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**FACTORS INFLUENCING THE ADOPTION OF ISO 14001  
EMS BY ORGANIZATIONS IN SOUTH AFRICA**

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# **FACTORS INFLUENCING THE ADOPTION OF ISO 14001 EMS BY ORGANIZATIONS IN SOUTH AFRICA**

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A research report submitted to the Faculty of Commerce, Law and Management, University of Witwatersrand, in partial fulfilment of the requirements for the degree of Master of Management (in the field of Public and Development Management).

Johannesburg, 2013

## **Declaration**

I declare that this research report is my own, unaided work. It is being submitted for the Degree of Masters of Management in Public and Development Management in the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination in any other university.

Signature:.....

.....day of.....

## **Abstract**

Many organizations in South Africa have adopted the ISO 14001 Environmental Management System (EMS). The results of implementing this system are beneficial, when viewed from a corporate and environmental perspective. However, there is no evidence to suggest a corresponding overwhelming acceptance of the system by some organizations, despite the obvious benefits. It is against this background that the study aimed at identifying factors that influence the adoption of ISO 14001 EMS by organizations in South Africa. A qualitative multi-case study approach was used to address the research questions. Data was sourced from three organizations that have recently implemented the system.

One of the outcomes of the study confirmed that while there are no direct legal requirements for an adoption of the system, it resulted in improved legal compliance. Another outstanding benefit was an improved corporate image amongst internal and external stakeholders. Despite these benefits, the adoption of the system was perceived to be costly. Organizations that adopted the system, established dedicated units to ensure its implementation. They also followed an open approach to understanding the needs of the system.

Critical factors for the successful implementation of ISO 14001 EMS were the benefits to the overall system and an enhanced environmental performance. In addition, costs and the incorporation and implementation of the system into the organization's strategic decisions played major roles in the decision to adopt this system. On the other hand, several factors that contributed to the non-adoption of the system were the following: resource constraints, delayed evidence of the impact of ISO 14001 EMS, lack of support from operational staff and management, as well as the limited focus on the establishment of environmental systems. Respondents also criticised the ISO 14001 EMS based on a combination of the preceding factors.

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## **CHAPTER 1: INTRODUCTION**

“Many of the current environmental issues have developed over the past 30 years despite the passage of a multitude of laws. Although stricter regulations in certain key areas are needed, clearly we will not be able to regulate our way out of our current dilemma.”

(Kausek, 2007, p. xvii).

### **1.1. Overview**

Over the years, concerns about environmental management have grown, due to the negative ecological effects of development and some organizations’ activities. This has been matched by increased efforts from governments which translated into various pieces of legislation and regulatory tools aimed at protecting the environment. In South Africa, there has been development and implementation of various pieces of environmental legislation aimed at curbing environmental degradation.

In addition to the legislated environmental management tools, such as the Environmental Impact Assessment (EIA) authorization, there were other “voluntary” processes adopted by companies that were aimed at environmental protection. In 1996, the International Organization for Standardization (ISO) introduced the ISO 14001 Environmental Management System (EMS) requirement standard, which then led to the ISO 14000 family of generic environmental management standards (Karapetrovic & Casadesu, 2009, p. 533). An EMS may be viewed as a set of management rules and procedures designed for the purpose of reducing the negative environmental impacts of an organization. This involved the reviewing and documenting of an organization’s activities that might have a negative impact on the environment, as well as an environmental policy statement and a plan to achieve environmental objectives (Barla, 2007, p. 292). According to statistics published by ISO, by the end of 2006, there were 129,199 certificates issued in 140 countries by the organization. This was an increase of 18,037 certificates since 2005 when the total number of certificates issued was

21,225 in 138 countries (Turk, 2009, p. 559). Hence there is a perceived high rate of adoption of ISO 14001 EMS throughout the world amongst organizations.

Notwithstanding the above, there is a need to confirm the extent of the implementation of ISO 14001 EMS. Parker and Nawrocka (2009, p. 601) indicated that more than 130,000 organizations worldwide were certified according to ISO requirements. In this context, the literature reviewed (Barla, 2007; Alexander *et al.*, 2008; Swanton, Weersink & Wall, 2001) indicated that there has been research into the link between implementation of ISO 14001 EMS and environmental performance. Furthermore, Dunne & Morris (2004) and Matela (2006) argued that this inquiry related to the implementation of ISO 14001 EMS, has been undertaken in South Africa, albeit not in a prominent fashion. The research presented herein aims to contribute to this research and focuses on investigating the reasons for adoption and non-adoption of ISO 14001 EMS by South African companies.

## **1.2. Background**

Currently there is no legal requirement for EMSs in South Africa to be put into place, other than where it was made a condition of a permit or license application (Department of Environmental Affairs and Tourism, 2005, p. 5). Despite this fact, there was some level of application of ISO EMS in South Africa due to *inter alia* the perceived positive impacts on environmental performance. “In very general terms, environmental performance means to enforce measures that provide the protection of environmental factors – air, water, soil, ecosystems” (Bran, Radulescu & Ioan, 2011, p. 893). The application of ISO EMS in South Africa was reinforced by the establishment of a registration scheme for environmental management systems that was formally announced by the South African Bureau of Standards (SABS) on the 19 November 1996 (South African Bureau of Standards, 1997). This meant that the implementation of ISO 14001 EMS by South African companies was endorsed by a South African standards authority. The purpose of South African National Standard (SANS) ISO 14001: 2005, which is the South African adaptation of ISO 1400:2004, is to support

environmental protection and the prevention of pollution, which is balanced with socio-economic needs (South African Bureau of Standards, 2004). An EMS in this context is essential to an organization's ability to anticipate and meet growing environmental performance expectations and to ensure ongoing compliance with local, provincial, national and international environmental requirements (North West University, 2004). To this end, as of March 2006, more than 223 business operations were officially registered and certified as complying with these ISO 14001 standards and all have an environmental management system in operation (National Treasury, 2006, p. 45). Overall there is recognition of the perceived environmental benefits of adopting EMS by organizations in South Africa.

Despite this recognition, there is a debate regarding the extent of adoption and implementation of the ISO 1400 EMS standards among various authors. Such a debate is in some instances expressed as an uncertainty associated with awareness, transparency and the significance of ISO 14001. This uncertainty may also be translated or reflected in terms of the extent of application of ISO 14001 by companies. This is especially as a result of *inter alia* the assertion that companies acquire ISO 14001 registration only because it provides a business advantage in terms of "improved corporate image" (Matela, 2006, p. 17). Furthermore Dunne and Morris (2004, p. 35) in a comparative analysis study of ISO 14001 and Forestry Stewardship Council certification for timber and furniture companies, argued that ISO 14001 EMS is viewed with some skepticism because of amongst others being perceived as "a set of rules about how to write rules", making it a poor vehicle for the expression of environmental awareness.

Contrasted by this skepticism, there is still overwhelming evidence from the literature (Kausek, 2007; Puvanasvaran, Tian, Suresh, & Muhamad, 2012; Urban & Govender, 2012) that the adoption of ISO 14001 EMS remains an effective approach to ensuring environmental protection. Hence research on the extent of the use of ISO 14001 EMS as an effective tool for enhancing environmental performance remains fundamentally valid. This is to the extent that some authors emphasize the need for such research. Morrow and Rondinelli (2002, p. 159) indicates that relatively few studies have explored the motivations of companies adopting and

certifying EMS and even fewer have examined the results or impacts on the companies which do so.

It is against this background that this research aims to shed light on why ISO 14001 EMS has not been widely adopted by companies in South Africa, despite being perceived as a tool for enhancing environmental performance.

### **1.3. Problem statement**

The implementation of ISO 14001 EMS is seen as a measure aimed at primarily reducing adverse environmental impacts emanating from an organization's activities. This is a voluntary measure complementary to the mandatory environmental legislation requirements. In this context, the research problem that forms the basis of this study is that despite the existence of corroborative data asserting the benefits of ISO 14001 EMS, it is still not widely used by companies as would be expected given its purported benefits. The prominence of this research problem, and hence the need for the study, is enhanced by the fact that apart from environmental imperatives, ISO 14001 EMS are aimed indirectly at augmenting the corporate image of organizations as well as trade opportunities. Hence the failure to adopt ISO14001 EMS may be perceived as a missed opportunity by organizations, especially for the enhancing of their environmental performance.

The knowledge gap that this research attempts to address is in terms of identification and understanding of the specific critical factors that are necessary to ensure the adoption of ISO 14001 EMS. Such factors could then be classified in terms of benefits, facilitators and barriers for the adoption of ISO 14001 EMS.

#### **1.4. Purpose statement**

The purpose of the research is to explore the factors which determine the implementation of ISO 14001 EMS. The research therefore aims to explain the factors that result in adoption or non-adoption of ISO 14001 EMS.

#### **1.5. Research questions**

The research question that formed the basis of this study is the following:

- I. What are the perceptions of organizations and environmental management authorities in terms of factors that result in the adoption or non-adoption of ISO 14001 EMS?

A secondary supporting research question for this study is the following:

- II. What are the perceived critical success factors for adopting ISO 14001 EMS as an effective tool for enhancing the environmental performance of organizations?

#### **1.6. Introduction to the case study**

In line with objectives of the research, this study focuses on three organizations that have adopted ISO 14001 EMS. The approach to the investigation in this regard is a case study of these organizations. A qualitative case study provides tools for researchers to study complex phenomena within their contexts and it ensures that an issue is explored through a variety of lenses, which allows for multiple facets of the phenomenon to be revealed and understood (Baxter & Jack, 2008). A qualitative multiple case study focusing on these three organizations was judged to be an appropriate methodology for the research. Other reasons were the complexity of the subject and the limited time frame and resources available to undertake the study. A detailed description of the adopted investigative approach to the study is provided in the methodology section of the report.

The three companies that participated in the research and the extent of implementation of ISO 14001 EMS are presented below.

**Table 1: List of companies that participated in the research**

| Company                                 | Extent of application of ISO14001         | Approach to implementation of ISO 14001       |
|-----------------------------------------|-------------------------------------------|-----------------------------------------------|
| Gold Mining                             | Acquired ISO 14001 accreditation          | Dedicated Environmental Management department |
| Water Supply                            | Acquired ISO 14001 accreditation          | Dedicated Environmental Management department |
| Electricity Generation and Distribution | In the process of acquiring accreditation | Dedicated Environmental Management department |

The three organizations that formed part of the study were required to provide detailed information on the adoption of ISO 14001 EMS in the context of the research question and in line with the chosen research methodology.

## **1.7. Structure of the Report**

The research report is presented in five chapters, which address the various aspects related to the rationale for the adoption of ISO 14001 EMS.

**Chapter one** introduces the study by presenting the background on the need and rationale for the adoption of ISO 14001 EMS. A brief review of the literature on the subject is undertaken, which presents a broad overview of the factors that emerge when dealing with the question of the adoption of ISO 14001 EMS. This brief literature review serves to introduce and set the tone for the presentation of the research problem, question and purpose.

**Chapter two** presents a detailed account of the literature review on the ISO 14001 EMS. The chapter focusses on the ISO 14001 EMS and presents information on the background, characteristics, implementation approaches, legal requirements, criticism and factors that result

in the adoption or non-adoption of the system. There is also a review of the literature, which provides an overview of the ISO 14001 EMS conditions in South Africa

**Chapter three** focusses on describing the methodology used to collect data for the study. The chapter outlines information on the research design, sampling approach, data collection strategies and data analysis methods adopted.

**Chapter four** outlines the findings of the research inquiry. The focus is on background of the companies that were part of the multi cases study, the basis of implementation of ISO 14001 EMS, and the nature of factors that affect implementation of ISO 14001 EMS.

**Chapter five** presents the conclusions emanating from the findings and the analysis of the study. It also outlines recommendations for encouraging increased adoption of ISO 14001 EMS by organizations.

## **CHAPTER 2: LITERATURE REVIEW**

This chapter outlines the information collected from a review of the literature. This review provides a focus for the study and highlights significant views on ISO 14001 EMS. The section commences with some background information on ISO 14001 EMS followed by an account of the characteristics of ISO 14001 EMS. There is also a review of criticism of ISO 14001 EMS. The section then concludes with a summary of factors that result in the adoption or non-adoption of ISO 14001 EMS.

### **2.1. Background on ISO 14001 Environmental Management System**

ISO 14001 EMS refers to an organization's environmental management system, which is used to develop and implement its environmental policy to adhere to the ISO 14001 standards (Wahid & Nee, 2010, p. 215). Hence conformance to the ISO 14001 standard requires policy commitments with all regulatory requirements and other mandates such as pollution prevention and EMS continual improvement. All of these can be verified by an external auditor (Wahid & Nee, 2010, p. 216). This leads to the question about the rationale for implementation of ISO 14001 EMS. In most instances, the implementation of EMS is necessitated by stringent environmental legislation and the need to satisfy different stakeholder's demands and pressures (Serena, Claudio, Alberto, & Andrea, 2009, p. 526). Beyond these imperatives, from the literature (Sumiani, Haslinda, & Lehman, 2006; Mohamed, 2007, p. 584) the EMS is noted to have a number of benefits that include:

- Reduced operating costs;
- Increased access to markets and enhanced corporate image;
- Providing confidence to external parties and evidence that the companies have control over the significant aspects of their operations and activities; and
- Potential (positive) impact on world trade to allow competition on an equal basis.

Environmental performance on the other hand is concerned with measuring the degree to which an organization emits toxic pollution given its size (Lenox & King, 2001). It can also be measured through calculating the log of total facility emissions of toxic chemicals (Lenox & King, 2001). However, there exist significant differences among decision making units in terms of environmental performance (Tyteca, 1996). Notwithstanding this, the definition of environmental performance, provided by South African Bureau of Standard (2004; p. 2), is that of “measurable results of the environmental management system related to an organization's control of its environmental aspects, based on its environmental policy.” This definition is within the domain ISO 14001 EMS and may not be seen as universal.

