

Risks and opportunities of ISO14001: 2015 transition process - perspectives from South African environmental practitioners

HL Vermeulen



orcid.org/**0000-0001-7744-138X**

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Supervisor:

Dr JA Wessels

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DECLARATION

I, Lloyd Vermeulen, hereby declare that this study, titled “**Risks and opportunities of ISO14001: 2015 transition process – perspectives from South African environmental practitioners**” and submitted to the North West University, Potchefstroom Campus, was prepared solely by me under the guidance of Dr Jan-Albert Wessels, for the master’s degree qualification **Master of Environmental Science**.

I, Lloyd Vermeulen, hereby declare that the results reported in this paper have not been submitted to any other university or institute for qualification.

Lloyd Vermeulen

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ABSTRACT

The International Organization for Standardization (ISO) develops and publishes International Standards such as the ISO 14000 family of standards. The latter is a set of guidelines that provides a framework for all types of organisations worldwide to implement an effective environmental management system (EMS), and thereby gain competitive advantage and trust from stakeholders.

In September 2015 the ISO 14001:2015 version was published. The transition phase from ISO 14001:2004 to ISO 14001:2015 could bring many opportunities, but also pose risks for certified organisations. Establishments might respond in different ways to harness these opportunities and to deal with the potential risks. The aim of this study, therefore, is to explore the risks and opportunities inherent in the ISO 14001:2015 transition for organisations in South Africa, focusing specifically on the perspectives of South African environmental practitioners.

To achieve the aim of this study, two objectives are set: firstly, to conduct an extensive literature review on the evolution of ISO 14001 in order to determine the internationally-perceived risks and opportunities of the ISO 14001:2015 transition and, secondly, to explore the risks and opportunities inherent in the ISO14001:2015 transition process have for South African environmental practitioners. The latter were identified by distributing a survey questionnaire to relevant participants via email and LinkedIn, and by conducting semi-structured interviews. Out of the 80 survey questionnaires distributed, 52 completed survey questionnaires were returned, 27 from the industry implementing ISO 14001 EMS and 25 from auditors, auditing organisations on ISO 14001.

After the survey questionnaire process had been completed and the responses had been analysed, it was evident that the environmental practitioners who participated had a positive attitude towards the ISO 14001:2015 transition. This study revealed that although there are risks involved in transitioning, there are also great opportunities, such as more emphasis on risk awareness, the streamlining and integration of EMSs alongside other management systems, and an opportunity for organisations to improve their levels of compliance to environmental legal frameworks and to contribute to preventative care. It will be interesting to see what the difference between the expectations vs the experiences will be once ISO 14001:2015 is implemented. Therefore a follow-up study on the experiences vs expectations is recommended.

Key words: ISO 14001, High Level Structure (HLS), Risks, Opportunities, Environmental Management System (EMS), International Organization for Standardization (ISO).

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LIST OF ACRONYMS

BSI	British Standards Institution
EMAS	Eco Management and Audit Scheme
EMS	Environmental Management System
EPA	Protection of the Environment Agency
IAF	International Accreditation Forum
IAP	Interested and affected parties
ISO	International Organisation for Standardization
NWU	North West University
PDCA	Plan, Do, Check, Act
SA	South Africa
SAATCA	Southern African Auditors & Training Certification Authority
SAGE	Strategic Advisory Group on the Environment

CHAPTER 1: INTRODUCTION - ISO 14001

1.1 Background on ISO 14001

The world we live in today is facing many challenges, many of which pertain to the environment, and most people have become used to modern living standards, which are not at all sustainable for future generations (Jensen & Bondesson 2016). People need to understand that it is not only globalisation that is of concern, but that there are many issues, such as climate change and environmental protection, security and health trust. Trust must be achieved globally to address these issues. Environmental problems are a growing concern for most countries around the world; therefore many development patterns cannot be maintained over the long term and are the most severely affected (ISO, 2015). Contrasting standards create certain barriers for the trade industry, creating advantages for some but disadvantages for others (Martincic, 1997).

The International Accreditation Forum (IAF) is an independent association of Conformity Assessment Bodies that attempts to ensure the competence and impartiality of renowned standards worldwide. Organisations are audited by an official certification body such as the IAF, which has the authority to certify organisations that are complying with the requirements of the standards (Perumaul, 2017). Accreditation bodies create a framework for organisations to support international trade by removing and minimising technical barriers. The role of the IAF is to ensure that their accreditation bodies are competent to do the work, to prevent any conflicts of interest and to establish mutual recognition arrangements among their accreditation body members. The IAF has the function of developing a single programme that can be implemented worldwide, focusing specifically on conformity assessments that reduce risks for organisations and its customers by assuring them that accredited certificates may be relied upon anywhere in the world (International Accreditation Forum, 2017).

An Environmental Management System (EMS), which forms part of an organisation's management system plan, relates specifically to managing its environmental aspects, such as its activities, products and services, successfully (Campos *et al.*, 2015). A system or standard is a framework or specific guidelines used by specialists to enhance the management of a specific sector of an organisation, for example, the environment, quality, etc. Marsh (2012) defines "EMS" as follows: *"An Environmental Management System is a structured framework for managing an organisation's significant environmental aspects and impacts."* The expression "environmental aspects and impacts" has a similar connotation to the term "environmental performance", which Szyszka and Matuszak-Flejszman (2015:314) describe as a "measurable result of an organisation's management of its environmental aspects". Performance can relate to either qualitative or quantitative findings (environmental policies, legal requirements, expectations of stakeholders, etc.).

There are various EMS approaches, such as EMAS, BS7750 and BS8555, but the most important and most effective in terms of successful management and acceptance is ISO 14001, and this will not change

in the near future (Marsh 2012). The International Organization for Standardization (ISO) was established in 1947 and the acronym “ISO” originates from the Greek word “isos”, which means “equal”. It has an identical meaning to a reference model and in this case it refers to the ISO 1004 standards compiled by ISO (Boiral, 2007:128). ISO is an organisation that provides voluntary standards for any type of organisation worldwide (Jensen & Bondesson 2016).

The Eco Management and Audit Scheme (EMAS) was first established in 1993 with only 3,000 certified organisations (Szyszka and Matuszak-Flejszman, 2015:313). The ISO 14001 family of standards was first published in 1996 and was swiftly implemented globally (Anon, 2005). ISO 14001 was the world's first international environmental standard that helps more than 320,000 organisations in 155 countries (Vilchez, 2016:34) to improve their environmental commitment, sustainability level and operational performance. This indicates the growth in awareness among organisations regarding the importance of environmental management.

Successfully managing environmental impacts and building an eco-friendly image is one of the latest trends among the largest organisations worldwide. They gain favour from customers and stakeholders by building a pro-environmental trend and establish themselves as an organisation caring for the environment. In order for organisations to prove their environmental involvement, they implement environmental management systems, such as EMAS and ISO 14001 (Szyszka and Matuszak-Flejszman, 2015).

ISO periodically reviews and updates each international standard. There are risks with each standard and ISO therefore deems it necessary to update each version every five years to ensure a continual improvement of its standards. There will always be certain challenges pertaining to each revision because the circumstances, especially regarding the environment, change. Thus each revision might not address each challenge (Smit *et al*, 2015). ISO 14001 has completed its second revision, which was released in September 2015, mainly to ensure that the EMS remained relevant in decades to come, and that ISO 14001 continues to serve organisations and maintain its relevance in today's market (BSI, 2015). Implementing ISO International standards as criteria or guidelines for accreditation, together with the incorporation of the IAF's mutual recognition arrangements, could constitute a major step forward in building trust and promoting best practice in conformity assessments worldwide (International Accreditation Forum, 2017).

1.2 Rationale of the study

The purpose of this study is twofold: by, firstly, doing an extensive literature review on the international risks and opportunities of the transition and, secondly, through the use of a survey questionnaires and semi-structured interviews, risks and opportunities will be identified according to the perspectives of both international and South African environmental practitioners. The identified international and local

perspectives on the risks and opportunities will be compared in order to determine what South African environmental practitioners claim to be the major risks and opportunities in contrast to those identified in the international literature.

The updating and revision of these standards leads to both risks and opportunities for certified organisations in South Africa. However, although the three-year transition phase ends next year, the risks and opportunities are not yet understood by environmental practitioners. Opportunities include ensuring that an organisation's EMS is aligned with the strategic direction of the organisation, an increase in the involvement of top management, introducing an integrated approach with other management systems and an overall improvement of environmental performance. Risks might include an increase in energy prices, making a company non-competitive, and a certified organisation not complying with legislation, which could lead to a loss in custom due to negative publicity.

These risks and opportunities were identified in the international literature, which leads to the problem statement of this study: that the risks and opportunities are not yet understood by South African environmental practitioners. This problem has led to the aim and the objectives of this study, which are explained in the following section. For the purposes of this study, "aim" refers to the overall goal, while "objectives" refer to the secondary goals, the achievement of which will facilitate achieving the primary aim of the research.

1.3 Aim and objective of this study

1.3.1 Aim of the study

Based on the aforementioned problem statement, the aim of this study is to explore the risks and opportunities of the ISO 14001:2015 transition process in relation to the perspectives of South African environmental practitioners.

1.3.2 Objectives

To achieve the aim of the study, the following objectives are set:

- 1) To do an extensive literature review on the evolution of ISO 14001 and to determine the internationally-perceived risks and opportunities of the ISO 14001:2015 transition.
- 2) To explore the risks and opportunities that the ISO14001:2015 transition process have for South African environmental practitioners.

In the following section the layout of the study is described and a schematic illustration of the main chapters within this study is provided.

1.4 Outline of the study

In Chapter 1 the background to the study is provided in the form of a general description of ISO 14001, as well as the problem statement, aim and objectives of the research. In Chapter 2 the methodology used for the research, such as how the surveys were compiled, distributed, collected and analysed, is described. In Chapter 3 an extensive literature study is described, with a view to generating a clear understanding of ISO 14001 and the evolution thereof. Chapter 4 comprises an analysis of the data collected from the survey and interviews. The data is analysed following the order of the questions asked in the survey and this will result in a clear understanding of what questions were asked about ISO 14001, why each question was asked and what the participants' answers to the question were. Chapter 5 concludes the paper with an explanation of how objective one and two of the study were achieved with respect to identifying the risks and opportunities of ISO 14001:2014, with a particular focus on the perspectives of South African environmental practitioners. Furthermore, the key findings of the study and recommendations for follow-up research will be formulated.

This thesis consists out of five chapters and is illustrated in the figure below:

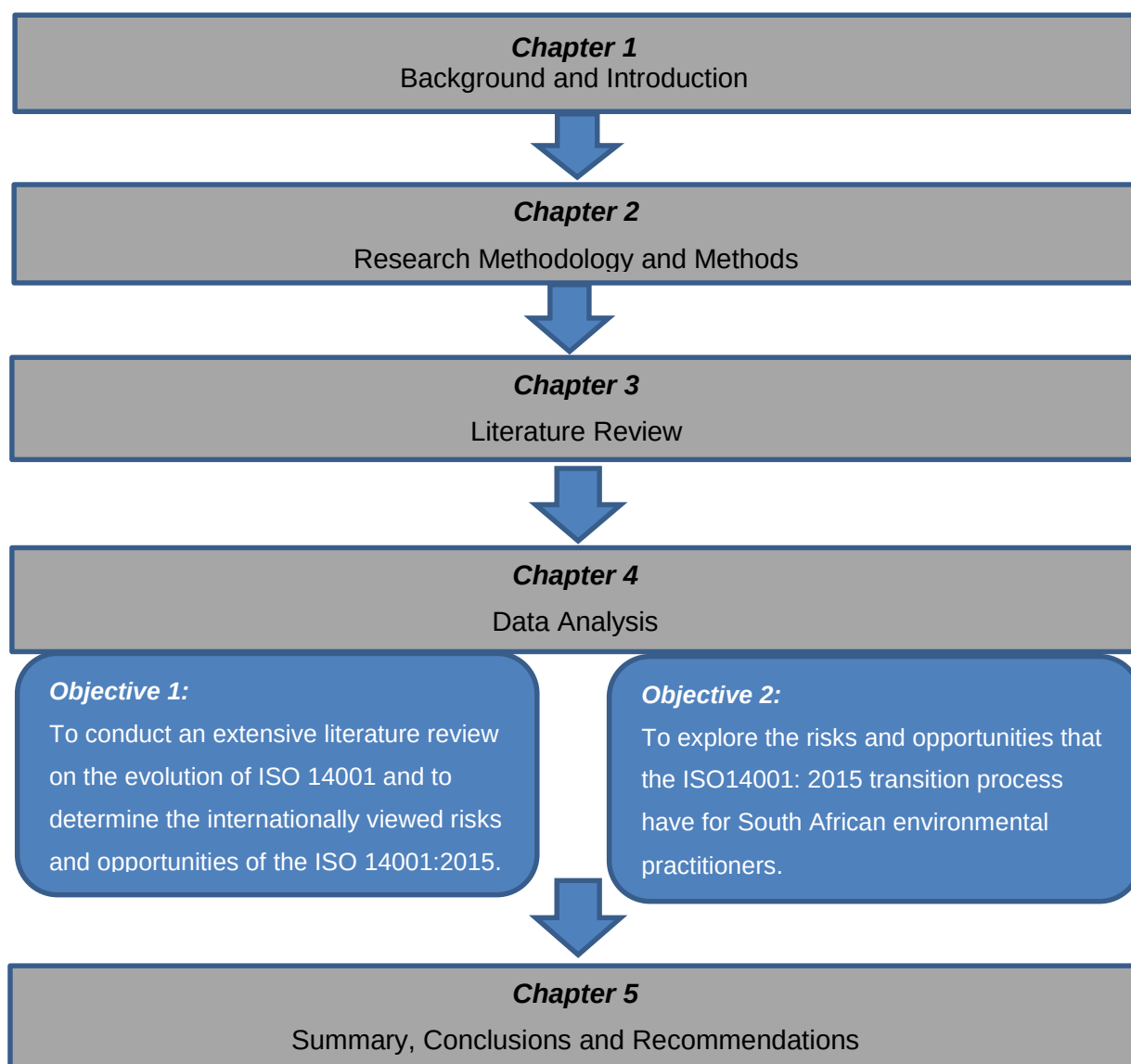


Figure 1.1: Outline and sequence of the thesis.

1.5 Chapter summary

In this chapter, the background, problem statement, aim and objectives that guided this research were explained. In chapter two the research methodology and how it was used to achieve the objectives of the study will be described.

CHAPTER 2: RESEARCH METHODOLOGY AND METHODS

2.1 Introduction

According to Leedy and Ormrod (2010), researchers make use of a systematic process, which makes the collection, analysis and interpretation of data easier in order to improve their understanding of a certain occurrence or fact about something they are concerned about or interested in. Kothari (2004) defines research as a scientific and systematic investigation into an occurrence or specific topic and concludes that research is an “art of scientific investigation” and a “voyage of discovery”.

In this chapter the research methodology and methods used to collect the data needed to conduct this study and to attain the two objectives described.

2.2 Research methodology and methods

Research methodology consists of certain techniques and procedures designed by research methodologists, which we as researchers use to improve, consolidate and develop a certain study (Kothari et al. 2014:25). According to Layder (2012), research methods must be chosen in such a manner that they are the most appropriate for the problem statement of the study. Layder explains that the correct research method chosen will provide certain explanations of problems and raise questions that will be a driver for the study. As mentioned earlier, the problem is that the risks and opportunities inherent in the 2015 transition are not yet understood; therefore an extensive literature review will be suitable as a research method to identify internationally-perceived risks and opportunities.

Two objectives were set in order to achieve the aim of this study. The first one was to conduct an extensive literature review on internationally-perceived risks and opportunities related to the 2015 transition and to critically review the evolution of ISO 14001. Achieving objective one will also involve examining the differences between the 2004 standard and the 2015 standard, and why there was a need for change. Objective two was to identify the risks and opportunities related to the 2015 transition from a South African perspective by distributing a survey questionnaire and conducting semi-structured interviews. The survey questionnaire was emailed to various participants who were working with ISO 14001 and implementing the new 2015 standard within various organisations. Therefore a mixed-methods approach was adopted to achieve the two objectives.

A mixed-methods approach comprises a combination of methods, which enables the researcher to gather a broad spectrum of insights when conducting a study (Mertens, 2007:220). A mixed-methods research approach is adopted by a researcher to collect and analyse both quantitative and qualitative data in the same study (Creswell, 2003). It involves gathering both textual data from texts and numerical information (Creswell, 2003). In the case of this study, information was gathered by means of a literature review and a survey questionnaire, as well as semi-structured interviews.

Creswell, (2003) uses the term “concurrent procedures”, which is one of three strategies of the mixed-methods approach and which supports the data collection method. He explains the term as follows: “concurrent procedures” means that “the researcher collects both forms of data at the same time during the study and then integrates the information in the interpretation of the overall results”.

Figure 2.1 below illustrates the milestones and the route followed in order to achieve the aim of the study and indicates the step-by-step process to that led to the final conclusions and recommendations for further follow-up studies. During the survey preparation and before sending the questionnaire to potential participants, ethical clearance was needed. The results indicated that there would be no negative impact on human participants, animals or the environment. Therefore, a declaration by the Research Proposal Committee was obtained, which stated that there was no need for ethical clearance.

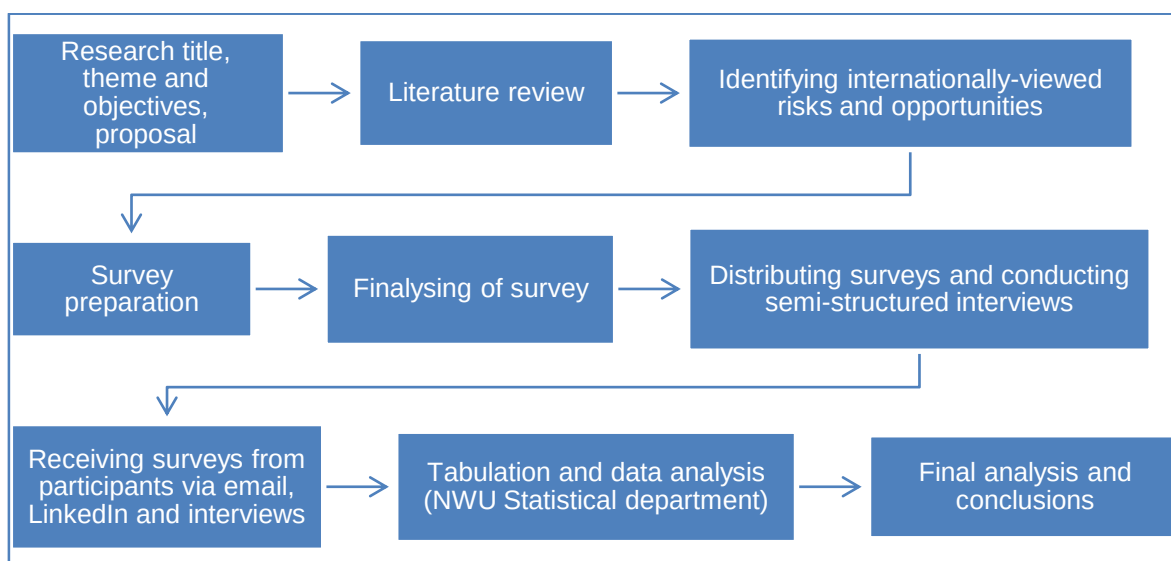


Figure 2.1: Research methodology sequence.

2.2.1 Methods for achieving objective 1: To do an extensive literature review on the evolution of ISO 14001, from the first to the current version, and to determine the internationally viewed risks and opportunities of the ISO 14001:2015 transition.

Data collection and analysis methods

A literature review was conducted continuously throughout the research process. There are certain stages involved when conducting a literature review, namely scanning, making notes, structuring the literature review, writing the literature review and generating an acceptable bibliography (Rowley and Slack, 2012:35).

In order to achieve objective one, a literature review was conducted to investigate the following: the evolution of ISO 14001, from the first to the current version; why changes to ISO 14001 had taken place in the past; what the recent changes to the system were; why changes would continue to take place in the

future; and what the internationally-perceived risks and opportunities were. The steps identified by Rowley and Slack (2012) helped this researcher to formulate a process to follow in order to achieve the outcomes of objective one. In accordance with the process suggested by these authors, the following steps were implemented:

1. Searching for information sources that will aid in achieving objective one: appropriate web-based resources were sought on the internet, books were obtained from the North-West University and relevant academic and professional journal articles were found via Google Scholar.
2. Evaluating relevant information sources: this step comprised identifying relevant and viable sources that supported objective one generating a clear understanding of the subject matter.
3. After the relevant sources had been identified, a conceptual framework was developed using a mind map to plan ahead and create a graphical way to present ideas. This is a visual tool to help structure and analyse the information identified.
4. Lastly, a literature review was written to report on why changes to the international standard had taken place, what the recent changes to the system were, and why changes will continue to take place in the future. Conducting a literature review provided the relevant criteria and framework in which to evaluate the information gathered in the empirical research and thus help to achieve objective two.

2.2.2 Methods for achieving objective 2: To explore the risks and opportunities that the ISO14001: 2015 transition process have for South African organisations.

To achieve objective two, the perspectives of South African environmental practitioners from ISO 14001-certified organisations on the risks and opportunities of the ISO14001:2015 transition process were explored.

