

**An Integrative Approach to Quality**

by

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## DECLARATION OF CANDIDATE

I, Shalini Singh, declare that unless otherwise indicated, this thesis is my own work and that it has not been submitted for any degree at another Tertiary Institution.

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November 2006

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## **Abstract**

Managers and employees are faced with an increasing number of complex challenges including implementing and maintaining multiple management systems/codes of practice such as safety, environment and quality, increasing competitive advantage and showing continued sustainability with limited resources. In addition, corporate scandals like Enron and the impact of the Aids pandemic on the economy of a country, further burden the responsibility of managers and employees. Operating all these management systems/codes of practice in parallel, however, duplicates documentation, makes auditing the systems difficult and decreases employee morale.

Hence, this study reviewed related literature which represented secondary sources of information, to determine the most suitable management systems/codes of practice, to show the benefits of using integrated management systems and to select appropriate business improvement tools to promote business excellence. It developed a simple management system and designed integrated documentation to support these integrated systems. A model was developed. The Process Approach was used as a foundation to develop this model which integrated safety, environmental management, corporate governance, quality and HIV/Aids management systems/codes of practice. The SECQA model is the name proposed for the model, it provides a holistic model to facilitate world class performance. This part of the study represented the qualitative method of research.

The quantitative method of research complimented the findings above by using interviews with key role players, a pilot study of two manufacturing organisations and a principal study of thirty manufacturing and service organisations. The pilot and principal studies were conducted on organisations from the Kwa Zulu-Natal region and the interviews were conducted with representatives from Gauteng and Cape Province. Questionnaires were designed using open-ended and closed-ended type questions and together with interviews formed the primary source of information. The challenges of employees working with management systems and the suitability of the SECQA model were established from the questionnaire. The possible advantages and disadvantages of the SECQA model were also shown. The strengths and weaknesses of the management systems and how they can be addressed and overcome by the model are presented.

The challenges that were evident from the results of the interviews and pilot study were that respondents found that there was a lack of resources, lack of training and understanding of the management systems by employees within their organisation.

From the results of the principal study it was apparent that some organisations did not have the infrastructure and had limited resources to support multiple management systems. There was a lack of support from senior managers. Safety, environment and quality managements systems were the most commonly used in organisations. Most organisations found that their management systems were beneficial. Benchmarking, cause and effect diagrams and brainstorming were the most common business improvement tools used by organisations.



The predominant view among respondents was that in the operation of management systems, integration was preferred to operating multiple systems.

The majority of the respondents indicated that they would be keen to use the SECQA model in their organisation since integration of management systems would assist in reducing workloads of employees. They also believed that the range of management systems selected was conducive to the trends of the country. In addition respondents have indicated that the SECQA model would be beneficial to their organisation, and would reduce resources used, and would be better than their current practice.

The SECQA model, once authenticated can also be used as a springboard for organisations seeking South African Excellence Model (SEAM) status.

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## LIST OF ABBREVIATIONS AND ACRONYMS

|                                |   |   |
|--------------------------------|---|---|
| AFP                            | : | Agence - France - Presse  |
| AIDS                           | : | Acquired Immune Deficiency Syndrome                               |
| Al                             | : | Aluminium   |
| Al <sub>2</sub> O <sub>3</sub> | : | Aluminium Oxide   |
| AMS                            | : | AIDS Management System  |
| ANSI                           | : | American National Standards Institute                             |
| BSI                            | : | British Standard Institution                                      |
| CEO                            | : | Chief Executive Officer   |
| CFR                            | : | Code of Federal Regulations                                       |
| CI                             | : | Continuous Improvement  |
| COQ                            | : | Cost of Quality   |
| e mark                         | : | Legal Metrology Quantity Control Scheme                           |
| EMAS                           | : | European Communities and Audit Scheme                             |
| EMS                            | : | Environmental Management System                                   |
| FMCG                           | : | Fast moving consumable goods                                      |
| FMEA                           | : | Failure Mode Analysis   |
| GMP                            | : | Good Manufacturing Practice                                       |
| HACCP                          | : | Hazard Analysis and Critical Control Point                        |
| HIV                            | : | Human Immunodeficiency Virus                                      |
| ISO                            | : | International Organisation of Standardisation                     |
| JCAHO                          | : | The Joint Commission on Accreditation of Healthcare Organisations |

|           |   |  |
|-----------|---|--|
| JSE       | : | Johannesburg Stock Exchange  |
| KFA       | : | Key Focus Areas  |
| km        | : | kilometres   |
| KZN       | : | KwaZulu-Natal  |
| MBQA      | : | Malcolm Baldrige Quality Award   |
| NASA      | : | National Aeronautics & Space Administration                            |
| NGO       | : | Non-governmental organisation  |
| NOSA      | : | National Occupational and Safety Association                           |
| OHS       | : | Occupational Health and Safety   |
| OHSAS     | : | Occupational Health and Safety Systems                                 |
| PDCA      | : | Plan, Do, Check, Act Cycle   |
| PESTE     | : | Political, Economical, Social, Technological and Environmental aspects |
| PPE       | : | Personal Protective Clothing   |
| PVC       | : | polyvinyl chloride   |
| QA        | : | Quality Assurance  |
| QA/QC     | : | Quality Assurance/Quality Control                                      |
| QESH      | : | Quality, Environment, Safety and Health Systems                        |
| QFD       | : | Quality Function Deployment  |
| QIP       | : | Quality Improvement Process  |
| QMS       | : | Quality Management System  |
| R         | : | Rands  |
| S & P 500 | : | Standard and Poors 500   |

