

# THE RELEVANCE AND IMPACT OF INTEGRATED MANAGEMENT SYSTEMS ON CONFORMITY ASSESSMENT IN CERTIFIED ORGANISATIONS: A CASE STUDY ON ACCREDITED CERTIFICATION

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## ABSTRACT

Recent studies have explored the capabilities of an effective quality management system based on the principles of ISO 9001 and ISO 14001. Whilst profit maximization is the ultimate goal for any profit-oriented organisation, it becomes obvious that there is also a compelling need for organisations to look at every aspect of their processes by implementing cost-cutting measures. These cost-cutting measures must include the well-being of employees, the working environment, and the impact that operations have on the surrounding community. It is for this need that ISO has developed and published internationally accepted standards such as ISO 9001 and ISO 14001 for Quality and Environmental Management Systems, respectively. In the quest for business excellence, the trends in modern business management points towards composite, comprehensive and integrated management systems (IMS) that ensure competitive performance in the global economy. As a result, establishing and integrating a relevant quality assurance system that complies with both ISO 9001 and ISO 14001 has emerged as a major challenge, usually leading to misinterpretation and misapplication of requirements. This research study, therefore, sought to investigate the relevance and impact of IMS on conformity assessment in Gauteng organisations certified to both ISO 9001 and ISO 14001. The findings of the study revealed that although the study was only limited to the Gauteng region, it provided objective evidence that IMS was relevant to conformity assessment activities in certified organisations. Furthermore, apart from the focus on overall system integration and improvement, the study has confirmed that IMS necessitates a unified problem solving approach through effective management reviews and internal audits. The study also concluded that the impact of IMS on conformity assessment activities was evident through customer satisfaction surveys, better allocation and deployment of human and information resources.

**Keywords:** Conformity assessment, quality management systems.

## INTRODUCTION

According to the study conducted by Rusjan and Alic (2010:276), product, processes and service quality are the most important factors affecting the survival of organisations. These authors confirmed that it is necessary for organisations to establish effective Quality Management Systems (QMS). They further confirmed that the International Organisation for Standardization (ISO) series of standards provide a framework for such systems. Whilst profit maximization is the ultimate goal for any profit-oriented organisation, it becomes obvious that there is also a compelling need for organisations to look at every aspect of their

processes. This organisation's self-evaluation calls for the implementation of cost-cutting measures, the well-being of their employees, the working environment, and the impact that operations have on the surrounding community. It is for this need that ISO has developed and published internationally accepted standards such as ISO 9001 and ISO 14001 for Quality and Environmental Management Systems, respectively. Khan and Rahman (2009:33) concur that, when compared together, both ISO 9001 and ISO 14001 standards are similar in many ways. As a result, organisations are taking advantage of these commonalities and are combining the two into one effective management system. The combination of the two systems therefore leads to the concept of a single Integrated Management System (IMS). While there has been a growing attention to IMS, no literature has been reported regarding the impact of IMS in meeting the requirements of Conformity Assessment Bodies (CABs). Thus, as the strategy of IMS becomes widespread, methods and criteria of their conformity assessment assume a more critical approach from a CAB's point of view. Of equal importance is the strategic evaluation approach that would ensure that requirements of each integrated management system are fulfilled by CABs. This research study, therefore, sought to investigate the relevance and impact of IMS on conformity assessment in Gauteng organisations certified to both ISO 9001 and ISO 14001.

### **Background to the study**

The ISO Survey on certification conducted in 2012 revealed a healthy growth of ISO 9001 and ISO 14001 certifications in South Africa. The figures in this survey exhibit a total of about four thousand (4000) ISO 9001 and nine hundred (900) ISO 14001 certificates in South Africa alone (ISO survey: 2012). The study conducted by Khan and Rahman (2009:33) indicates that the trends in modern business management point towards composite, comprehensive and IMS. These authors also indicate that IMS ensures competitive performance in the global economy in the quest for business excellence. As a result, it has become evident that establishing and integrating a relevant quality assurance system that complies with both ISO 9001 and ISO 14001 has emerged as a major challenge for practicing managers within certified organisations. These challenges usually lead to misinterpretation and misapplication of requirements from a conformity assessment point of view (Khan and Rahman, 2009:33). ISO International Standards are being used world-wide to ensure that products and services are safe, reliable and of good quality. For a business, these standards are used as strategic tools to reduce costs by minimizing waste and errors, and increasing productivity. According to ISO/IEC 17011 (2004:3), the focal point of business managers' attention and responsibilities have changed over the years. This change has broadened from only the quality of products and services (ISO 9001) to also include environmental management (ISO 14001), workplace health and safety, production and operations management. This approach has enabled ISO certified organisations to access new markets and facilitate free and fair global trade (ISO/IEC 17011, 2004:3). Van der Heuvel, Koning, Bogers and Van Dijen (2005:362) maintain that building an IMS requires desired business outputs to be clearly defined so that a set of interrelated processes can drive business objectives. Such integration still requires individual systems to be managed while at the same time achieving the objectives of the overriding system and meeting conformity assessment requirements. Unfortunately, there are no documented guidelines alluding to the effective harmonization of the two standards for enabling achievement of business objectives using IMS while at the same time meeting requirements of CABs. Van der Heuvel *et. al.* (2005:362) indicate that difficulties are also faced in the implementation of IMS for organisations that have diverse business scopes. To date, no formalised strategies could be traced in literature for aligning CABs requirements with the effective implementation of IMS.

## The research problem

As per the background above, developments towards IMS call for a clear conception and definition of what IMS really is, its relevance to certified organisations and the impact it has on conformity assessment requirements. To date, there are no guidelines suggesting that such a system is properly conceived and defined. ISO/IEC 17011 (2004:3) confirms this and alludes to the following as some of the current challenges associated with establishing such a system:

- ISO 9001 customers are individuals purchasing a product or service and ISO 14001 customers are the general public, local communities and the government – therefore harmonising the two standards is a challenge due to these inherent differences in the scope of application,
- Differences in management methods for the two standards, i.e. Project management for ISO 14001 and process management for ISO 9001 – inter-functional conflict because of varying interests, scope of application and motivation,
- Organisations implementing the two standards separately find themselves having more audit man-days for maintaining individual systems from CABs and this implies elevated administrative costs as opposed to implementation of IMS,
- There is generally a prominent misunderstanding by organisations about the benefits that IMS could bring to the business value chain without diluting the requirements of individual standard,
- Certified organisations have usually limited documenting IMS to simply combining similarities of the two standards (ISO 9001 and ISO 14001) without really aligning these to the organisation's business objectives.

## Aim of the study

The aim of this research study is therefore to investigate the relevance and impact of integrated management systems (IMS) on conformity assessment in certified organisations, with particular attention given to accredited certification.

## Research objectives

The objectives of the study are as follows:

- To investigate the relevance of integrated management systems (IMS) on conformity assessment in Gauteng certified organisations,
- To investigate the benefits that Gauteng certified organisations are deriving from IMS implementation,
- To investigate the impact IMS implementation has on service delivery, and
- To provide recommendations to CABs in approaching IMS audits, certified organisations for implementing an effective IMS without diluting individual requirements of each integrated standard and Accreditation Bodies (ABs) for approaching IMS assessments.

## Research questions

- What is the relevance of integrated management systems (IMS) on conformity assessment in Gauteng certified organisations?

- What are the benefits that Gauteng certified organisations are deriving from implementing integrated management systems (IMS)?
- What impact does IMS implementation have on service delivery?
- What recommendations can be provided to CABs, certified organisations and ABs for handling IMS without diluting individual requirements of each integrated standard?