Data collection methods

The data gathered to achieve this objective were obtained by distributing 80 survey questionnaires to various captured audiences, such as the Southern African Auditors & Training Certification Authority (SAATCA) and BSI Auditors. A stratified sampling technique was used to determine how survey questionnaires were gathered; two groups were created, namely auditors and industries. Most of the questionnaires were distributed via email to potential participants with a sound knowledge of ISO 14001 EMS and who were incorporating the ISO 14001 EMS into their organisations' management systems. However, due to certain challenges, such as delayed responses, some participants were also reached via LinkedIn. The respondents were asked open-ended questions to test their knowledge of ISO 14001 and their expectations regarding ISO 14001:2015. The participants were given the option to disclose their identities or the names of the organisations they represented, or simply to remain anonymous.

Of the 80 survey questionnaires sent out, including those sent to respondents who had been contacted via LinkedIn, 52 completed ones were returned and these made it possible to capture the participants' experiences with ISO 14001 EMS, with specific reference to auditors and the industry. Twenty-seven survey questionnaires from the industry and 25 from auditors were gathered.

Semi-structured interviews were also conducted with five practitioners to support the survey, results with content-rich data. According to Harris and Brown (2010), information gathered by means of an interview is normally considered data to be analysed qualitatively. A semi-structured interview is one in which the interviewer starts with a couple of open-ended questions, but spends a great deal of time examining the participants' answers and encouraging them to answer in more detail. This type of data is generally analysed qualitatively (Harris & Brown, 2010). Layder (2013) supports this statement by saying that interviews and observations are used in qualitative studies in order to generate a detailed sense of how and why people experience something the way they do, for example by describing their relationships and emotions. Creswell (2003) similarly notes that qualitative researchers use open-ended questions in order to enable participants to express their views and emotions.

The semi-structured interviews occurred between July 2016 and November 2016. The interviews were recorded and all the participants consented to this, but due to them not wanting to disclose their identities or the names of their organisations, the information regarding the locations of the interviews were not disclosed in the interviews or recordings.

Data analyses methods

Qualitative research is an exploration of factors or topics that are not well known in the world of research (Leedy and Ormrod, 2010). Knowledge of these topics can be enhanced by quantitative research; therefore qualitative analysis complements quantitative analysis through the examination of certain data, such as people's life experiences, which quantitative analysis cannot access (Layder, 2013).

Statistics is the scientific method by which data or information is collected, organised, analysed and interpreted for the purpose of description and reaching a final decision (Perumaul, 2017:52). A literature review and survey questionnaires were used to collect data and descriptive statistics were used to analyse the data. Essentially, the data collected from the survey questionnaire were inputted into an Excel spreadsheet. The spreadsheet was then analysed by the Statistical Department of the NWU. The analysed results were then presented in graphs, followed by a discussion of each graph for explanatory or clarification purposes.

From the 80 survey questionnaires distributed, 52 surveys were used to generalise themes from the data by using Excel. The NWU statistical department was also utilised to process the data and compare the findings received from the participants. With the help of the NWU, the statistical department findings could

be compared by analysing each applicant's opinion about the risks and opportunities they experienced regarding the ISO 14001:2015 transition.

2.2.3 Questionnaire design

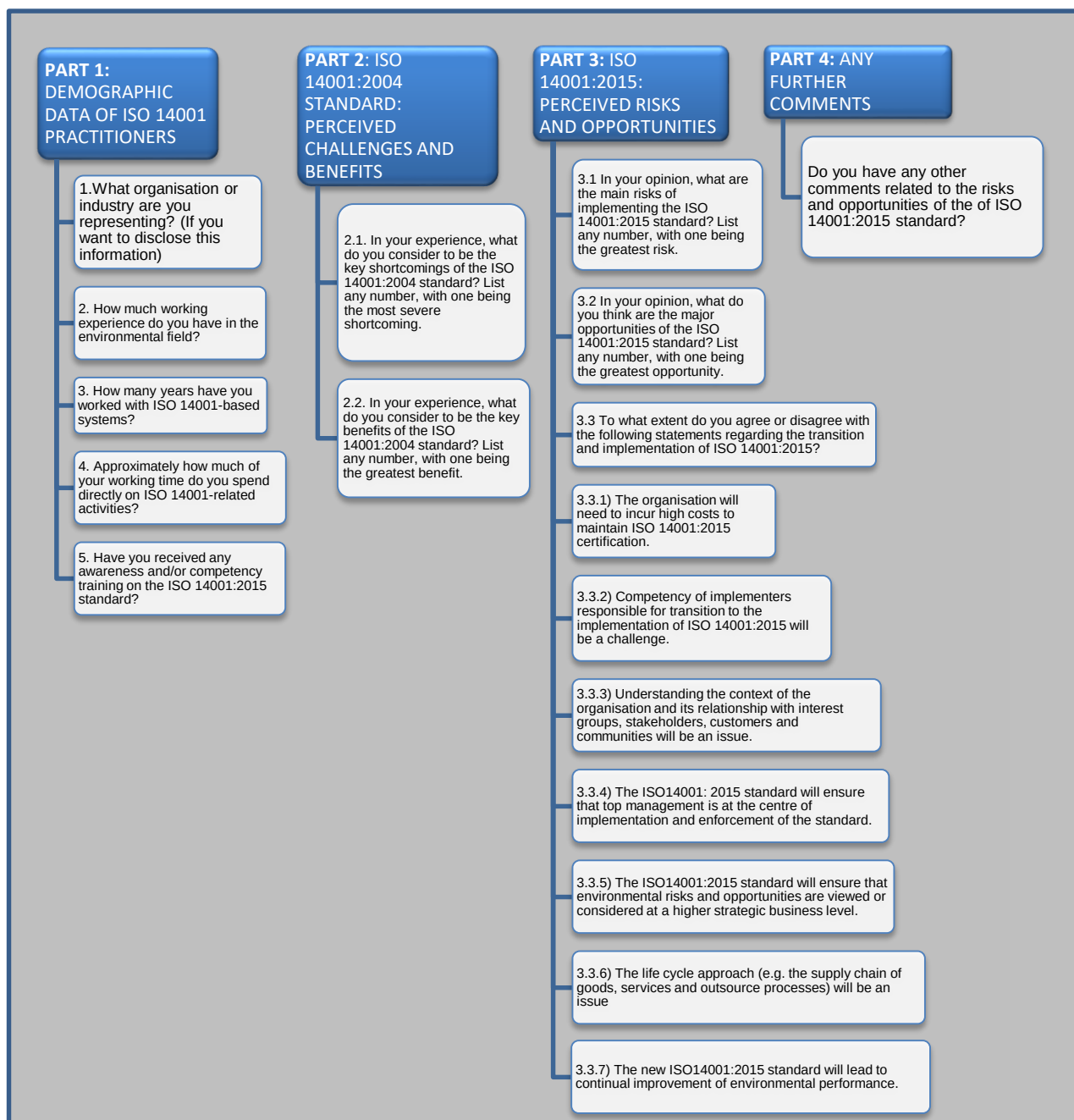


Figure 2.2: Questionnaire design

The survey consisted of four parts as shown in figure 2.2 above (see Appendix B). The first part of the questionnaire, Demographic Data, consisted of questions that specifically focussed on ISO 14001 certified organisations and auditors. Demographic data is there to collect demographics in order to make readers aware about the different sample of respondents to the questionnaire (Connelly, 2013) in this case the difference between each respondents awareness, knowledge and experience of ISO 14001 EMS. By

Carefully examining the figure above, the questions asked in part one of the questionnaire focussed mainly on closed choice questions to generate quantitative data. The second part of the questionnaire was intended to solicit the opinion of each participant regarding his or her experience with the previous version, ISO 14001:2004, and the challenges and benefits he or she had experienced during the implementation of the 2004 version in his or her organisations' management system. The third part of the questionnaire was designed to obtain the opinions of each participant regarding his or her experience with the new updated version, ISO 14001:2015. Part three of the questionnaire also contained open-ended questions that generated the qualitative data needed for this study. Finally, in part four of the survey the respondents were afforded an opportunity to add any further comments they wished to disclose to aid this research project.

2.3 Research limitations and trustworthiness of data

The latest version of ISO 14001 was released in September 2015. Organisations certified under ISO 14001 were made aware of the new updated version in 2014 when the draft of the international standard was released for public comment. From the semi-structured interviews held with participants working with ISO 14001, The researcher noticed that most of the participants had vast knowledge of ISO 14001:2004 and the benefits and challenges they experienced through the implementation thereof. However, the responses to the questions pertaining to the new 2015 standard indicated that the participants had less knowledge of this version, probably because most of organisations to which they belonged had not yet initiated their transition phase at that time.

Limitations can be found in almost everything, but in research it refers to the potential weaknesses in the study that are out of the researcher's control (Simon, 2011). The potential limitations and obstacles, such as time constraints, responses to the survey questionnaires and confidentiality, were kept in mind throughout the entire research period to ensure that each limitation or obstacle was overcome and dealt with accordingly.

Jensen and Bondesson (2016) state that only nine articles regarding ISO 14001:2015 appear in the entire Chalmers library database. They elaborate by stating that the amount of research regarding the new 2015 version of ISO 14001 is limited, and so is the knowledge of practitioners. This indicates that limited studies have been conducted on the organisational and managerial implications of the new 2015 standard (Jensen and Bondesson, 2016).

Another limitation was that many of the participants who were emailed did not reply immediately and sometimes did not reply at all. The same was true of many of the environmental practitioners who were identified via LinkedIn. A survey can be extremely time consuming for people working in the industry or have their own organisations, who have limited free time available; therefore they might not have had time to complete a survey.

Two very important aspects when it comes to research and the trustworthiness thereof is validity and reliability. Attention to these two aspects is crucial to research because it can distinguish good research from poor research (Brink, 1993). The validity of research depends entirely on the appropriateness of the research methods, as well as the procedures used (Kothari, Kumar and Uusitalo, 2014). As a researcher it is imperative to keep in mind the importance, as well as the risks, of validity and reliability, and the results gained from the mixed-methods approach.

There are five aspects to keep in mind when determining the validity of a literature review, namely purpose, scope, authority, audience and format (Brown, 2006). Each of these aspects were taken into account and addressed accordingly during the entire literature review process. Moreover, Golafshani (2003:598) also states that there are two aspects of validity, namely internal validity and external validity. External validity applies to people beyond the sample of the study. Internal validity refers to procedures used in the research and whether or not it measures what it is supposed to measure. Internal validity applies to the survey questionnaire, which was tested by the research promoters to ensure that it was understandable and appropriate to the objectives. Ethical clearance was obtained to further prove the validity of the research. To ensure the validity of the data collected from the survey questionnaire, a mixed-methods approach was adopted. This approach ensured the external validity of the research by collecting and analysing quantitative and qualitative data.

Another strategy used to ensure the validity of the research was to continually subject the drafts of the study and the research results to review by the research promoters (as advised by Kothari, Kumar and Uusitalo, 2014).

2.4 Summary framework of above

Figure 2.3 provides a schematic presentation of the research design followed in this research study. The figure illustrates that a mixed method approach was followed.

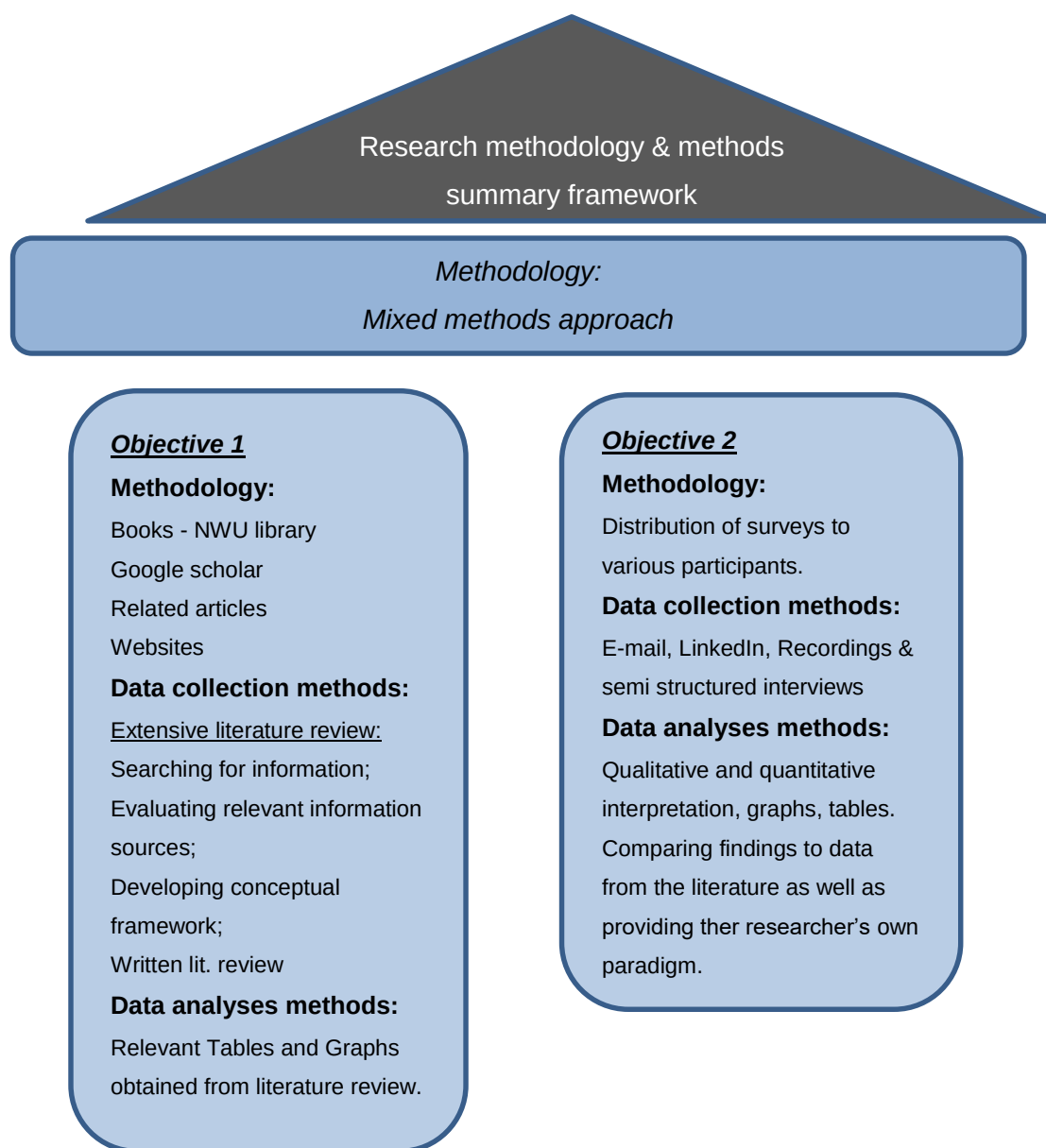


Figure 2.3: Schematic framework of methodology and methods.

CHAPTER 3: NEED, BENEFITS AND EVOLUTION OF ISO14001 TO THE 2015 VERSION, WITH ASSOCIATED RISKS & OPPORTUNITIES.

In this chapter the aim is to achieve objective one by presenting an extensive literature review on the evolution of ISO 14001, from the first to the current version, and to determine the internationally-perceived risks and opportunities of the ISO 14001:2015 transition.

An attempt will also be made to answer the following three fundamental questions pertaining to this study; 1) Why have changes been made to the international standard? 2) What are the recent changes to the system? and 3) Why will changes continue to take place in future?

To manage an organisation's impact on the environment successfully, one must first have a clear understanding of what an EMS is. Firstly it is not the management of the environment. Environmental management, according to El-Kholy, 2001 (cited by C.J. Barrow, 2006:5), is a process in which the focus is specifically on the interactions of humans and their activities that have a direct impact on the natural environment. Its aim is to identify: what is environmentally acceptable, and the social, economic, physical, and technological struggles involved in achieving successful environmental management.

ISO 14001 is a common environmental management standard related to an EMS. It is the most popular EMS worldwide, with more than 300,000 organisations implementing it to improve their environmental performance (Iatridis and Kesidou, 2016:7). Its aim is to reduce environmental impacts in an environmentally-friendly and cost-effective manner. It also helps organisations to realise that their current actions underwrite the future; therefore all organisations need an ongoing and effective range of environmental management systems.

Most organisations of today are facing increased pressure to improve their commitment to the environment and to utilise resources in such a way that they will be conserved for future generations. Many organisations have begun to use pollution prevention techniques and some have started to integrate their environmental management processes into more comprehensive management systems (Morrow and Rondinelli, 2002:159). Industries, governments and international organisations have seen the advantages of implementing the management systems and standards that organisations can use as guidelines in order to achieve successful implementation of their EMSs (Morrow and Rondinelli, 2002:159). ISO 14001 was developed to provide a management system to help organisations reduce their environmental impact and meet their environmental responsibilities accurately and consistently. It comprises a framework for organisations to demonstrate their commitment to the environment and to reduce their overall impact. The standard is generic and does not apply to any particular industry or business sector; therefore the standard is compatible with any type of organisation of any sector, size, structure or demographic location. It provides a strategic framework that can be used to meet external and internal objectives for management (ISO series, 2009).

To meet the requirements of the standard, organisations need to manage corrective actions right through to evaluating how effective that action was. The ISO 14001 EMS is a voluntary approach aimed at offering businesses an opportunity to invest in the environment while improving their performance. According to Bansal and Bonger (2002:271), EMSs provide specific guidelines for an organisation's procedures, structures, responsibilities, processes, practices and resources in order to ensure that a responsible and effective management system is implemented and institutionalised in all organisations with a certified EMS. The costs involved in the development, documentation and certification of the ISO 14001 EMS discourages small- and medium-sized organisations to pursue certification. This is especially true in developing countries, where the availability of resources is often limited. In many instances, not having certification renders companies in developing countries unable to compete globally, regardless of their environmental performance (Tambunlertchai et al., 2013:2041).

The results of a recent study conducted by To and Lee (2014:492) reflect this constraint. It was found in 2005 that the saturation level of the number of ISO 14001 certificates was 64.6% in selected countries, including China, Japan and Spain, and 91% of all ISO 14001 certificates issued in 2009 were for organisations in developed regions. Certificates issued in developing regions were mostly to organisations that faced losing market share in the export industry. A lack of appropriate infrastructure, unsound policies and ineffective environmental regulations, as well as financial and human resource constraints, were the major challenges facing developing countries when implementing the ISO 14001 EMS (Massoud et al., 2010:1884).

In 1997 IBM, one of the world's largest organisations manufacturing microelectronic technology, received ISO 14001 certification that covered its corporate headquarters and 11 of its 28 plants worldwide. IBM further went on to certify the rest of its plants in 1998. Other major organisations, such as Shell, Bristol Myers Squibb and more than a 100 US organisations in the electronics and semiconductor industry had their organisation ISO 14001 certified in the year 2000 (Morrow and Rondinelli, 2002:160) (Anon, n.d.). This indicates that the ISO 14001 EMS can be implemented in any type of organisation, and doing so will lead to a minimisation of water and air polluting emissions, a more cost-effective operation, and prevent pollution over the course of the implementation phase. Organisations not familiar with ISO 14001 have a tendency to reduce or eliminate their emissions after they have been exposed. Being ISO 14001 certified enables organisations to plan ahead and effectively manage and control their emissions before it is too late.

ISO 14001 comprises guidelines that assist companies to implement and coordinate an EMS and thus improve their performance in relation to environmental goals. ISO 14001 is currently used by industries, government agencies, financial institutions, hotels, shipping companies, non-governmental organisations, farmers and shopping malls (ISO, 2009).

The ISO 14001 environmental management standard requires that external auditors, known as certification bodies, be summoned by organisations to certify their commitment to the environment and to the standards' requirements (Iatridis and Kesidou, 2016:3). ISO 14001 provides guidelines for environmental auditing systems. Environmental audits are tools or guidelines that can quantify an organisation's environmental performance and the position of the organisation. In the opinion of this researcher, achieving ISO14001 certification enables companies to clearly demonstrate their commitment to reducing waste and recycling materials, where appropriate, and to show their general commitment to the natural environment.

3.1 Why is ISO 14001-based EMS important for an organisation?

The reasons for implementing an EMS can differ, according to Potoski and Prakash (2004, cited by Campos et al., 2015:291), but the most prevalent reasons for implementing an EMS are external factors such as the image of the organisation, market-related advantages, the demands of the customer or the need for better stakeholder communication and involvement. There can also be internal factors such as employee motivation, financial and organisational benefits, waste decrease, new customers, etc. In the view of this researcher, an EMS will be successful only when an organisation assesses and identifies its environmental impacts, set targets to reduce these impacts and formulates a plan to achieve its long-term goals. Considering the growing amount of pollution in all forms and continuous threats to the environment, no organisation can afford to place its reputation in jeopardy by ignoring its environmental responsibilities (ISO Revision, 2015). Probably the most important factor to take into consideration when aiming for an effective, successful EMS is organisational commitment, not only from top management but also from all the company's personnel.

Kourti, (2011) identifies some major benefits of an EMS:

- More innovative products
- Save more through better use of raw materials, resources and reducing waste
- Legal security
- Motivated employees and a better working environment will lead to an increase in the income of the entire organisation.