|        |   |   |
|--------|---|---|
| SABS   | : | South African Bureau of Standards                               |
| SAEM   | : | South African Excellence Model                                  |
| SAICA  | : | South African Institute of Chartered Accountants                |
| SANS   | : | South African National Standard                                 |
| SECQA  | : | Safety, Environment, Corporate Governance, Quality and HIV/Aids |
| SHE    | : | Safety, Health and Environmental System                         |
| SHEQ   | : | Safety, Health and Environment and Quality System               |
| SME    | : | Small and medium size enterprise                                |
| SPC    | : | Statistical Process Control                                     |
| SPSS   | : | Statistical Package for Social Science                          |
| SWOT   | : | Strengths, Weaknesses, Opportunities and Threats                |
| TAG    | : | Technical Assistance Guideline                                  |
| TQM    | : | Total Quality Management  |
| UK     | : | United Kingdom  |
| UN     | : | United Nations  |
| US     | : | United States   |
| USA    | : | United States of America  |
| £      | : | British Pound   |
| “5W2H” | : | Who, What, Where, Why, When, How, How much Approach             |
| \$     | : | US Dollar   |

## GLOSSARY

|                           |   |  |
|---------------------------|---|--|
| Accreditation             | : | Certification, by a duly recognised body, of facilities, capability, objectivity, competence and integrity of an agency, service or operational group or individual to provide the specific service or operation required. |
| Audit                     | : | Systematic, independent and documented process for obtaining evidence and evaluating it objectively to determine the extent to which audit criteria are fulfilled.   |
| Certification             | : | The procedure and action by a duly authorised body of determining, verifying and attesting in writing to the qualifications of personnel, processes, procedures or items in accordance with applicable requirements.       |
| Compliance                | : | An affirmative indication or judgement that a product or service has met the requirements of the relevant specifications, contract or regulation. Also the state of meeting the requirements.                              |
| Customer satisfaction     | : | Customer's opinion of the degree to which a transaction has met the customer's needs and expectations.   |
| Document                  | : | Information and its support medium.  |
| Environment               | : | All the external physical conditions that may influence the performance of a product or service.   |
| Management System         | : | To establish policy and objectives and to achieve those objectives.  |
| Procedure                 | : | Describes the way to perform an activity or process.   |
| Quality management system | : | System to establish a quality policy and quality objectives and to achieve those objectives.   |
| Quality Policy            | : | The overall quality intentions and direction of an organisation as regards quality, as formally expressed by top management.   |



|                  |   |  |
|------------------|---|--|
| Requirement      | : | Need or expectation that is stated, customarily implied or obligatory.                 |
| Top management   | : | Person or group of people who direct and control an organisation at the highest level. |
| Work Instruction | : | A description of how a specific task is carried out.                                   |

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## CHAPTER 1

### INTRODUCTION

“Quality is not just a control system; quality is a management function.”

David Garvin (Foster, 2001:97)

## **1. Introduction**

This chapter will focus on the current management systems used in industry and the challenges faced by employees to maintain them. It will present the aim, objective and outline of this research.

### **1.1 Awareness of the problem**

One of the most challenging tasks faced by managers and executives today is the need for them to increase their competitive advantage by using minimum resources. According to Boninelli (2005:42) managers and executives in South Africa have to contend with many more challenges than their counterparts from other countries. He attributes this to changes in the socio-economic conditions. The various codes of practice and management systems and tools, when used successfully by competitors, add further pressure to an already stressed organisation (Hoyle, 1999:63). Recent trends have been marked by shifts from quality control and quality assurance to total quality management (TQM), operations management and environmental management (Foster, 2001:22). Kotze (2003) is of the view that managers need to devise strategies to keep the work force healthier for longer in order to counteract the impacts of Acquired Immune Deficiency Syndrome (Aids) and Human Immunodeficiency Virus (HIV). The latter, together with the local and international scandals, leaves even the most motivated manager frustrated and overwhelmed.

In an attempt to keep up with globalisation, the philosophy of integrating resources is currently widespread. The cellular phone, for example, is no longer only a device for making a call. It can now send text messages, photographs, graphs and electronic mail. Single function operations have become increasingly redundant. Boninelli (2005:42) expresses the view that the modern manager should have the ability to seek and implement world-wide best practice and appreciate the results of cross-functional integration.

It is of significance that the importance of quality management has always been underrated (Stevenson, 2002:420). This may change if managers accept that a small input such as

attention to re-design and implementation of a few strategic practices, yield improvement throughout the organisation (Foster, 2001:351). This is illustrated by the case discussed below:

An industrial component manufacturing organisation in the United States of America (USA) was asked by a customer to reduce its costs. The organisation decided to improve the inspection of certain components. The benefits achieved from this activity produced a 14% reduction in the cycle time, decreased the amount of scrap generated, increased cost savings of thousands of dollars and improved employee morale and customer satisfaction. This example serves to draw attention to a very crucial point regarding quality management and cross-functional integration in an organisation. It makes little sense to check the quality at the end of a process. Attention to quality in the early stages of the process would help to eliminate the cost of repeating the process (Stevenson, 2002:440).

