Egypt. The main causes of the pollution are generally considered to be rapid industrial development and a dramatic increase in population, particularly in Cairo.

Table (3): Pollution factors of the environment in Egypt.

| Elements | Main Pollution Sources | Pollutants |
|---|---|---|
| Air Pollution | *Gas from vehicle exhaust<br>*Gas and fumes from factories | $No_x$, $So_x$, CO, heavy metals, hydrocarbon, dust, etc. |
| Water Pollution | *Industrial wastewater<br>*Agricultural wastewater<br>*Domestic wastewater | Organic matters, hazardous substances(heavy metals, pesticides, etc), nutrient salts(total nitrogen, total phosphorus) |
| Solid Waste Pollution | *Household waste<br>*Commercial waste<br>*Industrial waste<br>*Medical waste | Hazardous substances (heavy metals and toxic chemicals, etc) |
| (EEAA, 2000) | | |

Therefore, MSEA and EEAA establish many projects (about 40 projects now) to protect the environment and achieve other aims (such as, education, training and Awareness Program). Examples for these projects are:-

(1) Environmental Information and Monitoring Program (EIMP) aims at establishing monitoring network for ambient air quality. The design of the EIMP includes:- (a) establishing 42 network measurement sites ( a total of 14 sites in Cairo, one of them in

Helwan area to control on Cement Companies' activities, 8 sites in Alexandria, 10 sites in Delta and Canal area, 9 sites in Upper Egypt and 1 site in Sinai, (b) data collectors, sensors and monitors, (c) data transfer systems and data quality assurance/ control procedures, (d) data bases, and (e) data distribution.(http://www.eeaa.gov.eg/english/info/proects-search; http://www.eimp.net/tsourcesof%20pollution).

(2) Cairo Air Improvement Project (CAIP)

The goals of the CAIP project are:-

-Reduce air pollutants that have the most serious impacts on human health in Cairo, especially, suspended particulate and lead.

-Reduce total suspended particulate emissions from diesel-fueled buses through expanded use of Compressed Natural Gas (CNG) in public transportation.

-Improve the fuel efficiency and reduce exhaust emissions from gasoline-fueled vehicles licensed in Cairo through vehicle emission testing enhancing modern tune-up capabilities, and vehicle certification (VET).

-Reduce airborne lead emissions from lead smelters.

-Increase public awareness and communication programs as well as evaluation of other air pollution prevention and reduction initiatives. (EEAA, 2000).

***The Environmental Reports in Egypt***

Until now, companies in Egypt do not engage in environmental reporting. Some companies start to announce that they have ISO certifications and their products are environmentally friendly only in the media. Some oil companies are beginning to disclose about their environmental costs and their environmental initiatives such as, having ISO14000 certification in their annual report to shareholders (such as, SUCO oil company in Egypt).

The EEAA established the Environmental Information Monitoring Programme (EIMP), which aims at providing detailed knowledge of the ambient air and coastal water quality in Egypt for the relevant authorities to take appropriate actions. Also, EIMP helps to produce the following kinds of reports to meet different purposes:-

1- Daily reports on the air quality in greater Cairo area.
2- Monthly report on the air quality in Egypt.
3- Annual report on the air quality in Egypt.
4- Monthly report on the progress of work in the air quality monitoring networks.

5- Quarterly reports on the air quality in greater Cairo and Upper Egypt area.
6- Annual reports on the air quality in greater Cairo and Upper Egypt area.
7- Quarterly reports on the air quality in Alexandria and Delta.
8- Annual report on the air quality in Alexandria and Delta.

***The Auditing profession in Egypt***

***-The applied standards in auditing***

The international auditing standards are applied standards in Egypt. The Egyptian auditing standards released in 2000, which consists of six standards as follows:-

1- Standard no. 100 "the framework for Egyptian auditing standards".
2- Standard no. 200 "the independent auditor's report on financial statements".
3- Standards no. 210 "additional information, which related to audited financial statements".
4- Standard no. 220 "the independent auditor's report about auditing for specific purposes".
5- Standard no. 230 "examining the future financial information".
6- Standard no. 240 "limited investigation of financial statements"

***-The legal framework of independent auditors***

Independent auditors in Egypt subject to some laws, which determine duties, rights and responsibilities of auditor, as the following:-

1- Law no. 133 of 1951 for practising the accounting and auditing profession.
2- Law no. 159 of 1981 for holding and subsidiary companies.
3- Law no. 203 of 1991 for share companies.

***-Requirements of practising the accounting and auditing profession***

According to the law no. 133 of 1951, which concerns the accounting and auditing profession:-

-It is not permitted to practice the accounting and auditing profession in Egypt unless the person registers his/ or her name in the general register of accountants and auditors in the Ministry of Commerce and Industry. This general register includes three levels:

1- Level 1: auditors and accountants under training.
2- Level 2: auditors and accountants.

3- Level 3: auditors and accountants assistants.

The law determines conditions and requirements to register in each level as well as required conditions for transferring from level to level according to scientific qualifications and experience years. Furthermore, there are additional requirements should be fulfilled to practise the profession in Egypt such as:-

- Scientific qualification at least bachelor degree of commerce (accounting division).
- The accountant and auditor must pass two exams, primer exam and final exam, each exam includes four subjects:- (1) accounting, (2) auditing, (3) taxes, and (4) information system.
- Governmental laws regulate the accounting and auditing profession in Egypt. The Egyptian accountancy bodies have a limited role concerning professional regulations. Their role is mainly devoted to put professional exams for accountants and auditors.

**(a) Suez-Oil Company (SUCO) Magazine.**

# Environmental Leadership with SUCO

SUCO has recently achieved Certification to ISO14001,the International Environmental Management System Standard. This Certification is valid Until March 2004 for all activities related to production of oil, gas and condensate from onshore and offshore installations at Ras Budran, Zeit Bay and Ras Fanar in the Gulf of Suez. Certification involves a thorough audit of the system by DNV as an external body to verify that the model of best practice described in ISO 14001 is followed.

The route to ISO 14001 used the International Environmental Rating System, IERS as the tool using our own resources. Fields were then externally assessed against IERS with Ras Budran achieving Level 6 and Zeit Bay/Ras Fanar achieving Level 5 in September 2000. IERS is based on the ISRS system where Ras Budran and Zeit Bay/ Ras Fanar achieved Level 7.

SUCO was certified to ISO 14001 for the whole organisation in March 2001.

SUCO is the only company in Egypt to achieve these three certifications, ISO 14001, ISRS and IERS.

ISO 14001 is published by the International Organisation for Standardisation (ISO), Based in Geneva.

ISO is the primary organisation promoting standardisation worldwide. ISO publishes agreed standard documents describing both specifications for goods and services and specifications for management systems, methods and tests.

The ISO 14001 approach to environmental management has four main elements:

* a thorough understanding of impacts on the environment
* compliance with envionmental legal requirements as a minimum
* a commitment to continually improving environmental performance
* a systematic method of organising, describing and documenting activities to manage significant impacts

DET NORSKE VERITAS
MANAGEMENT SYSTEM CERTIFICATE

SUEZ OIL COMPANY (SUCO)

ISO 14001 improvement process related to the sections of ISO 14001 is shown in the diagramme.