According to Oliveira et al., (2016, cited by Stevens *et al.*, 2012), the ISO 14001 standard does not provide specific action/performance criteria, or a duration model that is responsible for control indicators and environmental procedures. However, Oliveira et al. (2016:1385) state that the ISO 14001 standard clearly sets out important requirements (planning, implementation methods, corrective action, verification, environmental policy, operation and critical analysis) with which an organisation needs to comply in order to be ISO 14001 certified. ISO 14001 can be considered a useful tool or system to implement an organisation's environmental strategy (Balzarova & Castka 2008:1952) and to ensure that the organisation

is managed swiftly and with the an end goal of overall success. As mentioned earlier, the ISO 14001 EMS can be considered the most successful management system (Marsh, 2012) and, moreover, it can be considered as a major benchmark for organisations because it enables them to operate in an environmentally-friendly way (Oliveira et al., 2016:1392). A recent study conducted by Sambasivan and Fei (2008:1426), who focused specifically on the development and implementation of a successful EMS, identified several benefits of an effective EMS. These are listed below with a description of each:

Table 3.1: Benefits of a successful EMS

	Benefit	Description
1.	Improves organisations' reputation and image.	A corporate image can be enhanced by a successfully implemented EMS (e.g. ISO 14001 certification) and when it exceeds stakeholder expectations this enables the organisation to build stronger relationships with stakeholders, which will help the organisation to rise above difficult economic and political conditions. According to Tan (cited by Sambasivan & Fei 2008:1427) the image of 94% of organisations with ISO 14001 certification improved immensely. Certification with any EMS equals the confidence of stakeholders and customers,
2.	Increases morale and motivation of staff members.	This is only possible if the staff members are involved from the beginning of the certification process of an EMS. Staff members will be highly motivated when objectives are set out properly and the importance of the EMS standards are clear. Successfully implementing an EMS, management commitment and employee empowerment creates a well-balanced relationship and better cooperation levels between management and employees. Without these factors it is impossible to benefit from any EMS.

3.	P.P.O – Profit, Performance, Opportunity.	It has been found that when environmental impacts are reduced, organisations become more attractive to stakeholders and customers. More pressure on environmental aspects will lead to: • Operational efficiency • Raise corporate image • New opportunities • Development of new products • Competitive advantage
4.	Gains loyalty and trust from customers.	Organisations with a good track record regarding their environmental image gain many more customers than an organisation with a poor environmental record. Certifying an organisation with ISO 14001 sends a clear message to stakeholders and customers that that particular organisation has a strong commitment to the environment.

Today more organisations and customers are aware of the importance of the natural environment and the management thereof; thus most of them prefer to work with and buy from organisations with a solid environmental commitment (Sambasivan & Fei, 2008:1430). This indicates that ISO 14001 is the most popular and effective EMS globally. Bansal & Bogner (2002:273) support this statement and state that ISO 14001 has the largest geographical and industrial coverage of all the EMSs. The more diverse the application of the standard the more flexible and less strict the requirements are. Bansal and Bogner (2002:273) go on to create a better understanding of how flexible ISO 14001 really is. They compare the EU programme EMAS, which is published for volunteer participation by organisations, with ISO 14401 and asserts that EMAS requires that all policies and programmes related to the environment be made public, whereas ISO 14001 requires only the following:

- The environmental policy of the organisation be disclosed.
- An independent agent can certify the EMS if they choose to.

- May self-declare its compliance to ISO 14001 or may choose only certain elements of the EMS.

EMAS was updated in November 2009, with the primary objective of enhancing the continuous improvement of environmental management among certified organisations (Campos et al., 2015).

3.2 Benefits of ISO 14001

According to To and Lee (2014:495), many studies have been conducted regarding the motivations for and the benefits of ISO 14001 certification. To generate a clear understanding of the background of ISO 14001 as a whole and the related benefits, several studies demonstrate (Jiang & Bansal, 2003; Morrow & Rondinelli, 2002; To et al., 2012) that being ISO 14001 certified has many advantages and can aid an organisation in many sectors. Delmas (2001:348) supports these statement by saying that being ISO 14001 certified can create a competitive advantage for organisations and the continuous diffusion of ISO 14001 certificates globally could grant organisations international trade abilities. Furthermore, ISO 14001 certification could provide organisations with access to foreign markets that accept ISO 14001 as a trustworthy international standard (Delmas, 2002:349). Bansal and Bogner (2002:271) list several benefits of ISO 14001:

- Voluntary approach – no legal requirements to get certified;
- Does not set performance standards; and
- The main focus is on management processes rather than environmental outcomes.

Delmas, (2001) states that by adopting the ISO 14001 standard, organisations will gain competitive advantage by developing certain skills that will enhance commercial, stakeholder and organisational management. Bansal and Bogner (2002:272) conclude by stating that a successful EMS will enable the firm to reduce environmental impacts and at the same time reduce costs and increase productivity levels, as well as enable it to regulate and keep track of its environmental activities and, finally, achieve greater efficiency and effectiveness.

Several benefits are identified by Sambasivan and Fei (2008):

- Improves product quality and quality of services;
- Enhanced green operations will lead to a better quality of operations;
- Damage to the environment is minimised;
- Preparedness for emergencies improves;
- Reduces emissions;

- Less waste production; and
- Lowers risk of environmental accidents.

All the above-mentioned benefits will lead to financial savings by reducing the consumption of raw materials, improvement in production levels and lowering the costs of waste disposal Sambasivan & Fei (2008). By adopting ISO 14001, it will not only generate the above-mentioned benefits but it will also create an ideal framework for the development of an effective and successful EMS (Delmas, 2001). Therefore, in the opinion of this researcher, many organisations around the world, of any size and in any sector, need ISO 14001 certification. By implementing the ISO 14001-based EMS they will improve their overall performance and production, increase profit and provide a lot more business opportunities in the future. This will enable organisations and their employees to generate productive and effective management skills to execute in any given environment of the organisation, enabling it to ultimately climb the ladder to overall success.

According to Yin and Schmeidler (2009, cited by Ferrón Vilchez, 2016:889), several researchers disagree with the above statements. They argue that the adoption of ISO 14001 does not always go hand in hand with the overall improvement of an organisation's environmental performance. A study done by Aravind and Christmann (2011:74) indicated that organisations certified with ISO 14001 with a low implementation rate (in other words, organisations that fail to invest a lot of their time and resources in the continual improvement, maintenance and updating of their EMSs) are not that different from organisations that are not ISO 14001 certified. Da Fonseca (2015:42) claims that the implementation of an EMS such as ISO 14001 as a short-term measure is mostly to gain entry to the global market and this fails to enhance environmental sustainability. Da Fonseca (2015:43) makes an important point, namely that if organisations do not change the way they do things, resulting in, in this case, negative environmental impacts, the meaning of the certificate will lose its value.

3.3 Evolution of ISO 14001

The acronym "ISO" originates from the Greek word "isos", which has an identical meaning to that of a reference model. In this case it refers to the ISO 1004 standards compiled by the International Organization of Standardization (Boiral, 2007). Environmental protection originated in 1970 when systems were needed for the management of environmental impacts, but extensive interest in environmental management systems (EMS) emerged in the decades to come (Neumayer & Perkins, 2004). Major companies in Europe developed a more proactive approach to environmental issues by seeing them as a business opportunity rather than a problem. ISO is responsible for the development and publishing of International Standards such as the ISO 14000 family of standards to enable organisations to produce better, safer and cleaner products (ISO, 2016).

Figure 3.1 comprises an overview of the evolution of ISO, showing when the Protection of the Environment Agency (EPA) was formed to the launch of the ISO committee, which was established especially to create a management system that soulfully focused on protecting the environment in an sustainable and environmentally-friendly way, up to the official publishing of ISO 14001 in 1996 and where we are today, the implementation of ISO 14001:2015.

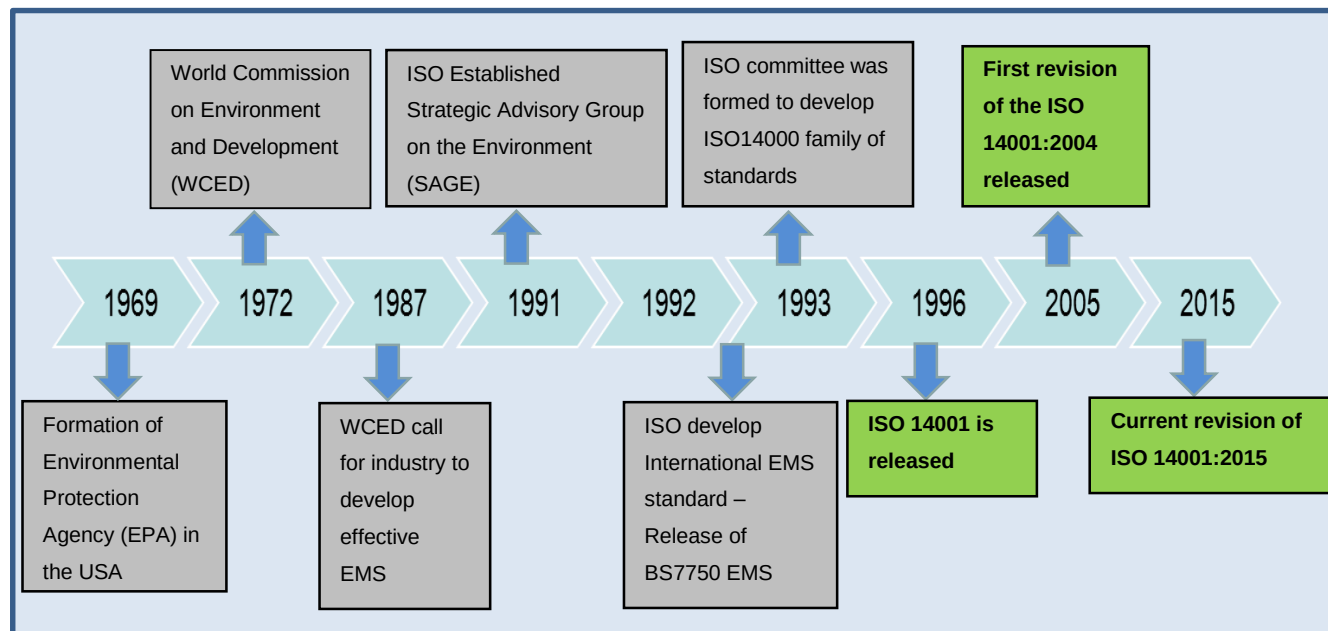


Figure 3.1: Evolution of ISO (ISO 2016).

The following section is a discussion about the three main ISO 14001 EMSs over the course of 1996 to 2015.

3.4 ISO 14001:1996

The first edition of the ISO 14001 family of standards was first published in 1996 and was swiftly implemented globally (Anon, 2005). It was the world's first international environmental standard, helping more than 320,000 organisations in 155 countries (Ferrón Vilchez, 2016:34) to improve their environmental, sustainability and operational performance since it was first published as BS 7750 in 1992 at the "Earth Summit", which was held in Rio de Janeiro in 1992 (ISO, 2015). BS 7750 served as the basis of ISO's ISO 14001, which was released in 1996 (Campos *et al.*, 2015:294). The Earth Summit called for a new global prominence of corporate roles in environmental protection. Prior to this, in 1991, ISO had established a committee, the Strategic Advisory Group on the Environment (SAGE), to develop an Environmental Management System (EMS), which was finalised in 1995. The ISO 14001 standards was first implemented by SAGE to consider whether these standards could serve or aid in the following ways (Anon, 2005):

- To enhance a neutral approach to environmental management, as well as the quality of the environment.
- To improve organisations' ability to measure their enhancement of environmental quality.
- To ensure that organisations can facilitate trade and remove barriers to trade.

All ISO standards are periodically reviewed every five years, ensuring the continuous improvement of standards and their implementation. Each revision is aimed at correcting shortcomings, difficulties identified and challenges that were raised during implementation (Whitelaw, 2004). The ISO 14001 series of standards are published to fulfil the following (Anon, 2005):

- Environmental auditing
- Environmental management
- Life cycle assessment
- Environmental performance
- Environmental labelling

3.5 ISO 14001:2004

In December 2004, the first revised version, the ISO 14001:2004 standard, was published, and was seen as a great improvement on the 1996 ISO 14001 version. The ISO 14001:2004 version was easy to understand, the requirements were clearer and there was an emphasis on compliance, as well as compatibility with ISO 9000:2000 (Anon, 2005). The ISO 14001:2004 version had a number of changes in relation to the 1996 version of ISO 14001, which included the following (ISO, 2004):

- Terminology had been clarified to ensure ease of understanding;
- Certain requirements that were unclear in the previous version had been clarified;
- Greater emphasis on compliance; and
- Additional requirements had been added in.

The ISO 14001 EMS is a voluntary approach aimed at offering businesses the opportunity to invest in environmental stewardship whilst improving performance (Potoski & Prakash, 2013:275). Whitelaw (2004) summarises the reasons for which organisations seek ISO 14001 certification as follows:

- To gain a green corporate image in order to gain or retain market share
- To attract ethical investment
- To reduce insurance risks
- To reduce the risk of prosecution
- To reduce costs

Since its launch in 1996, the number of ISO 14001 certificates issued globally grew exponentially from 1,491 in 1996 to an expected 364,000 in 2015 (To & Lee, 2014). The 2004 version of ISO 14001 led to an

increase of implementation among organisations, as well as widespread recommendation of the ISO 14001:2004 EMS worldwide (Psomas et al., 2011:517). This statement is supported by a study done by Peixe et al. (2012), which indicates an exponential increase in ISO 14001 certifications from the year 2003 to 2009. Evidence of these results can be seen in figure 3.2. The Far East and Europe experienced the greatest growth. Between 2006 and 2007 the Far East passed Europe. The remaining regions indicated a stable increase in ISO 14001 certifications. It is important to highlight the regions that showed the greatest growth in certifications by the year 2006 (Peixe et al, 2012:8).

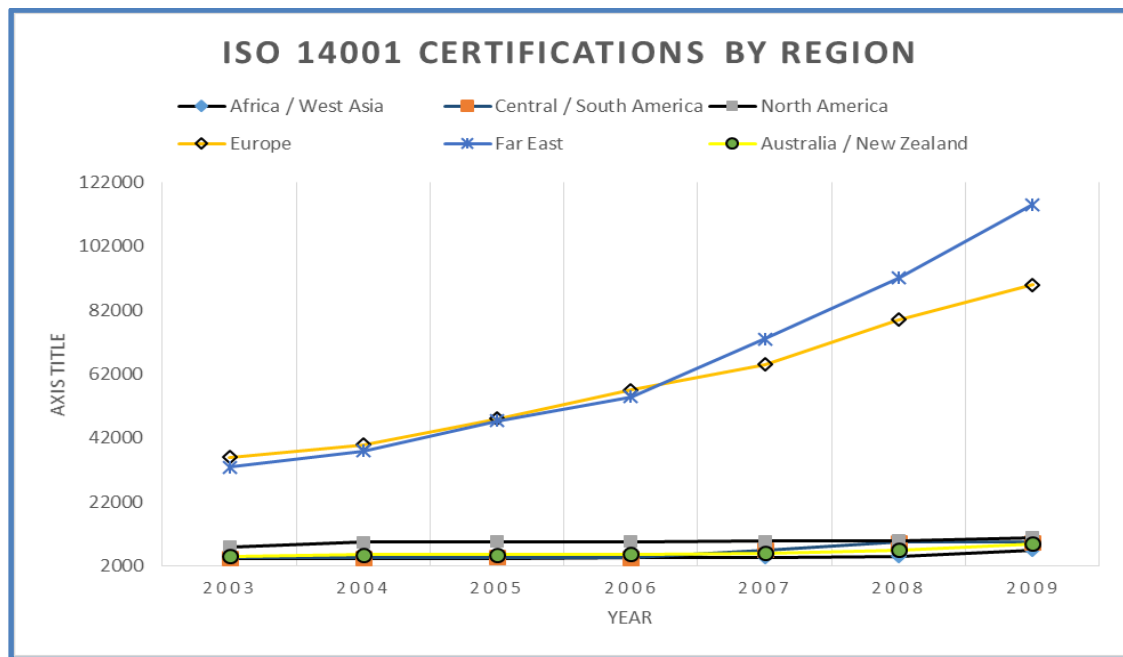


Figure 3.2: Number of ISO 14001 Certifications by region. ISO series (cited by Peixe et al., 2012:7).

It can be seen that increasingly more organisations are being certified, using ISO 14001 as their EMS. In the study done by Peixe et al., (2012) it became clear that there was an increased growth in ISO 14001 certification and that there was a greater visibility and involvement among stakeholders.

3.5.1 Shortcomings of ISO 14001:2004

ISO 14001 was motivated by many good intentions regarding the protection of the environment, but it also has several flaws that reduce positive environmental impacts. This can lead to inconsistency in the success of ISO 14001 and the implementation thereof in organisations (Marsh, 2015).

J. Marsh identified the following shortcomings of ISO 14001:2004:

- *Awareness of ISO 14001*

There was a general lack of awareness of ISO 14001. This was more evident in larger organisations and much less in smaller organisations. ISO 14001 was designed for organisations and not for the public;

however, there was a major lack of engagement from the public. The interaction with local communities was minimal and that placed more pressure on organisations to implement ISO 14001 if the overall general public did not have any awareness of the EMS.

- *Lack of transparency*

There was no requirement to make any information public about an organisation's environmental impact or performance. Any organisation could do so on a voluntary basis, but if this information would place the organisation in a poor light it could withdraw its decision. This lack of transparency could lead to organisations that were less legitimate benefitting the most. It was possible that consumers would do business with organisations that were environmental irresponsible.

- *Internal goal and target setting*

Organisations certified with ISO 14001 are able to set their own goals and targets, which can be seen in a positive or negative manner. Positively, an organisation's management would know its capabilities and limitations, and therefore would be able to set realistic targets to achieve by using the ISO 14001 framework. On the other hand, a negative aspect is that organisations' management can set easily reachable goals and targets, and then state to stakeholders or consumers that it is ISO 14001 certified without deserving this status.

- *Self-implementation and management*

The implementation of ISO 14001 is a self-managed process and therefore the success of the implementation of the EMS depends largely on the commitment of the management team of the organisation. Marsh states that many organisations might fail to achieve their goals and targets mainly due to the management's lack of awareness of the commitment it requires in terms of time and money. Then there are managers who set unreachable goals and targets just to put their organisation in a better light.

The above deficiencies are just a short summary of shortcomings of ISO 14001. More studies have been done by experts such as Marsh (2012) and Vilchez (2016), pertaining to the shortcomings of ISO 14001 and all of them need to be considered when implementing ISO 14001 as an EMS. Ferrón Vilchez (2016:37) fears that the adoption of ISO 14001 could become a "double edged sword" leading to negative consequences in terms of the reliability of the standard, where a positive factor would be a continuous number of ISO 14001 certifications and the negative would be in not implementing plans to reduce environmental impacts. Besides the shortcomings, ISO 14001 has several benefits, which will be discussed in the next section.

3.5.2 Key benefits of ISO 14001:2004

Organisations that implement ISO 14001 will achieve goals that are greatly beneficial to the vision of the organisation and what it aims to accomplish in the future. The first benefit of ISO 14001 is that the correct implementation thereof will lead to more efficient use of energy types and other key materials (Marsh, 2012). Succeeding in this it will automatically lead to a reduction in the waste output of an organisation. ISO 14001 is a well-recognised standard and is greatly respected worldwide. Consumers who have enough knowledge and awareness of ISO 14001 may feel confident when seeing that an organisation is ISO certified (Marsh, 2015). Organisations, in this author's opinion, will develop a better corporate image as well as credibility when implementing ISO 14001 as their EMS.

ISO 14001 also enables organisations to control the environmental aspects and impacts of their products, processes and services (Marsh, 2015). Nobody knows how much waste an organisations generates better than the staff of an organisation. This allows the organisation's internal experts to control the situation rather than a third party who does not know anything about the company. Adopting ISO 14001 as its EMS it would give the organisation a green image, which stakeholders deem to be extremely attractive. Also, adopting ISO 14001 as its EMS would cause internal stakeholders (employees) to be motivated and proud of their company, which will increase production levels. Not only will the employees be motivated; they will also have a reliable framework to help them meet the organisation's targets.

The following are the benefits of adopting an ISO 14001-based EMS, as identified by Balzarova and Castka (2008):

- Organisations gain external recognition
- As well as market benefits
- Management quality increases
- Skills, communication, knowledge and attitudes of managers and employees improves
- Better interactions and relationships between employees and managers, which leads to increased morale

These are only some of the benefits ISO 14001 has to offer. There are many business improvements that an organisation can expect from implementing a successful EMS based on the ISO 14001 standard. In the following section the ISO 14001:2015 transition from the previous 2004 version of ISO 14001 is dealt with. In this section the internationally-perceived risks and opportunities of the 2015 transition identified via an extensive literature review are described.

3.6 ISO 14001:2015

ISO 14001 has undergone its second revision mainly to ensure that the EMS remains relevant in decades to come and that ISO 14001 continues to serve organisations and to maintain its relevance in today's

market (BSI, 2015). The ISO 14001:2015 version was released in September 2015. Currently certified systems have until September 2018 to transition to ISO 14001:2015. The purpose of this international standard is to provide organisations with a framework in order to protect the environment and to respond to changing environmental conditions, and at the same time achieve a balance with socioeconomic needs. Each revision helps to identify shortcomings and opportunities for improvement. The 2015 ISO 14001 revision took almost 11 years since the 2004 version, mainly because the new 2015 version is more integrated and is developed in way to respond to the latest trends and to ensure it stays compatible with other management systems (ISO, 2015).