## **2.2. Characteristics of ISO 14001 EMS**

The ISO 14001 EMS is characterized by the fact that it is the only standard in the ISO 14000 EMS series against which an organization's environmental management system can be certified (Matela, 2006, p. 25). It serves as the cornerstone of the ISO series standards that are a specification as compared to a guidance document (Matela, 2006, p. 26). ISO 14001 EMS falls within a group of ISO 14000 family of standards that are international, voluntary, agreed upon consensus. These standards were developed by the International Organization for Standardization (ISO), located in Geneva, Switzerland (Quazia, Yee-Koon, Chin-Meng, & Wongd, 2001, p. 525). The goal of the ISO is to develop standards on a worldwide basis to allow commerce to transcend national boundaries without creating trade barriers (Quazia, *et al.*, 2001, p 525; Wall, Weersink, & Swanton, 2001).

The ISO EMS consists of five principles that are presented below:

- Environmental policy;
- Planning;
- Implementation and operation;
- Checking and corrective action; and

- Review and improvement.

(Quazia, *et al.*, 2001, p 525; Whitelaw, 1997, p. 49).

These principles form the basis for the implementation of ISO 14001 EMS. They are underpinned by an understanding that any EMS is tailored according to the individual organization's own needs and management culture. Further, the organization must comply with the requirements stated in the standard in order to claim that its EMS is in accordance with ISO 14001 (Mattias, *et al.*, 2008). Performance of an organization against these principles, in terms of its environmental aspects and associated environmental impacts, determines ISO 14001 EMS certification by SABS in the case of South Africa.

### **2.3.Implementation of ISO 14001 EMS**

The implementation of ISO 14001 EMS is based around the Plan / Do / Check / Act cycle. Organizations wishing to be certified as ISO 14001 EMS must go through an assessment process in which they are audited to see if they are compliant with the ISO 14001 standards (Alexander, *et al.*, 2008; Whitelaw, 1997). The ISO 14001 EMS requirements follow the Plan / Do / Check / Act cycle, as presented by Matela (2006; p. 26), which stipulates the following stages:

#### **Stage 1:**

This consists of a selection of a third party accredited certification body (external auditor) for the EMS assessment in order to review the organization's documentation and carry out an initial audit of the site (Matela, 2006, p. 27). By considering the company's evaluation of environmental effects, it ascertains that targets set for the management programme are measurable and achievable in terms of the following:

- ***Continual Improvement and Environmental Policy Planning***
  - Environmental Aspects;
  - Legal and other requirements;
  - Objectives and targets; and
  - Environmental management programs.
  
- ***Management Review, Implementation and Operation***
  - Structure and responsibility;
  - Training, awareness and competence;
  - Communication;
  - EMS Documentation;
  - Document control;
  - Operational control; and
  - Emergency preparedness and response.
  
- ***Checking and Corrective Action***
  - Monitoring and measurement;
  - Nonconformance and corrective and preventative action;
  - Records;
  - Environmental Management System audits; and
  - EMS audits.

## **Stage 2:**

This is a full audit that is aimed to ensure that records and working practices demonstrate that the company is following its procedures (Matela, 2006, p. 27). Following a successful audit by an accredited certification body, a certificate of registration is issued to ISO 14001 EMS that recognizes an organization's preparedness to work towards improving the environment (Matela, 2006, p. 27).

**Stage 3:**

After a successful audit and the certificate's issue, there are surveillance visits (usually once or twice a year) to ensure that the system continues to work (Matela, 2006, p. 27). In essence, once organizations have gained certification, they must also conduct an annual internal review to ensure compliance with ISO 14001 EMS standards. Next, these organizations are audited externally for recertification every three years. (Alexander, *et al.*, 2008, p. 3).

**2.4. Legal requirements for ISO 14001 EMS**

Currently, there are no legal requirements for ISO 14001 EMS to be implemented, thus, the standard is voluntary (Department of Environmental Affairs and Tourism, 2005). Despite this fact, various pieces of legislation associated with individual activities are applicable in terms of standalone requirements. This was also the case where such activities are associated with permits (Department of Environmental Affairs and Tourism, 2005). This showed the importance of legislative compliance as part of the process of the current ISO 14001 EMS certification, which was presented in the previous section. According to P. Haarsbroek (personal communication, June 17, 2010), in addition to this secondary legislative compliance, SABS is considering adopting the EA – 7/04 as part of accreditation for ISO 14001:2.

The following are criteria for compliance that EA – 7/04 will add to ISO 14001 EMS certification:

- Expectation of full legal compliance;
- Ability to demonstrate achieved compliance with environmental legal requirements prior to certification; and
- Existence of a document demonstrating agreement with the environmental regulators planning for attainment of full compliance in instances where there is no compliance (European Co-Operation For Accreditation, 2010, p. 2).

## **2.5. Criticism of ISO 14001 Environmental Management Systems**

In the literature, the positive comments associated with ISO 14001 EMS were equally matched with criticism. Such criticism was related to the setting of environmental targets that were decided internally by the organization. The condemnation in this regard was that the ISO 14001 EMS norms did not prescribe any specific objective except with respect to existing regulations (Barla, 2007, p. 291). Therefore ISO 14001 EMS was seen as a marketing device for improving the corporate image of an organization without significantly impacting on its environmental performance (Barla, 2007, p. 291). Criticism was also related to the fact that ISO 14001 EMS did not prescribe how to carry out the environmental performance, instead it relied on the assumption that good environmental management will result in improved environmental performance (Matela, 1996). Other factors related to operation and implementation of ISO 14001 such as the high cost of implementation, extra effort in documentation, shortage of man-power and resistance of supervisors and employees also led to its criticism (Ofori, Gang, & Briffett, 2002, p. 1397). Lastly criticism was also related to the fact that ISO 14001 EMS is not a label that signified a 'green' or 'environmentally friendly' product or service but implied that the organization had followed the prescribed steps for implementing an environmental management system (Wall, Weersink, & Swanton, 2001, p. 38). There is a vast body of literature on the limitations of ISO 14001 EMS in terms of its contributing to environmental performance (Grace, Grace, Perez, & Maywah, 1999; Famiyeh, 2005; Traves, 2009). This is why this research report is so important.

## **2.6. Factors that result in the adoption or non-adoption of ISO 14001 EMS**

Many recent studies have explored the question of factors that influenced the adoption of ISO 14001 EMS (Balzarova, Castka, Bamber, & Sharp, 2006; Taddei-Bringas, Esquer-Peralta, & Platt-Carrillo, 2008; Psomas, Fotopoulos, & Kafetzopoulos, 2011). This was expressed differently by the various authors: from the success factors for implementing ISO 14001 EMS to the decision criteria for its adoption.

### **2.6.1. Success factors for implementing ISO 14001 EMS**

Success factors for implementing ISO 14001 EMS were noted in the literature (Chin, Chiu, & Tummala, 1999; Quazi, 1999; Abdulla and Fuong, 2010; Nee, 2011) to include management attitude, organizational change, external and social aspects, and technical aspects. These are summarized below as follows:

#### **Management attitude**

Management attitude was related to exhibiting a positive top management disposition towards the implementation of the ISO 14001 EMS. This was in the form of commitment expressed as adequate financial, technological and human resources allocation for the implementation of the system, as well as adhering to high standards (Quazi, 1999).

#### **Organizational change**

This was linked to management support and is focused on enhancing the adoption of ISO 14001 EMS through putting in place systems and resources. This is in terms of *inter alia* appropriate allocation of responsibilities, training and awareness, communication, documentation and control (Chin, Chiu, & Tummala, 1999).

#### **External and social aspects**

External and social aspects that had an influence on the implementation of the ISO 14001 EMS include environmental legislation, market pressure, and employee relations (Chin, Chiu, & Tummala, 1999).

### **2.6.2. Technical aspects**

This was associated with ensuring that there was the required personnel capacity to provide environmental specialist assistance in understanding and assessing the technical issues of the

organization's operations, which may have significant environmental impacts (Chin, Chiu, & Tummala, 1999).

### **2.6.3. Decision criteria that informed the adoption of ISO 14001 EMS**

In the literature review, the factors that constituted decision criteria for the adoption of ISO 14001 EMS included operation costs, company image, nature conservation, market trend and company performance. These factors represented the motivators for the adoption of ISO 14001 EMS with varying levels of significance to its implementation for individual companies (Morrow & Rondinelli, 2002). In this regard, Pun and Hui, (2001) undertook a study of the importance of these factors in terms of their implementation by organizations using an analytical hierarchy process methodology. The conclusion that was reached in this regard was that objective and focus of EMS adoption may vary from organization to organization given the nature of its business, its company position as well as resources and constraints (Pun & Hui, 2001). It may be further argued that these factors have a varying influence with regards to the adoption by different countries of EMS, hence the need for this study in the South African context.

### **2.7. Barriers that hinder the implementation of ISO 14001 EMS**

Barriers that hinder implementation included the following: the complexity of the ISO 14001 standard, the legal ramifications, the lack of incentive to implement the policy, inappropriate approach to its implementation, the lack of commitment by management, the lack of total employee involvement, the cost of implementation and unclear responsibilities of employees (Quazi, 1999).

## **2.8. Overview of the ISO 14001 EMS situation in South Africa**

This section presents the outcome of the literature review on the status of ISO 14001 EMS in South Africa. The review of literature is related to the enabling legislation that made the implementation of ISO 14001 EMS desirable for companies. This is followed by an examination of various pieces of legislation that made the adoption of ISO 14001 EMS both necessary and almost compulsory. The last subsection presents information from the literature that indicates the case for the adoption of ISO 14001 EMS from a South African business perspective.

### **2.8.1. Enabling legislation**

The review of various pieces of law presented in this section is aimed at highlighting the fact that there is an existing framework of legislation that supports its adoption, although implementation of ISO 14001 EMS is not legally required in South Africa. Various authors (Kotze, 2007; Lochner, 2005) noted that the following legislation encouraged the implementation of ISO 14001 EMS by organizations in South Africa:

- The Constitution of South Africa, 1996 (Act No. 108 of 1996);
- National Environmental Management Act, 1998 (Act No. 107 of 1998);
- National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004); and
- National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008).

The above pieces of legislation have requirements for environmental protection. In the literature reviewed, it was noted that the obligatory environmental performance might be attained through the implementation of ISO 14001 EMS.

### **2.8.2. Sustainability reporting requirements**

A major component of the King III Report on Governance for South Africa<sup>4</sup>, and the King Code of Governance principles, is that of sustainability reporting. Sustainability reporting and disclosure highlighted a company's plans to improve on the positives and eradicate or mitigate the negatives in the triple context of economic, social and environmental issues (The Institute of Directors in Southern Africa, 2009). The importance of the adoption of ISO 14001 EMS by organizations in terms of sustainability reporting was demonstrated in the literature (Chachage, Ngulube, & Stilwell, 2006; South African Institute of Chartered Accountants, 2009). More specifically, the ideal way of producing a sustainability report would be for companies to use the information produced by their management systems. These management systems included "the Environmental Management System (EMS) such as ISO 14001, which was used to compile the environmental section of a company's sustainability report" (Nel, 2008, p. 3).

Throughout the literature review, general benefits and spin-offs associated with the adoption of ISO 14001 EMS were noted. The benefits included an improved corporate image, an increased environmental performance and an enhanced compliance with environmental legislation. These are similar in the South African context and are not reemphasized in this section.

## **2.9. Conclusion**

The implementation of ISO 14000 EMS as a tool for enhancing environmental performance was associated with both benefits and limitations. This dichotomy led to the debate on the effectiveness of ISO 14001 EMS as a tool for enhancing environmental performance. The characteristics of ISO 14001 EMS, including legislative imperatives in the South African context, served as a basis and starting point for the research. In particular, I will examine the factors that result in the adoption or non-adoption of ISO 14001 EMS in South Africa.

The literature review showed that the criticisms of ISO 14001 EMS were associated mainly with the nature of the standard viz. that it is voluntary and *inter alia* does not prescribe environmental performance requirements. Moreover, it was linked to marketing imperatives that led more to the improvement of corporate image than to a significant impact on its environmental performance. This criticism of the ISO 14001 EMS showed more barriers to its implementation that included the following: a lack of incentives to apply it, an inappropriate approach to its practice, lack of commitment by management and an absence of employee involvement. However, the literature also revealed that there has been extensive research which was related to factors that resulted in the adoption or non-adoption of ISO 14001 EMS. These positive factors, that are associated with the adoption of the system, are also presented as success factors in its implementation. Furthermore, they served as determining factors in the adoption of ISO 14001 EMS. In the literature, most authors rejected an indiscriminate criticism of ISO 14001 EMS as they emphasized the importance of context when ISO 14001 is adopted. Both the objective and focus of EMS adoption is company specific and it may be necessary for South African organizations to adopt it since it depends on the enabling legislative framework and corporative governance requirements.

In conclusion, the literature review suggested that the starting point to address the research question is by an understanding of the characteristics of ISO 14001 EMS. However, it is even more important to focus on the success factors for implementing ISO 14001 EMS and adopting the decision criteria of ISO 14001 EMS for this research."

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## **CHAPTER 3: RESEARCH METHODOLOGY**

### **3.1 Introduction**

This section presents information on the methodology followed in undertaking the study and it begins with a description of the nature of the proposed research. Detailed descriptions in terms of research design, proposed sampling, data collection and analysis are presented in the following subsections.