### **Significance of the study**

The outcome of this research study would contribute to the consistency of planning and delivery of IMS audits by CABs, proper planning of IMS witnessed audits by the Accreditation Body (AB) such as SANAS. The outcome of this study would also broaden SANAS Assessors' knowledge on other certification management systems and facilitate the development of elaborated strategies in auditing IMS by CABs. The introductory remarks above have highlighted that effective integration of management systems into an organisation's value chain has become a key factor for achieving and maintaining superior quality performance. Whilst IMS is found to be a critical dimension to quality excellence, meeting requirements of CABs is just as important. The need to pursue this line of research was legitimized largely because of the growing importance of IMS to yield sustainable global competitive advantage for certified organisations.

### **LITERATURE REVIEW**

This section describes and elaborates on theoretical implications of quality and environmental management systems that informed the initiation of this research study. Polit, Beck and Hungler (2004:48) concur with the notion that a thorough literature review provides a foundation on which to base new knowledge. It is for this reason that current literature on the research topic was analysed and key principles identified and used as a framework for this study.

### **Evolution of TQM in a workplace**

One issue that is still controversial from the literature on TQM is the definition of quality. To date, there is no consensus on this definition (Wicks, 2009:83). According to Kelemen (2005:8), quality has different meanings to different people in different institutions, public or private, depending on their specific perspective and is a fundamental component in the formulation of strategies by organisations. It is clear from this notion that quality calls for, firstly analysing and understanding what quality means before unpacking the concept of TQM in an operations environment. According to Reed, Lemark and Mero (2000:5) quality is what is defined by the end user and can be measured more precisely when outlined as conformance to specifications with the aim of meeting and exceeding consumer expectations. This definition presents an element of measurement and management and since quality is an attribute that can be measured, it can therefore be managed by everyone involved in the process. Hence the concept TQM. The Institute for Supply Management (ISM) defines TQM as "managing the entire organisation so that it excels on all dimensions of products and services that are important to the customer". It is clear from this ISM definition that TQM is an organisation-wide process where everyone participates with the aim of meeting customer requirements under conditions that foster quality to be implemented. It is necessary to understand the application of TQM concepts in the modern day operations and look back at the philosophies of notable individuals who pioneered and shaped the evolution of TQM. Their philosophies have contributed to our knowledge and understanding of quality today.

The focus has since shifted from inspection to customer- driven quality over the years. The current trend in South Africa for instance is such that the customer defines quality and their needs must be met (an example is the enforcement through the Consumer Protection Act No 68 of 2008). This requires that organisations consider quality both from a producer and customer point of view. Thus product design must take into consideration the production process in order that design specifications and customer requirements can be met. The main contributions of these theorists are:

<b>Quality Theorist</b>	<b>Contributions</b>
Walter A. Shewart	Developed concept of statistical control charts for understanding process variability.
W. Edwards Deming	Developed “14 points” to guide companies in quality improvement and stressed management’s responsibility for quality.
Joseph M. Juran	Developed concept of cost of quality and defined quality as “fitness for use”.
Armand V. Feigenbaum	Introduced concept of “total quality control”.
Philip B. Crosby	Introduced concept of “zero defects” and coined phrase “quality is free”.
Kaoru Ishikawa	Developed cause and effect diagrams and identified the concept “internal customers”
Genichi Taguchi	Developed “Taguchi loss function” and focussed on product design quality

Source: Adapted from TQE (2013)

In general, ideas that were brought about by these theorists could be attributed to two schools of thought, namely; the technical dimension of quality such as statistical control charts, and the human and management dimension. One thing in common that stands out from these contributions is that management and the system, rather than workers, are the cause of poor quality. This is further elucidated by the concepts and derived main ideas by these theorists as illustrated below.

<b>Concept</b>	<b>Main idea</b>
Customer focus	Goal is to identify and meet customer needs
Continuous improvement	A philosophy of never-ending improvement
Employee Empowerment	Employees are expected to seek out, identify and correct quality problems.
Use of quality tools	On-going employee training on the use of quality tools.
Product design	Products need to be designed to meet customer expectations.
Process management	Quality should be built into the process; sources of quality problems should be identified and corrected.
Managing supplier quality	Quality concepts should extend to company’s suppliers.

Source: Adapted from TQE (2013)

### **The international organisation for standardization (ISO)**

Contrary to what the name suggests ISO is not a typical international organisation, but rather a transnational private network of standards committees (ISO 9001, 2008:iv). Rusjan and Alic (2010:276) confirm that ISO’s international standards are technical specifications for the design, dimensions and performance of products and processes. Van der Heuvel *et al.* (2005:362) maintain that international standards are meant to create a common language between producers, suppliers and consumers, even if the parties do not have any personal



contact at all. Van der Heuvel *et. al.* (2005:362) further suggest that ISO series of standards are designed to be generic in nature and could be applied to any organisation anywhere and of any size. Gutierrez and Perez (2010:576) support the above arguments as they maintain that international standards clarify expectations and allow for control of products and services.

### **Quality Management Systems based on ISO 9001**

According to Rusjan and Alic (2010:278), fast changing technologies and globalization of markets demand a process-oriented QMS. Rusjan and Alic (2010:278) also maintain that a well-established QMS provides an organisation with a mechanism for continuous assessment and improvement. The British Assessment Bureau (BAB) (2014) concurs with the notion that ISO 9000 series of standards were useful during World War II when the British Ministry of Defence sought to reduce mistakes and incidents in the manufacturing of ammunitions. According to BAB (2014), ISO established technical committee 176 ('Quality management and quality assurance') in 1979 and published the first standard in 1987. Moreover, the best-known standard of this series, ISO 9001, was initially intended for manufacturing, but has evolved into a generic methodology for improving and controlling quality that can be applied to all types of organisations and sectors. According to the ISO Survey (2013), there has been a respectable increase in the number of ISO 9001 certificates, exhibiting a total of 1129446 certificates in 187 countries globally. One trend from 2012 highlights a steady growth of 3% of ISO 9001 certificates issued worldwide. This result demonstrates that ISO 9001 certification continues to spread through the global market. This International Standard, ISO 9001 (2008:1), specifies requirements for a quality management system where an organisation:

- Needs to demonstrate its ability to consistently provide product that meets customer and applicable statutory and regulatory requirements, and
- Aims to enhance customer satisfaction through the effective application of the system, including processes for continual improvement of the system and the assurance of conformity to customer and applicable statutory and regulatory requirements.

The ISO 9001 (2008:v) promotes the adoption of a process approach when developing, implementing and improving the effectiveness of a quality management system. This is necessary to enhance customer satisfaction by meeting customer requirements. The model of a process-based approach, in figure 2.1, shows that customers play a significant role in defining requirements. This model also indicates that inputs and monitoring of customer satisfaction requires the evaluation of information relating to customer perception as to whether the organisation has met the customer requirements. The findings of the study conducted by Evangelos, Psomas and Kafetzopoulos, (2013:146) confirm the dimensionality of the ISO 9001 effectiveness and reveal its significant contribution to the performance of the service companies. Evangelos *et. al.* (2013:146) also revealed that the product or service quality and operational performance of companies are directly and significantly influenced by ISO 9001 effectiveness.

### **Environmental Management Systems based on ISO**

The second major step in ISO's expansion was the decision in the 1990s to start development on the ISO 14000 series of standards for environmental management. According to BAB (2014), the ISO 14001 standard was published in its first revision in 1998. The initiative to set up the technical committee 207 ('Environmental management') came from industry representatives as a reaction to growing environmental concerns and to pre-empt governmental regulation. According to Daniele and Weissinger (2012:7), at the time of ISO

14001 publication there were a number of significant environmental threats to the future of humanity. These threats included “global warming” of the earth’s surface and lower atmosphere, depletion of the stratospheric ozone layer, over-consumption of non-renewable resources and global air-pollution. Protection of the environment has become of increasing importance to any organisation. According to the ISO Survey (2013), there has been a notable increase in the number of ISO 14001 certificates, exhibiting a total of 301647 certificates in 171 countries globally. On trend from 2012, this highlights a steady growth of 6% of ISO 14001 certificates issued worldwide.