According to the BSI Group, the new version will enable organisations to incorporate the management system directly into the business process. Moreover, it requires more involvement from top management and will ensure that organisations' overall needs are met for modern day business. There was a principle change to the 2015 version, whereby the emphasis shifted from improving the management system to improving overall environmental performance (ISO, 2015). The new standard addresses the change in environmental practices and ensures that the management system is future-proof in order to ensure that future resources are not compromised. The 2004 version of ISO focused on continual improvement of the standards, but the 2015 version focuses on the continual improvement of the organisation using the system standards (ISO, 2015).

The ISO 14001:2015 standard is suitable for organisations in all areas, all sizes and in any type of industry (Oliveira et al, 2016:1387). It is designed to be flexible so that organisations can make it work according to their own needs (e.g. encouraging stability and commercial progress while simultaneously reducing their environmental impacts). According to the Environmental Managers Technical Guide, the purpose of the new ISO 14001 version is to provide a framework for organisations that will enable them to protect the environment and respond to changing environmental conditions while balancing these with socioeconomic needs. Because of the new common structure, ISO 14001:2015 has adopted a higher level of compatibility with related management system standards, such as ISO 50001 (energy management), ISO 27001:2013 (information security management), ISO 9001:2013 (quality management) and the upcoming ISO 45001:2016, which will make the integration of these standards easier (NQA, 2015).

ISO periodically reviews and updates each international standard. The update to the new 2015 version is a result of several years' work, with nations around the world contributing to the major success this international standard promises for organisations, as well as the protection of the natural environment. Da Fonseca (2015) conducted a study identifying the foundations or pillars the ISO 14001:2015 version is built on and, as a result of these foundations, the new ISO 14001 was released in September 2015.

He sums up the 2015 revision in five steps, namely:

1. Working draft (WD)

2. Committee draft (CD)
3. Draft International Standard (DIS)
4. Final International Standard (FDIS)
5. International Standard (IS – which is the final revised standard)

The figure below, sourced from the BSI website, illustrates the three-year transition phase from the publishing of ISO 14001:2015, which indicates that the deadline will be in September 2018:

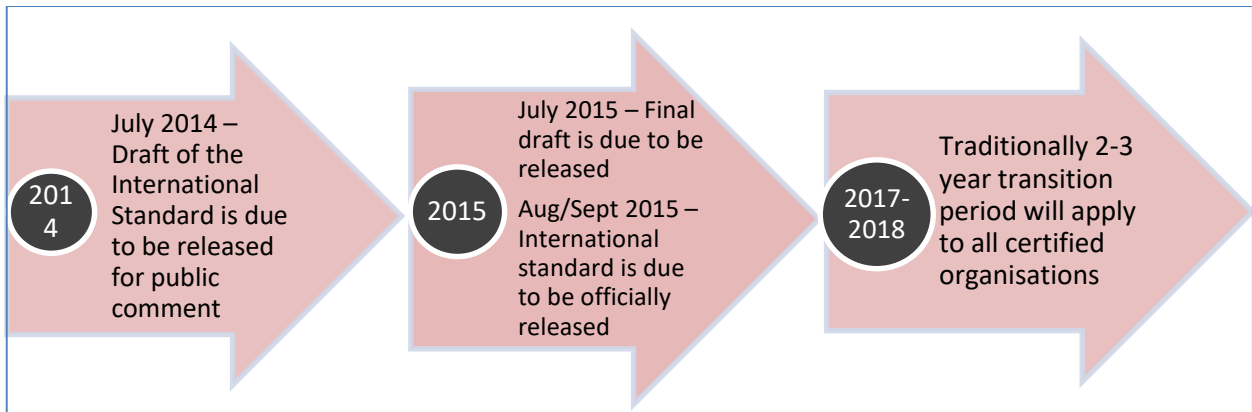


Figure 3.3: ISO 14001:2015 Transition illustration (BSI, 2016).

The figure below is a clear illustration of the total number of ISO 14001 certificates worldwide as of 1996 up to 2015, when the new standard was published. By examining Figure 3.4 one can conclude that there has been a huge increase in ISO 14001 certifications.

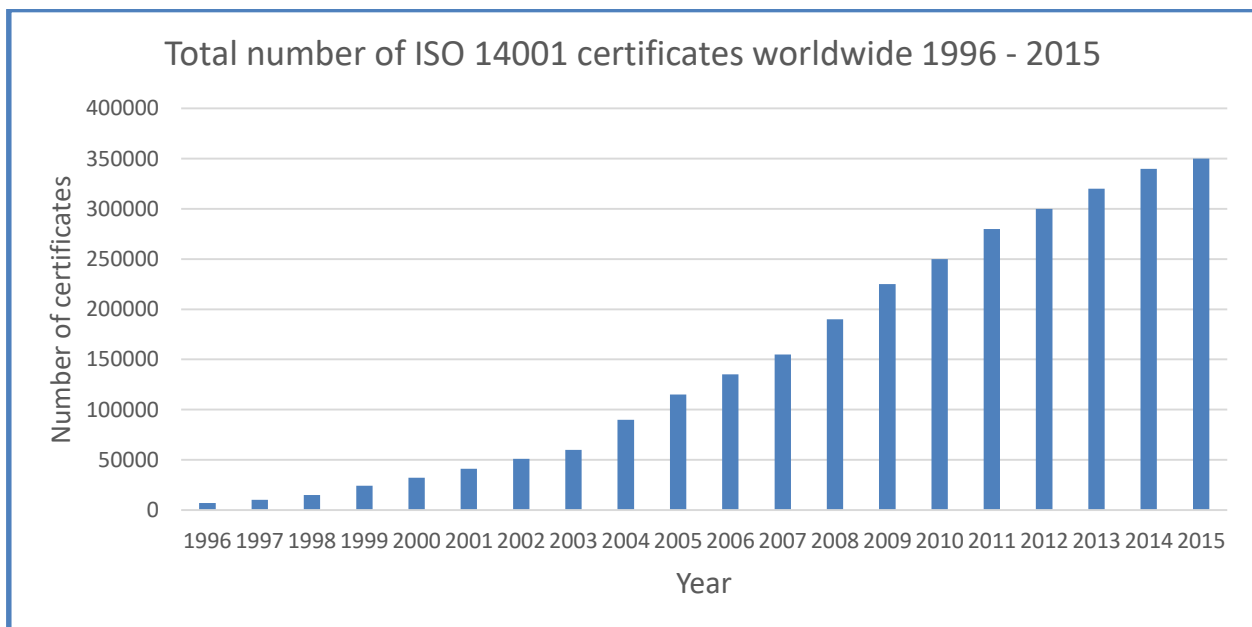


Figure 3.4: Total number of ISO 14001 certificates worldwide (To and Lee, 2014).

3.6.1 Expected risks for ISO 14001:2015

ISO 14001 was developed to not only improve an organisation's environmental performance, but also to achieve continual improvement. With over 285,000 ISO 14001 certifications worldwide (Iatridis and Kesidou, 2016:12), the stakeholders, management staff of businesses and regulatory authorities have the right to wonder if the purpose of an ISO 14001-based EMS, which is to improve overall environmental performance, is truly fulfilled (Nawrocka & Parker, 2009:602). Many certified businesses and organisations are still struggling to improve their environmental performance. A concern or challenge concerning continual improvement is that more and more businesses are using these guidelines as a "tick box" exercise (Theron, 2015). In other words, organisations use the system as a label or cover to achieve certification as their main objective. The goal for many is achieving certification, not necessarily improving environmental performance.

A study conducted by Nawrocka & Parker (2009) comparing environmental performance to environmental management systems indicates that there is no clear understanding on regarding what environmental performance is or how to measure it. They go on to prove that there is no clarity nor a clear agreement about how or why environmental management systems improve environmental performance. Szyszka and Matuszak-Flejszman (2015) argue that performance indicators have been introduced to the new standard and this can pose a risk if those who are unfamiliar with the standards do not understand the meaning of environmental performance. Performance can be either quantitative or qualitative assessed. "Findings and indicators" refers to several examples, such as environmental policy, objectives or expectations of stakeholders and legal requirements, but in the end the selection of indicators remain the decision of the organisation (Szyszka and Matuszak-Flejszman, 2015:314).

Szyszka and Matuszak-Flejszman, (2015:314), goes on to give a clear definition of environmental performance: *"It is a measurable result of an organisation's management of its environmental aspects."* This is a great conflict regarding the main aim of the ISO 14001 EMS and can be a big risk if environmental performance evaluation is not understood or executed correctly. Organisations need to strive towards the goal of continually improving their performance to ensure a minimal impact on the surrounding environment, rather than seeing this system as another trophy in the trophy case (Smit, *et al*, 2015).

The new revised version of ISO 14001 will be more focused on performance, which hints at the idea that a selection of indicators should be used to accomplish measurable goals (Theron, 2015). The importance of trying to accurately determine the performance of the ISO 14001 EMS in organisations remains a future challenge for those who are not familiar with the history and clarification of the terms of the standard. We have to keep in mind that this is a new standard; thus it is crucial for organisation's certified with the ISO 14001:2015 standard to identify its risks and opportunities related to aspects and impacts, compliance obligations (known as Legal and Other Requirements in the 2004 standard) and other related problems

and requirements, and then have the ability to take immediate action to address and improve them (Are & To 2015).

External communication

External communication has been a voluntary approach throughout the life cycle of ISO 14001. In the new ISO 14001:2015 standard internal and external communication will be obligatory and more emphasis is placed on interested parties regarding the requirements and strategic considerations of the organisation's environmental aspects (Szyszka and Matuszak-Flejszman, 2015:318). The organisation need to establish an open dialogue, not only with the interested parties, but also with the public to consider their views and opinions. It will be a challenge to see whether organisation that are or are in the process of becoming ISO 14001 certified cope with the communication to interested parties, the public and the employees.

High Costs

ISO 14001 is a complex system that requires a lot of attention. The implementation of ISO 14001 and the ongoing audit and improvement thereof costs a great deal of money. For organisations to be successful, high quality environmental management systems need to be implemented to improve an organisation's overall performance. Kolk (cited by Patoski & Prakash, 2005) estimated that the costs of establishing an EMS and having it audited by a third party can range from US\$25,000 to over US\$100,000 per facility. The costs are much higher for moderate-sized organisations. Nel (in Burt *et al.*, 2015) estimated that, in the South African context, implementation costs range from R190,000 to R250,000 for a basic EMS; R280,000 to R500 000 for a medium size, noncomplex organisation and between R850,000 to R1.4 million for large, complex organisations.

ISO 14001:2015 could increase the costs for organisations seeking certification, but will also have great cost implications for companies that need to incorporate the changes. Careful planning will be necessary to manage the costs of the transition. Costs are an extremely important aspect to think about before implementing ISO 14001 as an EMS. Organisations often underestimate the amount of time and attention ISO 14001 requires in order to be effective. Planning and making sure that the financial budget will cover all the expenses related to the EMS is vitally important before implementing an EMS such as ISO 14001 (Yiridoe & Marett, 2004:40). When planning is not effective, high costs will continue to remain a challenge for organisations.

Legal Compliance – Compliance obligation

It is important to know that ISO 14001 remains a voluntary system and not a legal requirement. Legal Compliance has to be taken more seriously because poor communication can lead to the incorrect approach towards legal compliance. Because this system is not a legal requirement, it creates a set of markets that poses as a group of organisations that are certified, whether they are complying with the legal

requirements or not (Smit, et al, 2015). This creates a bad image for ISO 14001 as an EMS and does not attract more stakeholders.

However, the new 2015 version of ISO 14001 addresses this shortcoming of the 2004 version. The new version implies that organisations must prove that they are complying with these legal requirements and they also have to keep documented information on how each legal requirement is met. However, the new ISO 14001 standard has replaced the term ‘Legal Compliance’ with ‘Compliance Obligations’, which means that organisations are required to generate a clear understanding of their compliance with relevant legal requirements at all times (Szyszka & Matuszak-Flejszman, 2015:316). As stated in clause 6.1.3 of the new 2015 version, organisations will be required to:

- a) Identify and have access to the compliance obligations related to its environmental aspects.
- b) Determine how these compliance obligations apply to the organisation, as well as maintain documented information relating to its compliance obligations.

It will be a challenge to see how organisations cope with the stricter requirements and the major change in the system regarding compliance obligations.

Life cycle perspective

A life cycle perspective will be required under the new standard during the identification and evaluation of environmental aspects and impacts. Although it is not expected from organisations to conduct a detailed life-cycle assessment, which is the evaluation of the inputs, outputs and environmental impact of a specific product or service throughout its life cycle period. It does, however, mean that organisations will need to think beyond the usual areas they have control of and also take into account their direct influence (Szyszka and Matuszak-Flejszman, 2015:317). It will be challenging for organisations to cope with the increased workload to successfully implement ISO 14001:2015.

ISO 14001:2015 also poses risks for auditors. Da Fonseca, (2015:38) identifies several risks that auditors need to think about and he begins by asking how much improvement is really enough? He goes on to state that environmental laws are not the same in all countries and therefore the level of compliance in organisations and their EMS performance might differ from country to country. He adds that there is variation between some certification bodies regarding their approaches and practices, level of expertise, audit approaches and their relation to global coverage.

3.6.2 Expected opportunities of ISO 14001:2015

ISO 14001:2015-based EMS is a lot more compatible with other management system standards, such as ISO 27001:2013, ISO 9001:2015 and the new ISO 45001:2016, which will make integration with these standards easier (Are and To 2015). In 2013 ISO conducted a survey on ISO 14001, focusing specifically

on areas in the standard for continual improvement. This survey was distributed in 11 languages and close to 5,000 participants from 110 countries responded. In a summary of the continual improvement survey, several motivations experienced by the participants when adopting or implementing the ISO 14001:2015 standard were identified. These motivations were:

- A greater commitment to environmental conservation;
- A reduction in environmental impacts;
- Primary influence on business management;
- Focusing more on customer requirements and the public image of the organisation; and
- The majority of the participants indicated that there was a better value for business because of the better integration with other management systems (ISO 9001, ISO 50001, ISO 27001, ISO 26000 and OHSAS 18001). This supports the abovementioned statement made by Are and To (2015).

The study concluded with a breakdown of several opportunities identified by the participants relating to the implementation of ISO 14001:2015. The users of ISO 14001 suggested that organisations had come to the conclusion that ISO 14001 had immense value for the management of an organisation's environmental performance. Adopting ISO 14001 could help with meeting legal requirements, enhancing stakeholder involvement, increasing management commitment, and improving overall environmental performance (ISO, 2014). Furthermore, 78% of the participants agreed that the adoption of ISO 14001 provided a competitive advantage, as well as financial benefits for organisations.

The new standard places immense emphasis on risks; therefore users implementing ISO 14001 need to understand the meaning and importance of the term "risk". Firstly, the assessment of significant impacts needs to be incorporated into strategic risk management plans (Fagateanu *et al.* 2015:207). To succeed in risk managing, it is necessary to carefully identify risks that can potentially develop into negative environmental aspects, as well as risks that can have a positive effect on environmental aspects. After the risks are identified, these can be integrated into an action plan to ensure that the management of all the risks are managed successfully (Fagateanu *et al.*, 2015:207).

A study was conducted by Jensen and Bondesson (2016) on the benefits of implementing ISO 14001:2015. An interview was held with three site managers, all three of whom had the same responsibility, namely the management of a construction site. Each participant named several benefits related to the implementation of ISO 14001. These are listed below:

- The adoption of ISO 14001 enables organisations to have organised routines and continual learning experiences, and improves the organisation overall;
- The organisation becomes more efficient as the implementation of ISO 14001 becomes familiar;
- It increases the organisation's and customers' or stakeholder's knowledge;
- There is a strong emphasis on quality assurance;

- More commitment from managers on all levels of the organisation;
- The new standard enables employees and stakeholders to become more involved;
- Creates better awareness among employees; and
- The responsibilities of employees and managers are defined clearly.

The results obtained from Jensen and Bondesson's (2016) interviews showed that all of the participants agreed that adopting ISO 14001 created a good public image for the organisation and several of the participants agreed that it helped structure the work process and made it easier to locate documents.

ISO itself reported several benefits related to the new standard and it has determined that users of the ISO 14001:2015 standard consider the following to be beneficial when implementing the new ISO 14001:2015 standard. ISO lists the following benefits reported by ISO 14001:2015 users:

- Increases the involvement of top management and improves the engagement of all employees;
- Boosts company reputation and improves the confidence of stakeholders through improved communication;
- Environmental issues are incorporated into the business management plan, which leads to easier and more effective ways of achieving strategic business aims;
- Current and future statutory and regulatory requirements are clearer and more understandable;
- Being ISO 14001:2015 registered, improving efficiencies and reducing costs generates a more competitive and financial advantage; and
- Suppliers are more integrated into the organisation's business system, which enhances better environmental performance and thus leads to continual improvement in all sectors of the organisation.

Continual improvement is an important principle that ISO 14001:2015 is based on and it provides a valuable framework for organisations to develop an effective EMS (Vilchez, 2016:37).

3.7 Changes to the ISO 14001 High Level Structure (HLS)

3.7.1 Why the need for change to the ISO 14001 HLS

According to Fagateanu *et al.* (2015), all standards need to be revised every five years in order to ensure that each standard meets the changing needs of the marketplace that implements it. The aim of a revision is to incorporate the necessary changes into the new standard. Taking into consideration the experience with previous standards, each standard needs to be reviewed before release to ensure that the same challenges do not occur during the implementation phase (Szyszka & Matuszak-Flejszman, 2015:320). Most organisations implement and certify more than one management system standard. To manage several management systems can be extremely time consuming and takes up a lot of resources. All management standards to date have differing requirements, structures and terminology, so integration

remains a challenging aspect. ISO saw a clear need for a management standard that was more integrated and combined standards in a more understandable manner; therefore ISO addressed the problem by developing the Annex SL, which provides a new HLS for ISO management systems.

In other words, the 2015 revision of ISO 14001 has been written using the new high level structure, which is shared by all the new ISO management system standards. BSI supports this statement by saying that this framework is a generic management system and serves as a guideline for all new and updated management system standards (Bsi, 2015). This will lead to simplifying integration when the implementation of more than one management system is required. ISO has published several management system standards for a vast array of topics over the past decades. Although these management systems share common elements, they often have different structures. The BSI Group describes the situation aptly: “There is not a clear and independent standard developed for the creation of a standard for standards” (BSI Group, 2015).

This has led to confusion, and difficulties at the implementation stage have made the integration of different management systems challenging (Tangen & Warris, 2012). To address these issues, all ISO management systems will now have to follow Annex SL in the new ISO supplement that standardises structure, text and terms and definitions. The HLS will replace the standardising guide 83. The aim of this consolidation is to “ensure consistency among future and revised management system standards and make integrated use simpler” (Tangen & Warris, 2012). The new HLS structure is summarised in Table 3.2 below.

Table 3.2: The new ISO 14001:2015 system clauses (Tangen & Warris. 2012).

CLAUSE NUMBER	TOPIC/CLAUSE
Clause 1	Scope
Clause 2	Normative references
Clause 3	Terms and definitions
Clause 4	Context of the organisation
Clause 5	Leadership
Clause 6	Planning
Clause 7	Support
Clause 8	Operation
Clause 9	Performance evaluation
Clause 10	Improvement

Despite the need for consistency, it is still necessary to ensure that the standards are not overly prescriptive. Although there are specific guidelines, the standards must still give organisations the freedom and flexibility to differentiate themselves from possible competition. This must be accomplished and still give organisations the ability to improve management systems (Nel, 2015; ISO, 2015).

3.7.2 The key changes to ISO 14001:2015

The following changes were identified on the Bureau Veritas website, and by the National Quality Assurance (NQA):

- *Increase in the accountability of leadership/top management*

Top management is more closely defined in order to make the EMS more integrated and strategic with respect to organisations' decision making. ISO 14001:2015's approach to environmental management will provide top management with information that will enable it to build success in the long term. Environmental and sustainability managers will be expected to have more interaction with top management. More involvement from top management is an extremely important change, in the opinion of this researcher. It allows management to be more involved and employees will consequently be more motivated. NQA agrees, saying that top management needs to enhance its leadership skills, as well as its commitment to the standard and the success of the organisation, because of its higher accountability in terms of the effectiveness of the management system and its ability to offer its full support and resources, if needed.

- *Life cycle approach*

This requirement was established to consider environmental impacts throughout the supply chain, as well as relevant life cycle issues, for example, from the purchasing of raw material or the generation from natural resources to the planning of end-of-life treatment (Are & To 2015).

- *Rethinking impact*

The revision introduces a new term, namely "environmental condition" and is defined as the long-term changes to the environment that can directly affect the activities, services and products of the organisation. The aim is to ensure that the organisation's focus is on what impact the environment has on it rather than what impact it has on the environment. This was considered to be a significant weakness of the previous version of ISO 14001.

- *Risks and opportunities*

This requirement indicates how significant environmental risks and opportunities are managed within the supply chain. It is expected from the organisation to show that it has made a connection between the environmental difficulties and how these difficulties relate to the business, as well as how the interfaces with the business are managed.

- *Pro-active reporting*

The revision requires the organisation to proactively consider external and internal reporting on environmental issues to interested parties (Da Fonseca, 2015:39) and to show greater control of how environmental data is used and managed.

- *Strengthened compliance*

The clause “Evaluation of Compliance” has been strengthened in the new version of ISO 14001. In the previous standard, there was a requirement to evaluate compliance, but in the new standard the requirement is improved by specifying exactly how compliance is to be evaluated and recorded.