There are two types of research *viz.* basic research and applied research, and other ‘sub-types’ of applied research, such as, social impact assessment and action research. From the information presented in the previous sections it is evident, that the research undertaken and presented in this report is applied research. The characteristics of applied research include small scale studies that provide results that can be used in the short term to make decisions (Neuman, 2010, p. 26). Basic research on the other hand advances fundamental knowledge about the social world and focuses on refuting or supporting theories that explain how the social world operates (Neuman, 2010, p. 26).

This study is also classified as applied evaluation research. This classification is supported by similarities observed between the general description of evaluation research presented in the literature and the overall purpose of the study. Evaluation research is aimed at finding out whether a programme, a new way of doing something, or a policy is effective (Neuman, 2010, p. 26; Ormrod & Leedy, 2010, p. 136). The overall objective of this research is to find out why ISO 14001 EMS is implemented in a limited number of organizations, and what the determinant factors for adopting the system are in the South African context. This is different from the other types of applied research *viz.* action research and social impact assessment. Action research is concerned with treating knowledge as a form of power and fosters the diminishing of boundaries between research and social action, whilst social impact assessment

is concerned with estimating the likely social consequences of planned change (Neuman, 2010, p. 27).

In terms of further unpacking the nature of the research presented in this report, it is concluded that the research falls within the realm of primarily explanatory and descriptive research instead of exploratory. Explanatory research is focused on explaining the reasons something occurs and looks for causes (Neuman, 2010, p. 35). On the other hand, descriptive research focuses on the “how” and “who” questions, presenting clarity on usual processes, and providing context or the background to a situation.

In terms of the research approach this study can be described as being within the domain of interpretive social science and not within a positivist, critical social science, feminist or postmodernist framework. The rationale for identifying this research within the domain of interpretive social science is that this approach is described as being concerned with the achievement of understanding rather than with testing law-like theories of human behaviors (Neuman, 2010, p. 87). Moreover, some of the characteristics of interpretive social science that are valid and resonate with this study are that social scientific evidence is conditional, context specific and often requires bracketing (Neuman, 2010, p. 88).

In conclusion, the overall research approach that is undertaken for this study is qualitative instead of quantitative research. This is based largely on the purpose of the study and corresponding description in terms of relevant research types as presented in the preceding passages. Qualitative research is characterized by concentration on few cases, data in the form of words and images from documents, observations and transcripts, and such data is analyzed using themes (Neuman, 2010). Conversely, a quantitative research approach is concerned with measuring objective facts and concentrates on many cases, where there is eventual statistical analysis of the collected data (Neuman, 2010). Appropriate qualitative research techniques were used in this study, and details on these techniques in terms of research design, sampling, data collection and analysis will be outlined in the ensuing subsections.

### **3.2 Research design**

The research design presented herein is based on the description outlined in previous sub-sections. Closely associated with this description, is the purpose of the study and the corresponding inquiry that is centered on the implementation principles and approaches to ISO 14001 EMS. In the South African context, there is legislation and other limitations that influence the extent to which the ISO 14001 EMS is adopted.

There is a need to understand the ramifications and perceptions concerning the environmental performance in relation to ISO 14001 EMS. Secondly, in terms of the purpose of the research, it is important to identify the critical factors concerning the implementation of ISO 14001 EMS that are relevant for companies. Lastly, there was a more detailed inquiry into these factors which focused on the “why” questions. This information was obtained by interviewing representatives of three companies, who are at different stages of the implementation of ISO 14001 EMS.

In addition, information was also obtained from officials from SABS and government departments responsible for environmental management regulation. These departments are the Gauteng Department of Agriculture and Rural Development (GDARD) and the Department of Mineral Resources.

Guided by the purpose of the research, an in-depth investigation, which concentrated on three cases, was considered sufficient to acquire the required information. In this regard, the three companies which were implementing ISO 14001 were selected to form the focus of this study. There were various factors used in making the selection of these three organizations, such as: availability of relevant information, ease of access to the organization and a varying track record in implementing ISO 14001 EMS. The most important considerations in deciding on the organizations were acquiring credible information and reaching a successful conclusion to this research. In this regard the three companies that were selected (despite having varying

characteristics related to ISO 14001 EMS) were noted be committed to its implementation. This is shown by having dedicated personnel charged with the responsibility of managing the implementation of ISO 14001 EMS. These companies are in the water supply, electricity generation and distribution and mining sector. I have used generic descriptions of the industrial sector within which these companies were found instead of specific official names of the companies. This was due to the confidentiality requirements that were stipulated during the data collection process.

### **3.3 Sampling**

The main focus of the research is to identify why organizations do not widely adopt ISO 14001 EMS and that is why I used three companies which were implementing the system in my analysis. The sampling inquiry is influenced by the purpose of the research and the overall approach viz. qualitative study. In this vein, the sampling approach that was used for the study was underpinned by the following assertion by Neuman (2003): it stipulates that qualitative research sampling focuses less on representativeness than on how the sample or small collection of cases clarify social life. The qualitative sampling approach is concerned with finding cases that will enhance what researchers learn (Neuman, 2003, p. 219). Furthermore, the selected sampling strategy used in this research is guided by the realization that there are two basic strategies for selecting units to study, viz. empirical or statistical strategy and a theoretical or purposive strategy (Schwandt, 2001, p. 232). For this study, a suitable approach is therefore the non-probability purposive strategy. Other non-probability sampling approaches that were not used for this research are haphazard, quota, snowball deviant case, sequential and theoretical approaches. The study uses purposive sampling strategy or information-oriented sampling. A definition of purposive sampling is that it uses the judgment of an expert in selecting cases, or it selects its cases with a purpose in mind, and it is also appropriate to select unique cases that are especially informative (Neuman, 2003, p. 221).

The organizations selected for this research were identified on the basis of their potential to provide relevant data for this research. Initially, only two companies were requested to provide the information as part of the research. However, a third company was added, so that more comprehensive data would be provided for this research. Within these organizations, relevant officials involved in the implementation of the ISO 14001 EMS were contacted to provide the required information as per the research questions.

### **3.4 Data collection strategies**

The data collection techniques in this study are within the domain of qualitative research. These techniques are conducting interviews, questionnaire survey and expert review.

#### **3.4.1. Interviews**

One-on-one in-depth interviews were conducted with representatives of the three companies that were at different stages of the implementation of ISO 4001 EMS certification, officials from SABS and the relevant government Departments responsible for environmental management regulation. There were also in-depth interviews undertaken with experts in the field of environmental management systems.

In terms of types of interview questions (i.e. structured, semi-structured and unstructured), the interview questions were in the form of structured, semi-structured and unstructured questions, albeit predominantly semi-structured and unstructured. The dominance of semi-structured and unstructured questions was to ensure a greater chance for the collection of information that had new and fresh insights. Most of the unstructured interviews that were used *inter alia* guided formulation of follow-up questions for the interviews. This was noted as one of the purposes of this kind of question by Barla (2007).

### **3.4.2. Questionnaire survey**

Given the limited time available to undertake the research and the discussions with the participants in the research, it was decided that the primary data collection tool used would be questionnaires. In this regard, at the outset meetings were held with representatives of two of the three companies involved in the research. During these meetings, the purpose of the research and its associated questionnaires were discussed. This was in order to provide clarity on the information required. Similar discussions on the information required were held telephonically with a representative of the third company. This was because the third company is located in the North West Province and is not in the Gauteng Province like the other two. Following these initial study clarification sessions, the questionnaires were submitted to the representatives to be completed and returned to the researcher for review, analysis and presentation in line with the requirements of the research questions. The time that it took to acquire the information through the questionnaires from the three companies was approximately three months, that is, between December 2012 and February 2013.

Based on the research aims and information sourced from the literature review, the questions outlined in the questionnaire documents dealt with the following topics:

- The general perceptions of personnel involved in the implementation of ISO 14001 EMS;
- Mandatory and legal requirements for the implementation of ISO 14001 EMS;
- Critical success factors for the adoption of ISO 14001 EMS as an effective tool for enhancing environmental performance of organizations;
- The factors that resulted in the adoption of ISO 14001 EMS;
- The factors that may result in non-adoption or hindered the implementation of ISO 14001 EMS;
- The factors that resulted in criticism of ISO 14001 EMS in relation to operations and environmental performance.

The information from the questionnaire from the three companies that participated in the research covered the above topics.

### **3.4.3. Review of documents**

Document review is a useful source for case study research, as it is used to corroborate and augment evidence from other sources and tentatively make inferences (Yin, 1994, p. 81). I planned to make an extensive review of the documents from the companies that agreed to be part of this research. These documents included the following:

- ISO 14001 EMS policy documents;
- Reports on environmental expenditure and financial provision;
- Reports on stakeholder engagement;
- ISO 14001 EMS training documents;
- ISO 14001 EMS audit outcomes reports; and
- Environmental compliance related documents.

There were challenges associated with acquiring this documentation, especially due to the confidentiality clauses which informed this research. As a result, most information was obtained from the questionnaires.

### **3.4.4. Peer review**

A peer review process was employed, which was mainly aimed at inputs on the research from experts in the field of ISO 14001 EMS implementation. In some literature (e.g. Schwandt, 2001) refers to this as peer debriefing, and it is aimed at sharing one's evolving attempts at describing and analyzing qualitative data to achieve consensual validation. The purpose of this additional data collection strategy was to enhance the research by verification of the information obtained from the study and to validate the information.

### **3.4.5. Triangulation of measures**

Data collection from the study using various techniques as presented above, viz. conducting interviews, review of documents and peer review constituted a process of triangulation. There exist several types of triangulation that include the following: triangulation of measures, triangulation of observers, triangulation of theory and triangulation of methods. The type of triangulation used for this research is that of triangulation of measures, which occurs where multiple measures of the same phenomenon were taken (Neuman, 2003, p. 149). In this context, such an approach is aimed at enhancing the validity and reliability of the information collected.

## **3.5 Data analysis strategies**

The core of qualitative analysis lies in the related process of describing a phenomenon, classifying it and seeing how the associated concepts interconnect (Dey, 1993, p. 30,). The research used this approach while analyzing the data. This approach was guided by the following steps prescribed by Ormord and Leedy (2010, p. 138): organizing the details about the case, categorizing the data, interpreting of single instances, identifying of patterns, and synthesizing and generalization.

### **3.5.1 Organizing the details about the cases**

This entailed collating all the collected data from the interviews, document review and peer review exercises. Further, this also involved revisiting the research questions and the purpose of the research, in order to confirm that the relevant data was collected. In this regard, the responses from the participants were classified and grouped according to the initial questions presented in the questionnaire. This grouping of the answers served to elicit common characteristics in terms of the research questions. It also enabled the merging of similar responses from the various respondents in relation to the themes of the research. Microsoft

Word tables were used to present and organize the data, to show an emerging picture which allowed for further interpretation.

### **3.5.2 Summarizing of the data and interpretation of single instances**

The summarizing of the data entailed an establishment of themes based on a categorization of the collected data. These themes were also based on the information that emerged from the literature review and preliminary results of the research that were presented. Further identification of these themes was also through the observation of common words and similar meanings that emerged.

Interpreting of single instances involved the identification of outstanding and unique cases, then the acquiring of more information in order to be able to interpret their meaning. Outstanding characteristics for each organization were unique due to the nature of each company. For instance, the fact that not all organizations were ISO 14001 EMS certified presented a unique feature. This feature was used to interpret other elements within the findings of this study.

### **3.5.3 Identification of patterns and synthesis and generalization of data**

The process entailed reviewing the information provided with the aim of identifying specific patterns and acquiring more information about them in order to interpret its meaning. Identification of such patterns was made possible by the initial categorization and organization of the data.

This involved synthesizing all the information and presenting it in such a manner that it addressed the research questions. There was also interpretation of the synthesized information wherein generalizations were made where possible. In this regard, a review of the information from a different perspective was crucial. For instance, in determining the extent to which

environmental compliance is achieved through the adoption of ISO 14001 EMS, various meanings of environmental compliance were found in the data, which were used to make generalizations.

## **CHAPTER 4: RESEARCH FINDINGS**

### **4.1. Introduction**

This research aims to address questions related to the specific critical factors that are necessary to ensure the adoption of ISO 14001 EMS. This is so that a deeper understanding develops of the factors that influence the adoption of ISO 14001 EMS in the context of the benefits, the factors that facilitate the process, as well as the impediments. In addition, the intention is to furnish information that presents clarity on the factors that lead to the adoption or non-adoption of ISO 14001 EMS by the three companies. These factors are of importance given the perceived “obvious” benefits associated with the implementation of ISO 14001 EMS. In this regard, three companies that are currently involved in the implementation of ISO 14001 EMS were used as the main sources of information for the study.

For ease of reference, the purpose of the research and the research questions, as presented in the first chapter of the report, are noted below:

#### **Purpose**

The purpose of the research is to explore the factors determining the implementation of ISO 14001 EMS. The research therefore aims to explain factors that result in the adoption or non-adoption of ISO 14001 EMS.

#### **Research question**

The research questions that formed the basis of this study are the following:

- 1) What are the perceptions of organizations and environmental management authorities in terms of factors that result in the adoption or non-adoption of ISO 14001 EMS?
- 2) What are the perceived critical success factors for adopting ISO 14001 EMS as an effective tool for enhancing environmental performance of organizations?

This chapter outlines the findings of the research in line with the methodology and data analysis strategies indicated in the previous sections. The findings of the research are presented in sequential steps: an outline of the backgrounds of the companies involved in the research, the presentation of information on the outcomes of the interviews and the questionnaire in the context of the research questions. Once the information generated from the interviews and questionnaire is obtained, a process of further interpreting the results is undertaken in the following ways: through organizing the details about the case, categorizing of the data, interpretation of single instances, identifying of patterns, and the synthesis and generalization of the information.