ISO 14001 benefits SUCO in many ways:

Meeting shareholders expectations regarding good management and legal compliance.

Demonstrates compliance to International Oil Company standards.

Maintains good standing with EGPC especially with increasing envionmental pressures.

Gives SUCO a high Status in local industry.

Improves staff understanding and competence.

Facilitates effective management of costs.

Improves management of polluting emissions and wastes.

Maintains effective emergency response systems.

To achieve ISO 14001 SUCO has to demonstrate systematic control in Planning Activites, involving identification of Environmental Aspects and Legal Requirements, creating a Policy and setting Objectives for Improvement. Implementation includes providing resources, training and awareness,communications, procedures document control and management of suppliers and contractors. A thorough analysis of potential emergency situations is also necessary and appropriate drills carried out. The system must also include relevant process monitoring and maintenance of adequate records to demonstrate control. The system is monitored both by Internal Audit and by Management Review involving the MD's in the process.

SUCO's history in good environmental practice is a long one. Before ISO 14001 existed and before the introduction of the Egyptian Environmental Law 4 in 1994, SUCO carried out Environmental Impact Assessments before the start -up of Field Operations. Environmental matters are included in risk assessments and HAZOP studies. Also International Oil Company Syandards were followed. This included setting water discharge points at least 500m from the shoreline, installation of a hazardous waste incinerator at Ras Budran and use of ballast water tanks although these went well beyond the minimum for Egyptian Legal Requirements.

SUCO has also been active in working with sister companies and Geographical Committees to improve the industry response to potential oil spill emergencies.

Prepared by: Nadia Khattab / Environment Assistant General Manager
&
Tom Carpenter H.S.E Adviser

**(b) ISO14000 Certificate of Suez Oil Company (SUCO).**

DNV

# DET NORSKE VERITAS

# MANAGEMENT SYSTEM CERTIFICATE

Certificate No. 01-EGY-AE-1688

*This is to certify that*
*the Environmental Management System*
*of*

## SUEZ OIL COMPANY (SUCO)

*at*
21 Ahmed Orabi St., El-Mohandessin, P.O. Box: 2622, Cairo, Egypt

*has been found to conform to the Environmental Management System Standard:*
**ISO 14001:1996**

*This Certificate is valid concerning all activities related to:*

**PRODUCTION OF OIL, GAS AND CONDENSATE FROM ONSHORE AND OFFSHORE INSTALLATIONS AT RAS BUDRAN, ZEIT BAY AND RAS FANAR IN THE GULF OF SUEZ, EGYPT.**

*Original Certification date*
March 2nd, 2001

*This Certificate is valid until*
March 1st, 2004

*Place and date*
Dubai, March 14th, 2001

*for the Accredited Unit:*
DNV CERTIFICATION B.V.,
THE NETHERLANDS

Accredited
by the RvA

*Compliance to the Standard in respect to the indicated scope is certified by the DNV approved registered Team Leader:*

Yngve Amundsen
*Lead Auditor*

Niraj Mathur
*Management Representative*

Lack of fulfilment of conditions as set out in the Appendix may render this Certificate invalid.

EKI F 2000-07-01

DNV CERTIFICATION B.V. Hastedtchaussee 7, 3079 DC Rotterdam, The Netherlands. TELEPHONE + 31 10 2922 688. FAX + 31 10 4796 768

**(c) Halliburton Petroleum Company's Guide for Health, Safety and Environment.**

# ENVIRONMENT

**COUNTRY TEAM :**

*We recognize that we are responsible for protecting the environment and consistently meeting those responsibilities*

**WE AIM TO**
Implement the environmental elements of the HSE guiding principles into our daily activities.

**HOW WILL WE DO THIS?**

- Execute a plan necessary to be able to hold every employee responsible for environmental excellence (we will support our employees through training and make sure they have the best information available)

- Systematically identify and manage environmental hazards (concentrating on chemicals, we will ensure they are properly controlled and use the most environmentally friendly chemicals we can find)

- Identify top 10 high risk behaviours through the use of a hazard observation program (HOC cards are an excellent way to identify potential problems and keep us to the left of zero)

- Systematically track environmental incidents and prevent recurrence (we will learn from our own mistakes and share the knowledge with the rest of Halliburton)

- Maintain a tiered inspection program that will measure environmental performance and provide for continuous improvement (we will continually watch what we're doing)

(d) ISO14000 Certificate of Alexandria National Iron and Steel Company.

## ISO 14000 Certificate regarding environment:

The company acquired the ISO 14001 Certificate regarding environment on May 1998 after passing successfully the procedures of acquiring such a certificate which was ratified by the German Inspection Authority (Germanischer Lloyd) affirming the successful system of environment preservation adopted by the company which coincided with the environment law no. 4 of 1994.

Germanischer Lloyd
Certification GmbH

GLC

# CERTIFICATE

The Germanischer Lloyd Certification GmbH, 20459 Hamburg,
herewith certifies that the company

Alexandria National Iron and Steel Company S.A.E.
(ANSDK)
Post Code No. 21537 Alexandria - Egypt

has established and maintains an Enviromental Management System relevant for

Production of billets, bars for concrete reinforcement and wire rod

Germanischer Lloyd certification GmbH has audited the company. Evidence was provided that the Enviromental Management System fulfills the requirements of the following standard:

ISO 14001
edition 10/1996

The validity of this certificate is subject to the company applying and maintaining its Quality Management System in accordance with the standard indicated. This will be monitored by Germanischer Lloyd Certification GbmH.

The certificate is valid until May 14, 2001

Hamburg, May 14, 1998

Certificate No. EM-1384 HH

Accredited by
Raad voor Accreditatie

GERMANISCHER LLOYD CERTIFICATION
GLC
ENVIRONMENTAL MANAGEMENT SYSTEMS

(Dr. Weber)

(K. P. Schröder)

**(e) ISO14000 Certificate of National Cement Company.**

SGS European Quality Certification Institute E.E.S.V.

International Certification Services

Environmental Management Systems Certificate

*EBE 00017*

**We state that the environmental management system of**

*National Cement Company*
*Cairo - Egypt*

**is in compliance with the environmental management system standard**

# ISO 14001

(first edition 01/09/1996).

**This certificate is applicable to**

*Production of all types of grey cement, gypsum plasters, light expansion clay aggregate (leca), hollow cement & leca bricks and kraft bags.*

Signed by G. D'Haese, Director
Antwerp, March 16, 2000

**Period of validity :**

*16/03/2000-30/04/2003.*

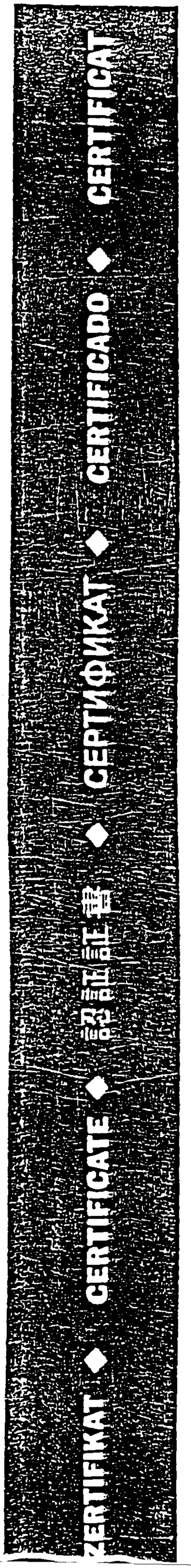
GREEN DOVE AWARD
ISO 14001
SGS

Registered Office :
SGS European Quality Certification Institute E.E.S.V.
SGS House, Noorderlaan 87,
B-2030 Antwerpen, Belgium
Tel. : (32-3) 545.48.08
Fax : (32-3) 545.48.09
E-mail : SGS.EQC.Belgium@sgsgroup.com
R.E.S.V. Antwerpen n° 2 - V.A.T. BE 0862 286

This certification does not cover the quality of the individual products and services delivered under the certified system.