- *Performance evaluation*

“Evaluation is the interpretation of results and analysis” (Are & To 2015). Evaluation is not a new concept to any manager, but in the new standard it places a big emphasis on this standard. Processes may be accurate and effective, but do they lead to positive results? This might pose a challenge for internal audits (Are & To 2015).

- *Performance Improvement*

There is a greater emphasis on performance improvement. It should be aligned with the organisation’s policy commitments to reducing emissions and waste levels to the specific target set by the organisation (clause 6.1.2 Significant Environmental Aspects and 6.2 Environmental Objectives and how to achieve them) (Da Fonseca, 2015:40).

- *Auditing*

It is important to remember that this standard was created for the benefit of organisations and not auditors. Auditors need to have a sound understanding and have the ability to recognise the extent and type of evidence that would be acceptable to assess whether conformity is in line with the 2015 requirements. Auditors of the 2015 standard need to have a good relationship with the managers of an organisation when seeking understanding about environmental objectives, strategies and policies to make sure that these are compatible and in line with the 2015 requirements.

- *Documented information*

The term “documented information” is used instead of “documents and records” for management to stay up to date with technological advances. It is similar to ISO 9001; therefore organisations will be more flexible when procedures are needed and in the end ensure effective control of processes.

- *Continual improvement*

The new standard places a stronger emphasis on continual improvement, with a specific clause in place that is in line with the policy set by top management to ensure that there will be less room for misinterpretation.

Some of the above-mentioned changes are also required by EMAS. EMAS is a system with more stringent requirements than ISO 14001 and deems the next step to be to improve EMSs (Szyszka and Matuszak-Flejszman, 2015:319). All of the above-mentioned changes were introduced to ensure that the EMSs will be more meaningful for organisations certified with ISO 14001:2015.

3.7.3 Why changes will continue to take place in the future.

There will always be certain challenges pertaining to each revision as circumstances, especially regarding the environment, change. Each revision may not be able to address each challenge (Smit et al., 2015). All the standards are revised and updated every five years, which enables ISO to assure that each updated version of ISO standards is relevant for the marketplace and that it stays compatible with other management systems (Da Fonseca, 2015:41). Szyszka and Matuszak-Flejszman (2015) support the above by adding that the aim of publishing of the new standard was to review the new standards' utility, taking into consideration experiences with previous management standards. The aim was to make the necessary changes to the new standard to ensure that it is fit for modern-day business and follows modern trends in terms of practices, science and technology.

It is essential for all standards to achieve a balance between the environment, society and the economy in order to meet the needs of the present without compromising the ability of future generations to meet their needs. Therefore it is imperative to achieve a balance between these three pillars.

ISO 14001 needed to be updated in such a way that it focuses more on enhancing sustainable development. ISO 14001:2015 aims to generate a balance between environmental, social and economic sub-systems, which are considered the three pillars of sustainability (Da Fonseca, 2015). The 2015 version is considered to have made a greater contribution to enhancing environmental sustainability and the evidence thereof can be seen in the introductory and scope sections of ISO 14001:2015 (Da Fonseca, 2015). ISO supports this statement by claiming that the diverse range of ISO standards can help organisations worldwide to make good progress pertaining to the three pillars of sustainable development. From the above statements, it is clear that ISO 14001 places a greater emphasis on sustainable development with each revision; therefore it will continue to do so in the future because sustainable development is crucial for future generations.

As mentioned above, the ISO 14001:2015 standard is more compatible with other management systems and ISO will continue to generate standards that are increasingly more compatible with each other in order to simplify the implementation of the various ISO management standards.

The following table indicates the key terms that have changed when comparing the 2004 version to the 2015 version.

Table 3.3: Major difference in terminology (Are & To. 2015).

ISO 14001:2004	ISO 14001:2015
Legal and other requirements	Compliance obligations
Documents; records	Documented information
Management representative	Term not used
Preventative action	Term not used
Term not used	Leadership
Term not used	Risk
Term not used	Opportunity
Term not used	Environmental conditions
Term not used	Life cycle

Managers of organisations certified with an EMS such as ISO 14001 need to keep in mind that the costs of ISO 14001 are profound and they need to conduct an in-depth analysis of the importance of ISO 14001 in relation to their organisation before they decide to jump on the ISO 14001 bandwagon. To do so without a clear understanding of what an ISO 14001-based EMS truly is might have negative consequences (Bansal & Bogner, 2002:270).

3.8 The ISO 14000 series

ISO 14000 consists of a series of elements and ISO 14001 is the dominant feature and actual standard of the series. It specifies a framework of control for an EMS, against which an organisation can be certified by a third party (ISO 2009). Other elements of the series include:

Table 3.4 The ISO 14000 series (ISO, 2009)

Standard	Description
ISO 14004	Guidance on the development and implementation of environmental management systems
ISO 14010	General principles of environmental auditing (now superseded by ISO 19011)
ISO 14011	Specific guidance on audit an environmental management system (now superseded by ISO 19011)
ISO 14012	Guidance on qualification criteria for environmental auditors and lead auditors (now superseded by ISO 19011)
ISO 14013/5	Audit program review and assessment material
ISO 14020	Labelling issues
ISO 14030	Guidance on performance targets and monitoring within an Environmental Management System
ISO 14040	Covers life cycle issues

3.9 Summary

In this chapter the main focus was to generate an understanding of ISO 14001-based environmental management systems obtained from an extensive literature review and to determine the internationally-perceived risks and opportunities of the ISO 14001:2015 transition.

Furthermore, the evolution of ISO 14001 was explained in this chapter, the three-main versions of ISO 14001 were discussed in order to identify the improvements made and in the final part of the chapter the three fundamental questions regarding the reason for the change, what the changes were and why changes will continue to take place in the future were answered. The ISO 14001 standards will always face challenges therefore it is important to continually improve with each revision as well as the management within organisations certified with ISO 14001.

Change will always be important in order to keep up with the changing economy, latest trend and once again to keep up with the constantly changing marketplace. How certified organisations will cope with the present changes, changes yet to come and the success thereof will mostly depend on the commitment

from leadership, level of protection for the environment and effective communication in all sectors of the organisation. In the researchers opinion it would be beneficial for organisations to always ask the abovementioned questions for present and future purposes. Change is inevitable, wether it happens now or in five years.

In the following chapter the data collected from a captured audience of participants will be presented in the form of bar graphs supported by a statistical explanation of each graph. Furthermore the risks and opportunities the participants experienced during the implementation of the 2015 ISO 14001 transition will be described.

CHAPTER 4: DATA ANALYSIS

“Statistics on its own does not mean much but the interpretation and discussion of statistics is what brings it to life and gives it purpose.” (Perumaul, 2017).

In this chapter the results from the data collected are presented using a descriptive statistic method by collecting and presenting data in the form of graphs. The data was gathered by means of the distribution of survey questionnaires and semi-structured interviews. The data was collected and analysed as a result of the research problem identified in chapter one. Fifty-two participants responded to the survey questionnaire, 27 from industry and 25 auditors. Four interviews were conducted with practitioners from the industry and one with an auditor. Each respondent provided details of the personal risks and opportunities he or she experienced during the ISO 14001:2015 transition.

In the following section the data analysis results are presented in the form of graphs and interpretations derived from the survey questionnaire, followed by the risks and opportunities identified by South African environmental practitioners and their opinions in response to open-ended questions regarding ISO 14001:2015.

4.1 Survey questionnaire data analysis

Indication of the total combined survey questionnaires received between auditors and industries.

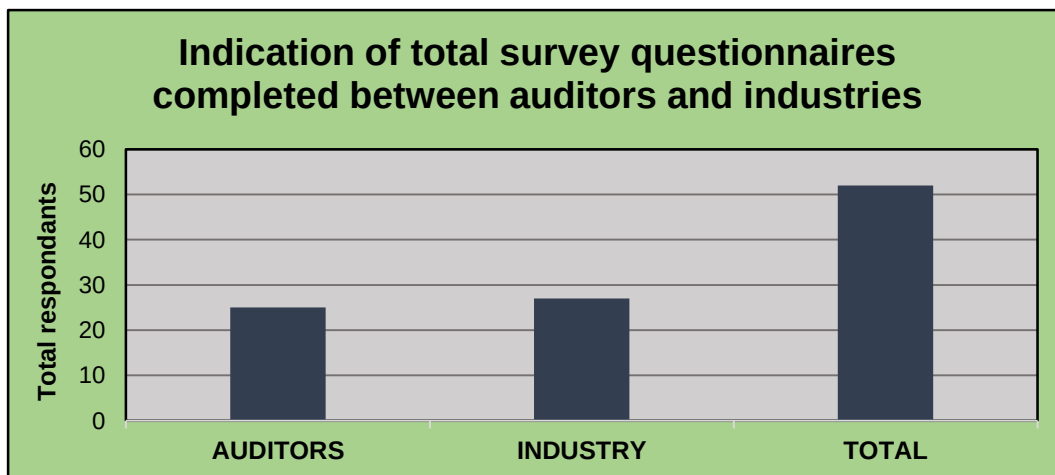


Figure 4.1: Total survey questionnaires between auditors and industries

Figure 4.1 – It is evident that the completed survey questionnaires were fairly evenly distributed between auditors and industry representatives. This makes the opinions fairly comparable between the two groups.

The following sections relate to parts 1, 2 and 3 of the survey questionnaire. The section headings of the following section reflect the questions on the survey questionnaire in order to prevent any confusion.

4.2 Part 1 of survey questionnaire

The following figure illustrates the demographic data analysis in terms of the experience of auditors and industry representatives. The questions asked in the following section were developed to determine the overall experience of the participants in the environmental field, as well as with ISO 14001. This was important because determining the level of experience and awareness would indicate the quality and reliability of the answers given regarding ISO 14001:2015.

4.2.1 Q2: How much working experience do you have in the environmental field?

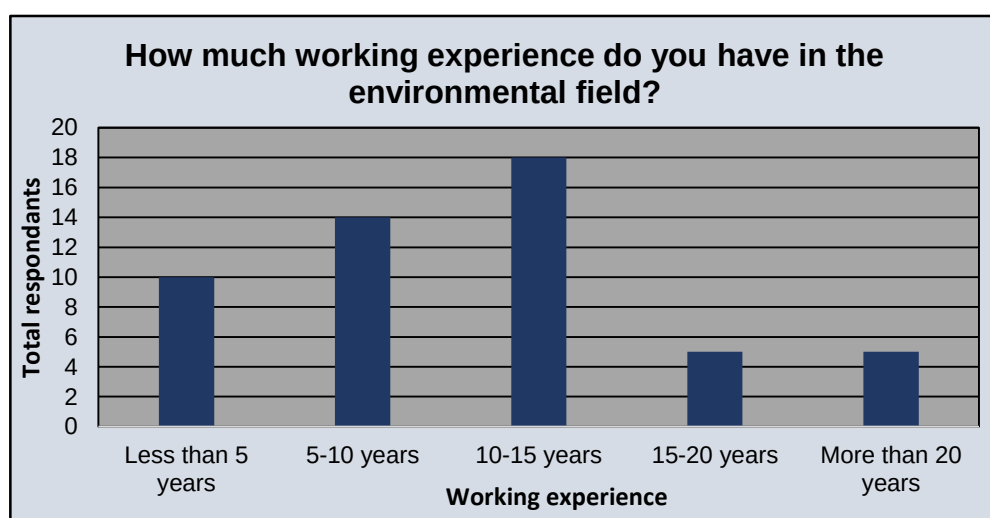


Figure 4.2: Total working experience in environmental field

Interpretation 4.2 (a): The majority (18) of the participants had 10-15 years' experience in the environmental field, followed by 5-10 years' experience. Only a handful of the participants had more than 15 years' experience. What is quite alarming in figure 4.2 is that the number of total participants with less than 5 years' experience was relatively high, considering that only 52 surveys were collected. The assumption is that although the majority of the participants in the field (32) had 5 to 15 years' experience, relatively few had more than 5 years' experience, with very few having more than 15 years' experience.

What is good to note is that all of the respondents answered this question, which implies that the practitioners were willing to gain more experience in ISO 14001-based EMSs.

4.2.2 Q3: How many years have you worked with ISO 14001-based systems?

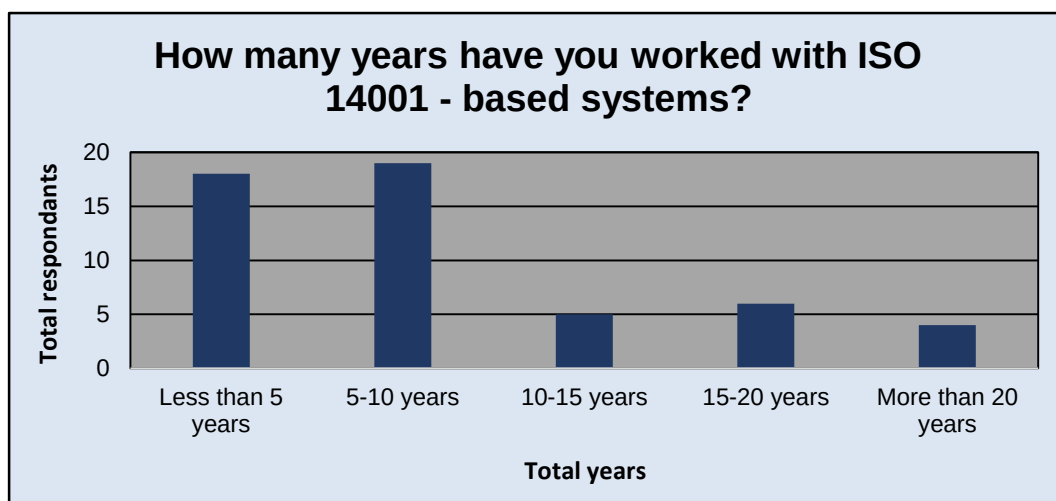


Figure 4.3: Total years worked with ISO 14001

Interpretation 4.2 (b): 36% of the participants had worked with ISO 14001-based systems for 5-10 years, followed by less than 5 years working experience at 33%. Again the 5-10 year option was one of the most selected by the participants. From the previous figure it was clear that the majority of the respondents had experience in the environmental field, but figure 4.3 indicates that although this was true of 34% of the participants, the majority of them had 36% experience with ISO 14001-based EMS. A total of 15 participants had more than 10 years' experience, which makes up 29% of the total. Therefore the data indicates limited experience.

4.2.3 Q4: Approximately how much of your working time do you spend directly on ISO 14001 related activities?

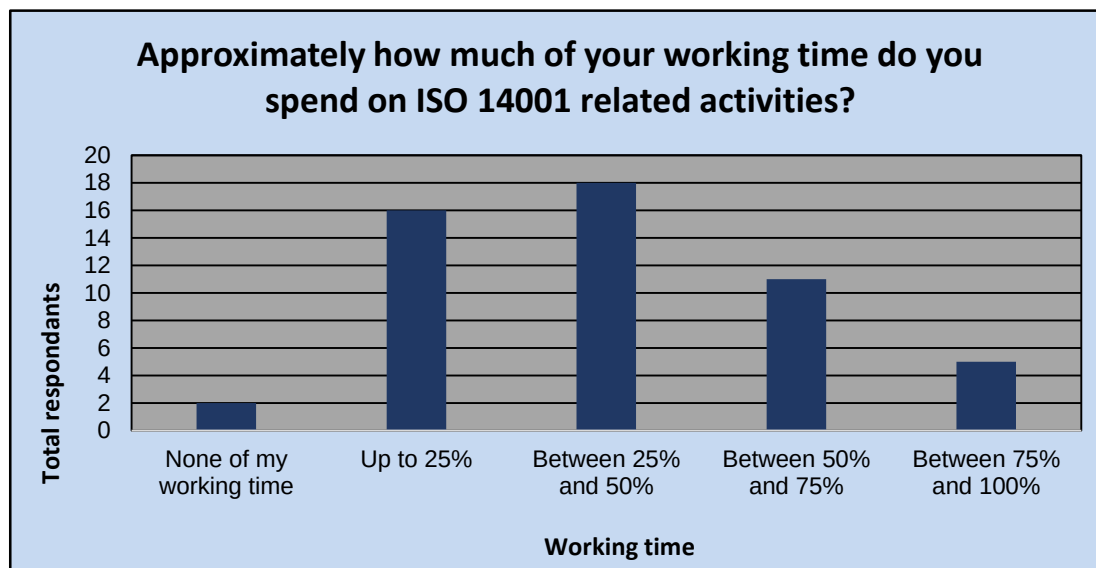


Figure 4.4: Total working time spent on ISO 14001 related activities.

Interpretation 4.2 (c): 35% of the participants spent between 25% and 50% of their working time on ISO 14001-related activities. It is safe to say that most of the participants spent between 25% and 75% of their working time on ISO 14001-related activities. Interestingly there were two participants who spent none of their time on ISO 14001-related activities. During the semi-structured interviews, two participants indicated that they did not have a lot of awareness of ISO 14001 and stated that their role was environmental management, such as environmental impact assessment (EIA), environmental degradation, and pollution and resource management, not implementing the ISO 14001 EMS, but that they would like to attend training courses in order to understand ISO 14001 better.

4.2.4 Q5: Have you received any awareness and/or competency training on the ISO 14001:2015 standard?

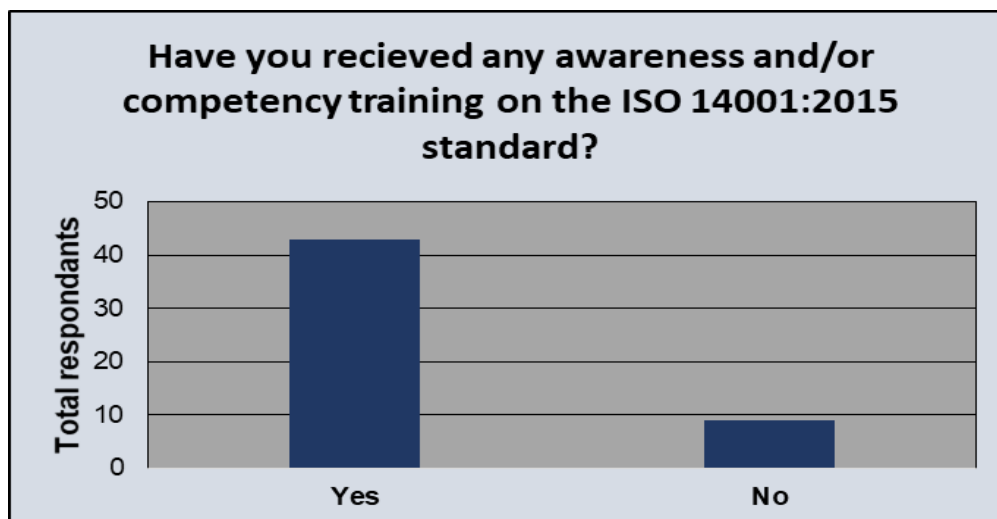


Figure 4.5: Awareness or competency training on ISO 14001:2015

Interpretation 4.2 (d): An overwhelming of 81% of the participants had awareness and competency training on the 2015 version of ISO 14001. Of the responding participants, 9 selected "No", 2 of the participants had some awareness but no training, and the remaining 7 participants had awareness of the 2015 version but had not received any training on the new version of ISO 14001. Out of the 52 participants, 17.0% had not received training and therefore might not have contributed significantly to interpreting or answering some of the questions, but the majority of the participants (82.7%) had indeed received training.

4.3 Industry experience vs auditors experience

The following figures illustrate the differences between industry and auditors' experience in the environmental field and with ISO 14001-based systems, as well as the amount of working time each entity spent directly on ISO 14001 related activities.