#### **4.2. Background on companies involved in the research**

The companies forming part of this research were selected primarily with the aim of ensuring that the required information was acquired with ease given the limited time and resources available for this study. In addition, the specific focus on these companies was due to the varied nature of their business. The information emanating from these companies relating to the implementation of ISO 14001 EMS would provide a comprehensive picture of the nature of the benefits, factors that assist implementation and the impediments when ISO 14001 EMS is adopted.

The companies that were invited to be part of the research are involved in the gold mining, water supply and electricity generation and distribution sectors. The factors that were looked at were the number of personnel involved in ISO 14001 EMS and their roles. These factors were considered to be relevant in terms of giving the required background information on these companies in relation to the adoption of ISO 14001 EMS.

#### 4.2.1 Personnel and their roles in implementation of ISO 14001 EMS

An analysis of the number of personnel and their roles in terms of the implementation of ISO 14001 EMS was considered to be important to the study. This is because information on the staff complement of an organizational ISO 14001 EMS programme, and the position these employees occupy, provides a picture of the significance of the programme in terms of the overall operation of the organization. This is contextualized through an assertion by Abdullah & Fuong (2010) that top management are the main drivers of ISO 14001 EMS implementation, because they have a critical role in making sure that ISO 14001 EMS is successfully implemented. In addition, the information is considered to be important, because it provides a reference point to enable an analysis of the organization in relation to the implementation of ISO 14001 EMS. The outcome of the investigation in terms of the number of personnel and their roles is outlined below.

**Table 3: Number of personnel and responsibilities in the implementation of ISO 14001 EMS**

| <b>Company</b>                                                       | <b>Roles and responsibilities related to implementation of ISO 14001 EMS</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|----------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Gold Mining<br><br><i>Personnel involved EMS implementation: 46</i>  | <ul style="list-style-type: none"><li>• Day to day running, maintenance and implementation of the system.</li><li>• Provide specialist input related to ISO 14001 EMS implementation that includes undertaking of projects and studies related to environmental aspects and impacts of the organization. These include undertaking ground water quality and air quality monitoring programmes and studies and Environmental Impact Assessments.</li><li>• Strategic decision making, risk assessment in order to amongst others ensure availability of funds for implementation of ISO 14001 EMS.</li></ul> |
| Water Supply<br><br><i>Personnel involved EMS implementation: 30</i> | <ul style="list-style-type: none"><li>• Safety Health, Environment and Quality (SHEQ) management and corporate guidance for the organization.</li><li>• ISO 14001 EMS system procedure and policy formulation, auditing and enforcement of implementation.</li><li>• ISO 14001 EMS implementation on site.</li><li>• Enforcement of ISO 14001 EMS implementation on site.</li></ul>                                                                                                                                                                                                                         |

|                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                         |
|-----------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Electricity Generation and Distribution<br><br><i>Personnel involved EMS implementation:</i><br><i>30</i> | <ul style="list-style-type: none"> <li>• Coordinate the overall ISO 14001 EMS Implementation.</li> <li>• Ensure the implementation of ISO 14001 EMS within the Operating Unit and departments.</li> <li>• Ensure that departments comply with ISO 14001 EMS requirements.</li> <li>• Ensure that daily duties are compliant with ISO 14001 EMS requirements.</li> </ul> |
|-----------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

From the results of the investigation as presented above on personnel, roles and responsibilities, the following common characteristics of organization implementing ISO 14001 EMS were observed:

- Existence of a sizeable number of personnel dedicated to the implementation of ISO 14001 EMS at all levels of the organization;
- ISO 14001 EMS implementation is not undertaken in isolation but in conjunction with other environmental management measures and tools;
- Existence of resources which support the implementation of ISO 14001 EMS; and
- Exhibition of commitment to the implementation of ISO 14001 EMS where the system was internalized by the operations of the organizations. This was expressed as coordination and integration, including enforcement of ISO 14001 EMS, within the overall operations of the organizations and especially with reference to the mitigation of environmental impacts.

The background information that was elicited through the questionnaire was found to be useful: it allowed the researcher to have a comprehensive understanding of the ISO 14001 EMS operations of the organizations involved in the research.

#### **4.2.2 Benefits, costs and indirect legal compliance implications of ISO 14001 EMS**

A question posed to the representatives of these companies was related to the overall benefits, costs and indirect legal compliance implications when ISO 14001 EMS was adopted. This question served as an introductory one to provide a broad understanding of the subject matter.

The question focused on these three factors, viz. overall benefits, costs, and indirect legal compliance implications of the adoption of ISO 14001 EMS. They were considered important because they would provide a snapshot of the status of the organizations, which adopted ISO 14001 EMS. An understanding of these facts contributes towards a comprehensive appreciation of the nature of the organizations' approaches to the implementation of ISO 14001 EMS.

The importance of an analysis of these factors in relation to understanding factors that influence the adoption of EMS is further supported by literature. For instance, European Cooperation for Accreditation (2007) indicates that determining the effectiveness of EMS is dependent on a number of impacts that include environmental consequences, stakeholder consequences and business consequences. Furthermore, Yiridoe & Marett (2004) argues that an analysis of the costs of ISO 14001 EMS is important for understanding the business incentives, since widespread adoption of ISO 14001 will depend on whether the overall benefits exceed the costs.

The inquiry related to legal requirements associated with the implementation of ISO 14001 EMS was significant, because of general knowledge that there is no direct legal obligation for adopting ISO 14001 EMS. However, ISO 14001 EMS serves as an enabler for compliance with environmental legislation. My inquiry in this regard served to confirm or refute this assertion.

The outcome of this inquiry in relation to overall benefits, costs, and indirect legal compliance implications is outlined below.

**Table 2: General background on the ISO 14001 EMS**

| <b>Company</b>                          | <b>Overall benefits</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <b>Costs</b>                                                                                                                                                                            | <b>Indirect legal compliance implications</b>                                                                                                                                                                                                                                                                                            |
|-----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Gold Mining                             | <ul style="list-style-type: none"> <li>• Improved image of the organisation and better housekeeping.</li> <li>• A better grasp and more focused approached to minimizing the impacts of the significant aspects.</li> <li>• Improved waste handling especially with reference to hazardous waste.</li> <li>• Entrenched cradle to grave concept is in all operations.</li> <li>• Increased awareness amongst senior officials regarding environmental risks.</li> <li>• Ensuring attainment of legal compliance.</li> </ul> | <ul style="list-style-type: none"> <li>• Initial costs of implementation associated with consultation are enormous.</li> <li>• Costs are offset by waste recycling measures.</li> </ul> | Legal and other requirements are considered to be part of the implementation of the EMS.                                                                                                                                                                                                                                                 |
| Water Supply                            | <ul style="list-style-type: none"> <li>• Improvement in the reputation of the organisation in relation to environmental matters.</li> <li>• Improved public perception about the organisation.</li> <li>• More environmentally friendly operations.</li> </ul>                                                                                                                                                                                                                                                              | <ul style="list-style-type: none"> <li>• High cost associated with implementation, maintenance, surveillance audits and certification.</li> </ul>                                       | Led to development of procedures for compliance.                                                                                                                                                                                                                                                                                         |
| Electricity Generation and Distribution | <ul style="list-style-type: none"> <li>• Ensuring the effectiveness of Environmental Management Plan (EMP).</li> <li>• Ensuring the planning of activities with associated legal responsibilities.</li> </ul>                                                                                                                                                                                                                                                                                                               | <i>No information was provided</i>                                                                                                                                                      | <ul style="list-style-type: none"> <li>• Ensuring compliance with environmental legislation by internal and external stakeholders.</li> <li>• Ensuring compliance with company policies, procedures and process control manuals.</li> <li>• Ensuring compliance with environmental authorisation requirements and conditions.</li> </ul> |

The above summarized results, which emanated from an inquiry into the overall benefits, costs, and indirect legal compliance implications, were further analyzed. This analysis was undertaken in sequential steps that entailed the following: interpretation of single instances, identification of patterns and synthesis, and generalization.

### **Interpretation of single instances related to EMS adoption**

The following observations were made through a process of interpreting the results from the individual organizations. These observations related to the benefits, costs and the implications of indirect legal compliance by adopting ISO 14001 EMS. The observations made about the Gold Mining Company were that:

- 1 There was a link between the overall benefits, costs, and indirect legal compliance implications when ISO 14001 EMS was adopted.
- 2 The positive benefits that resulted from the implementation of ISO 14001 EMS included the generation of revenue from the recycling of waste. This positively impacts on costs associated with the implementation of ISO 14001 EMS through the reduction of such expenses.
- 3 On the other hand, the positive benefits associated with the legal compliance were such that the implementation of ISO 14001 EMS resulted directly in improved compliance with environmental legislation.

As a result of the above link, there is an impression that despite the high costs of adopting ISO 14001 of EMS, there is an appreciation of the plethora of benefits. This is to the extent that the costs are perceived to be justifiable.

The above conclusion is supported by the following assertion by a representative of the one of the companies that participated in the research:

***“Waste recycling has also intensified as it has brought about income, i.e. there is a lot of money generated from the waste recycling initiatives, in certain parts of***

***the organization. It is this money which drives the EMS and projects related to continual improvements”***

- a) The observations made about the Water Supply Company were that:
- 1 There was a link between overall benefits and the indirect legal compliance implications when ISO 14001 EMS was adopted.
  - 2 This link showed that there were benefits beyond the existing direct, positive impacts based on the implementation of ISO 14001 EMS, such as, an improved reputation of the organization and better public relations. These benefits are in the form of enhanced legal compliance.
  - 3 The cost implications of the implementation of ISO 14001 EMS were presented by the respondent and not linked to the benefits.

As a result of the above, it was concluded that there was overall recognition of the benefits of the implementation of ISO 14001 EMS, especially with its emphasis on the positive impact on compliance with the legal requirements.

- b) The observations made about the Electricity Generation and Distribution Company were that:
- 1 There was a link between the overall benefits and the indirect legal compliance implications when ISO 14001 EMS was implemented.
  - 2 This link showed that there were benefits beyond the existing direct, positive impacts based on the implementation of ISO 14001 EMS, such as, the improved reputation of the organization and better public relations. These benefits are in the form of enhanced legal compliance.
  - 3 The degree to which the benefits were associated with enhancing the environmental legal compliance was emphasized. It should be noted that this was higher than in the case of the former two companies. Legal compliance was shown to be one of the main reasons for the adoption of ISO 14001 EMS.

It was concluded that the adoption of ISO 14001 EMS might be for the sole purpose of ensuring legislative compliance by the organization.

### **Identification of patterns related to the adoption of ISO 14001 EMS**

Following a process of the identification of patterns, which related to benefits, costs and indirect legal compliance implications of the adoption of ISO 14001 EMS, a number of conclusions were reached. These are outlined below:

- a) The implementation of ISO 14001 EMS was associated with the following benefits:
  - 1 An improved image, reputation and perception about environmental performance for the organization;
  - 2 An improved performance with regards to existing environmental management tools, such as, environmental management plans;
  - 3 The adoption of ISO 14001 EMS has led to a better grasp and greater awareness amongst senior officials that has included more focused approaches to minimize the environmental risks and impacts of significant aspects of the organization; and
  - 4 The adoption of ISO 14001 EMS has led to improved waste handling, especially hazardous waste.
  
- b) The implementation of ISO 14001 EMS was associated with the following cost factors:
  - 1 The costs for the implementation of ISO 14001 EMS were high;
  - 2 However, these high costs might be offset by a multitude of spin-offs that include revenue generation related to environmental management measures, for example, waste recycling.
  
- c) The implementation of ISO 14001 EMS was associated with the following indirect legal compliance implications:
  - 1 Legal and other requirements were considered as part of the implementation of ISO 14001 EMS, as the latter ensured compliance with applicable legislation and regulations;

- 2 The implementation of ISO 14001 EMS contributed to improved compliance with legal requirements by the organization and external service providers that rendered services to the company.

### **Generalizations related to EMS adoption**

From the above process of interpreting single instances and identification of patterns associated with the adoption of ISO 14001 EMS, the following generalization might be made:

An adoption of ISO 14001 EMS was associated with positive impacts on an organization's costs and environmental management legislation requirements. Hence the reasons for the adoption or non-adoption of ISO 14001 EMS were linked to the following:

- The extent to which the overall benefits of the adoption of ISO 14001 EMS were perceived as important to the operations of the organization;
- The extent to which high costs were offset by positive spinoffs and direct benefits with the adoption of ISO 14001 EMS;
- The extent to which direct and indirect legal requirements were fulfilled through the implementation of ISO 14001 EMS.

It was concluded that the decision factors, which related to the adoption or non-adoption of ISO 14001 EMS would differ from company to company and were largely determined by the nature and objectives of the organization.

### **4.2.3 Perceptions of personnel involved in the implementation of ISO 14001 EMS**

As part of the questionnaire there was an inquiry, among representatives of the organizations involved in the research, about the perceptions of personnel involved in the implementation of ISO 14001 EMS. Clark (2001) argued that this inquiry was necessary to reveal insights based on the intentions and priorities of corporations, given the increase of the number of companies that have adopted ISO 14001 EMS.

The inquiry into the perceptions of representatives of the organizations taking part in the study was noted to be important due to the following reasons:

- Generally the ISO 14001 EMS was implemented by dedicated personnel, hence the need to understand their perceptions;
- Positive or negative perceptions about the ISO 14001 EMS influenced the approach to activities related to the adoption of the system; and
- Perceptions about a particular matter also provided an indication of the attitude towards it and might provide an indication of the management approaches required.

The outcome of the inquiry on perceptions of the personnel involved in the implementation of ISO 14001 EMS is presented below.