If implementation to quality control is neglected throughout a process, any defects in the quality of the resulting product would have to be addressed at "corrective action forums". The latter comprises a group of employees and interested parties such as suppliers, who come together in an attempt to find the root cause of the problem and eliminate, control or prevent its recurrence. Although every activity from raw materials through to manufacturing and distribution is responsible for the integrity and ultimately the quality of the product which is delivered to the customer, final acceptance or rejection of a product is based on whether the product meets all its quality specifications. Investigation by "corrective action forums" is not confined to products which do not meet the quality specifications. It is also applied to products which bypass inspection but are identified as rejects by the customer. In view of this, the focus on quality management should be emphasised in every department and sub-department within an organisation.

With regard to the awareness of the importance of quality a survey (Unknown author, 2005:31) conducted with six-hundred and three chief executive officers (CEOs) is pertinent.

These chief executive officers were asked the following question: “does quality contribute to the triple bottom line?” The results of the survey showed that 99% of the CEOs believed that quality contributed to the bottom-line and provided a positive return. They were also of the view that it:

- increased revenue by repeat business
- facilitated referrals
- promoted customer loyalty
- produced less rework
- added savings on labour and materials

In addition to a quality management system CEOs should be aware that other management systems such as environment, safety, corporate governance and HIV/Aids should also receive priority. The latter systems should be harnessed with quality management to ensure that the service or product meets all customer requirements. These systems can be applied to an organisation using various codes of practice or management systems. These codes of practice should be implemented and maintained in a socially responsible manner to minimise the impact of the organisation’s activities on the environment and surrounding area. Motivation for implementing and maintaining these codes of practice is provided by the case studies described below:

Man has access to over 70 000 anthropogenic chemicals and 1000 new varieties are added each year (Ardington, 2003:11). In addition, results of the use of these chemicals are based on tests that are conducted on animals and not on humans who are the target customers of these products. Hence, the effects of these chemicals on humans are unknown. The combinations of these chemicals in humans are referred to as “cocktails” and the reactions between them are unknown. Consequently, there were some chemicals placed on the market which had adverse effects on humans and on the environment. These effects were experienced up to thirty years later as was evident from a study (Stables, 2001:392) of an organisation whose activities contributed to the pollution of an entire water table with

effluent. The organisation had to relocate at a huge cost. Operating an efficient and effective safety, quality and environmental system is a means to prevent the recurrence of such episodes.

The studies cited above show the lack of transparency and the neglect in an organisation's civic responsibility. The latter combined with the scandals such as Global Crossing, Enron, Worldcom, Xerox and Merck, among others, have contributed to the increased focus for fine tuning and promoting good corporate governance practices in many countries (George, 2002:791, Edmondson and Cohn, 2004:1; Dunn, 2003:13).

The impact of HIV/Aids has been well publicised. Kotze (2003) contends that it is going to have a huge social and economic effect on society. This has received credence from the Technical Assistance Guideline (TAG) (Section 71), which estimates from the annual anonymous survey conducted on pregnant women attending public sector clinics that 4,7 million people of the 40,6 million of the total South African population were infected with HIV/Aids. This figure was predicted to rise to between 6 and 7,5 million by 2010. The TAG was developed by the Department of Labour using the national and the international legal frame-work to assist employees and trade unions to manage the impacts of HIV/Aids in the workplace (Department of Labour, ix, 2003). Organisations can take control of these effects on their businesses by implementing appropriate management systems. In view of this, various guidelines and reporting mechanisms have been recommended and additional ones are being drafted. Some of these guidelines are recommended by the National Occupational and Safety Association (NOSA), the South African Institute of Chartered Accountants (SAICA) and the King II Report to enable organisations to assess the HIV/Aids specific risks to their organisations (Kotze, 2003).

Actuarial modelling techniques have been used to forecast and quantify the economic effects of HIV/Aids. Using these techniques, organisations are able to establish the cost and benefit of intervention strategies. Organisations are aware that education campaigns alone are not



sufficient for the prevention of the epidemic. Therefore, intervention strategies like the supply of anti-retroviral drugs are being implemented to treat the affected workforce. Such treatments together with a healthy lifestyle have been known to be beneficial. They also provide the organisation with more time to train a new workforce and monitor the trends in the market place towards sustainability (Kotze, 2003).

In the literature highlighted earlier, most managers lack the experience required to implement these management systems and codes of practice. Although integrating these codes of practice successfully is difficult initially, in the long term it would make managing and maintaining such systems easier. Additional initiatives outlining the benefits of such practices are encouraged to ensure buy-in by all stakeholders.

### **1.2 Motivation for the study**

Against the backdrop to the fall of Enron and Worldcom, managers are encouraged to understand the importance of implementing management systems or codes of practice and to use business improvement tools such as benchmarking and scenario analysis, to maintain credibility and sustain their organisations. The implementation of these practices and tools is encouraged for various reasons, including the need to optimise processes and to ultimately increase market share even in times of uncertainty.

Most organisations are forced to comply with safety, environment and quality management systems to satisfy either customer requirements or legislation or both. Although there are several recommendations from studies (Boninelli, 2005:42, Fresner and Engelhardt, 2004:624, Holdsworth, 2003:194 and Rajendra and Barrett, 2003:4) on integrating safety, environment and quality systems, there are no reports which deal with the benefits of adding corporate governance and HIV/Aids management systems. It is important to ensure that corporate governance is practised in all kinds of organisations to prevent the exploitation of share-owners and stakeholders. Recent scandals in organisations like Enron in America and Regal in South Africa, among others, have shown that strict control measures should be in

place to protect share-owners and stakeholders (Wixley and Everingham, 2003:52). In view of the impact of the Aids epidemic, every organisation should implement a strategy to identify the status of its employees so that provisions could be made to train new staff to take over from the sick or deceased colleagues and also to increase the working life span of the existing workforce. The TAG document implies that organisations should develop and comply with an integrated strategy to manage HIV/Aids in the workplace (Department of Labour, 2003:39). To be beneficial the strategy should assess and understand the impacts of the epidemic to provide short-term and long-term mechanisms to reduce its effects. The elements of the strategy must include a policy, a prevention and wellness programme and management measures to respond to direct and indirect costs of HIV/Aids (Department of Labour, 2003: 39).