### **General expected outcomes of certification to ISO 9001 and ISO 14001**

The fast changing business technologies and globalization of markets demand a more robust process-oriented management system. According to ISO and the international accreditation forum (IAF) (2010), ISO 9001:2008 and ISO 14001:2004 form an excellent base for a company’s management system. These standards improve internal sequences and processes and also promote the protection of the environment (ISO and IAF 2010:1). ISO and IAF (2010:1) also confirm that customers have made certification of a management system a confession towards good quality practices in meeting end-user requirements and continuous improvement. Furthermore, it has become very important that companies demonstrate compliance with quality and environmental requirements in order to win the confidence of customers, employees, legislative authorities, investors and the public in general. Moreover, in order to achieve conforming products, it is expected that the organisation has ensured the availability of resources necessary to support the operation and monitoring of organisational processes. According to Walker (2013) management systems emphasis is strongly on product realization activities which includes process identification. While Jungmittag and Mangelsdorf (2010) support these remarks, they also seem to suggest that such a description is sufficient for the purpose of understanding the main external interfaces of an organisation and locating it in the industry value chain. Depending on the industry and specific characteristics of the organisation, other factors such as the company organisational structure, characteristics of the competition and the regulatory environment also play a role in product realisation activities. It is because of this notion that management systems should be entrenched within the business value chain and not override it.

### **Conformity Assessment Bodies (CABs)**

According ISO/IEC 17021 (2011:vi), conformity assessment involves a set of processes that show that a product, service or system meet the requirements of the applicable standard. In addition, in the field of conformity assessment, the ISO committee on conformity assessment (CASCO) develops international standards and guides. According to ISO/IEC 17021 (2011:vi), certification of a management system, such as a ISO 9001 and ISO 14001, provides assurance that the organisation has implemented a system for the management of the relevant aspects of its activities, in line with its policy. Hence, bodies responsible for ensuring that these requirements are met are called conformity assessment bodies (ISO/IEC 17000, 2004:5).

### **Accreditation Bodies (ABs)**

ISO/IEC 17011 (2004:1) defines accreditation as a third-party attestation related to a conformity assessment body conveying formal demonstration of its competence to carry out specific conformity assessment tasks. Rusjan and Alic (2010:757) hold that in the regulatory

sector, government authorities implement laws covering the approval of products (including services) for reasons of safety, health, environmental protection, fraud prevention or market fairness. These authors also confirm that, in the voluntary sector, many lines of industry have set up systems for conformity assessment and approval, enabling comparability, and also ensuring competition on equal terms. In today's society it is often required to state objectively conformity of products or services to specified requirements. Rusjan and Alic (2010:757) highlight that CABs can objectively state such conformity. It is important for the purchaser, regulator and the public to know that these CABs are competent to perform their tasks. For this reason there is an increasing demand for impartial verification of their competence. ISO/IEC 17011 (2004) indicates that such verification is done by CABs that are impartial in relation to both the CABs and their clients, and which normally operate in a non-profit distributing manner. In the Republic of South Africa (RSA), the South African National Accreditation System (SANAS) is an example of such a body.

### **The Integration of Management Systems**

The need for an integrated management system (IMS) has always been influenced by the drive to have a single thriving system that is all-encompassing (Renzi and Capelli, 2000:851). Relevant literature on this subject suggest that integration of systems such as ISO 9001 and ISO 14001 have never been straight-forward (Renzi and Capelli, 2000:849). Of particular interest and although more than ten years old, research activities conducted by Wilkinson and Dale (2002:771) indicate that:

- There still exist differences in understanding what integration of two management systems mean,
- For system certification purposes, documentation is being combined using similarities in the structure and content of these two standards and this is not always obvious,
- Differences in application of the systems being integrated could hinder their integration and that
- Organisational culture is an important issue when integrating management systems.

This research study explores solutions to questions associated with the convenience and relevance of having an IMS, as well as considering the benefits and costs of implementing such a unified management system.

### **The relevance and principles underlying IMS**

According to Jorgensen, Remmen and Mellado (2006:714), the standards of quality and environment protection management have a very similar structure. They also maintain that the main condition which allows implementing different management systems is a united conceptual approach to the nature of organisational management. In other words, integrated management systems are principally developed on the basis of similarities and this is made possible through shared resources, unified organisational structure and combined work processes (Karapetrovic and Casadesus, 2009:537).

### **The benefits and challenges of Integration of Management Systems**

There have been many research studies investigating organisations' motivations for certification of management systems, their implementation experiences and the benefits derived from implementing such studies (Asif, Fischer, de Bruin and Pagell, 2010; Bernardo, Casadesus, Karapetrovic and Heras, 2009; Zutshi and Sohal, 2005; Douglas and Glen, 2000). It is worth noting that benefits highlighted in the above citations presented improvements



related to substantial cost savings, improved customer satisfaction, brand loyalty, enhanced operational efficiency and employee motivation. Furthermore, the following reasons were also highlighted in the above citations as to why implementation of IMS was beneficial for organisations:

- It allows the organisations to decrease the extent of documentation and bureaucracy which arises due to work organising and control, referring to separate procedures or different standards;
- It allows saving resources, entrusting the management of the integrated management system to one leader instead of appointing separate leaders to each and every management system, including the certificated one;
- It facilitates carrying out an internal and external audit more clearly and effectively;
- It promotes concentrating on the organisation's activity improvement and the strengthening of connections between quality, employee health and environmental protection.

Despite these benefits, challenges that emerge are related to lack of human resources and the dilution of individual standard requirements (Karapetrovic and Casadesus, 2009:539). Wilkinson and Dale (2000:772) highlight the aspect of organisational culture in IMS implementation as one of the reasons behind the success (or failure) of any implementation. Zutshi and Sohal (2005:213) concur with the above and note that 'to practise an integrated system it is essential that the organisation has a culture that is willing to embrace change'.

### **The impact of IMS implementation on service delivery**

According to Jorgensen et al. (2006:718), a single management system that is coordinated by a multidisciplinary team, thereby saving both financial and human resources, is a key issue for the future. Moreover, integration is considered to have a beneficial effect on the culture of the organisation as it promotes less departmental isolation between the various functions (Wright, 2000:138). According to Zorpas (2010:1544), small and medium-sized companies (SMEs) are considered to make up the vast majority of business on a global context. Furthermore, SMEs are quoted as contributing over 70% of global environmental pollution, with the majority coming from the manufacturing sector (Burke and Gaughran, 2007:698). In view of the above, Tsai and Chou (2009:1445) contend that creating a safe working environment for employees and improving the efficiency of work processes lead to higher recruitment attractiveness. While all such aspects are governed by ISO 9001 and ISO 14001 management systems, it is of great interest to integrate these systems into a single system (Jorgensen *et. al.* 2006:718). Many researchers from different countries have evaluated the implementation of IMS based on ISO 9001, ISO 14001 and OHSAS 18001. In Spain, for example, a study conducted by Bernardo *et. al.* (2009) revealed that a large number of companies (87% of 362 companies surveyed) have a great part of their management systems integrated. This pattern is in line with the findings of other researchers such as Karapetrovic and Casadesus (2009), confirming that organisations prefer implementation of IMS in order to avoid drawbacks associated with parallel management systems. The results of the study that was conducted by Zeng, Jonathan and Lou (2007) in China revealed that IMS implementation had a major impact on 61 out of 104 companies surveyed and this was a factor for competitiveness and survival. To date, no documented literature could be found citing the impact of IMS implementation within the Republic of South Africa (RSA) or Gauteng certified organisations. This is particularly significant given that a prerequisite for trade on equal terms is that any product/service, accepted formally in one economy, must also be free to circulate in other economies without having to undergo extensive re-testing, re-inspection or re-certification. Literature drawn from the above on trade facilitation concepts

has provided the framework for understanding the need for conformity assessment. However, at the same time, no literature reports could be identified where the focus was on the impact and relevance of IMS on conformity assessment from CABs and ABs perspective. Owing to the continued growing number of management systems based on the ISO 9001, IMS is certainly a relevant research topic. Clearly, IMS consists of certain underpinning values such as customer satisfaction, full participation of employees, leadership commitment, fact-based decision making and continuous improvement. It can therefore be concluded that IMS implementation process could be viewed from the perspective of three dimensions of change, that is, the content of IMS (WHAT), the context of IMS (WHERE) and most importantly HOW the process of IMS implementation impacts conformity assessment requirements. To date, no documented literature could be found that alludes to this final point.