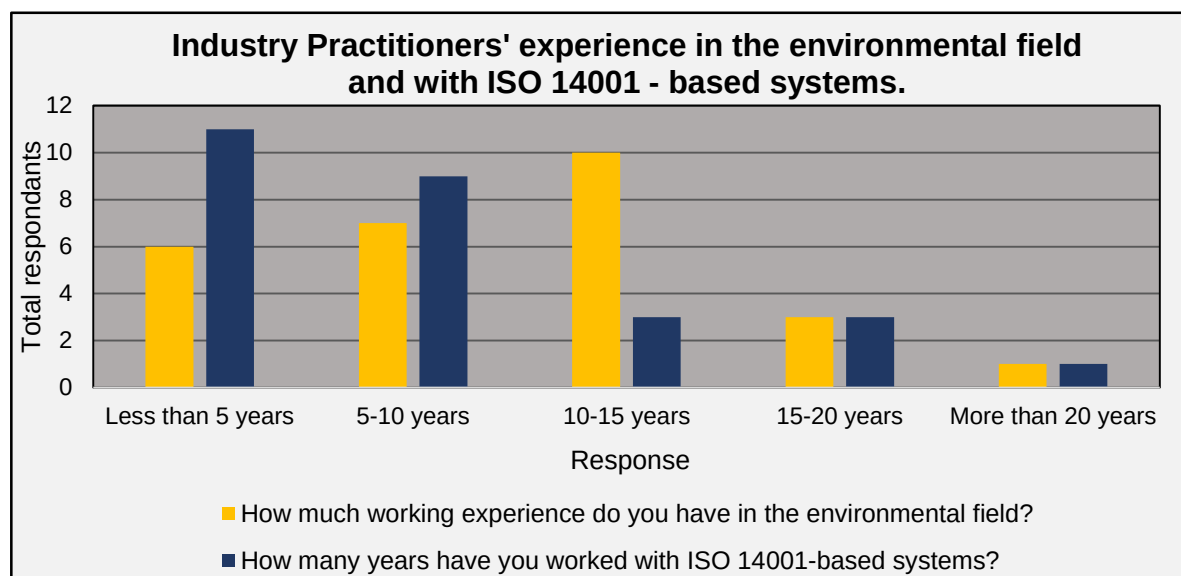


Figure 4.6: Industry practitioners' experience – Environmental field vs. ISO 14001-based systems

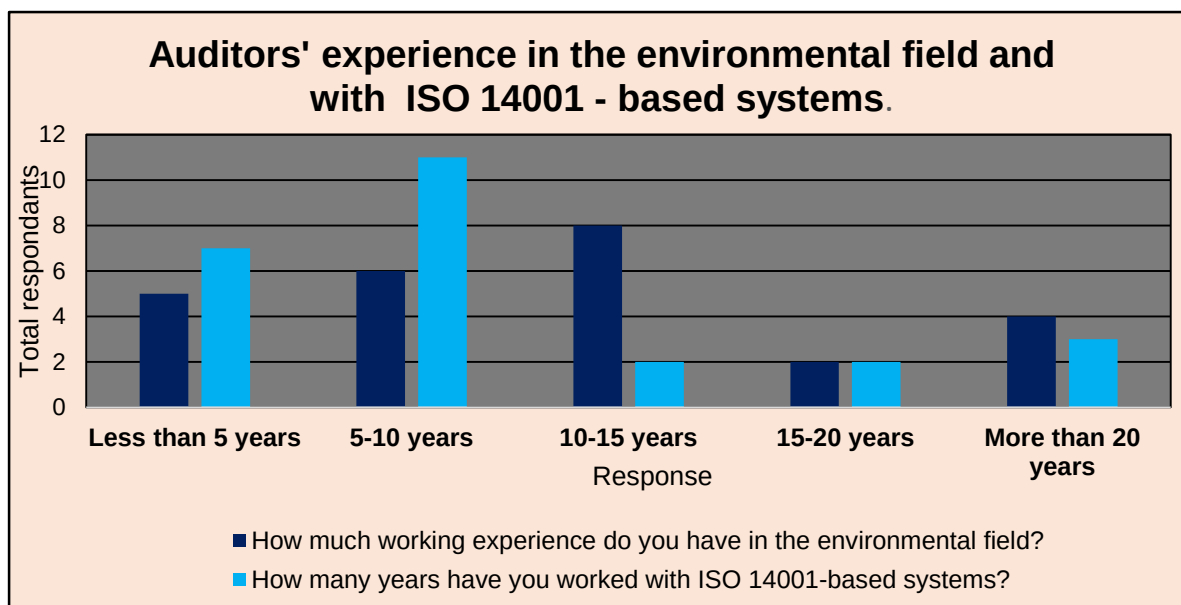


Figure 4.7: Auditors' experience – Environmental field vs. ISO 14001-based systems

Interpretation 4.3 (a): It is clear that the total experience of the industry practitioners was less than that of the auditors. The majority experience of the industry practitioners in the

environmental field was between 10 and 15 years and the majority experience in ISO 14001-based systems was less than 10 years. The possible conclusion to be made on these statistics is that, yes, industry has an unexpectedly high experience rate in the environmental field, but its representatives lack experience with ISO 14001-based systems. This could lead to a number of issues regarding the implementation of ISO 14001. Only 7 participants had more than 10 years' experience, which could lead one to doubt the competency of people working in the industry. With the release of the new 2015 version, it is critical that industry practitioners put a lot of effort and commitment into the implementation of the new standard to ensure successful implementation.

The auditors, on the other hand, had a relatively scattered response regarding their experience in the environmental field. This could merely be because, whether one works in the environmental field or with ISO 14001-based systems, one is still part of the environmental field and that is possibly the explanation for the scattered response. The majority experience with ISO 14001-based systems was between 5 and 10 years. There were only a handful of auditors with more than 10 years' experience with ISO 1400-based systems and the reason for that is unclear. One would think that after building experience in the environmental field, one would specialise in a certain standard or section. In this case, the total experience with the ISO 14001-based system decreased as the total years increased.

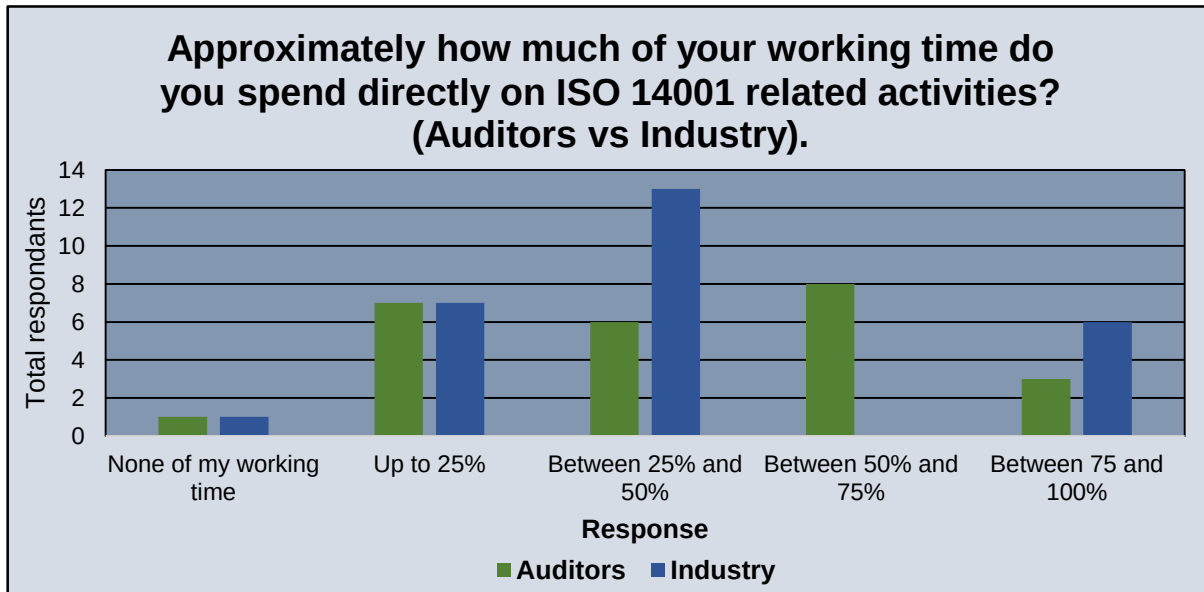


Figure 4.8: Total working time spent on ISO 14001 related activities

Interpretation 4.3 (b): All the participants replied to this question. Only one from each entity spent none of their working time on ISO 14001-related activities, which could be seen as statistically viable because that means that 50 participants did spend time on ISO 14001-related activities. The majority of the industry participants spent between 25% and 50% of their working time on ISO 14001-related activities. The possible reason for this could be that the industry has a lot of other aspects and standards to keep in mind and not just ISO 14001 and therefore not all of their time is spent on implementing and ensuring the success of ISO 14001. The relatively scattered response from the auditors illustrates their widespread experience with ISO 14001.

In the next section of this chapter the data analysed from part 2 of the survey questionnaire will be presented. The purpose of this section is to identify each participant's opinion in terms of their experience regarding the shortcomings and benefits of ISO 14001:2004. Identifying the shortcomings and benefits will not only reveal what the actual shortcomings and benefits were in the real world, but if compared to the risks and opportunities of ISO 14001:2015 it is possible to determine whether the shortcomings of ISO 14001:2004 were addressed and improved.

4.4 Part 2 of survey questionnaire

4.4.1 ISO 14001:2004 standard: perceived challenges and benefits

The following tables in part 2 and 3 reveal a comparison of the risks and opportunities identified by South African environmental practitioners captured from the survey questionnaire. As mentioned in chapter two, 52 completed survey questionnaires were returned out of the 80 distributed, which assisted in capturing the participant's experiences and opinions regarding the ISO 14001 EMS, with specific reference to auditors and industry practitioners. The survey questionnaire consisted of questions that were intended to elicit quantitative and qualitative data, with the aim of gathering empirical data that would assist in explaining what this study was intended to accomplish. Each participant was asked to complete a number of questions pertaining to ISO 14001:2004 shortcomings and benefits, and ISO 14001:2015 risks and opportunities. These risks and opportunities were identified for the industry and auditors separately and are tabulated in 4.5.1 of this paper.

Table 4.1 reveals the shortcomings and benefits of ISO 14001:2004 identified by the industry practitioners. By examining the table it is evident that the total shortcomings outweigh the benefits of the 2004 version, which indicates that ISO 14001:2004 had more shortcomings during implementation than benefits, according to industry participants.

4.4.2 Shortcomings and benefits related to ISO 14001:2004 identified by the industry

The figure below illustrates the total shortcomings and benefits related to ISO 14001:2004. It is clear that a higher percentage (62%) of participants representing the industry listed more shortcomings than benefits. Participants learned a lot during the implementation and use of ISO 14001:2004 EMS and could list accurate shortcomings due to experience during implementation.

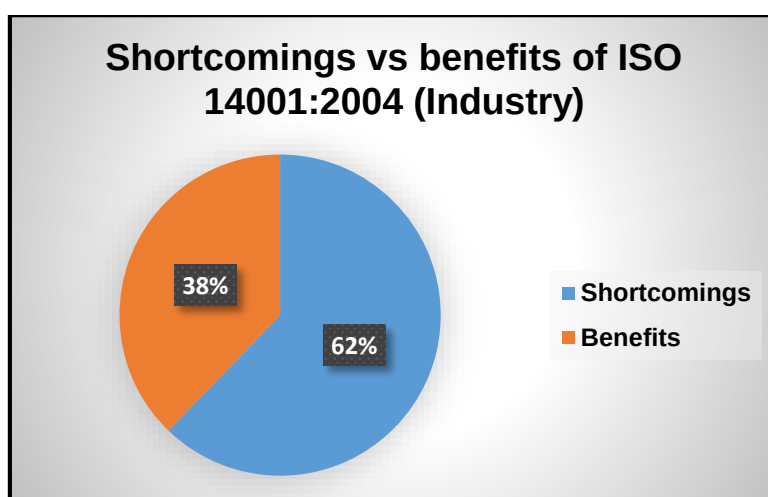


Figure 4.9: Shortcomings vs benefits of ISO 14001:2004 (Industry)

The following table indicates the five most mentioned shortcomings and benefits listed by participants representing the industry. (See annexure C for the complete list.)

Table 4.1: Top five shortcomings and benefits of ISO 14001:2004 identified by the industry.

Shortcomings	Benefits
Allowed organisations to “Ring Fence” the scope of the management system to evade effective implementation .	Reduces liability from environmental incidents . Implementing ISO 14001 into any organisation reduced any potential risks pertaining to the environment.
Focus was more on ecological environment as opposed to the inclusion of social and economic aspects .	Allows organisations to implement and monitor controls.
Driven by management representative rather than management.	Availability of standardised environmental management and performance evaluation .
Internal and external transparency , which weakens compliance success.	Objectives played a role in ensuring the common goal of an organisation.
Too many organisations find loop-holes to bypass the standard. Tick the box approach.	Access to new markets and jobs. ISO 14001 increases an organisations overall competitiveness in the marketplace. Generates an image of caring and reducing their footprint on the environment.

4.4.3 Shortcomings and benefits related to ISO 14001:2004 identified by the auditors

Figure 4.10 below illustrates the total percentages of shortcomings and benefits identified by auditors. There is not a major difference between the two but auditors experienced slightly more benefits (53%) regarding ISO 14001:2004 during the implementation thereof.

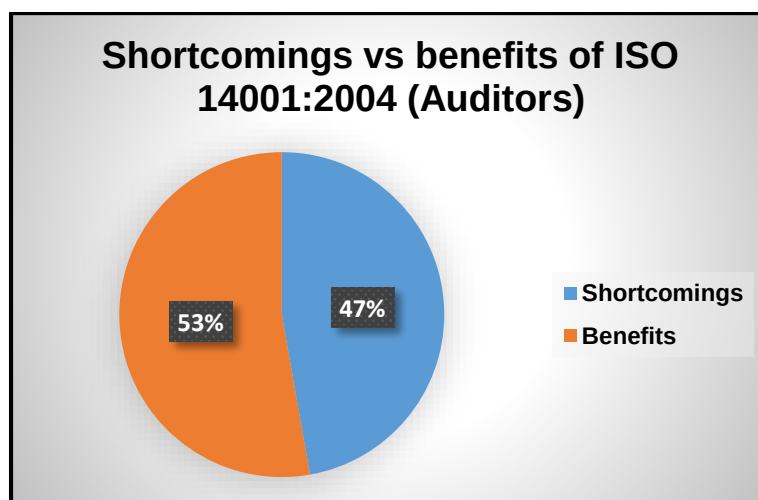


Figure 4.10: Shortcomings and benefits of ISO 140-01:2004 (Auditors)

Table 4.2 reveals the five most mentioned shortcomings and benefits of ISO 14001:2004 identified by the auditors. It is clear that the experiences of auditors with ISO 14001:2004 did not equal the experiences of the industry practitioners. The auditors listed more benefits than shortcomings. (See annexure C for complete list.)

Table 4.2: Top five shortcomings and benefits of ISO 14001:2004 identified by auditors

Shortcomings	Benefits
Health and safety was still a big challenge, although there was a strong emphasis placed on health and safety.	It ensured awareness of environmental matters to employees. Awareness is an important factor when it comes to the successful implementation of ISO 14001.
Essential measure and outcomes (i.e. the reduction of energy consumption) were not supported by the management system.	Achieving ISO 14001 certification enhances an organisations business procedures .
Top management involvement not clearly included. Top management did not consider environmental matters at a strategic level.	Puts the environment at the heart of corporate culture by establishing guidelines to reduce an organisations impact on the environment .

It was a conformance based standard and not a performance based standard.	Provided a structured approach to managing the environmental aspects.
Legal performance could not be audited or checked.	Reputational benefits when it comes to marketplace.

More shortcomings for ISO 14001:2004 were listed by the industry practitioners. However the auditors listed more benefits. The conclusion can be drawn that the auditors classified the previous version as more beneficial because they had audited organisations on ISO 14001 and the improvement in performance was clearer to them than to the industry practitioners, because they had to deal with all the problems and non-conformance issues that arose during audits and implementation.

The data analysed from part 3 of the survey questionnaire is presented in the next section of this chapter. The purpose of this section is to list the risks and opportunities experienced by each participant from each entity. Furthermore, each participant's opinion in response to the open-ended questions, and whether they agreed or disagreed and to what extent was analysed and is presented in the form of graphs. All of the graphs are combined data from both the industry practitioners and auditors.

4.5 Part 3 of the survey questionnaire

4.5.1 ISO 14001:2015: perceived risks and opportunities

The risks and opportunities were identified after analysing the completed survey questionnaires received from the industry practitioners. In figure 4.11 and table 4.3 below, it is evident that the opportunities of ISO 14001:2015 outweigh the risks of ISO 14001:2015, which indicates that the industry expects that more opportunities will arise during the implementation of ISO 14001:2015. Figure 4.11 shows that 59% opportunities were listed, which is 18% more than the 41% of risks identified.

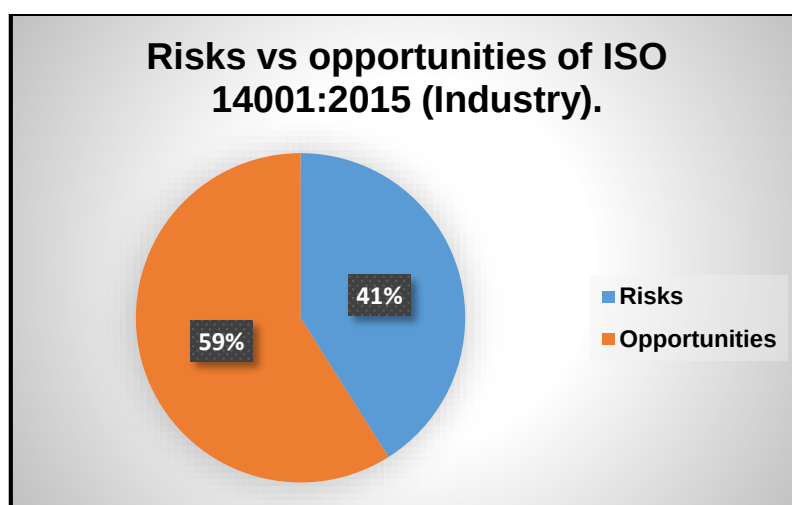


Figure 4.11: Risks vs. opportunities of ISO 14001:2015 (Industry)

Table 4.3: Top five risks and opportunities of ISO 14001:2015 identified by the industry

Shortcomings	Benefits
People not consisting of the necessary knowledge and awareness to implement the new standard successfully.	Forces organisations, auditors and responsible people to have more knowledge and broader understanding of the process
Competency of employees to cope with the transition. If managers and employees do not receive efficient training the standard will not succeed.	Better focus on high level issues for organisations to meet its targets.
Remains a “ top down ” approach and therefore opportunities for environmental improvement may be overlooked or disregarded.	The opportunity to consider environmental change as a management factor and to therefore adopt adaptive management strategies.
The costs involved could be very high. For example costs for training, maintenance and proving that the organisation will strive for continual improvement.	Opportunity for an organisation to improve level of compliance to environmental legal framework and contribute to the culture of preventive care.
Stakeholder engagement can lead to friction between communities and organisations.	ISO 14001:2015 caters for any type of organisation and therefore an organisation can develop an EMS that suites their activities and location.

4.5.2 Risks and opportunities related to ISO 14001:2015 identified by auditors

Figure 4.12 below illustrates the total risks and opportunities identified by the auditors. It clearly shows that auditors expect a lot more opportunities (68%) than risks (32%). Auditors spend much of their time working with ISO 14001-related activities (see 4.3). Auditors also have more years of experience in working with ISO 14001 and therefore could accurately identify what opportunities they expected, as well as what opportunities could be expected by certified organisations. Table 4.4 lists the five risks and opportunities most mentioned by the auditors.

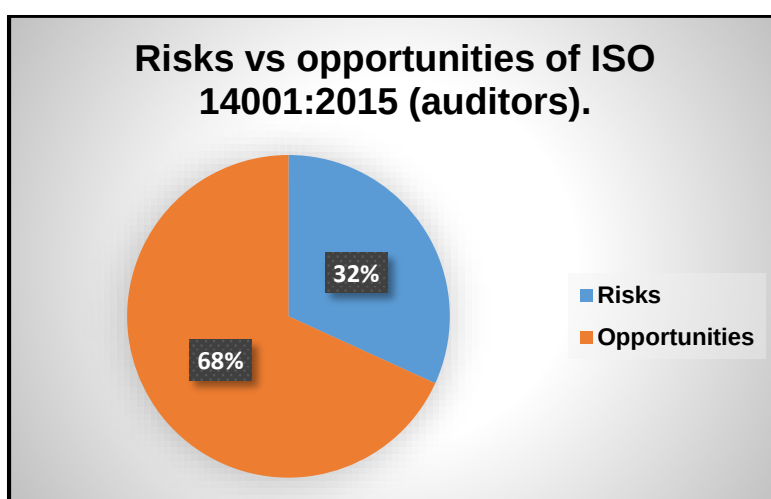


Figure 4.12: Risks and opportunities of ISO 14001:2015 (Auditors)

Table 4.4: Top five risks and opportunities of ISO 14001:2015 identified by Auditors

Risks	Opportunities
The High costs involved in the implementation of the new standard, in agreement with the industry practitioners. High costs involve maintenance, training and showing evidence of continual improvement.	Reduced risks and liabilities. There is a better emphasis placed on risk awareness .
The involvement and commitment from top management could turn into a risk because top management will now have to understand the total system.	Makes the adoption of a process approach in the implementation of a quality management system more explicit. Integration with other standards is much easier.
Major risk of organisations using shortcuts early in the life cycle to reduce the closing phase costs	Broadening the concept of pollution prevention .
Implementing the system without proper knowledge and not properly understanding the process-based approach. Once again	Accountability and increased involvement from top management . Management having to take a more active role in the management

training comes to mind, all persons responsible for the standard will need to be trained efficiently.	of the EMS – ensures that the EMS is not just someone sitting in the corner's job.
Organisations are required to determine and document the risks and opportunities related to the environmental aspects and compliance obligations.	There is a better time allocation towards resources and time management .

The above tables show the five risks and opportunities most mentioned by both the industry representatives and the auditors. The same conclusion can be drawn from both groups regarding the risks and opportunities of ISO 14001:2015: they also identified the shortcomings and benefits of the 2004 version. Both the industry practitioners and auditors listed more opportunities than risks when it came to the implementation of ISO 14001:2015. The conclusion can be drawn that the two groups agree that ISO 14001:2015 holds more opportunities than risks. It is important to keep in mind that the survey questionnaires were distributed during the transition phase, which is three years; therefore the risks will increase once organisations obtain certification. One risk that they always have to keep in mind is that of misuse, because this risk will always be there.

The most popular risk identified by the auditors and the industry was that the relevant people might not have the necessary knowledge and awareness to implement the new standard successfully. The lack of knowledge about the changes to the standard could result in differing interpretations of various clauses, which could result in misunderstandings and, if the situations are not appropriately managed, organisations might decide to throw out the implementation of the standard.