If an organisation wishes to remain competitive and maintain or improve its market share, careful planning to successfully run all five codes of practice simultaneously with ease, should become part of the culture of an organisation. This will further minimise the disruption of its daily activities. In business it would be preferable to have all five codes of practice maintained within an organisation as all of them have demonstrated their usefulness when implemented correctly. It also promotes productivity when expanding an organisation's customer base locally and internationally. These claims find support in published reports; for example, Reid and Sanders (2005:161) maintain that the International Organisation of Standardisation (ISO) certification has become a prerequisite for conducting business in many organisations and the European community uses the ISO 9000 series as a measure of the level of competence for organisations operating in Europe.

From literature the problems experienced with a non-integrative approach to quality are: identifying which business improvement tools to select to show process improvement, what the increased resources required would be and the difficulties that could be experienced on the shopfloor with meeting production targets and with maintaining supporting documentation required to sustain the variety of codes of practice (Rajendra and Barrett,

2003:2).

### **1.3 Problem statement**

The problem addressed by this thesis is: to determine the challenges presented by the integration of multiple systems such as safety, environment, corporate governance, quality and HIV/Aids and to determine the suitability of a proposed integrated model.

### **1.4 Aim**

In the light of the motivation described in section 1.2 the aim of this study will be to use related literature to investigate the challenges associated with operating management systems/codes of practice and to propose an integration of pertinent ones. The integration will be in the form of a diagrammatic representation using safety, corporate governance, quality, HIV/Aids and environmental management systems/codes of practice. An empirical study will be used to complement the findings of the literature review and to show the relevance of the diagrammatic representation above, which will be presented as a model.

The specific codes of practice used in developing this model will be:

- Occupational health and safety systems-specifications (OHSAS- 18001:1999)
- Environmental management system-requirements with guidance for use (EMS- ISO 14001:2004)
- Corporate governance (King II Report-2002)
- Quality management systems-requirements (ISO 9001:2000)
- HIV/Aids management system (AMS 16001:2003).

### **1.5 Objective**

To overcome the challenges presented by operating multiple systems/ codes of practice this study will develop a certifiable, auditable integrated model suitable to all sizes of manufacturing and service organisations to promote its sustainability, productivity and competitiveness. The model will provide a guideline to an integrative approach which would

assist managers with implementing management systems/codes of practice incorporating Safety, Corporate Governance, Quality, HIV/Aids and Environmental management. The study will also assess the applicability of the model.

### **1.6 Sub-objectives**

The sub-objectives of this study are to assess:

- current practice regarding management systems/codes of practice
- develop a schematic representation, in the form of a model, to integrate pertinent management systems
- the applicability of the schematic representation

These will be achieved by:

- reviewing related literature to establish the most commonly used management systems and the challenges associated with their operation
- using related literature and the Process Approach to develop an integrated model
- providing an example of a simple integrated policy, procedure, work instruction and self-assessment checklist
- selecting appropriate business improvement tools to provide organisations with the infrastructure to support management systems presented in the model
- conducting preliminary work to determine challenges faced by managers when implementing management systems
- designing a questionnaire which will determine:
  - the management systems/codes of practice most commonly used by organisations
  - the resources used by management systems/codes of practice, their adequacy and efficiency
  - ways in which such systems/codes of practice are beneficial
  - advantages and disadvantages of each system
  - aspects recommended for change

- tools currently in use
- whether integration is useful

Thereafter, the questionnaire will investigate the perceptions of the respondents on the Safety, Environment, Corporate Governance, Quality and HIV/Aids (SECQA) model on:

- the effects of the SECQA model on organisations
- whether it is beneficial to the organisation
- the advantages and disadvantages of the model for the organisation
- aspects recommended for change
- determine whether there is a difference between current practice and the situation if the proposed model was implemented

$H_0$ : There is no difference between current practice and the situation if the proposed model was implemented

$H_a$ : There is a difference between current practice and the situation if the proposed model was implemented

### **1.7 The research design**

This study will use qualitative and quantitative methods of research. The quantitative method will be used to complement findings from the qualitative one. The research design will consist of:

- a review of related literature
- the development of a model
- preliminary work
- a principal survey of a sample of organisations from the KwaZulu-Natal (KZN) region
- conclusions and recommendations

A brief description of each section is given below:

### **1.7.1 An overview of related literature**

A review of the literature on current practices and corporate failures will be used to highlight and enhance the importance of implementing the codes of practice proposed in this study. A review of business improvement tools which are required to establish management systems will be discussed in this section.

### **1.7.2 The development of the model**

This section of the study will discuss other models and will also show the theoretical grounding for developing the proposed model.