Accredited by
the Dutch Council
for Accreditation
Accreditation Number
C 055

(f) ISO14000 Certificate of Tourah Portland Cement Co.




# CERTIFICATE

TÜV

MANAGEMENT SERVICE

The Certification Body
of TÜV Management Service GmbH

Certifies that

TOURAH PORTLAND CEMENT CO.
TPCC
TOURAH EL- ASMANT, MAADI, CAIRO
EGYPT

has established and applies an
Environmental Management System for

Producing, Packaging & Dispatching
Different Types of Cement
including Production of Paper Sacks
for Internal Purposes

An Audit was performed. Report No. 24023326

Proof has been furnished that the requirements according to

ISO 14001 :1996

are fulfilled. The certificate is valid until April 2002

Certificate Registration No. 12 104 7397 TMS

Munich, 1999-04-21

Certification Body
of TÜV Management Service GmbH
Unternehmensgruppe TÜV Süddeutschland

Deutscher Akkreditierungs Rat

TGA-ZM-54-95-60-0

*Appendix 6: Environmental auditing surveys (survey 1, 2, and 3)*

***Survey 1 (Researchers)***

***(a) Information on respondent***

1- What is your position? please, tick one

- Manager ☐
- The director of finance ☐
- Internal auditor ☐
- External auditor ☐
- Accountant ☐
- Researcher ☐
- Employee ☐
- Consultant ☐
- Other. ☐ please, describe .....

2- What are your professional qualifications? please, tick one or more

- The university degree ☐
- Professional diploma ☐
- Master degree ☐
- Doctoral degree ☐
- Other ☐ please, describe .....

3- How many experience years do you have in the field of research? Please, tick one

- Two years or less ☐
- More than two but less than five years ☐
- More than five but less than ten years ☐
- More than ten years ☐

***(b)Knowledge about environmental issues***

1- Do you think environmental issues have an actual impact on the financial statements of companies? please, use the five-point scale and highlight the most appropriate number.

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| no impact | small | moderate | great | maximum impact |

2-Do you think environmental issues have a potential impact on financial statements of companies? please, use the five-point scale and highlight the most appropriate number.

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| no impact | small | moderate | great | maximum impact |

3-Do you think environmental issues may impact on the financial statements of companies in any of the following areas:- valuation of land, contingent liabilities, valuation of fixed assets, valuation of stock, and depreciation policy? please, use the five-point scale and highlight the most appropriate number.

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| no impact | small | moderate | great | maximum impact |

4-Do you conduct environmental audits in any of the following areas?

please, tick one or more

- Compliance with environmental laws and reporting requirements ☐
- Compliance with company environmental policies and procedures ☐
- Environmental management systems ☐
- Financial accounting for environmental risks and liabilities ☐
- The company's program for the treatment, storage or disposal of hazardous wastes or pollution prevention ☐
- Transactional audits ☐
- None ☐
- Other types of environmental audits ☐ please, describe.....

5- In your opinion, what are the potential advantages for companies which conduct environmental audits? please, use the five-point scale and place the most appropriate number in the blank space to the left of each item listed below.

| No advantage | small | moderate | great | Maximum advantage |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |

------Increased assurance of the adequacy of financial accruals for environmental liabilities

------ Reduction of fines for non-compliance with environmental regulations

------ Create a good corporate image

------ Increased company awareness of environmental issues

------ Publicise the commitment to environmental regulation

------ Increased early identification of issues and problems

------ Demonstrate that a company is operating according to the requirements of environmental laws

------ Reduction of long-term environmental risks

------ Increased environmental protection

------ Cost savings from waste minimisation and pollution prevention

------ Others please, describe.....

6- In your opinion, what are the potential disadvantages, which make companies, prefer not to conduct environmental audits? please, use the five-point scale and place the most appropriate number in the blank space to the left of each item listed below.

| no disadvantage | small | moderate | great | maximum disadvantage |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |

------ Use of environmental auditing reports against the company in regulatory enforcement action

------ Lack of financial and/or technical ability to solve environmental problems

------ Increase the cost of auditing processes

------ Loss of public trust if environmental problems are discovered

------ Decreased market share of company if environmental problems are discovered

------ Others please, describe.....

7- In your opinion, why some companies may disclose about their environmental performance?. please, use the five-point scale and place the most appropriate number in the blank space to the left of each item listed below.

| no motivation | small | moderate | great | maximum motivation |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |

------ to improve the image or reputation of the company

------ to publicise the commitment to environmental regulation

------ to reduce long-term environmental risks

------ to gain the marketing benefits arising from reputation for environmental protection

------ to publicise their commitment to improving environmental performance

------ to confirm the operating practices are performed according to environmental laws

------ to communicate information on company's behaviour towards environmental issues

------ to demonstrate regulatory compliance

------ to differentiate the organisation from its competitors

------ Others please, describe.....

*(c)Views on environmental guidance and regulation*

1- There is a need for separate auditing standards for environmental issues. Please, use the three-point scale and highlight the most appropriate number

| 1 | 2 | 3 |
|---|---|---|
| agree | neutral | disagree |

2- There is a need for separate financial reporting standards on environmental issues. Please, use the three-point scale and highlight the most appropriate number

| 1 | 2 | 3 |
|---|---|---|
| agree | neutral | disagree |

3- There is a need for a mandatory guidance from the professional accounting bodies concerning environmental issues. Please, use the three-point scale and highlight the most appropriate number

| 1 | 2 | 3 |
|---|---|---|
| agree | neutral | disagree |

4- The professional accountancy bodies exams should include subjects to enhance environmental awareness. Please, use the three-point scale and highlight the most appropriate number

| 1 | 2 | 3 |
|---|---|---|
| agree | neutral | disagree |

5- The professional accountancy bodies should require environmental disclosure by companies. Please, use the three-point scale and highlight the most appropriate number

| 1 | 2 | 3 |
|---|---|---|
| agree | neutral | disagree |

*(d) Views on extending the auditing profession to encapsulate environmental issues.*