Another risk was the fact that high costs will be an issue when implementing the 2015 standard, as well as the lack of communication from top management. Costs cited mostly involved training of the relevant employees, and demonstrating and maintaining environmental improvement. Another cause for alarm is that organisations do still not understand process-related issues. Training and focus on environmental matters are generally secondary to safety.

Legal obligations can be a risk and difficult to implement, but they can also be a blessing because they require an organisation to ensure compliance and prevent unnecessary risks. These risks correspond with the internationally-perceived risks. The literature indicated that high costs, low awareness, a lack of communication and legal obligations would be major risks in the implementation of ISO 14001:2015.

The most popular opportunities listed by auditors and the industry indicated that there was positive publicity surrounding environmental initiatives, which results in new customers. Top management is at the centre of decision making. It also creates a safer environment for employees. Being ISO 14001:2015 certified

helps organisations to develop an EMS that is most suitable for their location and level of risk. An organisation with a well-developed EMS will reap success and great opportunities. These opportunities correspond, to an extent, with the opportunities that were identified in the literature review.

The fact is that there are many risks and opportunities inherent in the 2015 revision, but the actual risks and opportunities will only be identified once ISO 14001:2015 is fully implemented. These risks and opportunities, or rather benefits, are still largely unknown and will only be known after September 2018, when the revision period is over.

4.5.3 Q3.3.1: The organisation will need to incur high costs to maintain ISO 14001:2015 certification?

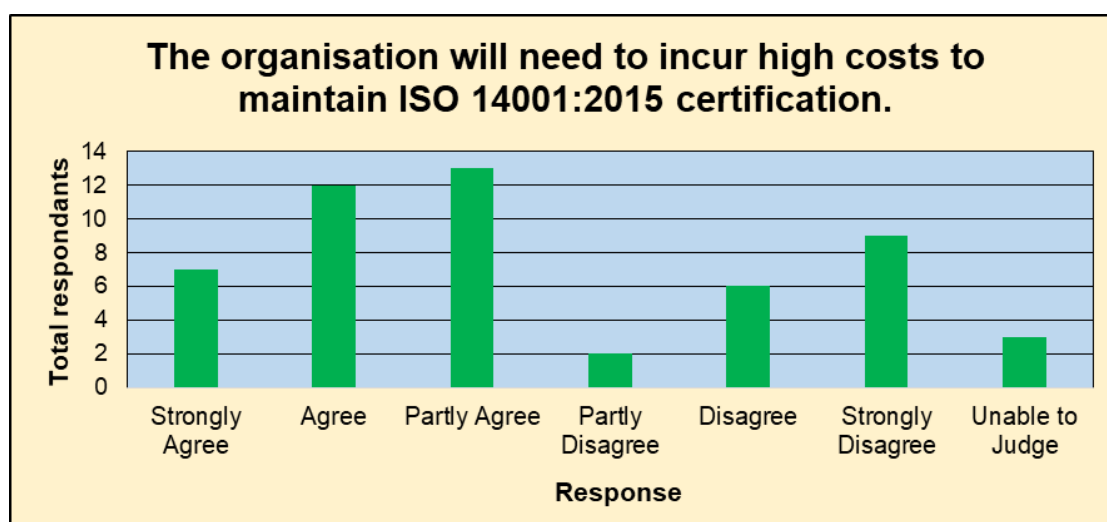


Figure 4.13: High costs to maintain ISO 14001:2015 certification

Interpretation 4.4 (a): Only 7 (14%) of participants strongly agree and 25 (48%) participants in total were in agreement that organisations will need to incur high costs to maintain ISO 14001:2015 certification. This statement is also supported by literature, there will be high costs in maintaining and implementing ISO 14001:2015 certification as well as proving continual improvement. High costs are considered a risk of the ISO 14001:2015 standard and is evident in the risks and opportunities identified by participants below. One example that was very popular during the literature review was the cost of training. Training can lead to high cost especially when there are a lot of incompetent people. The reason for 9 (18%) of the participants strongly disagreeing to the abovementioned statement could be that the benefits of being ISO 14001 certified outweigh the total costs involved to become certified. Therefore 18% of the participants believe that costs don't play a big role in ISO 14001 certification but rather in the benefits it entails for their organisation. Another reason for the 18% strongly

disagreeing is that not all organisations are the same size for example smaller organisations will pay less for certification in relation to bigger organisations.

4.5.4 Q3.3.2: Competency of employees responsible for implementing transition to the ISO 14001:2015 standard will be a challenge?

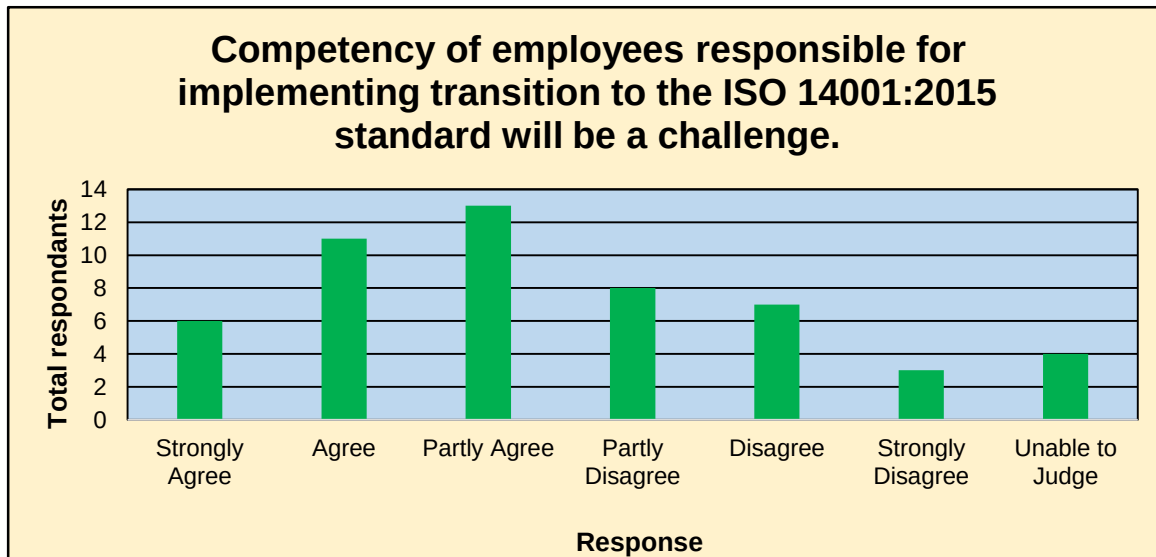


Figure 4.14: Competency of employees

Interpretation 4.4 (b): In order for ISO 14001 EMS to be successful and effective in any type of organisation, competency plays a major role in achieving just that. 30 (58%) in total of the participants agreed with this statement, indicating that the implementation will be a challenge because the employees responsible for the implementation of ISO 14001:2015 lack competency. Training in this case is a crucial factor to ensure that the employees responsible for implementation are made aware of the ISO 14001 EMS and are found competent to implement the standard. Only 22 (42%) of the participants were of the opinion that the competency of employees responsible for implementing the transition to ISO 14001:2015 standard would not be a challenge.

4.5.5 Q3.3.3: Understanding the context of the organisation and its relationship with interest groups, stakeholders, customers and communities will be an issue?



Figure 4.15: Understanding the context of the organisation

Interpretation 4.4 (c): There was a scattered response from the participants on this statement. Therefore it is difficult to draw a conclusion from the data received. It could be that the statement confused the participants and they did not understand it. Only 4 (8%) of the participants strongly agreed with this statement and an assumption can be made that these 4 participants received training on the 2015 standard. Three (6%) participants were unable to judge this statement, which leads to the assumption that the participants that were unable to judge did not understand the statement or did not have the necessary knowledge to judge this statement.

4.5.6 Q3.3.4: The ISO14001: 2015 standard will ensure that top management is at the centre of implementation and enforcement of the standard?

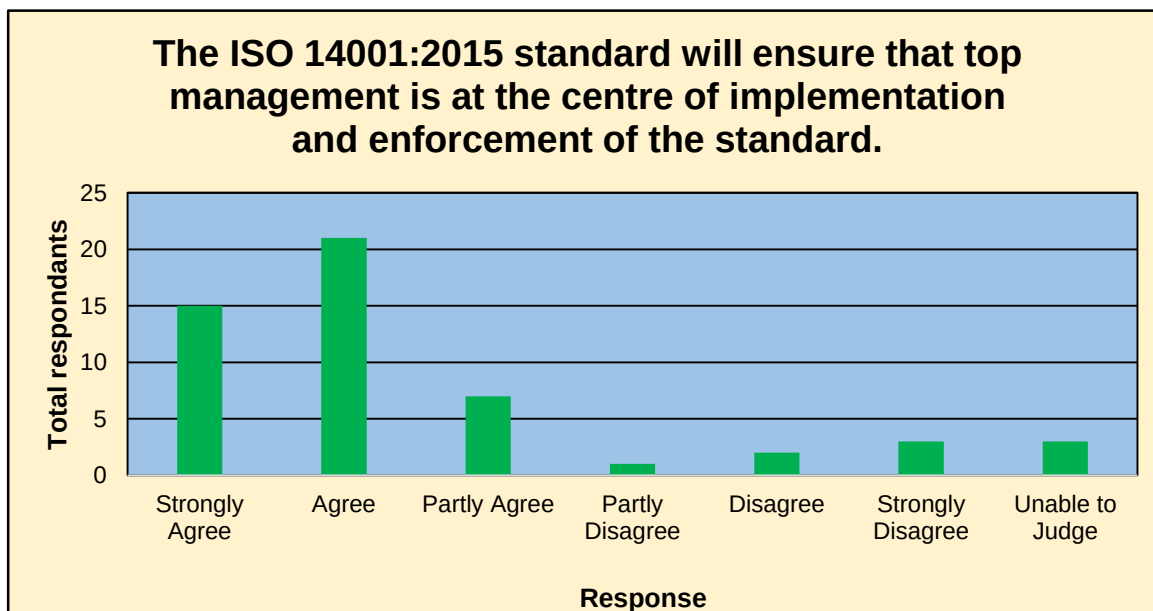


Figure 4.16: Top management at the centre of implementation

Interpretation 4.4 (d): One of the major opportunities identified in both the international literature and by South African environmental practitioners was that top management would be more involved in decision making and the implementation of ISO 14001:2015. There was an overwhelming response of 42 (81%) from participants who strongly agreed, agreed and partly agreed with this statement. Certified organisations felt that top management involvement would be a major opportunity in the implementation and enforcement of the ISO 14001:2015 standard to ensure that the standard is successfully implemented. Only 8 (15%) of the participants disagreed with this statement.

4.5.7 Q3.3.5: The ISO14001: 2015 standard will ensure that environmental, risks and opportunities are viewed or considered at a higher strategic business level?

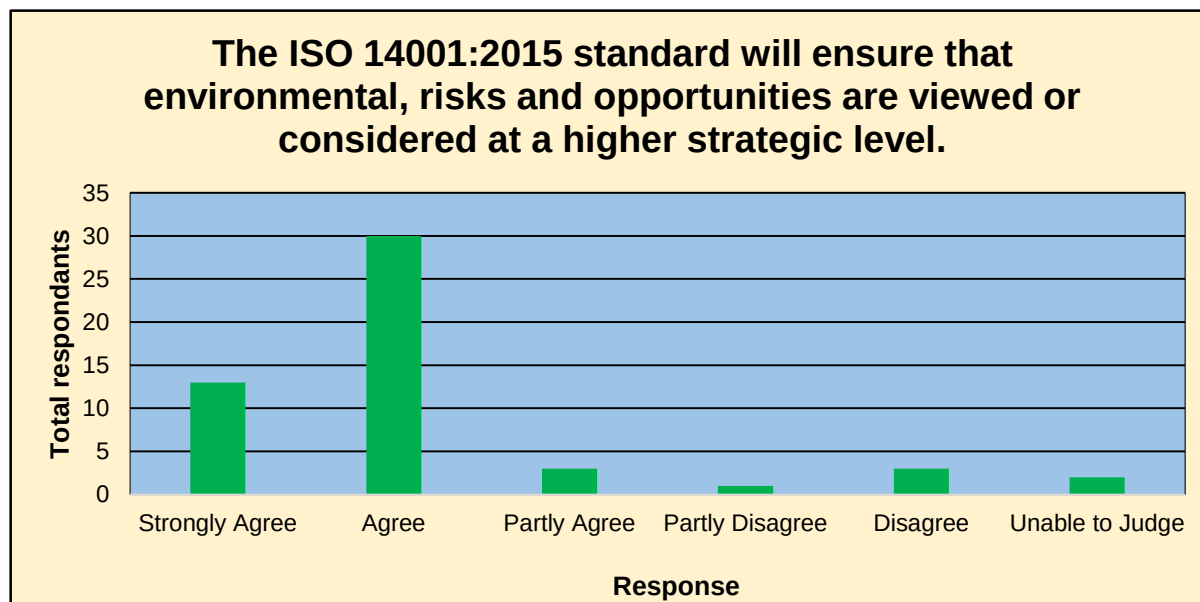


Figure 4.17: Environmental, risks and opportunities are viewed at a higher level

Interpretation 4.4 (e): Another overwhelming response of 45 (87%) participants agreed that the 2015 version will ensure that environmental risks and opportunities are viewed at a higher strategic level, supporting the previous statement of top management being more involved. Top management will be more involved in dealing with environmental risks and opportunities by being at the centre of decision making. The previous version focussed more on risks rather than both. The 2015 version places risks and opportunities at a higher level and making it a priority in order to achieve continual environmental performance. Only 6 (12%) participants disagree which indicates a positive response on this statement.

4.5.8 Q3.3.6: The life cycle approach (e.g. the supply chain of goods, services and outsource processes) will be an issue

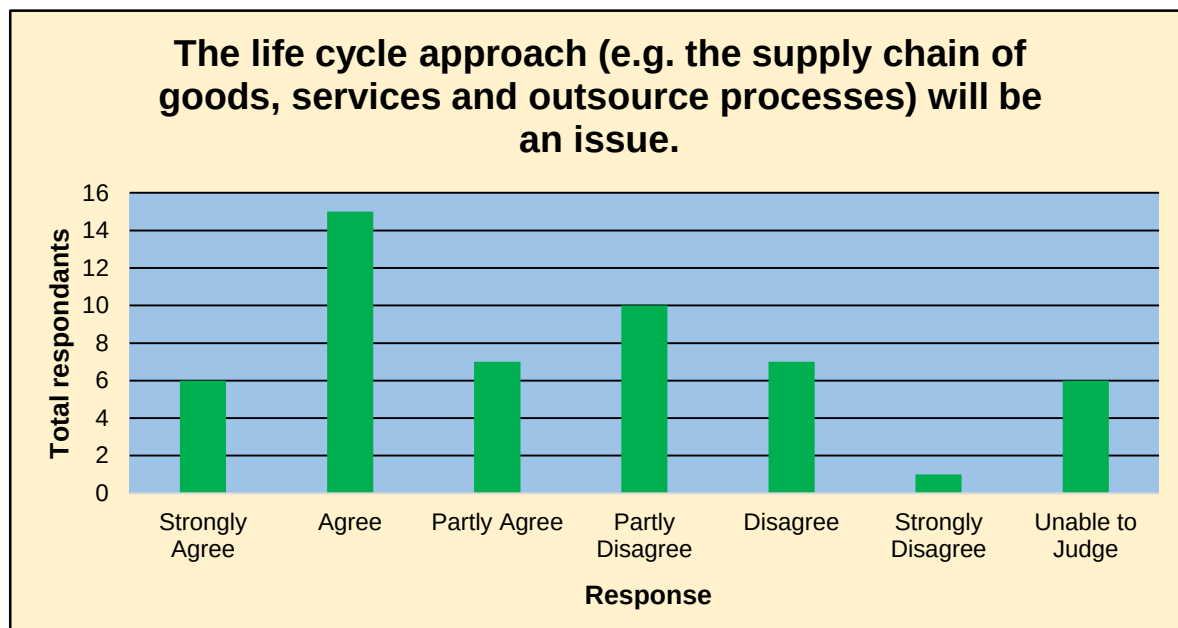


Figure 4.18: Life cycle approach will be an issue

Interpretation 4.4 (f): According to ISO a detailed life cycle approach is not a requirement. ISO stated that the life cycle should be seen as a perspective rather than an assessment. A life cycle approach has an influence in how an organisation identifies its environmental aspects (services, products etc.) and how these aspects are controlled and addressed. There was a relatively scattered response from the participants regarding this statement. According to the abovementioned statement and the data received and analysed, 28 (54%) of the participants agree that the life cycle approach will be an issue. This could also be because the term was first introduced in the ISO 14001:2015 standard (Hammar, 2016) so it's a new term that most people should learn in order to implement it successfully. Therefore this term can lead to confusion but when implemented correctly, any organisation will benefit.

4.5.9 Q3.3.7: The new ISO14001: 2015 standard will lead to continual improvement of environmental performance

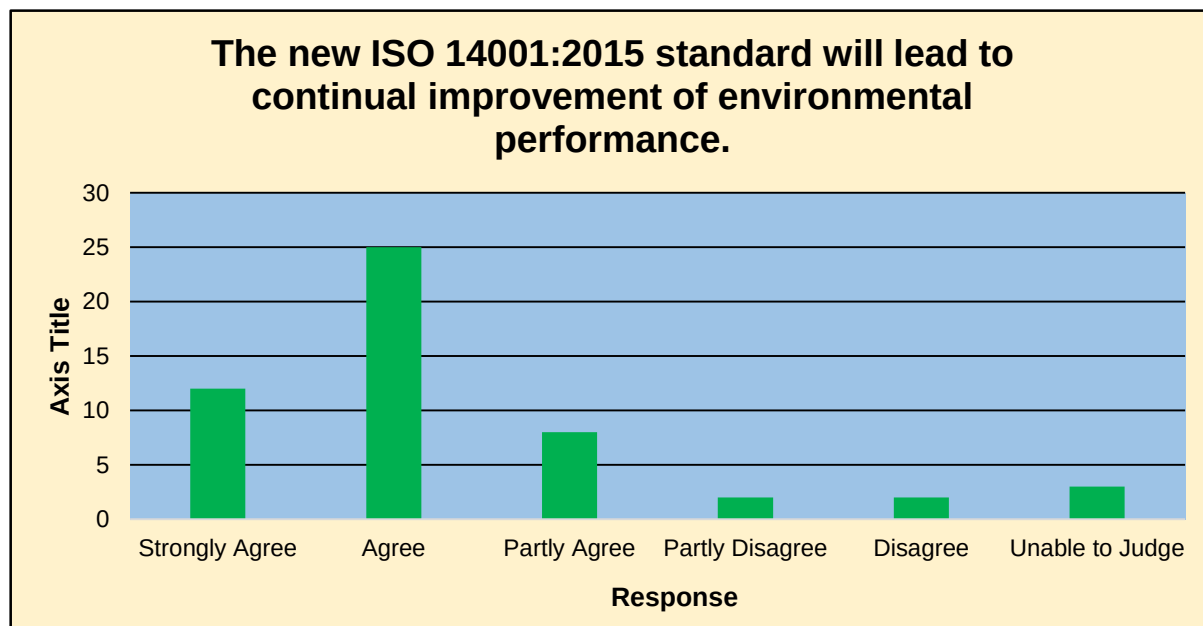


Figure 4.19: ISO 14001:2015 will lead to continual improvement

Interpretation 4.4 (g): Continual improvement according to ISO can be defined as "a recurring activity to enhance performance." The ISO 14001:2015 revision encourages continual improvement of environmental performance and could be considered one of the main principles. Continual improvement is a sub clause on its own (10.3) in the 2015 version which indicates that there is a great emphasis placed on this term. Organisations will need to focus more on improving suitability, adequacy and effectiveness of the EMS in order to enhance environmental performance. Of the responding participants, 44 (85%) strongly agree, agree and partly agree on this statement whereas only 4 (8%) disagree. Continual improvement of environmental performance is a good principle to enhance in any organisation and the results regarding this statement is evidence that most participants agree.

CHAPTER 5: CONCLUSION AND RECOMMENDATIONS

The aim of this master's thesis was to explore the risks and opportunities of the ISO 14001:2015 transition process for South African environmental practitioners with a view to increasing knowledge of what the real risks and opportunities were for South African environmental practitioners and how these practitioners would cope with organisational change as it became an integrated part of an organisation's management system. Two secondary objectives were formulated in order to realise the aim of the study. The first was to conduct an extensive literature review on the evolution of ISO 14001 and to determine the internationally-viewed risks and opportunities of the ISO 14001:2015 transition. The review also involved determining what changes to the previous standard had been introduced in the new one, what these changes were and why changes would continue to take place in the future.

The second objective was to explore the risks and opportunities of the ISO14001:2015 transition process for South African environmental practitioners. Survey questionnaires and semi-structured interviews were used to gather data on the perspectives of South African environmental practitioners regarding the ISO 14001:2015 transition.

5.1 Conclusion

Many reasons emerged for which organisations seek ISO 14001 certification. This study revealed that many risks and opportunities are perceived, both internationally and among South African environmental practitioners. In September 2015 a new revision, ISO 14001:2015, was released to replace the 2004 version, with a three-year transition phase for certified organisations, which ends in September 2018. Additional resources will be required in order to generate an understanding of future changes; therefore knowledge of these changes is an important requirement regarding the transition (Jensen & Bondesson 2016).