## **METHODOLOGY**

The research design can be defined as the overall plan for conducting research which outlines procedures for collecting, analysing and interpreting data so as to answer research questions in order to provide useful information for decision-making (Malholtra, 2004:10). Page and Meyer (2003:21) concur that the research design is informed by the purpose of the study which could be descriptive, exploratory or comparative in nature to test specific hypotheses or predictions generated by theory. While exploratory research focuses on collecting information to assist in defining the problem, descriptive research focuses on the description of things (Cooper and Schindler, 2006:186). The focus in this study was descriptive research as it provided an accurate profile of the IMS situation as it exists, without manipulation or control of any elements involved.

### **The types of research methods**

According to Burns and Grove (2008:125), research involves establishing clear objectives at the beginning of the study and working towards obtaining evidence in line with these established objectives. Polit, D.F., Beck C.T. and Hungler, B.P. (2004:209) further contend that in research studies, the most appropriate method to the context and questions must be employed. Polit et. al. (2004:208) further state that research methodologies are simply techniques used in structuring a research study and facilitate gathering and analysis of collected data as part of the research investigation. According to Burns and Grove (2008:125), there are two fundamental research approaches, namely; qualitative and quantitative research methods and the description of each is given below.

### **Quantitative and Qualitative research approaches**

Quantitative research involves the use of numerical measurement and statistical analyses to examine social phenomena. Burns and Grove (2008:125) maintain that this approach places great premium on objectivity and reliability of findings and encourages replication. Burns and Grove (2008:127) further maintain that quantitative research focuses on empirical research comprising of numerical data. They further argue that this type of approach is indirect and abstract and treats experiences as similar, adding or multiplying them together, or quantifying them. Qualitative research, in contrast, argues that the world is socially constructed and that science is driven by human interest. Burns and Grove (2008:125) argue that good qualitative research is centred on the depth of understanding and richness of details. However, this is undermined by the subjectivity of the researcher and the poor reliability of

the findings. This is due to the fact that two researchers may arrive at different conclusions based on their observations of the same phenomena at the same time.

### **Rationale for the research methodology used**

Saunders, Lewis and Thornhill (2009:378-379) contend that quantification should not be used as a substitute for qualitative judgements since quantitative data does not exclusively provide any real understanding of respondents. Instead, Saunders *et. al.* (2009:379) argue that both qualitative and quantitative methods must be viewed as complementary to each other. However, given the sensitivity that goes with maintaining international recognition and accreditation requirements, this study exclusively made use of a quantitative research methodology. This approach was a necessary prelude to investigating the relevance and impact of IMS on conformity assessment in Gauteng certified organisations. The quantitative research approach enabled direct questions to be asked, data collected, analysed statistically and findings to be presented in a graphical fashion. However, Burns and Grove (2008:125) caution that this method requires stringent controls to identify the effects of external variables under study. As a result, a survey, using a research questionnaire that has been pre-populated with precise information suited to the objectives of this study was used to conduct the study. According to Saunders *et. al.* (2009:70), there are many research strategies available, namely: experiment, case studies, grounded theory, action research, ethnography, archival research and surveys. While most of these research strategies are associated with either natural sciences, inductive or quantitative approaches, the use of a survey was selected as the best research strategy for this study.

### **The Target Population**

Strydom, Jooste and Cant (2006:24) view a population as a single unit of a sample on which measurements and observations can be made. They further argue it is important that a small sample of the population be isolated so that generalisations about the entire population may be made.

### **The types of sampling**

According to Cooper and Schindler (2006:183), there are generally two broad categories of sampling designs, that is, probability and non-probability sampling. They maintain that probability sampling is based on the concept of random selection – a procedure that ensures that each element of the population is given a known chance of selection. Non-probability sampling, in contrast, is non-random, arbitrary, subjective and purposive in that the researcher may select the sample using criteria other than those associated with randomness of selection. The latter provides a range of alternative techniques based on subjective judgments, where elements from the population are not selected randomly but in a deliberate, consciously controlled manner, with prior design and purpose. Saunders *et. al.* (2009:79) caution that an ideal sample must be sufficiently large for representativeness, yet sufficiently small to satisfy economic requirements. These economic requirements include subject availability, the complexity of data analysis, time and monetary expenses incurred. The latest ISO Survey of certification conducted in 2013 revealed a healthy growth for ISO 9001 and ISO 14001 certifications in South Africa. This survey indicated a total of about four thousand (4000) ISO 9001 and nine hundred (900) ISO 14001 certificates in South Africa alone with more than 500 certificates in the Gauteng region. The method chosen for this research study was therefore the non-probability sampling strategy as all the above-mentioned certificates

are dispersed widely across South Africa. The Gauteng region was targeted as selecting the entire population would not be financially feasible and would make data collection management very complex. As a result, a survey questionnaire was directed to 130 certified organisations drawn from over 500 certificates in the Gauteng Province (ISO Survey, 2013:1).

### Data Collection Instruments

Saunders *et. al.* (2009:141) maintain that there are many different kinds of data collection methods such as questionnaires, focus groups and observation. The researcher was mindful that clearly worded and valid questions would facilitate accurate data collection and raise the data's reliability. Since the presentation of every question can impact on the response rate, the researcher opted to use mainly closed-ended questions that supplied alternatives from which the respondent would choose a response. The Likert rating scale was used in this research study to record responses. For each statement or question, the respondent indicates the level of agreement by stating "Strongly agree", "Agree", "Neutral", "Disagree" or "Strongly disagree" Saunders *et. al.* (2009:157). Saunders *et. al.* (2009:158) note the following about the Likert rating scale:

- it makes certain of an individual's direction and intensity of opinion,
- analysis can occur per item or summated to form a specific score for each subject,
- the scale is relatively easy to construct.

The choice of the Likert rating scale was based on these notions and English was used as the language of communication to all participants.

### Questionnaire items

The researcher's aim was to acquire information on the relevance and impact of Integrated Management Systems on conformity assessment in Gauteng certified organisations. The questionnaire was divided into five (5) sections:

#### SECTION 1: Demographic data

This section collected data related to the position of the respondent within the certified organisation and consist of four dimensional questions (namely; confirmation that the certified organisation implements IMS, number of implementation years of IMS and age category of the respondent).

#### SECTION 2: The relevance of Integrated Management System (IMS)

This section sought the respondent's perception on the relevance of IMS within the certified organisation and consists of 5 dimensional statements (namely; adequate awareness of ISO standards, clearly defined quality objectives based on ISO standards, review intervals for these objectives, alignment of objectives with ISO 9001 and ISO 14001, and concurrent implementation of ISO standards)

#### SECTION 3: The benefits of IMS on certified organisations

Questions in section 3 were specifically formulated to ascertain the benefits of IMS on certified organisations and they were five in total (namely; contribution of IMS on operational excellence, whether IMS allows for consistent application of requirements, the effort required to maintain IMS requirements as opposed to individual standard requirements, customer perceptions on product quality due to IMS and whether IMS gives a certified organisation competitive advantage for survival).

**SECTION 4: The impact of IMS on service delivery**

This section sought to establish the impact of IMS on service delivery and consists of five questions (namely; continuous improvement, meeting customer requirements, handling of customer complaints, customer satisfaction and improvement on product defects).

**SECTION 5: Recommendations for improvement**

This section sought to determine respondents' opinions and provide recommendations for management on improvement opportunities and consists of three questions (namely; level of integration between ISO 14001 and ISO 9001, timely internal audits, management reviews and corrective actions, and total quality costs analysis).