### **1.7.3 Preliminary work**

The preliminary study will consist of a pilot study and interviews. The preliminary study will be presented as:

- a pilot study through the use of a questionnaire of two manufacturing organisations. One organisation is a large beverage organisation and the other is a medium sized hardware organisation. Both organisations will be from the KZN region.
- interviews with key role players represented on the Quality Forum

### **1.7.4 The Principal study**

The principal study will focus on thirty organisations from a cross-section of manufacturing and service sectors in the KZN area.

The pilot study and the principal study will consist of a questionnaire which would be checked for its suitability prior to issue by an experienced academic. The purpose of the questionnaire will be to establish current practice and to determine if management systems (Safety, Environment and Quality code of practice) existed in organisations. The questionnaire will also be designed to determine if organisations included corporate governance and HIV/Aids management strategies in their daily activities. The second part of the questionnaire will be used to elicit the perceived views of the same organisations if

they considered the introduction of the SECQA model to their operations.

### **1.8 Limitations of the study**

The limitations of the study were as follows:

- a certain number of respondents were unwilling to disclose the name of their organisation due to confidentiality clauses signed by respondents with their organisations
- the lack of awareness amongst respondents about corporate governance and HIV/Aids management systems

These shortcomings were overcome in the following ways:

- The non-disclosure of the name of the organisation under investigation did not hinder the study because the SECQA model will be applicable to both manufacturing and service type organisations.
- The researcher was available to assist with queries relating to the lack of knowledge on these systems. An overview of the management system was provided.

### **1.9 Assumptions/Prerequisites to the study**

The following assumptions/prerequisites were highlighted during the investigations of this study:

- management within organisations, is committed to implementing a Quality management system (QMS), Environmental management system (EMS), Health and Safety management system
- the organisation should have an existing Safety, Environmental and Quality system but wishes to improve performance
- the organisation wishes to attain accreditation to a certified code of practice such as ISO 9001, ISO 14001 or OHSAS 18001
- the organisation already has accreditation to one or all of the codes of practice mentioned above, but wants to improve one or all of them

### **1.10 Proposing an acronym SECQA**

This study will use safety, corporate governance, quality, HIV/Aids and environmental management systems or codes of practice to develop a schematic model which will be called the SECQA Model. In choosing the acronym SECQA, the following were taken into account:

- the model was limited to health and safety, quality, corporate governance, HIV/Aids and environmental management
- the order in which the management systems were selected to name the model in this study, depended purely on designing a name
- it was important to name the model to distinguish it from other models

### **1.11 Possible benefits of the SECQA model to organisations and the community**

It is hoped that this model will be used as a blue-print of the requirements for all types and sizes of organisations and will be patented after submission for this qualification.

Adherence to these requirements will provide an opportunity for the organisation to comply with OHSAS 18001:1999, ISO 14001:2004- (EMS), King II Report, ISO 9001:2000-(QMS) and AMS 16001:2003. It will also enable an organisation to be audited by an external assessment body against ISO 14001:2004-(EMS), ISO 9001:2000-(QMS), OHSAS 18001:1999, AMS 16001:2003 and Corporate Governance as stated in the King II Report.

### **1.12 Plan/Scope of the remaining chapters of this thesis**

#### **CHAPTER 2            Review of literature-management systems**

A review of related literature will be conducted to gather information regarding the different management systems commonly currently used in organisations. Literature describing the history of the codes of practice proposed in the study and various failures and disasters associated with poorly implemented systems will also be reviewed.



### CHAPTER 3            Review of literature-business improvement tools

The business improvement tools selected for this study will be discussed in this chapter.

### CHAPTER 4            Methodology, development of the model and preliminary work

This chapter:

- illustrates the design of the research
- shows the development of the SECQA model
- illustrates an integrated policy, procedure, work instruction and self-assessment checklist
- shows how and why specific research methods and tools were selected.
- shows preliminary work and presents the findings of this study

### CHAPTER 5            Results and discussion

This chapter evaluates the findings from the questionnaire. These findings are presented graphically with an interpretation of the results. The benefits hoped to be achieved from the use of the SECQA model will also be shown.

### CHAPTER 6            Conclusions and recommendations

The study will culminate with conclusions and recommendations to enhance performance. It will also highlight opportunities for future research.

## CHAPTER 2

### REVIEW OF LITERATURE - MANAGEMENT SYSTEMS

“Global competition is played out by different rules and for different stakes at each level.”

C.K.Prahalad and G. Hamel (Foster, 2001:61)

## **2. Review of literature - management systems**

The review of literature will explore the importance of implementing the management systems in this study, the development of these systems, their strengths and weaknesses, and it will also highlight the impact of such management systems when managed and implemented ineffectively. The review will include accounts of organisations which embarked on the integration of quality, environment and safety management systems. In addition, it will review other management systems and codes of practice or specifications which are widely used in the more specialised organisations, for example, in a food organisation and an automotive organisation.

### **2.1 Quality management**

Most organisations conform to some form of management practice. In some instances these management practices form codes of practice which are prepared by international bodies and in other cases they are specific to suit a particular organisation. The following section will discuss quality management and will review the international quality ISO 9001:2000 code of practice.

#### **2.1.1 The purpose of quality management and ISO 9001:2000 code of practice**

Tricker and Lucas (2001:1) explain the concept of quality. They are of the view that quality is always regarded as making something fit for use, which could be compared against pre-defined specifications. Any deviation from this specification had to be reworked, scrapped or sold at a reduced price. The root cause of the deviation from the pre-defined specification had to be identified, eliminated and prevented from recurrence. Gitlow, Oppenheim, Oppenheim and Levine (2005:27) are of the view that adherence to quality practices ensures less rework, increases productivity, lowers the unit cost per product and yields larger profits. These improvements in operations also ensured that there was job security for the existing work-force, more new employment was created and mutually beneficial long-term supplier relationships were established. In addition, they mentioned that better quality products were supplied to the customer, thereby evoking greater investor confidence in the organisation.