**Table 3: Perceptions on the implementation of ISO 14001 EMS**

| Company                                 | Perceptions of the personnel involved in implementation of ISO 14001 EMS                                                                                                                         |
|-----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Gold Mining                             | <ul style="list-style-type: none"><li>• Allowed for the improvement of environmental performance</li><li>• Associated with tedious administration</li></ul>                                      |
| Water Supply                            | <ul style="list-style-type: none"><li>• Provided a framework for environmental management, reporting and sustainable practices and operations.</li><li>• Facilitated legal compliance.</li></ul> |
| Electricity Generation and Distribution | <ul style="list-style-type: none"><li>• Allowed for acquisition of certification</li></ul>                                                                                                       |

Based on the inquiry regarding the personnel perceptions of the implementation of ISO 14001 EMS, a number of general statements were presented in the above table. A common perception of ISO 14001 EMS, amongst two out of the three organizations, was that it is aimed at improving the environmental performance of an organization. This was further clarified by providing an indication of the approach used to achieve an improved environmental performance.

In this regard, the adoption of ISO 14001 EMS provided a framework for environmental management, reporting and sustainable practices and operations. Further, it facilitated legal compliance. This was demonstrated by the following argument presented by one of the representatives of the organizations participating in the research:

***Implementation of ISO 14001 EMS “has led to a systematic approach on handling environmental issues, from aspect identification and rating, to the setting of objectives and targets and ensuring that these are adhered to.”***

In addition, the need to ensure certification was also mentioned as a factor that was important.

The perceived importance of certification was irrespective of whether an organization achieved certification or not. Although the implementation of ISO 14001 EMS was aimed at enhancing the overall environmental performance, certification was observed to be of equal importance. However, certification was considered to be a focal point of the implementation of ISO 14001 EMS in instances where such certification had not been achieved. Once certification was reached, it became less of a focal point because of the nature of ISO 14001 EMS viz there is an emphasis on continuous improvement. This process guaranteed maintenance of the organization's certification status which means that the initial certification was perceived to become unimportant. While this is the case, the initial certification and maintenance thereof was the ultimate goal of the adoption of ISO 14001 EMS. Improvements in environmental performance and enhanced compliance with environmental legislation were by-products of the adoption of ISO 14001 EMS.

#### **4.2.4 Conclusion on companies' implementation of ISO 14001 EMS**

The findings of this sub-section of the research are summarized with reference to the characteristics of the three organizations involved in the implementation of the ISO 14001 EMS. These characteristics were sourced through an inquiry into the benefits, costs and indirect legal compliance implications for the implementation of the system. Secondly, there

was an inquiry into the perceptions of personnel at these organizations, regarding the implementation of ISO 14001 EMS.

This process revealed that there was an organizational commitment to the implementation of ISO 14001 EMS, because there was a dedicated unit responsible for ensuring the adoption of the system. In addition, there was a general recognition of the positive benefits of the implementation of ISO 14001 EMS, which included generation of revenue from the recycling of waste. Such benefits offset the costs associated with the implementation of ISO 14001 EMS. The inquiry into the perceptions, associated with an adoption of ISO 14001 EMS, revealed that the focus of the programme was to ensure overall certification while improving on environmental performance. This is through *inter alia* the incorporation of ISO 14001 EMS into the daily operations of an organization. The improved environmental performance also led to enhanced compliance with environmental legislation.

#### **4.3. Basis of the implementation of ISO 14001 EMS by organizations**

The outcomes of the study are presented with a focus on the basis for the implementation of ISO 14001 EMS by organizations in table 4 below.

The factors that were looked at with regard to the implementation of ISO 14001 EMS were:

- Legal requirements and external influences on adopting ISO 14001 EMS;
- Critical success factors for adopting ISO 14001 EMS;
- Factors that might result in non-adoption of ISO 14001 EMS;
- Decision criteria and successful adoption of ISO 14001 EMS;
- Criticism of ISO 14001 EMS.

The outcomes of the inquiry in relation to these factors were presented in line with the data analysis strategy outlined in the methodology chapter.

**Table 4: Summarized outcomes of literature themes for the implementation of ISO 14001 EMS**

| Literature themes for implementation of ISO 14001 EMS                   | Organization                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                   |
|-------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                         | Gold Mining                                                                                                                                                                                                                                                                                                                                                                                      | Water Supply                                                                                                                                                                                                                                        | Electricity Generation and Distribution                                                                                                                                                                                                                                                                           |
| Legal requirements                                                      | <ul style="list-style-type: none"> <li>No legal requirements at the time of implementation.</li> <li>Indirect legal requirements which resulted in the implementation of ISO 14001 EMS were in the form of conditions of approval for an Environmental Management Programme. This was dictated by Section 102 of the Minerals and Petroleum Resources Development Act (MPRDA) (2002).</li> </ul> | There was no legal requirement to implement ISO 14001 EMS                                                                                                                                                                                           | Compliance with environmental legislation including the following: <ul style="list-style-type: none"> <li>National Environmental Management Act No. 107 of 1998.</li> <li>National Environmental Management: Waste Act No. 59 of 2008</li> <li>Provincial Ordinances and local municipality's by-laws.</li> </ul> |
| Additional reasons for the implementation of ISO 14001 EMS              | <ul style="list-style-type: none"> <li>Requirement by investors as well as those who traded with the organization.</li> <li>Demanded by investors as an assurance of the sound environmental practices of the organization.</li> <li>Implementation of ISO 14001 EMS was undertaken as a "best practice" decision.</li> <li>Need to acquire accreditation.</li> </ul>                            | Improved the organization's environmental performance reputation and it was in pursuit of best practice.                                                                                                                                            | <i>No information provided</i>                                                                                                                                                                                                                                                                                    |
| External stakeholders' influence                                        | Mainly investors required assurance of sound environmental practices, accreditation and environmental performance.                                                                                                                                                                                                                                                                               | <ul style="list-style-type: none"> <li>SABS</li> <li>Customers</li> <li>Government</li> </ul>                                                                                                                                                       | <i>No information provided</i>                                                                                                                                                                                                                                                                                    |
| perceived as critical success factors for the adoption of ISO 14001 EMS | Increased investor confidence.                                                                                                                                                                                                                                                                                                                                                                   | <ul style="list-style-type: none"> <li>The identification and monitoring of critical environmental aspects.</li> <li>The identification and implementation of mitigation measures and the tracking of improved environmental performance</li> </ul> | If the organization gets certified, then it will be recognized as the best organization, which has proper systems in place                                                                                                                                                                                        |

| Literature themes for implementation of ISO 14001 EMS          | Organization                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                        |
|----------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                | Gold Mining                                                                                                                                                                                                                                                                                                                                                                                                                                      | Water Supply                                                                                                                                                                                                                                                                                                             | Electricity Generation and Distribution                                                                                                                                                                                                                                                                                                                                                                                |
|                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <p>over time.</p> <ul style="list-style-type: none"> <li>• An analysis of trends that was necessary for information reporting.</li> <li>• Efforts of entrenching an environmentally friendly and socially responsible atmosphere amongst employees.</li> </ul>                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Factors that resulted in the adoption of ISO 14001 EMS         | Increased investor confidence.                                                                                                                                                                                                                                                                                                                                                                                                                   | <ul style="list-style-type: none"> <li>• Enhanced reputation of the organization.</li> <li>• Legal compliance.</li> <li>• Best practice.</li> </ul>                                                                                                                                                                      | <ul style="list-style-type: none"> <li>• Support from top management.</li> <li>• Availability of funds.</li> <li>• Cooperation at the implementation level by all the employees.</li> </ul>                                                                                                                                                                                                                            |
| Factors that might result in the non-adoption of ISO 14001 EMS | <ul style="list-style-type: none"> <li>• Financial constraints.</li> <li>• Lack of buy-in from other role players, especially the operational personnel where implementation takes place.</li> <li>• Delayed evidence of improved environmental performance.</li> <li>• This is the case where degradation of the environment is a legacy of the organization.</li> <li>• The fact that benefits will take a long time to be visible.</li> </ul> | <ul style="list-style-type: none"> <li>• Cost factors.</li> <li>• Resource constraints.</li> <li>• The fact that smaller organizations cannot maintain certification as it is too costly.</li> <li>• The fact that environmental systems are secondary to productive operations.</li> <li>• Time constraints.</li> </ul> | <ul style="list-style-type: none"> <li>• Non-availability of funds.</li> <li>• Lack of support from top management. This might lead to entrenchment of a despondent attitude towards certification.</li> <li>• The fact that it takes time to acquire certification whilst money and resources are expended on the system.</li> <li>• Lack of cooperation at the implementation level by all the employees.</li> </ul> |
| Decision criteria of ISO 14001 EMS adoption                    | <ul style="list-style-type: none"> <li>• Financial support</li> <li>• Buy-in from other role players especially the operational personnel where implementation takes place.</li> </ul>                                                                                                                                                                                                                                                           | <ul style="list-style-type: none"> <li>• Top management support</li> <li>• Growth strategy objectives of the organization</li> <li>• Sustainable development objectives of the organization.</li> </ul>                                                                                                                  | Objective of the organization to be certified and associated with positive recognition.                                                                                                                                                                                                                                                                                                                                |

| Literature themes for implementation of ISO 14001 EMS                    | Organization                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                 |
|--------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                          | Gold Mining                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Water Supply                                                                                                                                                                                           | Electricity Generation and Distribution                                                                                                                                                                                                                                                                                                                                                         |
|                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <ul style="list-style-type: none"> <li>Environmental policies of the organization</li> </ul>                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                 |
| Success factors for the implementing of ISO 14001 EMS                    | <ul style="list-style-type: none"> <li>Financial support.</li> <li>Buy-in from operational personnel where implementation takes place.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <ul style="list-style-type: none"> <li>Financial resources</li> <li>Commitment by employees</li> <li>Co-operation from government entities that manage environmental laws and requirements.</li> </ul> | Objective of the organization to be certified and associated with positive recognition                                                                                                                                                                                                                                                                                                          |
| Criticism of ISO 14001 EMS in relation to operations and the environment | <ul style="list-style-type: none"> <li>Implementation of ISO 14001 EMS was sometimes based on subjective values and ethics and not necessarily objective judgments influenced decision on what was regarded as environmentally significant and non-significant.</li> <li>Financial constraints also came into play.</li> <li>At times, a decision was made to postpone action which could have led to an improved environmental performance due to financial constraints. This was even at the level where legal noncompliance was accepted, because of a lack of the required funding to become legally compliant.</li> </ul> | <ul style="list-style-type: none"> <li>Cost factor</li> </ul>                                                                                                                                          | <ul style="list-style-type: none"> <li>Repetitive nature of the system.</li> <li>Acquiring certification does not guarantee that the organization will comply with ISO 14001 EMS requirements for ever.</li> <li>Cost factor</li> <li>Lack of understanding of the system</li> <li>Consideration and support of the system by top management was only due to the a legal compliance.</li> </ul> |

#### **4.3.1. Legal requirements and external influences on the adoption of ISO 14001 EMS**

An inquiry into the legal requirements for the implementation of ISO 14001 EMS, from the three companies that were part of the research, generated the information presented below. This inquiry into the legal and other requirement associated with the embracing of ISO 14001 EMS by organizations was important as it clarified relevant information related to the research question. The results of the investigation, as presented in the preceding table, showed the legal requirements and other reasons for the adoption of ISO 14001 EMS. The following factors were noted for the three organizations:

- Generally, there was no legal requirements; and
- The implementation of ISO 14001 EMS resulted in a general improvement with regards to compliance with environmental legislation.

Other reasons for the adoption of ISO 14001 EMS revealed were a result of demand by investors, trade partners and an internal drive to uphold a reputable corporate image. The investigation, in relation to the influence of external stakeholders on the implementation of ISO 14001 EMS, also revealed that there was a drive by investors for the adoption of the system. This was as a result of a required assurance of sound environmental practices, accreditation and environmental performance by the investors. The SABS, government and customers were other stakeholders who influenced the adoption of ISO 14001 EMS.

These results demonstrated that the non-existence of direct legal requirements for the implementation of ISO 14001 EMS has a limited impact on the decision for adoption or not of the policy.

#### **4.3.2. Critical success factors for the adoption of ISO 14001 EMS**

Based on the results of the investigation, the critical success factors for the adoption of ISO 14001 EMS were found to be generally similar to the factors that resulted in the adoption of the

policy. These factors increased investor confidence, enhanced the reputation of the organization, led to the adoption of best practice and the acquisition of certification. Other important factors recorded that led to the policy's adoption were the support from top management, the availability of funds and the cooperation at the implementation level by all the employees.

Additional factors that showed the inherent benefits of the adoption of ISO 14001 EMS, especially with regard to enhanced environmental performance, were the following:

- The identification and monitoring of critical environmental aspects;
- The identification and implementation of mitigation measures and tracking improved environmental performance over time;
- An analysis of trends that was necessary for information reporting; and
- There were efforts to entrench an environmentally friendly and socially responsible atmosphere amongst employees.

These factors demonstrated that there should be an upfront desire by organizations to ensure environmental performance. This objective of ensuring environmental performance served as a critical success factor for the adoption of ISO 14001 EMS.

#### **4.3.3. Factors that might result in the non-adoption of ISO 14001 EMS**

From the investigation, the factors that might result in the non-adoption of ISO 14001 EMS were the following:

- Resource constraints;
- Delayed evidence of the impacts of adopting ISO 14001 EMS;
- The lack of support from operational staff and management; and
- The non-prioritizing of environmental systems.

A detailed account, of the extent to which these factors result in the non-adoption ISO 14001 EMS, is presented below.

### **Resource constraints**

Resource constraints were expressed particularly in the context of financial ones, time and personnel. Specific emphasis was on financial constraints as a major factor that might result in the non-adoption of the system. This was due to the fact that the implementation of ISO 14001 EMS was generally considered to be a costly process. The size of the organization and associated financial resources served as an indicator of whether or not ISO 14001 EMS was adopted or not. The smaller the organization, which was associated with limited financial resource, the less likely the adoption of ISO 14001 EMS.