**Pilot Study**

Saunders *et. al.* (2009:394) maintain that pilot testing “tries out survey questions and refines the research hypothesis”. The result of this trial allows the researcher to detect weaknesses in the design of the questionnaire so that questions asked can be validated and data collection can be reliable. In light of the above, a minimum of ten questionnaires were circulated to certified organisations. The results obtained indicated that no major changes were required on the questions themselves, the overall results assisted in improving the outlook of the questionnaire with regards to ascertaining clarity of questions asked and also user friendliness thereof.

**Administration and collection of questionnaires**

Survey questionnaires were printed and distributed to a total of 130 certified organisations in the Gauteng province, 90 in the Johannesburg area and 40 in Pretoria. Collection of completed questionnaires was through returned emails and physical collection from clients within a period of seven weeks. All returned questionnaires were scanned and stored in a secured location.

**Validity of the questionnaire**

The choice to use a survey questionnaire as a valid instrument was based on the fact that the researcher would be able to spot and characterise the existing situation regarding the implementation of IMS. Supposing that participants' responses to this questionnaire would not be affected by other unpredictable aspects, it automatically followed that the questionnaire should produce valid results. This validity could therefore be quantified through measures of internal consistency such as Cronbach's alpha or consistency in responses (Mean, 2011:2). Furthermore, Cooper and Schindler (2006:232) address the following types of validity:

- Content validity – which is the degree of validity of all the relevant items in the questionnaire. In this research study, the questionnaire's content validity was ascertained by ensuring that the items in the questionnaire reflected the issues as per the research objectives.
- Criterion-related validity – which is used to correlate test results with another criterion of interest. The two types of criterion-related validity are predictive and concurrent validity. This implies that predictive validity focuses on the accuracy with which a test predicts or forecasts some future behaviour or status of individuals. Concurrent validity focuses on the accuracy with which the test identifies some current behaviour or status of individuals.



- Construct validity – this is used to ensure that the questionnaire is actually measuring what is intended to measure and not some other variables. In this study, the questionnaire was taken through a pilot stage to ensure that it measured what it was originally intended to measure.
- Face validity – it can be obtained by requesting friends, colleagues and persons from the population to comment on the relevance, accuracy and balance of the research instrument in relation to the research objectives Cooper and Schindler (2006:232).

### **Reliability of the questionnaire**

According to Saunders *et. al.* (2009:370), reliability is the degree to which a research instrument measures a variable and produces consistent results. The data collected during this study was subjected to following a test-retest reliability process which allowed for presentation of the same questionnaire to the same group of respondents twice, within a reasonable space of time (i.e. 2 weeks) and compare the two sets of data in terms of correlation coefficient to check the stability of the scores obtained. The results from piloting of the survey questionnaire were also used to check this reliability.

### **DATA ANALYSIS**

Sekaran and Bougie (2010:69) stress the fact that data analysis allows a host of information collected to be reduced to a manageable size, interpretable in a quantitative manner using statistical techniques. Cooper and Schindler (2003:86) also concur with this notion and advise the researcher to make use of computerised means for data analysis if data is collected from more than 30 participants. Descriptive and inferential statistics were used for presenting established patterns in a graphical manner using figures and tables. This allowed informed generalisations about the population from which the sample of 130 participants were drawn through measures of central tendency and spread (Gravetter and Wallnau, 2012:9). After all the questionnaires were collected, the MANCOSA Data Analysis Unit (DAU) was consulted and data capturing occurred in a format that facilitated analysis and interpretation. This involved careful entry of all responses on the computerised Microsoft Excel spreadsheet and thereafter emailed to the statistician for further processing.

#### **Descriptive statistics**

According to McCluskey and Lalkhen (2007:127), descriptive statistics is the easiest method of analysis in offering a general overview of the results and it restricts generalisation to the specific group of individuals observed. In this research study, the variables were described and compared using frequency distribution measures.

#### **Inferential statistics**

Unlike descriptive statistics, inferential analysis comprises the sampling and the selection of a small group assumed to be related to the population from which it is drawn (Gravetter and Wallnau, 2012:8). This therefore implies that inferences can be made from the sample's responses and applied to the population depending on the quality of these responses and the representativeness of the sample drawn. Gravetter and Wallnau (2012:9) further indicate that there are a number of inferential statistical methods that can be used, namely:

- Hypothesis testing – which examines the relationship between two or more concepts,

- Cronbach's coefficient alpha which calculates internal consistency (correlating the responses to each question in the questionnaire with the other questions in the same questionnaire),
- Correlation which quantifies the strength of the relationship between two ranked variables,
- Chi-square, T-test and analysis of variance (ANOVA) – establish whether groups are significantly different.

### Limitations of the study

The findings of this research study were critical in understanding the rationale behind accredited certification for integrated management systems (IMS). However, this study was limited to accredited certification of two system standards (i.e. ISO 9001 and ISO 14001) amongst other system standards such as OHSAS 18001 and ISO 27001. This omission is however justified by the minimal number (less than 100) of OHSAS 18001 and ISO 27001 certificates currently accredited in South Africa (ISO Survey, 2012:1). The research study was only limited to organisations in the Gauteng province and the responses to the questionnaire may not necessarily be the same when applied to other provinces. Ethical considerations such as anonymity and confidentiality have been assured in both the permission letter to conduct the study and the actual questionnaire. However, some quality managers within the targeted organisations might exercise caution and not be completely open in answering specific questions in fear of competition. In addition, given the exhaustive workload of some of these organisations, answering the questionnaire might not be prioritised. As a result, the questionnaire could be completed rapidly without giving questions the required due consideration and this may lead to incorrect conclusions.

### Ethical considerations

The data collection stage of this research study required participants to disclose demonstrated evidentiary facts about implementing IMS, as a result, due attention was given to the following key aspects Saunders *et. al.* (2009:194):

- Ensure that permission is obtained to conduct the research study from all involved stakeholders such as CABs, SANAS and organisations themselves,
- Ensure that confidentiality, anonymity and non-disclosure agreements are in place prior to commencing with the data collection,
- Ensure that participants understand the purpose and need of the research through introductory remarks accompanying survey questionnaires.

## RESULTS AND DISCUSSIONS

A total of 130 research questionnaires were distributed to respondents and 93 were completed and returned. This constitutes a response rate of 71.5% which according to Owen and Jones (1994:98) is good as it exceeds the minimum acceptable response rate of 30%. The intention of this question was to assess the impact positions of respondents had on the implementation of ISO standards in certified organisations. 16.3% of respondents are employed as Quality Managers, 75% as Certification Managers and 8.7% as Operations Managers. These results were then cross-related with respondents' awareness on implementing ISO standards in certified organisations. The results reveal that 12 out of 15 Quality Managers (80%), 41 out of 69 Certification Managers (59%) and 6 out of 8 Operations Managers (75%) agree that generally, there is adequate awareness on implementing ISO standards. The results indicate

that Certification Managers (75%) are dominating as compared to Quality Manager (16.3%) and Operations Manager (8.7%) in certified organisations. Strangely, only 59% of the dominant function, Certification Managers agree that there is adequate awareness on implementing ISO standards within their certified organisations. This rating is far less than what was obtained for the less dominant functions. The results indicate that position held within a certified organisation, in relations to quality aspects, does not have any significant influence in overseeing the implementation of ISO standards. These findings are found to be consistent with the provisions of ISO 9001 (2008:5) which require organisations to appoint individuals for ensuring implementation of quality management system. These provisions further indicate that this appointment must, irrespective of other responsibilities, ensure the maintenance of the quality management system.