Another benefit associated with quality practices was the ability to provide flexibility of the price of the product which improved the competitive position of the organisation. Evans and Lindsay (2005:9) view the aspect of good quality practice as being beneficial because it not only reduced the number of defects produced by the organisation but it also engaged employees to sustain improvement.

Reid and Sanders (2005:161) reported that organisations accredited with ISO 9001 use compliance to this management system as a marketing tool to show other organisations their adherence to specific international standards. It is evident from the literature above that Tricker and Lucas (2001:1), Gitlow, Oppenheim, Oppenheim and Levine (2005:27), Reid and Sanders (2005:161) and Evans and Lindsay (2005:9) are in agreement that adhering to sound quality practices has been useful to organisations.

#### **2.1.2 The development of quality management systems and ISO 9001:2000 code of practice**

Tricker and Lucas (2001:81) report that in 1979 the British Standard Institution (BSI) developed many codes of practice as guidelines for quality management and quality assurance with the principles of auditing in mind. One of these codes of practice was known as BS 5750 and was adopted by organisations who wished to achieve a minimum level of quality assurance. The Americans and the Europeans developed their own management system. In 1981 the Department of Trade and Industry in the United States assigned a committee commonly known as ISO to develop a code of practice to enhance competitive advantage. In 1983, ISO introduced a code of practice compatible with all countries. This compatibility was achieved by providing a means to amend documentation to suit a particular country without changing the essence of the code, for example, for use in Britain, Germany or France. In 1994 such code of practice was named ISO 9000:1994 (Tricker and Lucas, 2001:83). Stables (2001:2) indicates that in 1998, three-hundred thousand organisations were compliant with ISO 9001/2/3 codes of practice. These organisations covered a span of over 204 countries. He expresses the view that quality management is widespread and is used by

many types of organisations as these codes add value to their activities. However, there were doubts about the suitability of the ISO 9000:1994 version to different kinds (such as manufacturing and service) and sizes of organisations.

To this end a series called the ISO 9000:2000 was introduced in 2000. It was more user-friendly to service and manufacturing organisations, suited to businesses of all sizes and could be integrated with other codes such as the safety and environmental codes. Furthermore, it provides users with ISO 9000:2000 which presents the fundamentals and vocabulary of quality management and describes words used in the ISO 9001:2000 code of practice. This series also includes ISO 9004:2000, which enables an organisation to conduct a self-assessment to evaluate its performance prior to a third party audit. In this way deficiencies may be detected and corrected in anticipation of the ISO 9001:2000 certification (Tricker and Lucas, 2001:87).

The requirements stipulated by this code of practice are: the quality policy of the organisation, the responsibility of management in the implementation of the code of practice and the management of resources, the product realisation in terms of the inputs and outputs, measurement, analysis, improvement and continual improvement of processes. Organisations wishing to comply with the ISO 9001:2000 code of practice should adhere to these requirements (South African Bureau of Standards, 2000:6) (A).

### **2.1.3 Weaknesses and strengths of ISO 9001:2000**

The literature review did not reveal any account of organisations that experienced limitations with managing the ISO 9001:2000 code of practice. This could be attributed to the fact that the ISO 9001:2000 code is a fairly new practice in organisations and may not have reached maturity or realised its full potential. However, one of the criticisms of Reid and Sanders (2005:161) was that ISO 9001:2000 certification focuses on the processes used and conformance to specifications and fails to address the product, customer and market requirements.

From the review of literature in section 2.1.2, it was evident that the ISO 9001:2000 code of practice was developed to revolutionise the concept of quality management. This can be seen from the strengths of the code of practice which are discussed below.

Oakland (2003:222-3) is of the view that the ISO 9000:2000 series provides a compact, comprehensive, versatile collection of standards that could be used more widely than the 1994 series. The reduction from four to one certifiable standard also provides an organisation with a more achievable approach to operating management systems compared to the 1994 version. Some of his findings were the suitability of the 2000 version to current trends such as: the processes, changes in management thinking to improve on operational performance, risk analysis, interdepartmental relationships, the value-chain, equipment capability and management skills.

There appears to be conflicting views between Reid and Sanders (2005:161) and Oakland (2003:222-3) about this code of practice addressing market, customers and value-chains. However, there is agreement by both these authors about the focus of the code of practice on processes within the organisation.

Another strength in the design of the code was in the quest to minimise shortfalls in managing quality systems. The ISO 9001:2000 code of practice includes a mandatory requirement called "Continuous Improvement" to steer organisations in the direction of improving and adding value to each activity within a process (South African Bureau of Standards, 2000:5) (A). In this way the efficacy of the overall management system is improved and even potential areas of failure are detected and corrected, improving the organisation's sustainability. It is urged that organisations following management systems specifically designed for their organisations, introduce "Continuous Improvement" as a requirement within their management system. The review above shows consistency in the views of Oakland (2003:222-3) and (South African Bureau of Standards, 2000:5) (A) with regard to continuous improvement of operational performance of the organisation.