This was aptly revealed by one of the companies that provided a response related to costs associated with the adoption of ISO 14001 EMS:

***“Smaller organizations cannot maintain certification as it is too costly and environmental systems are secondary to productive operations”.***

Notwithstanding this comment, there were other factors presented below that also have an impact on the non-adoption of ISO 14001 EMS.

### **Delayed evidence on the impacts of the adoption of ISO 14001 EMS**

Delayed evidence on the impacts of the adoption of ISO 14001 EMS was found to be a significant factor in terms of the decision to implement the system or not. The need for evidence on the impacts of the adoption of ISO 14001 EMS was important, because the implementation of the system required an extensive investment of resources, specifically financial ones. Thus the return on such an investment in the form of positive impacts would serve to encourage the continued support for the system. It was clear that when extensive periods of time lapsed without evidence of positive impacts, then the adoption of the system might be questioned or even discontinued.

The importance of noting the period required for environmental performance to show positive results and keeping records, as well as the need to be in continuous communication with environmental management authorities, was revealed by this study. These actions helped to manage expectations and confirmed positive changes as a result of the adoption of the system. It was imperative for environmental management authorities to be involved as positive feedback, irrespective of exhibition of any improved environmental performance, was valuable.

#### **Lack of support from operational staff and management**

Lack of support from operational staff and management was another factor that might result in the non-adoption of ISO 14001 EMS. Although respondents mentioned the importance of support from these two levels viz. management and operational level, support was required from all levels and personnel of the organization. Generally speaking, if there was not support from all staff members, then this would result in the non-adoption of ISO 14001 EMS. However, support by the management and operational level personnel played a leading role in the adoption of the system.

#### **Non-prioritizing of environmental systems**

The non-prioritizing of environmental systems was a further factor that might result in the non-adoption of ISO 14001 EMS. This suggested that the adoption of ISO 14001 EMS should be a priority, especially in light of the plethora of challenges that organizations faced. There is a need to invest resources which should ensure that the adoption of the system would be successful over time.

#### **4.3.4. Decision criteria and success factors for the adoption of ISO 14001 EMS**

Decision criteria for organization in relation to the adoption of ISO 14001 EMS referred to a formal list of items. These factors were noted to be generally comparable to factors that resulted in an adoption of ISO 14001 EMS. However, decision criteria in relation to the

adoption of ISO 14001 EMS indicated a higher level of importance within the realm of the organization's strategic objectives.

From this study's inquiry, the decision criteria for the adoption of ISO 14001 EMS were shown to be the following:

- Financial support; and
- Support from operational and top management personnel.

The above information indicated that resources and personnel support also act as decision criteria for the adoption of ISO 14001 EMS. In addition to these factors, the following were also revealed as decision criteria for the adoption of ISO 14001 EMS:

- Growth strategy objectives of the organization;
- Sustainable development objectives of the organization;
- Environmental policies of the organization; and
- Organization's objective to be certified with its associated positive recognition.

These factors indicated that the decision to adopt ISO 14001 EMS should be part of an organization's strategy, as it required the incorporation of the system into an organization's mission, vision, values and strategies. The expending of an organization's resources for the purpose of implementing ISO 14001 EMS needs to be a well thought-out exercise that is successful and yields the desired outcomes. Such an exercise may only be successful and sustainable if it forms part of the strategy of the organization. From the investigation, the above factors were reiterated as contributing to the success factors for the adoption of ISO 14001 EMS.

#### **4.3.5. Criticism of ISO 14001 EMS**

From the investigation, criticisms of ISO 14001 EMS were shown as a result of the following factors:

- Cost factors;
- Subjectivity associated with the implementation of the system;
- Repetitive nature and lack of understanding of the system; and
- Perfunctory implementation of the system as a result of associated legal compliance.

A detailed account of these factors which led to criticism of ISO 14001 EMS is presented below.

##### **Cost factors**

Cost factors contributed to criticism of the system. This was obvious due to the extensive references to the significant role played by financial resources in the implementation of ISO 14001 EMS. The main message conveyed in this regard is that implementation of ISO 14001 EMS required extensive financial investment.

##### **Subjectivity associated with the implementation of the system**

The implementation of ISO 14001 EMS is inherently subjective given the context of competing environmental requirements presented as aspects and impacts that require funding in the organizations. This criticism is presented as a subjective decision, which is taken in terms of what is considered environmentally significant, driven by ethics, values and the availability of funds. Thus other factors beyond environmental performance may come into play in the implementation of the system, such as, the inherent ethics and values of the personnel managing the system and the availability of funds.

### **Repetitive nature and a lack of understanding of the system**

The implementation of ISO 14001 EMS is inherently repetitive. This serves as a criticism, because the undertaking of repetitive activities related to the implementation of the system ended up being regarded as tedious. The acquiring of certification required the organization to repeat activities on a regular basis. This might be considered a criticism especially where there is a lack of understanding of the system. Personnel at all levels needed to be conversant with the adoption of ISO 14001 EMS, so that they embraced the inherent characteristics of the system such as repetitiveness.

### **Perfunctory implementation of the system as a result of the associated legal compliance**

The fact that ISO 14001 EMS resulted in enhanced legal compliance is another criticism of the system. This was perceived as a criticism because the pursuit of enhanced legal compliance is the sole objective of the system, especially by top management. A comprehensive understanding of ISO 14001 EMS, in terms of its overall benefits, would contribute to addressing some of the criticisms noted in this section.

These factors further presented a different perspective on the negative views associated with the implementation of ISO 14001 EMS, because they also served to elucidate information on the research question.

### **4.3.6. Conclusion on the basis of implementation of ISO 14001 by organizations**

The conclusion to the findings of this sub-section of the research was focused on the basis of the implementation of ISO 14001 EMS by organizations. The outcomes of the study in this regard indicated that there were no legal requirements for the implementation of the system. However, it was concluded that an adoption of the ISO 14001 EMS was an indirect requirement of the various legal compliance conditions. The organization's environmental standing and reputation was enhanced positively by the adoption of ISO 14001 EMS. It was shown that the adoption of the system was encouraged by internal and external stakeholders

that included shareholders and consumers. The critical success factors that influenced the adoption of ISO 14001 EMS were the benefits of the system and its overall enhancement of environmental performance. Other critical success factors, such as costs and the incorporation into strategic decisions of the organization, played a major role in the implementation of the system. These factors were reviewed in line with others that might result in the non-adoption of the system and they were informed by the following: resource constraints, delayed evidence of the impacts of the adoption of ISO 14001 EMS, a lack of support from operational staff and management as well as the non-prioritizing of environmental systems. All of these factors also served as criticism of ISO 14001 EMS.

## **CHAPTER 5: CONCLUSIONS AND RECOMMENDATIONS**

### **5.1. Introduction**

This chapter of the report outlines the conclusions and recommendations of the research. The conclusions outlined herein are based on the outcomes of the inquiry into the factors that influenced decisions on the implementation of ISO 14001 EMS. The chapter is divided into four sub-chapters viz. a summary of the methodology that was used to acquire the research data, the outcomes of the research inquiry, which were presented as characteristics of organizations that adopted ISO 14001 EMS and finally, the factors that influenced decisions on the implementation of ISO 14001 EMS. The last subsection presents recommendations on measures taken to ensure that ISO 14001 EMS is adopted by organizations.

### **5.2. Summarized research methodology**

The methodology used to acquire the information for this research followed and applied an evaluation research approach. In addition, the research approach adopted for this study was described as a qualitative multi-case study, which involved the examination of the implementation of ISO 14001 EMS by three companies. These companies are in the water supply, the electricity generation and distribution as well as the mining sector. The information related to these inquiries was obtained through interviews, which involved representatives of three organizations that are at different stages of implementing ISO 14001 EMS. The sampling methodology used to acquire information from these companies was purposive sampling strategy or information-oriented sampling. Data collection techniques used included the following: conducting interviews, questionnaire survey, review of documents and expert review. The strategies used in data analysis entailed organizing the details about the cases, summarizing and categorization of the data, interpreting of single instances, identifying patterns, as well as synthesis and generalization.

### **5.3. Characteristics of organizations that adopted ISO 14001 EMS**

From this inquiry it was revealed that organizations that adopted ISO 14001 EMS exhibited the following characteristics:

There was organizational commitment to the implementation of ISO 14001 EMS, because there was a dedicated unit responsible for ensuring the adoption of the system within these organizations, which had resources to support this initiative. Secondly, the organizations exhibited an open approach to the adoption of the system, which was based on a general recognition of the positive benefits that resulted from its implementation. This knowledge about the positive benefits also included an understanding of the extensive costs associated with an adoption of ISO 14001 EMS. The benefits of the adoption of the system included offsetting the costs associated with the implementation of ISO 14001 EMS. Organizations showed their commitment to the implementation of ISO 14001 EMS, when they internalized the system into the organizations' operations. This was expressed by the coordination, integration and the enforcement of ISO 14001 EMS within the overall operations of the organization, especially with reference to the mitigation of environmental impacts.

From the analysis of the perceptions of representatives of organizations involved in the research, a conclusion was reached that the adoption of ISO 14001 EMS led to improved environmental performance, as well as an enhanced compliance with environmental legislation. Another conclusion was the representatives' views of the programme: it ensured certification while improving the organization's environmental performance. This is through *inter alia* incorporating ISO 14001 EMS aspects into the daily operations of an organization.

### **5.4. Basis of the implementation of ISO 14001 EMS by organizations**

The following conclusion was reached from the outcomes of the study regarding basis of the implementation of ISO 14001 EMS: there were no legal requirements for the implementation of the system, although the adoption of the ISO 14001 EMS was an indirect requirement of the various legal compliance conditions. This adoption of ISO 14001 EMS enhanced the organization's reputation and environmental standing which was encouraged by internal and external stakeholders that included shareholders and consumers. In this regard, external

stakeholders pushed for the adoption of the system due to the need for assurances of sound environmental practices, accreditation and an improved environmental performance by the organizations.

Critical success factors for the adoption of ISO 14001 EMS were the benefits of the system and overall enhanced environmental performance. Other critical success factors were comparable to decision criteria for the implementation of the system. Costs, together with incorporating the implementation of the system into the strategic decisions of the organization, played a major role. These factors were reviewed in line with others that might result in the non-adoption of the system, such as costs constraints, delayed evidence of the impacts of adopting ISO 14001 EMS, a lack of support from operational staff and management as well as the non-prioritizing of environmental systems. In conclusion, these factors also served as criticisms of ISO 14001 EMS.

## **5.5. Recommendations**

The following recommendations presented in this section of the report are related to the research purpose:

### **Undertaking of a comprehensive cost benefit analysis for the adoption of ISO 14001 EMS**

It is recommended that organizations should undertake a process of costing the negative impacts linked to the non-compliance to environmental legislation and their failure to realize the benefits, including the non-existence of a Safety, Health, Environmental and Quality system, associated with the adoption of the ISO 14001 EMS. A cost benefit analysis process associated with the implementation of ISO 14001 EMS should then be undertaken. This would serve as the first part of decision criteria for an adoption of the ISO 14001 EMS.

### **The adoption of ISO 14001 EMS as part of the strategic decisions of the organizations**

A direct recommendation, which emanates from the conclusions of the research, is that an adoption of ISO 14001 EMS should form part of the strategic decisions of the organizations. This recommendation would be enhanced by the above cost benefit analysis process and the

acquisition of relevant information to be disseminated to all stakeholders regarding ISO 14001 EMS. By doing so, the organization will be in a position to influence the strategic decisions positively, in favour of the adoption of the system.

### **Record keeping and communication with the environmental authorities**

Record keeping and continuous communication with the environmental management authorities is important to ensure confirmation of the positive impacts of adopting the system. This is particularly significant at the beginning stages of the implementation of ISO 14001 EMS, where encouragement and continuous effort is required to ensure the sustained execution of the system. These are of importance because of the existence of constraints associated with the adoption of ISO 14001 EMS, such as resource limitations, delayed evidence of positive impacts of the system and the non-prioritizing of environmental systems.

### **Training among personnel**

The final recommendation is that training related to the system is carried out among all the organization's personnel in order to ensure the successful adoption of the system. This is significant to guarantee the understanding, participation and eventual support of all employees of the organization.