1- The professional skills of external auditor can be raised to involve in environmental issues. Please, use the three-point scale and highlight the most appropriate number

| 1 | 2 | 3 |
|---|---|---|
| agree | neutral | disagree |

2- There is a need for external auditors' awareness of environmental issues to be raised. Please, use the three-point scale and highlight the most appropriate number

| 1 | 2 | 3 |
|---|---|---|
| agree | neutral | disagree |

3- There is a need for making changes in auditors' education to be able to cope with environmental issues. Please, use the three-point scale and highlight the most appropriate number

| 1 | 2 | 3 |
|---|---|---|
| agree | neutral | disagree |

4- The accountancy bodies should provide a certification and appropriate training to qualify the external auditor to conduct environmental auditing. Please, use the three-point scale and highlight the most appropriate number

| 1 | 2 | 3 |
|---|---|---|
| agree | neutral | disagree |

5- There is a role for large audit firms, which have environmental specialist, in verifying environmental reports. Please, use the three-point scale and highlight the most appropriate number

| 1 | 2 | 3 |
|---|---|---|
| agree | neutral | disagree |

6- There is a role for small audit firms in verifying environmental reports in liaison with environmental specialists. Please, use the three-point scale and highlight the most appropriate number

| 1 | 2 | 3 |
|---|---|---|
| agree | neutral | disagree |

7- If environmental reports are inevitable, the external auditor should participate in verifying them. Please, use the three-point scale and highlight the most appropriate number

| 1 | 2 | 3 |
|---|---|---|
| agree | neutral | disagree |

8- The public has a fundamental right to information about the environmental impact of companies. Please, use the three-point scale and highlight the most appropriate number

| 1 | 2 | 3 |
|---|---|---|
| agree | neutral | disagree |

9- The external auditor should involve in the preparation of environmental information for public disclosure. Please, use the three-point scale and highlight the most appropriate number

| 1 | 2 | 3 |
|---|---|---|
| agree | neutral | disagree |

10- In your opinion, what factors currently may limit external auditors to involve in environmental auditing?. Please, use the five-point scale and place the most appropriate number in the blank space to the left of each item listed below

| No limitation | small | moderate | great | Maximum limitation |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |

------ Lack of knowledge of environmental regulations

------ Lack of technical ability to solve environmental problems

------ Lack of experience in environmental field

------ Lack of professional guidance concerning environmental issues

------ Defined role of external auditor does not include environmental auditing

------ Lack of suitable training in the field of environmental auditing

------ The current qualification of external auditor is not appropriate and sufficient to cope with environmental problems

------ Others. Please describe.....

## *Survey 2 (Practitioners)*

### *(a) Information on respondent*

1- What is your position? please, tick one

- Manager ☐
- The director of finance ☐
- Internal auditor ☐
- External auditor ☐
- Accountant ☐
- Researcher ☐
- Employee ☐
- Consultant ☐
- Other. ☐ please, describe .....

2- What are your professional qualifications? please, tick one or more

-The university degree ☐
- Professional diploma ☐
- Master degree ☐
- Doctoral degree ☐
- Other ☐ please, describe .....

3- How many experience years do you have in the field of financial audit? Please, tick one

- Two years or less ☐
- More than two but less than five years ☐
- More than five but less than ten years ☐
- More than ten years ☐

### *(b) Knowledge about environmental issues*

1- Do you think environmental issues have an actual impact on the financial statements of clients? please, use the five-point scale and highlight the most appropriate number.

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| no impact | small | moderate | great | maximum impact |

2- Do you think environmental issues have a potential impact on financial statements of clients? please, use the five-point scale and highlight the most appropriate number.

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| no impact | small | moderate | great | maximum impact |

3- Do you think environmental issues may impact on the financial statements of clients in

any of the following areas:- valuation of land, contingent liabilities, valuation of fixed assets, valuation of stock, and depreciation policy? please, use the five-point scale and highlight the most appropriate number.

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| no impact | small | moderate | great | maximum impact |

4- Do you conduct environmental audits in any of the following areas?

please, tick one or more

- Compliance with environmental laws and reporting requirements ☐
- Compliance with company environmental policies and procedures ☐
- Environmental management systems ☐
- Financial accounting for environmental risks and liabilities ☐
- The company's program for the treatment, storage or disposal of hazardous wastes or pollution prevention ☐
- Transactional audits ☐
- None ☐
- Other types of environmental audits ☐ please, describe.....

5- In your opinion, what are the potential advantages for companies which conduct environmental audits? please, use the five-point scale and place the most appropriate number in the blank space to the left of each item listed below.

| No advantage | small | moderate | great | Maximum advantage |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |

------ Increased assurance the of the adequacy of financial accruals for environmental liabilities

------ Reduction of fines for non-compliance with environmental regulations

------ Create a good corporate image

------ Increased company awareness of environmental issues

------ Publicise the commitment of environmental regulation

------ Increased early identification of issues and problems

------ Demonstrate that a company is operating according to the requirements of environmental laws.

------ Reduction of long-term environmental risks

------ Increased environmental protection

------ Cost savings from waste minimisation and pollution prevention

------ Others please, describe.....

6-In your opinion, what are the potential disadvantages, which make clients prefer not to conduct environmental audits? please, use the five-point scale and place the most appropriate number in the blank space to the left of each item listed below.

| No disadvantage | small | moderate | great | Maximum disadvantage |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |

------ Use of environmental auditing reports against the company in regulatory enforcement action

------ Lack of financial and/or technical ability to solve environmental problems

------ Increase the cost of auditing processes

------ Loss of public trust if environmental problems are discovered

------ Decreased market share of company if environmental problems are discovered

------ Others please, describe.....

7- In your opinion, why some companies may disclose about their environmental performance?. please, use the five-point scale and place the most appropriate number in the blank space to the left of each item listed below.

| no motivation | small | moderate | great | maximum motivation |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |

------ to improve the image or reputation of the company

------ to publicise the commitment to environmental regulation

------ to reduce long-term environmental risks

------ to gain the marketing benefits arising from reputation for environmental protection

------ to publicise their commitment to improving environmental performance

------ to confirm the operating practices are performed according to environmental laws

------ to communicate information on company's behaviour towards environmental issues

------ to demonstrate regulatory compliance

------ to differentiate the organisation from its competitors

------ Others please, describe.....

8- Did you attend a course concerning the environmental accounting and auditing?

- Yes ☐
- No ☐

9- Did you provide advice on environmental issues to any client?

- Yes ☐
- No ☐

10- Have you taken training concerning the accounting or auditing implications of environmental issues?

- Yes ☐ if yes go to the next question
- No ☐

11- How long was the training? Please, tick one

- Less than a month ☐
- More than a month but less than three months ☐
- More than three months ☐