### **Experience of respondents**

The intention of this section was to assess the influence experience had on the implementation of ISO standards in certified organisations. The results indicate that 7.6% of respondents have been implementing ISO standards for 1-5 years, 42.2% for 5-10 years and 50% for more than 10 years. These results were then cross-related with respondents' awareness on implementing ISO standards in certified organisations. The results in reveal that 5 out of 7 respondents (71%) with experience of 1-5 years agree that there is adequate awareness on implementing ISO standards within certified organisations. While 30 out of 46 respondents (65%) with experience of more than 10 years tend to agree as well, only 24 out of 39 respondents (62%) with experience of 5-10 years tend to be in agreement also. The results in figure 4.2 indicate that those respondents with experience of more than 10 years (50%) are dominating as compared to those with 1-5 years (7.6%) and 5-10 years (42.4%) experience. However, , it is the respondents with less experience (1-5 years) that tend to agree more that there is adequate awareness on implementing ISO standards within certified organisations. Therefore, the findings indicate that the number of years one is involved with the implementation of ISO standards has no direct relationship with the level of awareness on implementing ISO standards. In fact, all categories reveal a positive attitude towards the implementation of ISO standards. This finding is consistent with the report made by Kigotho (2012:38) which indicates that experience has no significant influence on employee perception towards quality management systems.

### **Age category of respondents**

The intention of this category was to assess the impact age of respondents had in the implementation of ISO standards within certified organisations. The results indicate that 19.6% of respondents are below 30 years, 50% between 30-39 years and 30.4% above 40 years of age. These results indicate that the dominant age category is between 30-39 years and most of the respondents either agree or strongly agree with item 2.1 of the questionnaire. A total of 34 out of 46 respondents (74%) between 30-39 years of age agree that there is adequate awareness on implementing ISO standards within certified organisations. While 10 out of 18 respondents (56%) below 30 years of age also agree, only 15 out of 28 respondents (54%) above 40 years of age are in agreement as well. While the dominant age category is between 30-39 years, analysis of the cross tabulation results in table 4.3 indicate that age does not have an influence in the implementation of ISO standards. This is so because the results of all categories generally reveal a positive attitude towards implementing ISO standards. This finding is, however, inconsistent with the report by Kigotho (2012:38) which indicates that age has a significant influence on the employee perception towards quality management

system. These inconsistencies could perhaps be due to the differences in sectors investigated by the two studies.

### The research instrument

The research questionnaire consisted of 18 items excluding the 4 items that were covered under demographic information.

### Reliability of the questionnaire

The individual Cronbach's alpha for sections B to E were collated and comments made on reliability. These results are outlined in the table below:

**Table: Reliability statistics of the research instrument**

Sections	Cronbach's Alpha	N of Items	Comments on reliability
<b>B</b>	0.486	5	Section is unreliable, Cronbach's Alpha is $< 0.7$ ( $\alpha = 0.486$ , $n = 5$ ).
<b>C</b>	0.411	5	Section is unreliable, Cronbach's Alpha is $< 0.7$ ( $\alpha = 0.411$ , $n = 5$ ).
<b>D</b>	0.370	5	Section is unreliable, Cronbach's Alpha is $< 0.7$ ( $\alpha = 0.370$ , $n = 5$ ).
<b>E</b>	0.264	3	Section is unreliable, Cronbach's Alpha is $< 0.7$ ( $\alpha = 0.264$ , $n = 3$ ).

In all the 18 items on the research instrument, with a measurement at nominal and ordinal levels, the Cronbach's Alpha was determined to be less than 0.7, which indicates poor reliability of the research instrument. However, upon analysis, it became evident that the low reliability is attributable to the sensitivity of the questions prompting inconsistent responses. This prompted further analysis into the statistical significance of the association between two kinds of questions at any given point within the research instrument. The results from the cross tabulation and Chi-square (Fisher Exact test) were used for this analysis and the findings are outlined the sections below.

### Results from cross-tabulation and Chi-square (Fisher Exact Test)

The results indicated that the cross tabulation between organisations implementing both ISO 9001 and ISO 14001 concurrently, and organisations whose environmental and quality objectives are clearly defined. The crosstab indicates that there is a significant association between these two aspects as indicated in table 4.5 ( $p = 12.608$ ,  $n = 92$ ,  $p = 0.003$ ). Strangely, those people who are not implementing ISO 9001:2008 and ISO 14001:2004 concurrently in their organisation are more likely to agree that in their organisation, environmental and quality objectives are clearly defined. The results revealed a significant association between the organisation implementing ISO 9001:2008 and ISO 14001:2004 concurrently and an item on the questionnaire. This association indicates that implementation of both ISO 9001 and ISO 14001 does contribute to operational excellence within the organisation ( $\chi^2(1) = 5.698$ ,  $n = 92$ ,  $p = 0.021$ ). It is also evident from the table that respondents who said yes (26) are more likely to agree with this notion, whereas people who said no (31) were more likely to strongly agree with this notion as well. The results showed that there is a significant association

between the organisation implementing ISO 9001:2008 and ISO 14001:2004 and an item on the questionnaire. This association indicates that the level of integration between ISO 14001 and ISO 9001 does not lead to dilution of either standard requirements ( $\chi^2(1) = 4.243$ ,  $n = 92$ ,  $p = 0.047$ ). The crosstab reveals that people who said yes (13) to implementing ISO 9001:2008 and ISO 14001:2004 concurrently were more likely to strongly agree with this notion, whereas those who said no, were more likely just to agree (45).

### Results from statistical data and analysis

Normality: Both the Kolmogorov-Smirnov and Shapiro-Wilk used in the research were found to be significant – hence data is not normally distributed, non-parametric methodologies were then used for the research questions below.

### Analysis of results from research questions

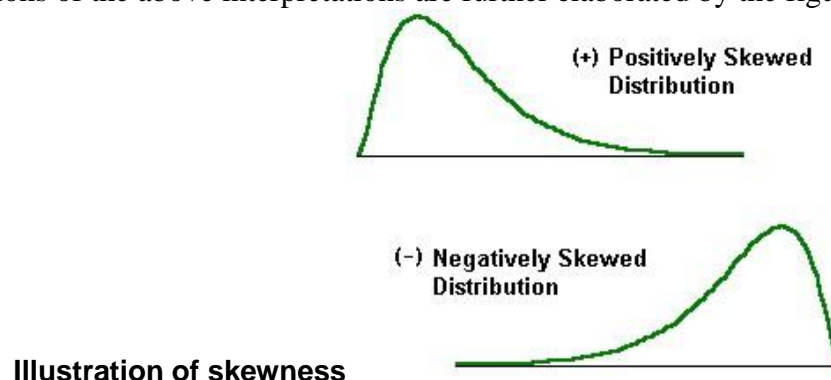
#### Research question #1: What is the relevance of IMS on conformity assessment in Gauteng certified organisations?

The first research question was to solicit information from certified organisations regarding the relevance of IMS on conformity assessment activities. The relationship between the relevance of IMS and conformity assessment was investigated through five questions.

The results were complemented by the analysis of response distribution in the form of skewness and kurtosis. The analysis of skewness and kurtosis is based on Leedy and Ormrod (2005:273)'s interpretation of data based on distribution around the mean. This interpretation is explained below:

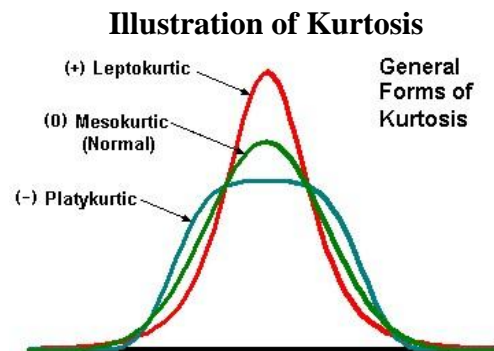
- Skewness  $> 0$  – implies right skewed distribution and most values are concentrated on left of the mean, with extreme values to the right,
- Skewness  $< 0$  – implies left skewed distribution and most values are concentrated on the right of the mean, with extreme values to the left,
- Skewness  $= 0$  – implies that the distribution is symmetrical around the mean, which means that data is not skewed.