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### Appendix A: Completed Questionnaires

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                           |
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| <b>Questionnaire Number: 1</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                           |
| <b>Organization: Gold Mining Company in South Africa.</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                           |
| Introductory Questions: Clarification of roles and responsibilities for implementation of ISO 14001 EMS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                           |
| <b>Kindly provide an indication of the approximate number of personnel involved in implementation of ISO 14001 EMS in your organization.</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                           |
| <p>Currently in our organization we have two regions, the Vaal river and the West Wits region, The Vaal river has 3 operating mines and 2 metallurgical plants. The plants operate under one managerial structure. The West Wits region also has three operating mines and 2 metallurgical plants. One of the mines has been put under care and maintenance due to reduced production rates. In each of the mines and the metallurgical plants in Vaal River there is a Senior Environmental Co-ordinator and an assistant at an Environmental Co-ordinator level. In total in Vaal River there will be a total of 8 individuals tasked for the day to day running and maintenance of an EMS.</p> <p>In West Wits the mine placed under care and maintenance has no co-ordinator and the services are offered from the other mine, and the situation is such that the mine has no assistant and only has a Senior Environmental Co-ordinator responsible for two mines. The other mine does have a Senior Environmental co-ordinator as well as an assistant. The metallurgical plants in the West Wits region are offered services by the Vaal River Senior Environmental co-ordinator and his/ her assistant. Hence in West Wits there is a total of 3 individuals tasked in the mines for maintenance and implementation of an EMS. In addition there are support services such as training, and land management department as well as High density which offered accommodation for the mine employees, the same situation prevails and hence 4 individual per region making it a total of 8 individuals within the support services. There is a central department which consists of specialists who offer specialized input and guidance to the operations on issues pertaining to environmental authorisations, air and water quality issues, and also conduct internal EMS audits for all the operations in order for the internal audits to be independent as required by the system. The team is comprised of 10 Senior Environmental Co-ordinators and 5 managers and 1 senior manager. At each operation the engineering manager is indirectly involved as they act as management representatives, more responsible for management activities and giving direction and not the day to day activities. The management representatives act more at a strategic level of implementation where decisions have to be made as well as the allocation of resources, it be personnel and or financial resources. This will be a total of 11 management representatives.</p> | + - 35 &<br>11 Management representatives |
| <b>Outline the roles and responsibilities that the personnel (presented above) have in terms of implementation of ISO 14001 EMS.</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                           |

| <b>Personnel<br/>Position/Designation</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <b>Roles and Responsibilities</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| Senior Environmental Co-ordinators at the operations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Day to day running, maintenance and implementation of the system. Ranging from inspections, recording of incidents, incident investigation and gathering the monitoring data. Communicating with all personnel at the operations. Also responsible to schedule management review meetings and to be the scribe during such meetings. Identify projects and in conjunction with the project managers develop the scope and communicate with the central environmental management department for specialist input. Communicate changes such as legal changes to management and cascade it down to all personnel. |  |
| Senior Environmental Co-ordinators at the central department                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Specialists and offer specialist input.<br>Co-ordinate projects such as studies for ground water quality, air quality and specialist activities such as air quality modeling.<br>Co-ordinate project such as EIA together with appointed consultants and in conjunction with the Environmental co-ordinators at the operations.                                                                                                                                                                                                                                                                                |  |
| Assistant Environmental Co-ordinators at the                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Assist Senior Environmental co-ordinators in their functions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |  |
| Environmental Managers                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Strategic decision making, risk assurors who ensure availability of funds for the reduction or risks and ensuring that                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |
| <b>What are the general perceptions of personnel involved in implementation of ISO 14001 EMS in your organization in terms of factors that result in adoption or non-adoption of ISO 14001 EMS?</b>                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |
| The general perception is that at times the “paper trail” required especially for auditing purposes can distract the main aim of improving the environmental performance of an organization. This is however a “lame excuse” for those with poor document control process. Environmental performance is always evident in many ways, from the general housekeeping to reduction in pollution, reduction in resource consumption and there is no way that a lack of an audit trail can distract the visible evidence of improved performance. |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |
| <b>Please present background information on the implementation of ISO 14001 EMS in your organization in terms of amongst others, overall benefits, costs, and indirect legal compliance.</b>                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |

| <p>Since implementation of the ISO 14001 system there is a big improvement in the general housekeeping of the operations. There is also better waste handling especially with reference to hazardous waste. Cradle to grave concept is entrenched in all operations when handling hazardous waste.</p> <p>Waste recycling has also intensified as it has brought about income, i.e. there is a lot of money generated from the waste recycling initiatives, in certain parts of the organization it is this money which drives the EMS and projects related to Continual Improvements.</p> <p>Implementation of the EMS has led to greater awareness amongst senior people on the environmental risks of the organizations, from aspect identification and hence a more focused approached to minimize the impacts of the significant aspects of the organization.</p> <p>Legal and other requirements are considered as part of the implementation of the EMS has also benefited the organisation in ensuring that legal compliance is attained. The initial cost of implementation could have been enormous as a lot of consultation work had to be done, but the spin off has been appreciated as it has led to an improved image of the organization , better housekeeping and generation of income through recycling and as indicated better grasp of the significant impacts of the activities the organization.</p> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |              |                                                  |           |                                                                                                                                                                                                                                                                                                                                                                           |  |  |  |
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| Basis of implementation of ISO 14001 by Organizations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |              |                                                  |           |                                                                                                                                                                                                                                                                                                                                                                           |  |  |  |
| <b>What are the mandatory and legal requirements for implementation of ISO 14001 EMS by your organizations?</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |              |                                                  |           |                                                                                                                                                                                                                                                                                                                                                                           |  |  |  |
| <p>There were none at the time of implementation. At the time of implementation of the EMS there were no mandatory legal requirements for its implementation. It was rather a “best practice” decision. However due to the fact that during the updating of the EMP in 2009 the organization made mention of having an EMS in place this thus became the condition within an EMP. It has thus become an “implied” legal requirement as the EMP was amended and accepted within the ambit of having an EMS in place and as a means of directing environmental management programmes within the organization.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |              |                                                  |           |                                                                                                                                                                                                                                                                                                                                                                           |  |  |  |
| <b>Apart from the legal requirements, are there other reasons for implementation of ISO 14001 EMS by your organizations?</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |              |                                                  |           |                                                                                                                                                                                                                                                                                                                                                                           |  |  |  |
| <p>It was a requirement by the investors as well as those doing trade with the organization. It was seen by the investors as a “cushion” against which investors can be assured that the organization they are doing business with has sound environmental practices.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |              |                                                  |           |                                                                                                                                                                                                                                                                                                                                                                           |  |  |  |
| <b>Are there stakeholders external to your organization that have an influence in the adoption of ISO 14001 EMS by organization?</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <b>Yes</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <b>No</b>    |                                                  |           |                                                                                                                                                                                                                                                                                                                                                                           |  |  |  |
| <p>If the answer is yes to question 2.3 above, kindly list these stakeholders and outline the nature of influence they have in terms of adoption of ISO 14001 EMS by your organization.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |              |                                                  |           |                                                                                                                                                                                                                                                                                                                                                                           |  |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <table border="1"> <thead> <tr> <th>Stakeholders</th> <th>Nature of influence on adoption of ISO 14001 EMS</th> </tr> </thead> <tbody> <tr> <td>Investors</td> <td>These would be the investors, as they initially were the individuals who set the condition that for them to continue doing business with the organization it would have to have some accreditation in place with regards to its environmental performance and the only way to get accredited was through having an EMS in place and hence internal and external auditing.</td> </tr> <tr> <td></td> <td></td> </tr> </tbody> </table> | Stakeholders | Nature of influence on adoption of ISO 14001 EMS | Investors | These would be the investors, as they initially were the individuals who set the condition that for them to continue doing business with the organization it would have to have some accreditation in place with regards to its environmental performance and the only way to get accredited was through having an EMS in place and hence internal and external auditing. |  |  |  |
| Stakeholders                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Nature of influence on adoption of ISO 14001 EMS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |              |                                                  |           |                                                                                                                                                                                                                                                                                                                                                                           |  |  |  |
| Investors                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | These would be the investors, as they initially were the individuals who set the condition that for them to continue doing business with the organization it would have to have some accreditation in place with regards to its environmental performance and the only way to get accredited was through having an EMS in place and hence internal and external auditing.                                                                                                                                                                                                                                |              |                                                  |           |                                                                                                                                                                                                                                                                                                                                                                           |  |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |              |                                                  |           |                                                                                                                                                                                                                                                                                                                                                                           |  |  |  |
| Nature of factors that affect implementation of ISO 14001 by Organizations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |              |                                                  |           |                                                                                                                                                                                                                                                                                                                                                                           |  |  |  |

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| <b>What are the perceived critical success factors for adopting ISO 14001 EMS as an effective tool for enhancing environmental performance of organizations?</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |
| Increased investor confidence.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |  |
| <b>What are the perceived critical success factors for adopting ISO 14001 EMS as an effective tool in terms of other reasons apart from enhancing environmental performance (if there are any) that are associated with adoption of the ISO 14001 EMS?</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |
| Same as above                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |  |
| <b>List the factors that result in adoption of ISO 14001 EMS (that may be described as facilitators or positive influencers) in your organization?</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |
| Increased investor confidence.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |  |
| <b>List the factors that may result in non-adoption or hinder implementation of ISO 14001 EMS (that may be described as impeters, barriers or negative influencers) in your organization?</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |  |
| Financial constraints.<br>Lack of buy in from other role players especially the operational people where implementation has to done at ground level.<br>Delayed evidence of improved environmental performance (some change/ improved environmental performance) can only be evidenced after a long time when a lot of money and time has been invested. This is the case where degradation of the environment is a legacy of the organization. Benefits take long to be visible and may at times deter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  |
| <b>Please explain how these factors (listed in 3.4 above) negatively influence the adoption and implementation of ISO 14001 EMS.</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |
| Explained above.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |
| <b>What are the factors that form the decision criteria of ISO 14001 EMS adoption?</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |
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| <b>Please explain how these factors (listed in 3.6 above) serve as decision criteria for implementation of ISO 14001 EMS.</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |  |
| <b>What are the success factors for implementing ISO 14001 EMS in your organization?</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |  |
| It has led to a systematic approach on handling environmental issues, from aspect identification and rating, to the setting of objectives and targets and ensuring that these are adhered to. Communicating with the employees on the significant aspects of their activities, the level of environmental awareness has been heightened. The allocation of funds for environmental project have come to the fore and not have a situation where projects are funded from the daily running costs whereby when things are tight, environmental projects would be the 1 <sup>st</sup> to be removed from the budget.<br>Has highlighted knowledge on the environmental risks of the organization and has ensured that these are attended to.<br>At ground level and in operational areas it has brought about better housekeeping, waste handling and better management and handling as well as accounting on hazardous material.<br>Better processes are in place for project management. Individuals in the operations, i.e. mines and metallurgical plants as well as support services, know that prior to project implementation a risk assessment has to be conducted on potential environmental impacts and this has to be communicated with specialist at the central department for their input as well as determination of the route to be followed. (EIAs, Basic Assessment or an internal Risk Assessment) |  |
| <b>What are the factors that result in criticism of ISO 14001 EMS in relation to operations and environmental performance of your organization?</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |  |

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| <p>Value and ethics do come to influence decision on what is regarded as significant and what is non-significant. Issues of significance are then given top priority and hence might affect the performance of other issues which are not given top rating in cases where to bring in an improved environmental performance will need a financial commitment.</p> <p>So criticism lie around the fact that decisions made may not necessarily be what is critical in improved environmental performance but a decision based on ethics and value judgment.</p> <p>Financial constraints do also come into play. At times a decision is made to postpone action which could lead to improved environmental performance due to financial constraints, even to a level where legal noncompliance is accepted based on the lack of funding required to become legally compliant.</p> |  |
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| <b>Questionnaire Number: 2</b>                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                |                            |              |                                                             |                                 |                                                                                              |                                |                                  |                       |                                                |  |  |  |
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| <b>Organization: Rand Water</b>                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                |                            |              |                                                             |                                 |                                                                                              |                                |                                  |                       |                                                |  |  |  |
| Introductory Questions: Clarification of roles and responsibilities for implementation of ISO 14001 EMS                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                |                            |              |                                                             |                                 |                                                                                              |                                |                                  |                       |                                                |  |  |  |
| <b>Kindly provide an indication of the approximate number of personnel involved in implementation of ISO 14001 EMS in your organization.</b>                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 30                             |                            |              |                                                             |                                 |                                                                                              |                                |                                  |                       |                                                |  |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                |                            |              |                                                             |                                 |                                                                                              |                                |                                  |                       |                                                |  |  |  |
| <b>Outline the roles and responsibilities that the personnel (presented above) have in terms of implementation of ISO 14001 EMS.</b>                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                |                            |              |                                                             |                                 |                                                                                              |                                |                                  |                       |                                                |  |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <table border="1"> <thead> <tr> <th>Personnel Position/Designation</th> <th>Roles and Responsibilities</th> </tr> </thead> <tbody> <tr> <td>SHEQ Manager</td> <td>SHEQ management and corporate guidance for the organization</td> </tr> <tr> <td>Corporate Environmental Advisor</td> <td>ISO14001 system procedure and policy formulation, auditing and enforcement of implementation</td> </tr> <tr> <td>Environmental Officers on site</td> <td>ISO 14001 implementation on site</td> </tr> <tr> <td>Risk Control Managers</td> <td>Enforcement of ISO14001 implementation on site</td> </tr> <tr> <td></td> <td></td> </tr> </tbody> </table> | Personnel Position/Designation | Roles and Responsibilities | SHEQ Manager | SHEQ management and corporate guidance for the organization | Corporate Environmental Advisor | ISO14001 system procedure and policy formulation, auditing and enforcement of implementation | Environmental Officers on site | ISO 14001 implementation on site | Risk Control Managers | Enforcement of ISO14001 implementation on site |  |  |  |
| Personnel Position/Designation                                                                                                                                                                                                                                                                                                                                                                                                                     | Roles and Responsibilities                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                |                            |              |                                                             |                                 |                                                                                              |                                |                                  |                       |                                                |  |  |  |
| SHEQ Manager                                                                                                                                                                                                                                                                                                                                                                                                                                       | SHEQ management and corporate guidance for the organization                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                |                            |              |                                                             |                                 |                                                                                              |                                |                                  |                       |                                                |  |  |  |
| Corporate Environmental Advisor                                                                                                                                                                                                                                                                                                                                                                                                                    | ISO14001 system procedure and policy formulation, auditing and enforcement of implementation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                |                            |              |                                                             |                                 |                                                                                              |                                |                                  |                       |                                                |  |  |  |
| Environmental Officers on site                                                                                                                                                                                                                                                                                                                                                                                                                     | ISO 14001 implementation on site                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                |                            |              |                                                             |                                 |                                                                                              |                                |                                  |                       |                                                |  |  |  |
| Risk Control Managers                                                                                                                                                                                                                                                                                                                                                                                                                              | Enforcement of ISO14001 implementation on site                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                |                            |              |                                                             |                                 |                                                                                              |                                |                                  |                       |                                                |  |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                |                            |              |                                                             |                                 |                                                                                              |                                |                                  |                       |                                                |  |  |  |
| <b>What are the general perceptions of personnel involved in implementation of ISO 14001 EMS in your organization in terms of factors that result in adoption or non-adoption of ISO 14001 EMS?</b>                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                |                            |              |                                                             |                                 |                                                                                              |                                |                                  |                       |                                                |  |  |  |
| <p>The EMS provides a framework for environmental management, reporting and sustainable practices and operations.</p> <p>It facilitates legal compliance</p>                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                |                            |              |                                                             |                                 |                                                                                              |                                |                                  |                       |                                                |  |  |  |
| <b>Please present background information on the implementation of ISO 14001 EMS in your organization in terms of amongst others, overall benefits, costs, and indirect legal compliance.</b>                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                |                            |              |                                                             |                                 |                                                                                              |                                |                                  |                       |                                                |  |  |  |
| <p>Overall benefits are:</p> <p>Increased reputation</p> <p>Legal compliance</p> <p>Public perception</p> <p>Procedures for compliance and environmentally friendly operations</p> <p>Implementation and maintenance of a system through certification body is very costly. The organization has to pay for certification, surveillance audits, etc. as well as resources (human and financial) to ensure continued maintenance of the system.</p> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                |                            |              |                                                             |                                 |                                                                                              |                                |                                  |                       |                                                |  |  |  |
| Basis of implementation of ISO 14001 by Organizations                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                |                            |              |                                                             |                                 |                                                                                              |                                |                                  |                       |                                                |  |  |  |
| <b>What are the mandatory and legal requirements for implementation of ISO 14001 EMS by your organizations?</b>                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                |                            |              |                                                             |                                 |                                                                                              |                                |                                  |                       |                                                |  |  |  |