12- Was the training useful? Please, tick one

- Yes ☐
- No ☐

***(c) Views on environmental guidance and regulation***

1- There is a need for separate auditing standards for environmental issues. Please, use the three-point scale and highlight the most appropriate number

| 1 | 2 | 3 |
|---|---|---|
| agree | neutral | disagree |

2- There is a need for separate financial reporting standards on environmental issues. Please, use the three-point scale and highlight the most appropriate number

| 1 | 2 | 3 |
|---|---|---|
| agree | neutral | disagree |

3- There is a need for a mandatory guidance from the professional accounting bodies concerning environmental issues. Please, use the three-point scale and highlight the most appropriate number

| 1 | 2 | 3 |
|---|---|---|
| agree | neutral | disagree |

4- The professional accountancy bodies exams should include subjects to enhance environmental awareness. Please, use the three-point scale and highlight the most appropriate number

| 1 | 2 | 3 |
|---|---|---|
| agree | neutral | disagree |

5- The professional accountancy bodies should require environmental disclosure by companies. Please, use the three-point scale and highlight the most appropriate number

| 1 | 2 | 3 |
|---|---|---|
| agree | neutral | disagree |

**(d)** ***Views on extending the auditing profession to encapsulate environmental issues.***

1- The professional skills of external auditor can be raised to involve in environmental issues. Please, use the three-point scale and highlight the most appropriate number

| 1 | 2 | 3 |
|---|---|---|
| agree | neutral | disagree |

2- There is a need for external auditors' awareness of environmental issues to be raised. Please, use the three-point scale and highlight the most appropriate number

| 1 | 2 | 3 |
|---|---|---|
| agree | neutral | disagree |

3-There is a need for making changes in auditors' education to be able to cope with environmental issues. Please, use the three-point scale and highlight the most appropriate number

| 1 | 2 | 3 |
|---|---|---|
| agree | neutral | disagree |

4- The accountancy bodies should provide a certification and appropriate training to qualify the external auditor to conduct environmental auditing. Please, use the three-point scale and highlight the most appropriate number

| 1 | 2 | 3 |
|---|---|---|
| agree | neutral | disagree |

5- There is a role for large audit firms, which have environmental specialist, in verifying environmental reports. Please, use the three-point scale and highlight the most appropriate number

| 1 | 2 | 3 |
|---|---|---|
| agree | neutral | disagree |

6- There is a role for small audit firms in verifying environmental reports in liaison with environmental specialists. Please, use the three-point scale and highlight the most appropriate number

| 1 | 2 | 3 |
|---|---|---|
| agree | neutral | disagree |

7- If environmental reports are inevitable, external auditors should participate in verifying them. Please, use the three-point scale and highlight the most appropriate number

| 1 | 2 | 3 |
|---|---|---|
| agree | neutral | disagree |

8- The public has a fundamental right to information about the environmental impact of companies. Please, use the three-point scale and highlight the most appropriate number

| 1 | 2 | 3 |
|---|---|---|
| agree | neutral | disagree |

9- The external auditor should involve in the preparation of environmental information for public disclosure. Please, use the three-point scale and highlight the most appropriate number

| 1 | 2 | 3 |
|---|---|---|
| agree | neutral | disagree |

10- In your opinion, what factors currently may limit external auditors to involve in environmental auditing?. Please, use the five-point scale and place the most appropriate number in the blank space to the left of each item listed below

| No limitation | small | moderate | great | Maximum limitation |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |

------ Lack of knowledge of environmental regulations

------ Lack of technical ability to solve environmental problems

------ Lack of suitable training in the field of environmental auditing

------ The current qualification of external auditor is not appropriate and sufficient to cope with environmental problems

------ Lack of experience in environmental field

------ Lack of professional guidance concerning environmental issues

------ Defined role of external auditor does not include environmental auditing

------Others. Please describe.....

## *Survey 3 (Companies)*

### *(a) Information on respondent*

1- What is your position? please, tick one

- Manager ☐
- The director of finance ☐
- Internal auditor ☐
- External auditor ☐
- Accountant ☐
- Researcher ☐
- Employee ☐
- Consultant ☐
- Other. ☐ please, describe .....

2- What are your professional qualifications? please, tick one or more

- The university degree ☐
- Professional diploma ☐
- Master degree ☐
- Doctoral degree ☐
- Other ☐ please, describe .....

3- How many experience years do you have in your company? Please, tick one

- Two years or less ☐
- More than two but less than five years ☐
- More than five but less than ten years ☐
- More than ten years ☐

4- In which industry does your company operate? Please, tick one

- Chemical ☐
- Pharmacy ☐
- Cement ☐
- Manufacturing ☐
- Petroleum refining and extraction ☐
- Others ☐ Please describe.....

5- Do your company's activities impact on Please, tick one or more

- Air? ☐
- Water? ☐
- Land? ☐

6. Does your company make any adjustments on its operations or make any changes to environmental protection and compliance with environmental laws, such as:

Please, tick one or more

- Fixing filters ☐
- Adding new equipment and replacing old equipment ☐
- Putting in systems to treat waste ☐
- None ☐

***(b) Environmental auditing nature***

1. What groups of your company are responsible for environmental issues?

Please, tick one or more

- Environmental committee ☐
- Environmental affairs department ☐
- Legal department ☐
- Finance department ☐
- Accounting and auditing department ☐
- Management systems department ☐
- None ☐
-Others ☐ Please describe.....

2. In your opinion, how important is the issue of environmental protection to your company today, and how important was this issue to your company six years ago? Please use the five-point scale and place the most appropriate number in the blank space to the left of each item.

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| no importance | small | moderate | Great | maximum importance |

- Importance of environmental protection issue today
- Importance of environmental protection issue from six years ago

3. Does your company conduct environmental audits in any of the following areas?

Please tick one or more

- Compliance with environmental laws and reporting requirements ☐
- Compliance with company environmental policies and procedures ☐
- Environmental management systems ☐
- The company's programs for the treatment, storage or disposal of hazardous wastes or pollution prevention ☐
- Transactional audits ☐
-Financial accounting for environmental liabilities ☐
- None ☐
- Other types of environmental audits ☐ Please describe.....

4. For each type of environmental audit that your company conducts, is the audit performed by external or internal personnel or both of them? Please, check the most appropriate response for each type of audit conducted by your company?

| | Primarily external personnel | Primarily internal personnel | Both internal and external personnel |
|---|---|---|---|
| - Compliance with environmental laws and reporting requirements | ——— | ——— | ——— |
| - Compliance with company environmental policies and procedures | ——— | ——— | ——— |
| - Environmental management systems | ——— | ——— | ——— |
| - The company's programs for the treatment, storage or disposal of hazardous wastes or pollution prevention | ——— | ——— | ——— |
| - Transactional audits | ——— | ——— | ——— |
| - Financial accounting for environmental liabilities | ——— | ——— | ——— |

5. From question number 4, specify external personnel (if they perform environmental audits). Please, tick one or more

- The environmental consultancy firms ☐
- External auditor ☐
- Governmental agencies ☐

- Environmental protection agencies ☐
- Environmental specialist ☐
- Other ☐ Please, describe.....

6. To whom do external personnel report upon environmental issues.

Please, tick one or more

- Board of directors ☐
-Senior managers ☐
- Manager of environmental health and safety department ☐
- Legal department ☐
- The public ☐
- Chief executive officer ☐
- The director of finance ☐
-Others ☐ Please, describe.....

7- From question number 4, specify internal personnel (if they perform environmental audit). Please, tick one or more

-Group of internal auditors ☐
- Legal department ☐
- The accounting and auditing staff inside the company ☐
- The environmental management systems staff ☐
- The management system departments ☐
-Other ☐ Please, describe.....

8- In your opinion, what are the potential advantages of environmental auditing if your company conducts it? please, use the five-point scale and place the most appropriate number in the blank space to the left of each item listed below.

| no advantage | small | moderate | great | maximum advantage |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |

------ Increased assurance of the adequacy of financial accruals for environmental liabilities

------ Reduction of fines for non-compliance with environmental regulations

------ Create a good corporate image

------ Increased company awareness of environmental issues

------ Publicise the commitment to environmental regulation

------ Increased early identification of issues and problems

------ Demonstrate that a company is operating according to the requirements of environmental laws

------ Reduction of long-term environmental risks

------ Increased environmental protection

------ Cost savings from waste minimisation and pollution prevention

------ Others please, describe.....