From the strengths above, it is recommended that organisations take the opportunity to use ISO 9001:2000 to improve their quality management practices. Compliance with this code of practice ensure continuous improvement strategies are constantly sought and implemented. In this way the organisation is always on the path of continuous improvement and sustainability.

#### **2.1.4 The impact of implementing an inefficient quality management system**

The operations of organisations are dynamic and range from changes in customers' needs, changes in technology, cultural differences and maintaining and improving market share. With such high demands on organisations especially when operating diverse systems, there are bound to be shortfalls in management systems. Some of these shortfalls have led to failures in a number of organisations and a few incidents of such failures are discussed in this section.

One may argue that the management of the impact of an organisation's activities on the environment and protecting employees by providing a safe and healthy area in which they can work, is equally important as monitoring quality related activities. This statement can be supported by the following reports which show the repercussions of implementing poor quality management practices:

##### **2.1.4.1 Land Rover**

Cokayne (2001) states that approximately 6 000 units of Freelander 4X4 vehicles had to be recalled by the supplier due to technical defects in some vehicles. This recall was limited to vehicles built between August 2000 and March 2001. A spokesperson for the distributing agent in South Africa reported that the recall was applicable to all countries. The vehicles were assembled in the United Kingdom (UK) and were imported into South Africa fully built. The defects reported by customers were: hand brake failures, engine harness malfunctions and foot brake problems.

These defects were highlighted during routine maintenance and from customer complaints. Cokayne (2004) states that some vehicle owners have started web-sites which allowed them to express their disapproval and disappointment with this product. Furthermore, Land Rover has subsequently focussed on training technicians and as a result fewer complaints and claims have been reported.

#### **2.1.4.2 Jeep**

The Business Report on the 16 April 2002, reports the recall of in excess of 1,1 million Jeep sport utility vehicles during that month. This recall was applicable to the following models: Wrangler manufactured between 2000-2002, Cherokees manufactured between 2000-2001 and Grand Cherokees manufactured between 1999-2002. This recall was prompted due to concerns from the United States National Highway Safety Administration about the design of the vehicles' engines. Apparently, the design of the air passages in the engines promoted the deposition of debris into certain parts thereby increasing the potential for fires. During a four month period in 2002, the manufacturer recalled 3,3 million vehicles. This figure exceeded the number of vehicles the organisation planned to sell that year. Serious repercussions emerge from such recalls. This can be supported from research which showed that 20% of customers prefer not to purchase this brand of vehicle as they are concerned with its reliability (Reuters, 2002).

A summary of the experiences of both the manufacturers mentioned above shows the loss of considerable revenue as a result of product recalls and rework and the loss of potential customers. It is also evident from Cokayne (2004) and Reuters (2002) that in both instances mentioned above, customers were dissatisfied with the poor quality of products they received.

### **2.2 Environmental management**

Environmental management focuses on the surroundings in which an organisation operates. This includes the air, water, land, natural resources, flora, fauna, humans and their



interrelations (Stables, 2001:396). To support environmental management initiatives the section below will focus on the international ISO 14001:2004 code of practice.

### **2.2.1 The purpose of environmental management and environmental management system (EMS) ISO 14001:2004 code of practice**

Reid and Sanders (2005:161) mention that the ISO 14000 series for environmental management is used by organisations to show their responsibility through “green manufacturing” and their awareness of environmental issues.

Stables (2001: 396) mentions that environmental management is very important especially if organisations wish to trade internationally. He also indicates that organisations following effective environmental management practices ought to produce products which are more acceptable in the marketplace as they make the customer feel that he/she is achieving his/her personal environmental objectives.

Furthermore, an efficient EMS could be designed to highlight areas of potential problems. This pro-active management is beneficial because it prevents the large costs associated with site clean ups and the “polluter pays” policies (Sampson, 2000:6). It also helps organisations manage their natural resources and waste more efficiently.

Sampson (2000:5) is of the view that an EMS assists an organisation to comply with environmental legislation. He also states that an EMS encourages better house-keeping practices within the organisation and promotes the organisation’s image to potential customers, investors and share-holders.

It can be deduced from the review in section 2.2.1 above that these authors are in agreement that adherence to an EMS helps organisations and customers satisfy their social responsibility to preserving the environment and its resources.

### **2.2.2 The development of environmental management system (EMS)- ISO 14001:2004**

According to Sampson (2000:6) environmental management and auditing emerged in America between 1970 and 1980 and was used as a management tool for organisations to show their compliance with legalisation. In addition, in 1992, the Earth Summit in Rio de Janeiro set the framework for sustainable development and expressed the need for organisations to manage and control the impact of their activities on the environment. Consequently, a request to ISO was placed in 1993 for the development of an environmental management system (EMS).

ISO 14001 was introduced in 1996 and updated in 2004. It presents an EMS consisting of general guidelines on principles, systems and supporting techniques. The value of this system is assessed via a management review at regular intervals (South African Bureau of Standards, 2005) (A).

The requirements stipulated by this code of practice are: the environmental policy of the organisation and planning, implementation, operation, checking and review of the activities of the organisation. Organisations seeking accreditation to an EMS should comply with the ISO 14001:2004 requirements (South African Bureau of Standards, 2005) (A).

### **2.2.3 Weaknesses and strengths of ISO 14001:2004**

It is very difficult to determine the legislation and the regulations applicable to one's organisation (Stables, 2001:399). To track the changing legislation applicable to an organisation, it is suggested that external consultants be hired to monitor and update documentation and practices.