The implications of the above interpretations are further elaborated by the figure below:



The above interpretation was further incorporated in the analysis of findings for research question #1. Leedy and Ormrod (2005:273) also highlighted the concept of kurtosis. These authors argue that kurtosis indicates the extent to which the values of a variable fall above or below the mean and that this manifests itself in a form of tails. Within kurtosis, data distribution could be leptokurtic, platykurtic or mesokurtic. The figure below illustrates the relationship between the three types of tails as general forms of kurtosis:





Leedy and Ormrod (2005:273) further interpreted kurtosis in the following manner:

- Kurtosis  $> 3$  - Leptokurtic distribution, implies sharper than a normal distribution, with values concentrated around the mean and thicker tails. This means high probability for extreme values or outliers,
- Kurtosis  $< 3$  - Platykurtic distribution, implies flatter than a normal distribution with a wider peak. This means that the probability for extreme values is less than for a normal distribution and the values are widely spread around the mean,
- Kurtosis  $= 3$  - Mesokurtic distribution - normal distribution.
- The results reveal that most of the respondents (N=92) either strongly agreed (17.4%) or agreed (64.1%) that there was adequate awareness in their respective organisations on the implementation of ISO standards. It was also noted that the respondents who were neutral (13%) and those who disagreed (5.4%) came from relatively small certified organisations (less than 15 employees, most of which are on temporary contracts). This notion could explain the respondent's neutrality and disagreement to this question given the need to retrain new staff members from time to time.

Whilst the median within the Likert scale is 2, there is a significant concentration of responses to the left of the median which implies right skewed distribution (Skewness = 0.791 and  $>0$ ) of responses more towards strongly agree and agree. The kurtosis for this distribution (Kurtosis = 1.180 and  $<3$ ) resembles platykurtic behaviour which indicates that there is less probability of extreme responses or outliers. It can therefore be stated that most respondents generally agree that there is adequate awareness on the implementation of ISO standards within their organisations. It was found that most of the respondents agree (56.5%) and few strongly agree (32.6%) that environmental and quality objectives are clearly defined in their respective organisations. There is also a significant concentration of responses to the left of the median ( $=2$ ) which implies right skewed distribution (Skewness = 0.965 and  $>0$ ) of responses more towards strongly agree and agree. The kurtosis for this distribution (Kurtosis = 1.503 and  $<3$ ) indicates that there is less probability of extreme responses or outliers. It can therefore be stated that the dominant responses favour the agreement that both environmental and quality objectives are clearly defined in respondents' organisations. In addition most of the respondents agree (54.3%) and few strongly agree (31.5%) that their organisations' quality objectives get to be reviewed at predetermined intervals. There is also a significant concentration of responses to the left of the median ( $=2$ ) which implies right skewed distribution (Skewness = 0.840 and  $>0$ ) of responses more towards strongly agree and agree. The kurtosis for this distribution (Kurtosis = 0.918 and  $<3$ ) indicates that there is less probability of extreme responses or outliers. It can therefore be stated that the dominant responses favour the agreement that organisations' quality objectives are reviewed at predetermined intervals. The research found that most of the respondents agree (48.9%) and few strongly agree (30.4%) that their organisations' objectives are aligned with ISO 9001 and

ISO 14001 standards. There is also a significant concentration of responses to the left of the median ( $=2$ ) which implies right skewed distribution (Skewness = 0.144 and  $>0$ ) of responses more towards strongly agree and agree. The kurtosis for this distribution (Kurtosis = -0.992 and  $<3$ ) indicate that there is less probability of extreme responses or outliers. It can therefore be stated that the dominant responses favour the agreement that organisations' objectives are aligned with ISO 9001 and ISO 14001 standards. It is also indicated that most of the respondents agree (48.9%) and fewer neutral (30.4%) that both ISO 9001 and ISO 14001 are implemented concurrently in their organisations. There is also a significant concentration of responses to the left of the median ( $=2$ ) which implies right skewed distribution (Skewness = 0.144 and  $>0$ ) of responses more towards strongly agree and agree. The kurtosis for this distribution (Kurtosis = -0.992 and  $<3$ ) indicate that there is less probability of extreme responses or outliers. It can therefore be stated that the dominant responses favour the agreement that both ISO 9001 and ISO 14001 are implemented concurrently in certified organisations. In conclusion:

- Generally respondents agree that in their respective organisations there is adequate awareness on implementing ISO standards,
- Environmental and quality objectives are clearly defined and these are reviewed at predetermined intervals,
- Overall organisations' objectives are aligned with ISO 9001 and ISO 14001 standard requirements and finally that both ISO 9001 and ISO 14001 are implemented concurrently.
- These findings strongly suggest that implementing a single IMS based on ISO 9001 and ISO 14001 requirements is a relevant topic within a certified organisation. This is confirmed by Jorgensen, T., Remmen, A. and Mellado, M. (2006) (2006:714), who maintained that these two standards have a very similar structure and can be integrated and implemented on the basis of similarities. The effective implementation can therefore be made possible through shared resources, unified organisational structure and combined work processes (Karapetrovic and Casadesus, 2009:537).

The findings above are also supported by Rusjan and Alic (2010:756) who argue that a well-established IMS provides an organisation with a mechanism for continuous assessment and improvement on conformity assessment activities. Most of the respondents have agreed that the overall organisations' objectives were aligned with ISO 9001 and ISO 14001 requirements and that these are reviewed at predetermined interval. This finding is crucial for a certified organisation to demonstrate its ability of consistently providing products that meet customer, applicable statutory and regulatory requirements, on a continuous basis. Of particular interest, there were a few respondents whose responses were either neutral or disagree, especially with questions related to the alignment of organisational objectives with ISO 9001 and ISO 14001 requirements and also the implementation of both ISO 9001 and ISO 14001 concurrently. This finding is confirmed by Wilkinson and Dale's (2002:771) report which indicates that there still exist differences in understanding what integration of two management systems mean within certified organisations. In general, the findings above favour the relevance of IMS on conformity assessment in Gauteng certified organisations.

### **Research question #2: what are the benefits that Gauteng certified organisations are deriving from implementing IMS?**

The second research question was concerned with establishing the benefits that Gauteng certified organisations are deriving. The relationship between the two variables of this research question, that is, the benefits and implementing IMS, were further interrogated using correlation statistics. The technique of using correlation statistics for comparative purposes was well explained by Leedy and Ormrod (2005:265). These authors concur that comparison