9-In your opinion, what are the potential disadvantages of environmental auditing if your company conducts it? Please, use the five-point scale and place the most appropriate number in the blank space to the left of each item listed below.

| no disadvantage | small | moderate | great | maximum disadvantage |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |

------ Use of environmental auditing reports against the company in regulatory enforcement action

------ Lack of financial and/or technical ability to solve environmental problems

------ Increase the cost of auditing processes

------ Loss of public trust if environmental problems are discovered

------ Decreased market share of company if environmental problems are discovered

------Others please, describe.....

10- What is the extent of external auditor's role in environmental auditing in your company? Please, tick one

No involvement ☐

small ☐

moderate ☐

great ☐

maximum involvement ☐

11- Do you expect external auditor to become more involved in environmental auditing in your company in the future? Please, tick one

- Yes ☐

- No ☐

*(c) Current environmental issues within the company*

1-Does your company have a written environmental policy statement?

Please, tick one

- Yes ☐ (go to next question)
- No ☐

2-When was the environmental policy statement issued? Please, tick one

- This year ☐
- From two years ☐
-More than two years ☐
- More than ten years ☐

3-Who set environmental policy statement inside your company?

Please, tick one or more

- Board of directors ☐
- Management systems department ☐
- Environmental affairs department ☐
- Legal department ☐
- Finance department ☐
- Accounting and auditing department ☐
- Others ☐ Please, describe.....

4-Is there a separate budget for environmental issues in your company?

Please, tick one

- Yes ☐ (go to next question)
- No ☐

5-How much is this budget, annually?

Please, tick one

- 10 000 or less, but less than 100 000 Egyptian Pounds (EP) ☐
-100 000 but less than one million EP ☐
- More than one million EP ☐

6-Have any of the following staff appointments been made or planned in connection with environmental audits? Please, tick one or more

- The environmental consultancy firms ☐
- Environmental specialist ☐
- External auditor ☐
- Internal auditing staff ☐
- Researcher ☐
- Manager of management systems department ☐
- No new appointments ☐
- Other ☐ Please, specify.....

7-Do you think environmental audits should be conducted using…?

Please, tick one or more

- Existing Staff ☐
- New specialist staff ☐
- External auditor ☐
- A combination of the above ☐

## *Appendix 7: Frequency Tables of the descriptive analysis of surveys*

Frequency table (7.1a)

| Scale | Actual impact on financial statements of companies | | Potential impact on financial statements of companies | | Areas affected by the financial statements, e.g. valuation of land | |
|---|---|---|---|---|---|---|
| | N | % | N | % | N | % |
| None | 36 | 35.3 | 1 | 1.0 | 7 | 6.9 |
| Small | 42 | 41.2 | 25 | 24.5 | 47 | 46.1 |
| Moderate | 17 | 16.7 | 46 | 45.1 | 30 | 29.4 |
| Great | 6 | 5.9 | 25 | 24.5 | 17 | 16.7 |
| Maximum | 1 | 1.0 | 5 | 4.9 | 1 | 1.0 |
| Total | 102 | 100 | 102 | 100 | 102 | 100 |

Frequency Table (7.6a)

| Scale | There is a need for separate auditing standards for environmental issues | | There is a need for separate financial reporting standards on environmental issues | | There is a need for a mandatory guidance from the professional accountancy bodies concerning environmental issues | | The professional accountancy bodies exams should include subjects to enhance environmental awareness | | The professional accountancy bodies should require environmental disclosure by companies | |
|---|---|---|---|---|---|---|---|---|---|---|
| | N | % | N | % | N | % | N | % | N | % |
| Agree | 101 | 99 | 101 | 99 | 102 | 100 | 82 | 80.4 | 58 | 56.9 |
| Neutral | - | - | - | - | - | - | 12 | 11.8 | 10 | 9.8 |
| Disagree | 1 | 1.0 | 1 | 1.0 | - | - | 8 | 7.8 | 34 | 33.3 |
| Total | 102 | 100 | 102 | 100 | 102 | 100 | 102 | 100 | 102 | 100 |

Frequency Table (7.7a)

| Scale | The professional skills of external auditor can be raised to involve in environmental issues | | There is a need for external auditor's awareness of environmental issues to be raised | | There is a need for making changes in auditor's education to be able to cope with environmental issues | | The accountancy bodies should provide a certification and appropriate training to qualify external auditor to conduct environmental auditing | |
|---|---|---|---|---|---|---|---|---|
| | N | % | N | % | N | % | N | % |
| Agree | 64 | 62.7 | 96 | 94.1 | 89 | 87.3 | 77 | 75.5 |
| Neutral | 3 | 2.9 | 2 | 2.0 | 12 | 11.7 | 17 | 16.7 |
| Disagree | 35 | 34.4 | 4 | 3.9 | 1 | 1.0 | 8 | 7.8 |
| Total | 102 | 100 | 102 | 100 | 102 | 100 | 102 | 100 |

Frequency Table (7.8a)

| Scale | There is a role for large audit firms, which have environmental specialists in verifying environmental reports | | There is a role for small audit firms in verifying environmental reports in liaison with environmental specialists | |
|---|---|---|---|---|
| | N | % | N | % |
| Agree | 65 | 63.7 | 51 | 50.0 |
| Neutral | 23 | 22.5 | 27 | 26.5 |
| Disagree | 14 | 13.73 | 24 | 23.5 |
| Total | 102 | 100 | 102 | 100 |

Frequency Table (7.9a)

| Scale | If environmental reports are inevitable, the external auditor should participate in verifying them | | The public has a fundamental right to information about the environmental impact of companies | | The external auditor should involve in the preparation of environmental information for public disclosure | |
|---|---|---|---|---|---|---|
| | N | % | N | % | N | % |
| Agree | 62 | 60.8 | 88 | 86.3 | 61 | 59.8 |
| Neutral | 1 | 1 | 14 | 13.7 | 2 | 2 |
| Disagree | 39 | 38.2 | - | - | 39 | 38.2 |
| Total | 102 | 100 | 102 | 100 | 102 | 100 |