|                                                                                                                                                                                                                                                            |                     |                                                         |  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|---------------------------------------------------------|--|
| <b>There is no legal requirement to implement ISO 14001</b>                                                                                                                                                                                                |                     |                                                         |  |
| <b>Apart from the legal requirements, are there other reasons for implementation of ISO 14001 EMS by your organizations?</b>                                                                                                                               |                     |                                                         |  |
| Reputation and best practice                                                                                                                                                                                                                               |                     |                                                         |  |
| <b>Are there stakeholders external to your organization that have an influence in the adoption of ISO 14001 EMS by organization?</b>                                                                                                                       | <b>Yes x</b>        | <b>No</b>                                               |  |
| <b>If the answer is yes to question 2.3 above, kindly list these stakeholders and outline the nature of influence they have in terms of adoption of ISO 14001 EMS by your organization.</b>                                                                |                     |                                                         |  |
|                                                                                                                                                                                                                                                            | <b>Stakeholders</b> | <b>Nature of influence on adoption of ISO 14001 EMS</b> |  |
|                                                                                                                                                                                                                                                            | SABS                |                                                         |  |
|                                                                                                                                                                                                                                                            | Customers           |                                                         |  |
|                                                                                                                                                                                                                                                            | Government          |                                                         |  |
| Nature of factors that affect implementation of ISO 14001 by Organizations                                                                                                                                                                                 |                     |                                                         |  |
| <b>What are the perceived critical success factors for adopting ISO 14001 EMS as an effective tool for enhancing environmental performance of organizations?</b>                                                                                           |                     |                                                         |  |
| Critical aspects are identified and monitored. Mitigation measures are implemented showing improved environmental performance over time. Trends are analysed and provides information for reporting.                                                       |                     |                                                         |  |
| <b>What are the perceived critical success factors for adopting ISO 14001 EMS as an effective tool in terms of other reasons apart from enhancing environmental performance (if there are any) that are associated with adoption of the ISO 14001 EMS?</b> |                     |                                                         |  |
| To embed an environmentally friendly and socially responsible atmosphere amongst employees.                                                                                                                                                                |                     |                                                         |  |
| <b>List the factors that result in adoption of ISO 14001 EMS (that may be described as facilitators or positive influencers) in your organization?</b>                                                                                                     |                     |                                                         |  |
| Reputation<br>Legal compliance<br>Best practice                                                                                                                                                                                                            |                     |                                                         |  |
| <b>List the factors that may result in non-adoption or hinder implementation of ISO 14001 EMS (that may be described as impeters, barriers or negative influencers) in your organization?</b>                                                              |                     |                                                         |  |
| Costs<br>Resources<br>Time                                                                                                                                                                                                                                 |                     |                                                         |  |
| <b>Please explain how these factors (listed in 3.4 above) negatively influence the adoption and implementation of ISO 14001 EMS.</b>                                                                                                                       |                     |                                                         |  |
| Smaller organizations cannot maintain certification as it is too costly<br>Environmental systems are secondary to productive operations.                                                                                                                   |                     |                                                         |  |
| <b>What are the factors that form the decision criteria of ISO 14001 EMS adoption?</b>                                                                                                                                                                     |                     |                                                         |  |
| Top management<br>Growth strategy<br>Sustainable development ideas<br>Environmental policies                                                                                                                                                               |                     |                                                         |  |

|                                                                                                                                                                    |  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| <b>Please explain how these factors (listed in 3.6 above) serve as decision criteria for implementation of ISO 14001 EMS.</b>                                      |  |
| <b>What are the success factors for implementing ISO 14001 EMS in your organization?</b>                                                                           |  |
| <b>Human resources</b><br>Financial resources<br>Commitment by employees<br>Co-operation from government entities that manage environmental laws and requirements. |  |
| <b>What are the factors that result in criticism of ISO 14001 EMS in relation to operations and environmental performance of your organization?</b>                |  |
| <b>Cost factor</b><br>Secondary to productions.                                                                                                                    |  |

|                                                                                                                                                                                                     |                                                                            |                                                                                                    |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|--|
| <b>Questionnaire Number: 3</b>                                                                                                                                                                      |                                                                            |                                                                                                    |  |
| <b>Organization: Eskom Distribution</b>                                                                                                                                                             |                                                                            |                                                                                                    |  |
| Introductory Questions: Clarification of roles and responsibilities for implementation of ISO 14001 EMS                                                                                             |                                                                            |                                                                                                    |  |
| <b>Kindly provide an indication of the approximate number of personnel involved in implementation of ISO 14001 EMS in your organization.</b>                                                        |                                                                            |                                                                                                    |  |
| Distribution Division has 9 Operating Units. Each unit has Environmental Manager and Environmental Advisors (4) per unit. Total of 5 resources Per Operating Unit.                                  |                                                                            |                                                                                                    |  |
| <b>Outline the roles and responsibilities that the personnel (presented above) have in terms of implementation of ISO 14001 EMS.</b>                                                                |                                                                            |                                                                                                    |  |
|                                                                                                                                                                                                     | <b>Personnel Position/Designation</b>                                      | <b>Roles and Responsibilities</b>                                                                  |  |
|                                                                                                                                                                                                     | Sustainability Manager(Distribution Division) and Environmental Specialist | Coordinate the overall ISO 14001 Implementation throughout Distribution divisions                  |  |
|                                                                                                                                                                                                     | OU's Environmental Managers                                                | Ensure the implementation of ISO 14001 within the Operating Unit                                   |  |
|                                                                                                                                                                                                     | Environmental Advisors                                                     | Ensure implementation of ISO 14001 within the departments in the Operating Unit                    |  |
|                                                                                                                                                                                                     | Departmental Managers                                                      | Assist the Environmental department with the implementation of ISO 14001 within their departments. |  |
|                                                                                                                                                                                                     | Supervisors                                                                | Ensure that their respective departments complies with ISO requirements                            |  |
|                                                                                                                                                                                                     | Employees                                                                  | Ensure that their daily duties is in compliant of ISO                                              |  |
|                                                                                                                                                                                                     | Auditors :Internal and External auditors                                   | Ensure that work is done in accordance with the standards                                          |  |
|                                                                                                                                                                                                     |                                                                            |                                                                                                    |  |
| <b>What are the general perceptions of personnel involved in implementation of ISO 14001 EMS in your organization in terms of factors that result in adoption or non-adoption of ISO 14001 EMS?</b> |                                                                            |                                                                                                    |  |
| It is that our department need to get certification and everybody in the team has to ensure that all Eskom's areas complies with the ISO requirements.                                              |                                                                            |                                                                                                    |  |
| <b>Please present background information on the implementation of ISO 14001 EMS in your organization in terms of amongst others, overall benefits, costs, and indirect legal compliance.</b>        |                                                                            |                                                                                                    |  |

| <b>Objectives</b><br><b>1. To ensure compliance with applicable legislation and regulations as well as other requirements (i.e. Eskom Holdings policies, procedures, Process Control Manuals and guidelines as a minimum).</b><br><b>2. To ensure the effectiveness of Environmental Management Plan (EMP) implementation and compliance to environmental authorisation requirements and conditions.</b><br><b>3. To ensure the planning of activities with associated legal responsibilities and incorporating of these activities into the organization's environmental policies, objectives and targets. This will include consideration of operational procedures such as waste management, hazardous substances, land and biodiversity etc.</b><br><b>4. To ensure the compliance of service providers e.g. contractors to Environmental Legislation, Eskom Procedures and Eskom requirements as well as the root causes of non-compliances where applicable.</b> |                                                  |                                                  |  |  |  |  |  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|--------------------------------------------------|--|--|--|--|--|
| Basis of implementation of ISO 14001 by Organizations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                  |                                                  |  |  |  |  |  |
| <b>What are the mandatory and legal requirements for implementation of ISO 14001 EMS by your organizations?</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                  |                                                  |  |  |  |  |  |
| Organization goal is to get certification in all the Eskom's Distribution divisions.<br><br>Compliance include the following legislations as a minimum, but not limited to:<br><br>National Environmental Management Act No. 107 of 1998.<br>National Environmental Management: Waste Act No. 59 of 2008<br>National Environmental Management: Biodiversity Act No. of 10 of 2004<br>National Environmental Management: Protected Areas Act No. 57 of 2003<br>National Water Act No. 36 of 1998.<br>National Forests Act No. 84 of 1998<br>National Veld and Forest Fire Act No. 101 of 1998<br>National Heritage Resources Act No. 25 of 1999<br>Environment Conservation Act No. 73 of 1989<br>Conservation of Agricultural Resources Act No. 43 of 1983<br>Provincial and local by-laws.                                                                                                                                                                            |                                                  |                                                  |  |  |  |  |  |
| <b>Apart from the legal requirements, are there other reasons for implementation of ISO 14001 EMS by your organizations?</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                  |                                                  |  |  |  |  |  |
| No                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                  |                                                  |  |  |  |  |  |
| <b>Are there stakeholders external to your organization that have an influence in the adoption of ISO 14001 EMS by organization?</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Yes                                              | No<br>x                                          |  |  |  |  |  |
| <b>If the answer is yes to question 2.3 above, kindly list these stakeholders and outline the nature of influence they have in terms of adoption of ISO 14001 EMS by your organization.</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                  |                                                  |  |  |  |  |  |
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| Stakeholders                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Nature of influence on adoption of ISO 14001 EMS |                                                  |  |  |  |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                  |                                                  |  |  |  |  |  |
| Nature of factors that affect implementation of ISO 14001 by Organizations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                  |                                                  |  |  |  |  |  |
| <b>What are the perceived critical success factors for adopting ISO 14001 EMS as an effective tool for enhancing environmental performance of organizations?</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                  |                                                  |  |  |  |  |  |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| If the organization gets certified, it will be recognized as the best organization with proper systems that are in place.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |  |
| <b>What are the perceived critical success factors for adopting ISO 14001 EMS as an effective tool in terms of other reasons apart from enhancing environmental performance (if there are any) that are associated with adoption of the ISO 14001 EMS?</b>                                                                                                                                                                                                                                                                                                                                                                                                                                           |  |
| None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |  |
| <b>List the factors that result in adoption of ISO 14001 EMS (that may be described as facilitators or positive influencers) in your organization?</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |
| Support from the top management<br>Availability of funds.<br>Cooperation at the implementation level by all the employees.<br>Having same goal towards achieving certification.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |  |
| <b>List the factors that may result in non-adoption or hinder implementation of ISO 14001 EMS (that may be described as impeters, barriers or negative influencers) in your organization?</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  |
| Opposite of the above mentioned issues                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |
| <b>Please explain how these factors (listed in 3.4 above) negatively influence the adoption and implementation of ISO 14001 EMS.</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |  |
| It will take the organization time to achieve certification goal and at the same time money and resources will be wasted.<br>If there is no support people will be despondent towards certification.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |  |
| <b>What are the factors that form the decision criteria of ISO 14001 EMS adoption?</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |
| Goal to be certified and recognized as the best company in Environmental Management.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |  |
| <b>Please explain how these factors (listed in 3.6 above) serve as decision criteria for implementation of ISO 14001 EMS.</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  |
| If the organization gets certified it is regarded as positive or good thing to the business and for an organization to get ISO certification is regarded as an achieved goal.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  |
| <b>What are the success factors for implementing ISO 14001 EMS in your organization?</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  |
| Repetition of the above question.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |
| <b>What are the factors that result in criticism of ISO 14001 EMS in relation to operations and environmental performance of your organization?</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |  |
| ISO is a continual improvement process, sometimes it feels like you are doing one thing all over again and it does not challenge the team anymore. Most of the times you do one thing hundred times until the organization understand it.<br>Getting certification does not guarantee the organization that it will comply with ISO requirement for ever. Things might change in the organization.<br>There is no financial support that will assist the team to run with the implementation of ISO.<br>Nobody seems to understand what is required in order to comply.<br>Most of the times there is no support from top management, they only consider it important to avoid legal contraventions. |  |