through correlation is a statistical process by which the nature of the relationship amongst different variables can be discovered. This analysis is based on the resulting statistical number falling between -1 and +1. In Leedy and Ormrod's (2005:265) interpretation, a correlation value near zero (0) indicates little or insignificant correlation whilst a value near -1 or +1 indicates a higher level of correlation. They further indicated that a positive sign indicates a positive correlation which means that an increase in one variable causes an increase in the other. A negative sign indicates a negative correlation which means that an increase in one variable causes a decrease in another. All respondents in either agreed (52.2%) or strongly agreed (47.8%) that implementation of ISO 9001 and ISO 14001 contributes to operational excellence in their respective organisations. Furthermore, although insignificant, there is a positive correlation between items 3.1 and 3.2 ( $r = 0.035$ ,  $N=92$ ) in table 4.11. This positive correlation indicates that the implementation of both ISO 9001 and ISO 14001 concurrently leads to consistent application of requirements which in turn contributes to business operational excellence. All respondents in either agreed (60.9%) or strongly agreed (39.1%) that implementation of ISO 9001 and ISO 14001 leads to consistent application of requirements in their respective organisations. There is also a strong negative correlation between items 3.2 and 3.4 ( $r = -0.243$ ,  $N=92$ ) in table 4.11. This negative correlation indicates that a decrease in the customer perception about product quality would spark the need for an increase in the consistent application of IMS requirements. All respondents in either agreed (47.8%), strongly agreed (32.6%) or neutral (13.0%) that it is almost effortless to maintain the combined ISO 9001 and ISO 14001 system requirements, as opposed to when these standards are implemented individually in their respective organisations. There is also a strong positive correlation between items 3.3 and 3.4 ( $r = 0.224$ ,  $N=92$ ) in table 4.11. This positive correlation indicates that an increased maintenance of the combined ISO 9001 and ISO 14001 system requirements would certainly lead to an increased effective implementation of IMS. All respondents either agreed (68.5%) or strongly agreed (26.1%) that their products/services are perceived to be of superior quality by customers due to the effective implementation of IMS. About 5.4 % of respondents were neutral and this could be due to the lack of customer satisfaction information or survey feedback at the time of this study. All respondents either agreed (69.6%) or strongly agreed (30.4%) that their organisations stand a good chance of surviving in the market if they continue to comply with the requirements of ISO 9001 and ISO14001 IMS. There is a negative correlation between items 3.5 and 3.1 ( $r = -0.160$ ,  $N=92$ ) in table 4.11. This negative correlation indicates that a decrease in compliance with IMS requirements would certainly inspire an increased need for ensuring that there is operational excellence within an organisation. The findings above indicate that most respondents are in agreement or perhaps strongly agree with items 3.1 to 3.5 on the research questionnaire. Generally, almost all respondents seem to agree that the implementation of both ISO 9001 and ISO 14001 system contribute to operational excellence. It was also confirmed through the findings that effective implementation of IMS gives certified organisations a good chance of surviving in the market. Zutshi and Sohal (2005:213) concur with the above findings. They further note that the realisation of a successful IMS allows the organisations to decrease the extent of documentation and bureaucracy which arises due to referring to separate procedures or different standards. They also indicate that effective IMS facilitates carrying out an internal and external audit more clearly and efficiently. Overall, the findings above confirm that certified organisations do derive tangible benefits from IMS implementation.

### **Research question #3: What impact does IMS have on service delivery?**

The third research question was concerned with assessing the impact of IMS on service delivery. Respondents were asked five questions. The intention of this line of questioning

was to assess the commitment of management representatives within certified organisations in using IMS as a means of monitoring service delivery. The responses to these questions were intended to provide insight into whether management representatives ensured the promotion of the awareness of customer requirements throughout the organisation. The results indicated that 55.4% of the respondents seem to agree that IMS is a primary driver for continuous improvement on quality of their products and services. While 30.4% seemed to strongly agree as well, only 14.1% were neutral. The dominant responses seem to favour the notion that management representatives are using the implementation of IMS as a primary vehicle for continuous improvement within their certified organisations. Most respondents either agree (54.3%) or strongly agree (45.7%) that IMS implementation ensures the consistency of providing products/services that meet customer requirements. This further indicates the extent of management representatives' commitment as far as analysing the IMS review input in line with customer requirements. The results indicate that most respondents either agree (57.6%) or strongly agree (34.8%) that IMS implementation does contribute to timeously addressing customer complaints. This finding is in line with the report by Filip (2013:271) which indicates that handling of customer complaints should be considered as an indicator of organisational performance. Regarding item 4.4 in table 4.12, most respondents either agree (56.5%) or strongly agree (43.5%) that IMS implementation has contributed in the organisation achieving over 75% customer satisfaction level. This finding is confirmed by the requirements of ISO 9001 (2008:7) which mandates organisations to determine and implement effective arrangements for communicating with customers in relation to customer feedback, including customer complaints. The results obtained for item 4.5 in table 4.12 indicate that most respondents either agree (56.5%) or strongly agree (28.3%) that IMS implementation has contributed to achieving minimal product defects within their organisations. This finding is also confirmed by the requirements of ISO 9001 (2008:7), which requires organisations to determine and implement effective arrangements for communicating with customers in relation to customer feedback. The few respondents who were neutral (15.2%) to this question might be because they were not yet in position that they have received such feedback from customers. The findings revealed the significance and the relevance of implementing IMS, the benefits associated with effectively implementing IMS and the impact of IMS implementation on service delivery within certified organisations and also confirmed the level of commitment of management representatives in relation to meeting customer requirements.

## **RECOMMENDATIONS FROM THE RESEARCH STUDY**

### **Recommendations to certified organisations**

The latter part of the research questionnaire included three questions which prompted respondents to provide any opportunities for improvement within their organisations. Most of respondents either agree (77.2%) or strongly agree (22.8%) that their organisations have policies in place to ensure that the level of integration between ISO 14001 and ISO 9001 does not lead to dilution of either standard requirement. All the respondents further agreed (67.4%) and strongly agreed (32.6) that in their organisations internal audits, management review meetings and timely correction actions are conducted at pre-determined schedule to ensure continued compliance with IMS. Strangely enough, most respondents agreed (51.1%), some were neutral (35.9%) and a few disagreed (13.0%) that total quality costs are collected and analysed and the cost of poor quality is known in their organisations. This latter finding should be taken seriously as it has a direct impact on the organisations' financial performance. In view of the above, it is highly recommended that certified organisations ensure that level of integration of their IMS includes consideration to respond to the multi-

aspects of business needs, including monitoring the costs of quality. It is also the management representative's responsibility to ensure that the IMS is characterised by the following elements:

- An integrated documentation set, including work instructions to a good level of development, as appropriate,
- Management reviews that consider the overall business strategy and plan,
- An integrated approach to internal audits, policy and objectives and system's processes.

### **Recommendations to Certification Bodies**

The findings from this research study revealed that most respondents from certified organisations are implementing IMS and management representatives are promoting the awareness of conformity assessment activities throughout the organisations. It is therefore recommended that Certification Bodies consider the level of integration of their client's IMS system in establishing the audit program that covers the certification cycle. Furthermore, audit plans must cover all areas and activities applicable to each management system standard through the audit of an IMS. Preferably, the audit must be managed by a team leader, competent in at least one of the audited standards of the IMS. It is also critical that sufficient time is allocated to accomplish a complete and effective audit of the organisation client's IMS.

### **Recommendations to SANAS**

As a way of improving assessment durations and coverage, it is highly recommended that when SANAS determines assessment duration for witnessing activities, the following aspects of the CB's client IMS must be given due consideration:

- the complexity of the audit of an IMS compared with single management system audits,
- inform the CB that the duration of an IMS audit, based on the declared level of integration of the organisation's management system, may be subject to adjustment on the basis of confirming the level of integration when SANAS reviews the audit plan and the program for subsequent audits,
- all applicable requirements of each management system standard relevant to the scope of the IMS must be audited at least during a recertification audit,
- audit reports can be integrated or separate, with respect to the management systems audited. However, each finding of non-conformity raised in an integrated report should be traceable to the applicable management system standard(s),
- that the CB has considered the impact of previously raised nonconformities and noted the impact a nonconformity found for one of the management system standard has on the compliance with the other management system standard (s).

### **Recommendations for further studies**

The study identified the need to further investigate the financial impact that IMS has on conformity assessment in small, medium and large organisations. These efforts would be necessary for developing a harmonized auditing approach for organisations implementing IMS irrespective of the size of the organisation. The outcome of this study would provide a necessary prelude for all organisations to be treated in a fair and non-discriminatory manner based on size. This latter provision is in line with the requirements ISO/IEC 17021 (2011:23).



## CONCLUSION

This study sought to investigate the relevance and impact of IMS (based on ISO 9001 and ISO 14001) on conformity assessment in Gauteng certified organisations. Although the study was only limited to the Gauteng region, it provided objective evidence that IMS was relevant on conformity assessment activities in certified organisations. Furthermore, apart from the focus on overall system integration and improvement, the study has confirmed that IMS necessitates a unified problem solving approach through effective management reviews and internal audits. The study also concluded that the impact of IMS on conformity assessment activities was evident through customer satisfaction surveys, better allocation and deployment of human and information resources. Finally, the study identified that certified organisations were not really giving due attention on the analysis of cost of quality as a result of system integration. This final integration aspect has been recommended for further research studies as it has a direct impact on the financial performance of the organisation.

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