Frequency Table (7.11a)

| Scale | Actual impact on the financial statements of companies? | | | | Potential impact on the financial statements of companies | | | | Areas affected by the financial statements, e.g.:- valuation of land,...etc. | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ***Big Firms*** | | ***Small Firms*** | | ***Big Firms*** | | ***Small Firms*** | | ***Big Firms*** | | ***Small Firms*** | |
| | N | % | N | % | N | % | N | % | N | % | N | % |
| None | - | - | 6 | 60 | - | - | 1 | 10 | - | - | 1 | 10 |
| Small | 8 | 80 | 4 | 40 | 1 | 10 | 5 | 50 | - | - | 5 | 50 |
| Moderate | 2 | 20 | - | - | 3 | 30 | 4 | 40 | 6 | 60 | 4 | 40 |
| Great | - | - | - | - | 6 | 60 | - | - | 4 | 40 | - | - |
| Maximum great | - | - | - | - | - | - | - | - | - | - | - | - |
| Total | 10 | 100 | 10 | 100 | 10 | 100 | 10 | 100 | 10 | 100 | 10 | 100 |

| | | | Agree | Neutral | Disagree | Total |
|---|---|---|---|---|---|---|
| There is a need for a separate auditing standards for environmental issues | ***Big firms*** | N | 10 | - | - | 10 |
| | | % | 100 | - | - | 100 |
| | ***Small firms*** | N | 5 | 4 | 1 | 10 |
| | | % | 50 | 40 | 10 | 100 |
| There is a need for a separate financial reporting standards for environmental issues | ***Big firms*** | N | 10 | - | - | 10 |
| | | % | 100 | - | - | 100 |
| | ***Small firms*** | N | 5 | 4 | 1 | 10 |
| | | % | 50 | 40 | 10 | 100 |
| There is a need for a mandatory guidance from the professional accountancy bodies concerning environmental issues | ***Big firms*** | N | 10 | - | - | 10 |
| | | % | 100 | - | - | 100 |
| | ***Small firms*** | N | 5 | 4 | 1 | 10 |
| | | % | 50 | 40 | 10 | 100 |
| The professional accountancy bodies exams should include subjects to enhance environmental awareness | ***Big firms*** | N | 8 | 1 | 1 | 10 |
| | | % | 80 | 10 | 10 | 100 |
| | ***Small firms*** | N | 5 | 4 | 1 | 10 |
| | | % | 50 | 40 | 10 | 100 |
| The professional accountancy bodies should require environmental disclosure by companies | ***Big firms*** | N | 5 | 2 | 3 | 10 |
| | | % | 50 | 20 | 30 | 100 |
| | ***Small firms*** | N | 4 | 4 | 2 | 10 |
| | | % | 40 | 40 | 20 | 100 |

Frequency Table(7.17a)

Frequency Table (7.18a)

| Scale | The professional skills of external auditor can be raised to involve environmental issues | | There is a need for external auditors' awareness of environmental issues to be raised | | There is a need for making changes in auditors' education to be able to cope with environmental issues | | The accountancy bodies should provide a certification and appropriate training to qualify external auditor to conduct environmental auditing | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | ***Big firms*** | | ***Small firms*** | | ***Big firms*** | | ***Small firms*** | | ***Big Firms*** | | ***Small firms*** | | ***Big firms*** | | ***Small firms*** | |
| | N | % | N | % | N | % | N | % | N | % | N | % | N | % | N | % |
| Agree | 7 | 70 | 2 | 20 | 10 | 100 | 5 | 50 | 10 | 100 | 5 | 50 | 9 | 90 | 2 | 20 |
| Neutral | 1 | 10 | 6 | 60 | - | - | 4 | 40 | - | - | 4 | 40 | - | - | 7 | 70 |
| Disagree | 2 | 20 | 2 | 20 | - | - | 1 | 10 | - | - | 1 | 10 | 1 | 10 | 1 | 10 |
| Total | 10 | 100 | 10 | 100 | 10 | 100 | 10 | 100 | 10 | 100 | 10 | 100 | 10 | 100 | 10 | 100 |

Frequency Table (7.19a)

| Scale | There is a role for large audit firms, which have environmental specialists in verifying environmental reports | | | | There is a role for small audit firms in verifying environmental reports in liaison with environmental specialists | | | |
|---|---|---|---|---|---|---|---|---|
| | ***Big firms*** | | ***Small firms*** | | ***Big firms*** | | ***Small firms*** | |
| | N | % | N | % | N | % | N | % |
| Agree | 10 | 100 | 1 | 10 | 4 | 40 | 1 | 10 |
| Neutral | - | - | 9 | 90 | 5 | 50 | 8 | 80 |
| Disagree | - | - | - | - | 1 | 10 | 1 | 10 |
| Total | 10 | 100 | 10 | 100 | 10 | 100 | 10 | 100 |

Frequency Table (7.20a)

| Scale | If environmental reports are inevitable, the external auditor should participate in verifying them | | | | The public has a fundamental right to information about the environmental impact of companies | | | | The external auditor should involve in the preparation of environmental information for public disclosure | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ***Big firms*** | | ***Small firms*** | | ***Big firms*** | | ***Small firms*** | | ***Big firms*** | | ***Small firms*** | |
| | N | % | N | % | N | % | N | % | N | % | N | % |
| Agree | 7 | 70 | 1 | 10 | 9 | 90 | 4 | 40 | 7 | 70 | 1 | 10 |
| Neutral | - | - | 4 | 40 | 1 | 10 | 6 | 60 | 1 | 10 | 4 | 40 |
| Disagree | 3 | 30 | 5 | 50 | | - | - | - | 2 | 20 | 5 | 50 |
| Total | 10 | 100 | 10 | 100 | 10 | 100 | 10 | 100 | 10 | 100 | 10 | 100 |

Table (7.22): Position and experience

| Position | N | Percentage (%) | Experience (Mean) |
|---|---|---|---|
| - Manager | 23 | 47.9 | 3.96 |
| - The director of finance | 12 | 25.0 | 4 |
| - Internal auditor | 1 | 2.1 | 4 |
| - Accountant | 11 | 22.9 | 3.73 |
| - Employee | 1 | 2.1 | 4 |
| - Total | 48 | 100 | 3.92 |

Table (7.23): Types of industry

| Types of industry | N | Percentage (%) |
|---|---|---|
| -Chemical | 12 | 25.0 |
| -Pharmacy | 12 | 25.0 |
| -Cement | 12 | 25.0 |
| -Petroleum Refining and Extracting | 12 | 25.0 |
| Total | 48 | 100.0 |

Table (7.24): Company's activities impact on the environment

| Company's activities Impact on environment | Chemical | | Pharmacy | | Cement | | Petroleum | |
|---|---|---|---|---|---|---|---|---|
| | N | % | N | % | N | % | N | % |
| Air | 6 | 12.5 | 8 | 16.7 | 12 | 25.0 | 4 | 8.3 |
| Water | 10 | 20.8 | 10 | 20.8 | 5 | 10.4 | 8 | 16.7 |
| Land | - | - | 5 | 10.4 | 1 | 2.1 | 12 | 25.0 |
| * Some companies' activities impact on more than one area of the environment | | | | | | | | |

## *Appendix (8): The factor analysis of surveys (2 and 3)*

### *The factor analysis of survey 2 (Table 8.6 to 8.10)*

Table (8.6): Types of environmental audits

| *Areas audited (variables)* | *Factor 1* | *Factor 2* | *Factor 3* |
|---|---|---|---|
| | *Environmental systems and compliance* | *Environmental liabilities* | *Environmental policies* |
| -Environmental management systems<br>-Compliance with environmental laws and reporting requirements | 0.87108<br>0.82049 | | |
| -Financial accounting for environmental risks and liabilities<br>-The company's program for the treatment, storage or disposal of hazardous<br>-Transactional audits | 0.32553 | 0.85642<br>0.61801<br>0.61801 | |
| -Compliance with company environmental policies and procedures | | | 0.98850 |
| Eigenvalue | 2.37789 | 1.51982 | 1.12269 |
| Percent of variance | 34.0 | 21.0 | 16.0 |
| Percent of total variance | 34.0 | 55.7 | 71.1 |