To accurately identify the risks and opportunities of the ISO 14001:2015 standard, it was necessary to first explore what the shortcomings and benefits were of the previous 2004 standard. If the shortcomings and benefits had not been explored or identified, how could the standard have been improved? These shortcomings and benefits were discussed in chapter 4 and it was important to consider them in order to plan effectively for the implementation of ISO 14001:2015. The questionnaire included questions regarding the 2004 version in order to identify the shortcomings and benefits of ISO 14001:2004. The reason for this was to firstly identify these shortcomings and benefits and secondly to determine how the 2015 revision addressed the shortcomings and increased the benefits. According to Jensen & Bondesson (2016), the ISO 14001:2004 standard helped organisations to structure their work process, but it was time consuming to implement; management and employees allocated a great deal of time to documentation and the knowledge of ISO 14001 varied among managers. This statement was echoed by the shortcomings identified by South African environmental practitioners.

The risk of misuse is always going to be there and therefore if a standard is implemented without knowledge or awareness, training, effective leadership commitment, maintaining continual improvement and understanding the context of the organisation, the risk of misinterpretation and misuse is always going to be a possibility. One of the major shortcomings identified was the lack of meaningful public reporting regarding environmental impacts and performance. This has led to mistrust in the system and also enabled organisations to report only what they wanted to, with poor performance and major impacts being “swept under the rug”. The lack of performance standards did not allow for sufficient measurement and monitoring of impacts or performance and thus made it difficult to assess whether the desired outcome, namely continual improvement, was ever truly achieved. The lack of a standardised approach to goal and target setting, as well as problem solving, also led to instances of exploitation of certification status. Lastly, the high costs involved in the implementation and certification process deterred many small and medium enterprises from implementing the standard. Organisations in developing countries are especially affected by this, because a lack of certification can often impede their ability to conduct their business.

The new revision of the ISO 14001 standard will address some of these concerns, but not all of them. ISO 14001:2015 will retain the “Plan Do Check Act” (PDCA) approach, but there is an improvement in the balance between process and procedure. The format has been changed to match the flow of implementation better and a much larger focus is placed on performance. The new HLS will also make integration with other management systems easier, improving overall productivity and aligning environmental performance and issues better with the overall strategic direction of the organisation. Uniform terms and easier language will make the standard easier to understand and interpret, which could improve implementation and performance. Stakeholder engagement is improved in the new revision, but meaningful public reporting is still not a requirement, once again leaving the standard vulnerable to exploitation.

5.1.1 Conclusion regarding objective 1:

This aim of this study was to achieve two main objectives. Objective one: To do an extensive literature review on the evolution of ISO 14001, from the first to the current version, and to determine the internationally-perceived risks and opportunities of the ISO 14001:2015 transition. In chapter three an extensive literature review was done to explain the evolution of ISO 14001. The internationally-viewed risks and opportunities were identified. An explanation was provided of what the changes were, why the changes took place and why they will continue to take place in the future. By briefly examining the risks and opportunities, the majority of the risks and opportunities identified correspond to those listed by South African environmental practitioners.

5.1.2 Conclusion regarding objective 2:

Objective two: To explore the risks and opportunities of the ISO14001:2015 transition process for South African environmental practitioners. The perceptions of risks and opportunities inherent in the ISO 14001:2015 revision were gathered with the help of a survey questionnaire. This questionnaire was distributed to competent potential participants via email and LinkedIn and further information was gathered by means of semi-structured interviews. Fifty-two survey questionnaires were obtained in total, 25 from auditors and 27 from industry practitioners. Each participant's responses reflected his or her personal experience as they listed the shortcomings and benefits of ISO 14001:2004 and the risks and opportunities of ISO 14001:2015. Moreover, the risks and opportunities of the 2015 version were briefly compared to internationally-perceived risks and opportunities, in order to generate an understanding of what the international perspectives on risks and opportunities were compared to those identified by South African environmental practitioners.

Overall, the responses of the participants to the open-ended questions seemed to be relatively scattered. According to the risks and opportunities identified by environmental practitioners, this study showed that the majority thought that more opportunities than risks would ensue from implementation of the ISO 14001:2015 standard. However, as mentioned above, the risk of misuse is always present; therefore organisations need to ensure effective and honest implementation of the standard.

5.1.3 Final conclusion

As with all major changes, the transition will bring challenges of its own. Organisations have three years to implement the new standard, but new requirements regarding legal compliance and measuring and documenting performance might require competencies and skills not currently available to organisations. The costs of implementing the new standard will be high for organisations seeking to gain or retain their certification. This could deter organisations or have financial implications that could damage the integrity of operations. However, continuous improvement is at the core of the standard; thus, once the new system is implemented, weaknesses can be identified and corrective actions planned and implemented in the next ISO 14001 revision. The 2015 standard requires a greater focus on leadership, so managers could improve their communication regarding their organisations' environmental work and this will lead to an increase in organisational knowledge, which will enable a better understanding of how to successfully work in accordance with the ISO 14001 standards. It is crucial that top management fully commit to the change and stay involved with the implementation process by receiving education and leadership training regarding the revision. The leadership training will enable top management to communicate the changes better, increase organisational knowledge among employees, aim for sustainability and strive for continual improvement.

Finally, the aim of the study was to achieve two objectives in order to solve the problem that the risks and opportunities for certified organisations inherent in the ISO 14001:2015 transition process were not yet understood by South African environmental practitioners. The objectives of the study have been met and therefore the initial problem has been solved.

Key learning gained from this research study is that ISO 14001:2015 requires a philosophical transition. The changes to the standard will provide real opportunities for any organisations and their EMSs in order for them to evolve and align with changing business priorities. It will therefore be interesting to see whether certified organisations will embrace these much improved changes or simply use a “tick the box” approach in order to gain customers, impress stakeholders and build an image in the marketplace.

5.2 Recommendations

The following recommendations are offered for related or future research regarding the ISO 14001 EMS. These recommendations are based on shortcomings identified in the literature and in the empirical research findings. An overall need for research is that most environmental practitioners are not familiar with the risks pertaining to ISO 14001:2015 because the standard has not been widely implemented yet. Therefore an appropriate study would be to critically evaluate or explore what the challenges are after the revision and when the 2015 standard is fully implemented. Most of the respondents said that the high cost would be a problem; thus one research topic one would be to determine whether the transition to ISO 14001:2015 was worth the costs or not.

Another research recommendation is to investigate whether the increase in leadership commitment was successful by conducting interviews with certain organisations and their employees, as well as top management. Input from all parties would enable one to determine whether top management was actually at the centre of decision making and to test their knowledge of ISO 14001:2015, which is, after all, one of the standard's requirements.

It might also be of interest to consider conducting a study on the actual role of the environmental manager, specifically related to the industry. Environmental work seems to lean more towards the concept of a marketing tool in order to land more projects and customers within industries. The goal of industries certifying their EMSs to ISO 14001 is not always to reduce their environmental impact, but it enables the organisation to move forward in terms of enhanced environmental thinking in everyday production (Jensen & Bondesson 2016).

To reflect back on the study, each participant completed the survey questionnaire during the transition phase. Not all of the participants had received training on the new version and therefore it will be a challenge to see how organisations cope once the relevant organisations are certified. It will be interesting to see how the risks and opportunities listed by environmental practitioners differ from the challenges and benefits of ISO 14001:2015 once the standard has been implemented. Another interesting point will be to

see how audits will change in the coming years as auditors gain more experience of the 2015 standard and organisations will have to show how they have made progress in the new areas. A follow-up study on the expectations vs. experiences of ISO 14001:2015 is therefore recommended for future research.

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ANNEXURES

ANNEXURE A: COVERING LETTER

Risks and opportunities of the ISO14001: 2015 transition process - perspectives from South African environmental practitioners.

I am currently a master's candidate in Geography and Environmental Management at the North West University (Potchefstroom campus) under the supervision of Dr Jan-Albert Wessels.

The third revision of the ISO 14001-based Environmental Management Standard (EMS) adopted a High Level Structure (HLS) and may offer many opportunities but also pose risks for organisations. Organisations might respond in different ways to harness these opportunities and to deal with the potential risks. This study, therefore, explores the risks and opportunities that the ISO 14001:2015-based EMS holds for organisations in South Africa.

Objectives:

- 1) To do an extensive literature review on the evolution of ISO 14001, from the first to the current version, and to determine the internationally viewed risks and opportunities of the ISO 14001:2015 transition.
- 2) To explore the risks and opportunities that the ISO14001: 2015 transition process have for South African environmental practitioners.

The document presented to you is a survey designed to gather the necessary data to assist me in obtaining a master's degree. Your expertise will be of significant value to this research project.

Your inputs are much appreciated and I thank you for your time and effort in completing the survey.

Yours sincerely

Lloyd Vermeulen

lloydver77@gmail.com

Master's Candidate

North West University (Potchefstroom Campus)

ANNEXURE B: EXAMPLE OF SURVEY QUESTIONNAIRE

PART 1: DEMOGRAPHIC DATA OF ISO 14001 PRACTITIONERS

1. What organisation or industry are you representing? (If you want to disclose this information)

2. How much working experience do you have in the environmental field? (Choose 1 only)

Less than 5 years ☐ 5-10 years ☐ 10-15 years ☐

15-20 years ☐ More than 20 years ☐

3. How many years have you worked with ISO 14001-based systems? (Choose 1 only)

Less than 5 years ☐ 5-10 years ☐ 10-15 years ☐

15-20 years ☐ More than 20 years ☐

4. Approximately how much of your working time do you spend directly on ISO 14001 related activities?

None of my working time ☐ Up to 25% ☐ Between 25 and 50% ☐

Between 50 and 75% ☐ Between 75 and 100% ☐ 100% ☐

5. Have you received any awareness and/or competency training on the ISO 14001:2015 standard?

Yes ☐ No ☐

PART 2: ISO 14001:2004 STANDARD – PERCIEVED CHALLENGES AND BENEFITS

In your experience, what do you consider to be the key shortcomings of the ISO 14001:2004 standard? List any number with one being the most severe shortcoming.

2.1 In your experience, what do you consider to be the key benefits of the ISO 14001:2004 standard? List any number with one being the greatest benefit.

PART 3: ISO 14001:2015 – PERCEIVED RISKS AND OPPORTUNITIES

3.1 In your opinion, what are the main risks of implementing the ISO 14001:2015 standard? List any number, with one being the greatest risk.

3.2 In your opinion, what do you think are the major opportunities of the ISO 14001:2015 standard? List any number with one being the greatest opportunity.

3.3 To what extent do you agree or disagree with the following statements regarding the transition and implementation of the ISO 14001:2015 standard?

3.3.1) The organisation will need to incur high costs to maintain ISO 14001:2015 certification.

<i>Strongly</i>		<i>Partly</i>	<i>Partly</i>		<i>Strongly</i>	<i>Unable</i>
<i>Agree</i>	<i>Agree</i>	<i>Agree</i>	<i>Disagree</i>	<i>Disagree</i>	<i>Disagree</i>	<i>to Judge</i>
☐	☐	☐	☐	☐	☐	☐

a) Explain your answer

3.3.2) Competency of employees responsible for implementing transition to the ISO 14001:2015 standard will be a challenge.

<i>Strongly</i>		<i>Partly</i>	<i>Partly</i>		<i>Strongly</i>	<i>Unable</i>
<i>Agree</i>	<i>Agree</i>	<i>Agree</i>	<i>Disagree</i>	<i>Disagree</i>	<i>Disagree</i>	<i>to Judge</i>
☐	☐	☐	☐	☐	☐	☐

a) Explain your answer

3.3.3) Understanding the context of the organisation and its relationship with interest groups, stakeholders, customers and communities will be an issue.

<i>Strongly</i>		<i>Partly</i>	<i>Partly</i>		<i>Strongly</i>	<i>Unable</i>
<i>Agree</i>	<i>Agree</i>	<i>Agree</i>	<i>Disagree</i>	<i>Disagree</i>	<i>Disagree</i>	<i>to Judge</i>
☐	☐	☐	☐	☐	☐	☐

a) Explain your answer

3.3.4) The ISO14001: 2015 standard will ensure that top management is at the centre of implementation and enforcement of the standard.

<i>Strongly</i>		<i>Partly</i>	<i>Partly</i>		<i>Strongly</i>	<i>Unable</i>
<i>Agree</i>	<i>Agree</i>	<i>Agree</i>	<i>Disagree</i>	<i>Disagree</i>	<i>Disagree</i>	<i>to Judge</i>
☐	☐	☐	☐	☐	☐	☐

a) Explain your answer

3.3.5) The ISO14001: 2015 standard will ensure that environmental risks and opportunities are viewed or considered at a higher strategic business level.

<i>Strongly</i>		<i>Partly</i>	<i>Partly</i>		<i>Strongly</i>	<i>Unable</i>
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Agree Agree Agree Disagree Disagree Disagree to Judge

☐ ☐ ☐ ☐ ☐ ☐ ☐

a) Explain your answer

3.3.6) The life cycle approach (e.g. the supply chain of goods, services and outsource processes) will be an issue.

Strongly Partly Partly Strongly Unable
Agree Agree Agree Disagree Disagree Disagree to Judge

☐ ☐ ☐ ☐ ☐ ☐ ☐

a) Explain your answer

3.3.7) The new ISO14001: 2015 standard will lead to continual improvement of environmental performance.

Strongly Partly Partly Strongly Unable
Agree Agree Agree Disagree Disagree Disagree to Judge

☐ ☐ ☐ ☐ ☐ ☐ ☐

a) Explain your answer

PART 4: ANY FURTHER COMMENTS

8. Do you have any other comments related to the risks and opportunities of the ISO 14001: 2015 standard?

ANNEXURE C: LIST OF TOTAL SHORTCOMINGS AND BENEFITS OF ISO 14001:2004

INDUSTRY:

Shortcomings	Benefits
Lack in management commitment and resources.	Responsible environmental management.
Consistency between users implementing ISO 14001:2004.	Reduce liability from environmental incidents.
Lack of meaningful public reporting.	Saving on operational costs.
Not completely mandatory.	Standard helped to identify risks. (Risk-based approach).
Does not provide organisations with tools to solve complex problems.	Allows organisations to implement and monitor controls.
Focussed heavily on documentation.	Key focus on keeping evidence of compliance.
Legal and other requirements were not that extensive.	Non-conformances and emergency procedures were dealt with.
Targets and objectives were subjective.	Clear requirements of procedures.
Too much room for interpretation.	Availability of standardised environmental management and performance evaluation.
No clear indication of how to scope the EMS system.	Improved environmental performance although it may be on an “ad hoc” basis.
No life cycle considerations.	Objectives played a role in ensuring the common goal of an organisation.
Only one management representative.	Helps organisations to manage aspects, legal and other requirements.
The 2004 standard could be more holistic.	Activities are controlled in terms of their impacts.
Willingness and long term commitment to adapt.	Reduction of harmful impacts on the environment.
Lack of external auditing.	Enhanced credibility among customers.
Maintaining of processes but not necessarily improved outcomes.	Overall safety is improving.
Internal and external transparency, which weakens compliance success.	Access to new markets and jobs.
Did not consider opportunities, only risks.	

Did not promote a process approach.	
Allowed organisations to “Ring Fence” the scope of the management system to evade effective implementation.	
Management not taking ownership	
Management of change is not effectively addressed.	
Not enough human resources to ensure success.	
Difficult to interpret the organisations environmental impacts.	
Too many organisations find loop-holes to bypass the standard.	
Bribing of officials in order to, not comply with the standard.	
Focus was more on ecological environment as opposed to the inclusion of social and economic aspects.	
Driven by management representative rather than management.	

AUDITORS:

Shortcomings	Benefits
Health and safety was still a big challenge, although there was a strong emphasis placed on health and safety.	Organisations reduce their environmental impact.
It was a conformance-based standard rather than a performance-based standard.	It is a standard organisations and contractors can adhere to.
Legal performance could not be audited or checked.	It ensured awareness of environmental matters to staff.
Very secretive. (Not transparent).	Certification auditing helped with validation to an extent.
Lack of meaningful public reporting.	Puts the environment at the heart of corporate culture.
Took too long to review (10 years).	Increases overall efficiency.
Was mostly a paper exercise.	Assisted with legal compliance.

Weak on opportunities regarding the environment.	Reputational benefits.
Essential measure and outcomes (i.e. the reduction of energy consumption) were not supported by the management system.	Integrated approach to managing environmental issues.
Top management involvement not clearly included. Top management did not consider environmental matters at a strategic level.	Key focus on keeping evidence of compliance.
Interested and affected parties (IAP) not required to be identified.	Workers are offered a safer working environment.
Needs and expectations of IAP not required.	It is a strategy for improvement.
No mention made of the life cycle approach.	Provided a structured approach to managing the environmental aspects.
Only focussed on legislative requirements.	Raised awareness across organisations regarding environmental elements and their interaction.
Focussed heavily on documentation.	Monetary savings such as energy efficiency.
Internal goal setting.	Competition encouragement.
A very tunnel focussed system.	Voluntary system.
	Being ISO 14001 certified enhances business procedures.
	Sustainable operations as part of the business plans.

ANNEXURE D: LIST OF TOTAL RISKS AND OPPORTUNITIES OF ISO 14001:2015.

INDUSTRY

Risks	Opportunities
Organisation not willing to adapt to changes of the 2015 transition.	Greater involvement from top management due to increased leadership responsibilities.
Lack of understanding and managing “compliance obligations.”	Meeting the needs and expectations of interested parties.
More costs involved in proving and maintaining continual improvement.	Investors input and financial backing.
Difficult to get top management involvement in a large company.	Proactive initiatives.
Stakeholder engagement can lead to friction between communities and organisations.	Better commitment to sustainable development.
Focus on life cycle thinking, “Cradle to Grave” may not fully apply to all industries.	Broadening the concept of pollution prevention.
Increased costs regarding training. Training is also time consuming.	Forces organisations, auditors and responsible people to have more knowledge and broader understanding of the process
Competency of employees to cope with transition.	Better focus on high-level issues for organisations to meet their targets.
Not getting cooperation from external parties.	Performance-based continual improvement.
Will influence the procurement of products, services and activities.	Increased clarity and accessibility.
Lack of time dedicated to the management of integration complexity.	Entire EMS is seen as preventative action.
Remains a “top down” approach and therefore, opportunities for environmental improvement may be overlooked or disregarded.	Life cycle consideration.
Maintenance costs could be very high depending on the size of the organisation.	The opportunity to consider environmental change as a management factor, and to therefore adopt adaptive management strategies.
Engaging all parties to comply with the standard will be a challenge.	Streamlining and integration of EMS and implementation alongside other management systems (ex. ISO 9001).

Not effectively addressing positive impacts through opportunities identified.	Consistency for management systems across industries.
	Opportunity to reflect on and respond to complexity.
	Better understanding of the organisation in relation to internal and external interested parties.
	Opportunity for an organisation to improve level of compliance to environmental legal framework and contribute to the culture of preventative care.
	Improved regulatory compliance requirements.
	Provides reliable credentials about an organisation.
	2015 version can help organisations to develop an EMS that suits their activities and location.
	Sound governance.
	Opportunity for correctly addressing issues raised by interested and affected parties.

AUDITORS:

Risks	Opportunities
High Costs to implement the new standard.	Reduced risks and liabilities. Better emphasis on risk awareness.
The involvement and commitment from top management could turn into a risk because top management will now have to understand the total system.	Makes the adoption of a process approach in the implementation of a quality management system more explicit.
Lack of awareness and knowledge of the changes to the standard.	Continued environmental improvement and increase in clarity and accountability.
Implementing the system without proper knowledge and not properly understanding the process-based approach.	Accountability and increased involvement from top management. Management having to take a more active role in the management of the EMS – ensures that the EMS is not just the job of someone sitting in the corner's job.

Lack of transparency and leadership commitment.	Better understanding of compliance obligations.
Stakeholder engagement can be a risk.	Management of environmental impacts as part of the business processes.
Major risk of organisations using shortcuts early in the life cycle to reduce the closing phase costs.	Operational and emergency control measures implemented to minimise risks.
The impact of the system on the strategic direction of an organisation.	Monitoring and measurement of requirements.
Organisations are required to determine and document the risks and opportunities related to its environmental aspects and compliance obligations.	The new revision will force organisations to focus more widely on the context of what they are doing.
Not understanding the context of the organisation effectively.	The new revision will introduce the concept of proactive protection of the environment.
Not receiving buy in or support from top management.	The new revision will require leadership based on values and not just management playing the blame game based on procedures.
Training can be time consuming which takes away the productivity on other project tasks.	There is a bigger focus on the environmental performance of an organisation.
Top management thinking that the changes to the new standard are minor and not spending enough time implementing it properly and making sure everyone understands.	There is a better allocation of resources and time management.
Compliance obligations are broad and can be tricky to implement in the RSA context.	Better decision making.
	Increase in environmental status.
	Does not contain a clause with specific requirements for preventative action.
	Caters for all organisations.
	Increased commitment to sustainable development.
	Broadening the concept of pollution prevention.
	Extension of an organisation's environmental influence on the supply chain.

	The fact that risks, but also opportunities has to be defined.
	Identification of the needs and expectations of interested parties.
	Enhanced credibility among customers and peers.
	Reduction of harmful impacts on the environment.
	Improved relationships with stakeholder such as government agencies, community groups and investors.
	Better communication and networking.
	The link of strategic business thinking to environmental management.
	Having environmental management as part of the business process.
	Enhancement of environmental performance.
	Holistic approach to environmental management.