Table (8.7): The potential advantages of environmental auditing

| ***Potential advantages of environmental auditing (Variables)*** | ***Factor 1*** ***Environmental risks*** | ***Factor 2*** ***Legitimacy of a company*** | ***Factor 3*** ***The corporate image*** |
|---|---|---|---|
| -Increased early identification of issue and problems | 0.89591 | | |
| -Reduction of long-term environmental risks | 0.82849 | | |
| -Reduction of fines for non-compliance with environmental regulations | | | |
| -Increased environmental protection | 0.74688 | | |
| -Cost savings from waste minimization and pollution prevention | 0.62779 | | -0.57103 |
| -Increased environmental protection | | 0.73656 | |
| -Publicise the commitment to environmental regulation | | -0.68629 | 0.45547 |
| -Demonstrate that a company is operating according to the requirements of environmental laws | | 0.64825 | |
| -Increased assurance of the adequacy of financial accruals for environmental liabilities | | 0.58169 | |
| -Increased company awareness of environmental issues | 0.44582 | | 0.74604 |
| -Create a good corporate image | | | -0.68993 |
| Eigenvalue | 2.89939 | 1.74541 | 1.61474 |
| Percent of Variance | 29.0 | 17.5 | 16.1 |
| Percent of total Variance | 29.0 | 46.4 | 62.6 |

Table (8.8): The potential disadvantages of environmental audits

| ***Potential disadvantages of environmental auditing*** | ***Factor 1*** | ***Factor 2*** |
|---|---|---|
| | ***The limited demand for environmental auditing*** | ***The sustainability of a company*** |
| -Lack of financial and/or technical ability to solve environmental problems | 0.92438 | |
| -Use of environmental auditing reports against the company in regulatory enforcement action | 0.76008 | |
| -Loss of public trust if environmental problems are discovered | | 0.80223 |
| -Decreased market share of company if environmental problems are discovered | | 0.59629 |
| -Increased the cost of auditing processes | 0.45836 | 0.58916 |
| Eigenvalue | 1.76866 | 1.33624 |
| Percent of Variance | 35.4 | 26.7 |
| Percent of total Variance | 35.4 | 62.1 |

Table (8.9): Companies' motivations for environmental disclosure

| *Companies' motivations for environmental disclosure (Variables)* | *Factor 1* *Publicising regulatory compliance* | *Factor 2* *Competitive advantages* | *Factor 3* *Environmental awareness* |
|---|---|---|---|
| -To publicise their commitment to improving environmental performance | 0.89904 | | |
| -To confirm the operating practices are performed according to environmental laws | 0.88724 | | |
| -To gain the marketing benefits arising from reputation for environmental protection | 0.46749 | | |
| -To publicise the commitment to environmental regulation | | 0.79279 | |
| -To demonstrate regulatory compliance. | | 0.78229 | -0.42274 |
| -To differentiate the organization from its competitors. | | 0.69551 | |
| -To improve the image or reputation of the company. | | | 0.85996 |
| -To communicate information on company's behavior towards environmental issues. | 0.41720 | 0.57997 | -0.59700 |
| -To reduce long-term environmental risks. | | | 0.58580 |
| Eigenvalue | 3.10650 | 1.69595 | 1.27099 |
| Percent of Variance | 34.5 | 18.8 | 14.1 |
| Percent of total Variance | 34.5 | 53.4 | 67.5 |

Table (8.10): Factors limit the external auditors' involvement in environmental audits

| ***Factors limit external auditor's involvement in environmental audits (Variables)*** | ***Factor 1*** ***Expertise in environmental areas*** | ***Factor 2*** ***Lack of environmental audits requirements*** |
|---|---|---|
| -Lack of experience in environmental field | 0.841 | |
| -Lack of technical ability to solve environmental problem | 0.755 | |
| -Lack of suitable training in the field of environmental auditing | 0.513 | |
| -Lack of knowledge of environmental regulations | | -0.711 |
| -Lack of professional guidance concerning environmental issues | | 0.669 |
| -Defined role of external auditor does not include environmental auditing | | -0.641 |
| -The current qualification of external auditor is not appropriate and sufficient to cope with environmental problems | | 0.639 |
| Eigenvalue | 2.36071 | 1.71596 |
| Percent of Variance | 33.7 | 24.5 |
| Percent of total Variance | 33.724 | 58.24 |

*The factor analysis of Survey 3 (Table 8.11 to 8.13)*

Table (8.11): Types of environmental audits

| *Audit Area (Variables)* | *Factor 1* | *Factor 2* | *Factor 3* |
|---|---|---|---|
| | *Compliance with regulation* | *Environmental liabilities and systems* | *The company's environmental program* |
| -Compliance with environmental laws and reporting requirements | 0.87814 | | |
| -Compliance with company environmental policies and procedures | | 0.77934 | |
| -Financial accounting for environmental liabilities | | 0.68889 | |
| -Environmental management systems | 0.42104 | 0.64757 | -0.30109 |
| -The company's programs for the treatment, storage or disposal of hazardous wastes of pollution prevention | | | 0.96934 |
| Eigenvalue | 2.01141 | 1.26533 | 1.14253 |
| Percent of Variance | 33.5 | 21.1 | 19.0 |
| Percent of total Variance | 33.5 | 54.6 | 73.7 |

Table (8.12): The potential advantages of environmental auditing

| *Potential advantages of environmental auditing (Variables)* | *Factor 1* | *Factor 2* | *Factor 3* |
|---|---|---|---|
| | *The corporate image* | *Environmental risks* | *Legitimacy of a company* |
| -Create a good corporate image | 0.75699 | | |
| -Publicise the commitment to environmental regulation | 0.75497 | | |
| -Cost savings from waste minimization and pollution prevention | 0.57585 | | |
| -Increased company awareness of environmental issues | 0.50433 | | |
| -Increased early identification of issues and problems | | 0.75174 | |
| -Reduction of fines for non-compliance with environmental regulations | | 0.6966 | |
| -Reduction of long-term environmental risks | | 0.65105 | 0.4741 |
| -Increased assurance of the adequacy of financial accruals for environmental liabilities | 0.4073 | 0.49898 | 0.34241 |
| -Increased environmental protection | | | 0.85602 |
| -Demonstrate that a company is operating according to the requirements of environmental laws | 0.38087 | | -0.70590 |
| Eigenvalue | 2.44774 | 2.08643 | 1.25975 |
| Percent of Variance | 24.5 | 20.9 | 12.6 |
| Percent of total Variance | 24.5 | 45.3 | 57.9 |

Table (8.13): The potential disadvantages of environmental audits

| *Potential disadvantages of environmental auditing* | *Factor 1* | *Factor 2* |
|---|---|---|
| | *The sustainability of a company* | *The limited Demand for environmental auditing* |
| -Loss of public trust if environmental problems are discovered | 0.91624 | |
| -Decreased market share of company if environmental problems are discovered | 0.83229 | |
| -Increased the cost of auditing processes | 0.69757 | |
| -Use of environmental auditing reports against the company in regulatory enforcement action | | -0.74575 |
| -Lack of financial and/or technical ability to solve environmental problems | 0.34420 | 0.65218 |
| Eigenvalue | 2.19317 | 1.02727 |
| Percent of Variance | 43.9 | 20.5 |
| Percent of total Variance | 43.9 | 64.4 |