This code of practice is applicable to all types and sizes of organisations. Compliance with this code facilitates environmental adherence to legislation, protection and prevention of pollution of the environment (Sampson, 2000:6). The ISO 14001 code of practice, requires organisations to develop an environmentally-friendly policy for determining aspects and

impact of their activities, for focussing on environmental planning and developing procedures to establish objectives and targets consistent with policy and to adhere to legal and contractual requirements. Such policy can also be integrated with safety and quality management systems (South African Bureau of Standards, 2005) (A).

From the review of literature (Sampson, 2000:6 and Stables, 2001:396) it is evident that organisations which implement efficient EMS reduce their consumption of natural resources thereby saving overall operating costs. The management of waste has also been beneficial and many organisations have adopted recycling and other waste management strategies, proving that an effective EMS is beneficial. These good practices could perhaps enhance the image of the organisation thereby making it more attractive as a member included on the value chain.

#### **2.2.4 The impact of implementing an ineffective environmental management system**

The devastation resulting from inefficient management systems is not only confined to the impact on products and employees but also to the surrounding environment in which organisations operate. Peters (2004) reports that the aquatic and bird life in a once lush lagoon in Milnerton, Cape Town, is deteriorating as a result of pollution. Environmentalists and community leaders are very concerned with the health and the environmental impact on the ecosystems surrounding this area. He reports further that the cause of such pollution is the sub-standard quality effluent from a waste-water sewage plant situated near the lagoon, that is discharged into the water. Their views are that the waste-water plant is under resourced for the capacity of the incoming effluent. Consequently untreated effluent containing high levels of dangerous substances like ammonia flows into the lagoon.

He mentions that studies of the lagoon revealed that forty million prawns have disappeared and that the bird and fish activity in the area have been reduced. This can be confirmed by studies conducted by the Marine and Coastal Management which states that only five of the eighteen species of fish which lived in the lagoon were observed. Two exotic species of fish

could not be accounted for. Although these studies did not conclude the root cause of the loss of life in the lagoon, a member of another action group reiterates that the effluent released into the river is indeed sub-standard quality. His claims are supported by the following episodes: canoeists were reported to get sick after paddling in the water, wounds which were sustained at the lagoon became infected and dogs which swam in the lagoon became very sick and had to be taken to the veterinary surgeon.

Waste-water officials confirmed these claims. The problems experienced by the officials were as a result of the increase in the load to be treated by the plant. Funds have been budgeted for an upgrade to the system. As part of the upgrade, a disinfection unit will be installed to reduce the bacterial levels of the effluent. It is envisaged that this would make contact with the water from the lagoon safer for animals and humans beings (Peters, 2004).

It is evident from this review that an inefficient management system has had serious repercussions on environments surrounding the organisation. It can be inferred from Peters (2004) that there are areas in South Africa which support unique and fragile ecosystems, as was the site at Milnerton in Cape Town. These sites attract tourism which in some instances are the main source of income for the area. Hence, it is urged that management behaves responsibly to sustain these ecosystems for example, by implementing an efficient EMS.

A report by Carnie (2004) shows the seriousness of government's commitment to the reduction of pollution. This is evident from the Environmental Minister at the World Congress on Environmental Health when he related that the police and the members of his department had worked together in an effort to arrest a member of the community for dumping hazardous waste substances illegally. The Minister's commitment was reinforced when he joined protestors outside the Congress in support of their campaign for clean air. Members of the community and activist groups were not convinced by the pledges of the government officials and stated that government and industry should be held responsible for the effects of pollution on the health of surrounding communities.

In another similar incident, an organisation in Brazil neglected to control their environmental activities (Stables, 2001:392). Consequently these activities contributed to the pollution of an entire water table and the organisation had to relocate at a huge cost.

Peters (2004), Carnie (2004) and Stables (2001) are in agreement that neglecting good practice could lead to the loss of reputation and credibility of an organisation. Their reviews also highlight the importance for organisations to conduct their activities in a socially responsible manner. This is by far perhaps one of the worst experiences for any manager. Some of the possible repercussions from such activities are: loss of customers, loss of investor confidence and loss of profits. It is encouraged that management should make every effort to buffer management systems to prevent such occurrences.

### **2.3 Safety management**

Good safety practices are encouraged to prevent occupational accidents and diseases. To comply with safe occupational practices this section will discuss the occupational health and safety series - OHSAS 18001:1999.

#### **2.3.1 The purpose of safety and the occupational health and safety assessment series-OHSAS 18001:1999**

According to Niranjana (2003:2), the Occupational Health and Safety Act No. 85 of 1993 recommends that employees should work in environments that are safe and free of risk and hazard to their health and well being and provides specific requirements with which an organisation must comply (Section 12).

He mentions that the Act stipulates that when work environments pose a threat, the employer should ensure that the employees are aware of the risks, hazards and their rights. The employees should know how to protect themselves from harm by working safely. One method of protecting the employee is to issue protective clothing (Section 12) (Niranjana, 2003:2). An employer is required to supply and maintain all equipment to perform the

activity required. The equipment should operate in a manner that does not affect the employee adversely. Any situation that poses a threat to the well being of employees should be assessed and the threat reduced or removed before protective clothing is assigned and work commences (Section 8 & 12) (Niranjan, 2003:2).

Akass (1994:3) is of the opinion that the more prominent organisations used their performance in safety aspects as a useful indicator to determine business success. It is evident from this statement that organisations possibly used the number of incidents reported as an indication of the maturity, efficiency and effectiveness of their safety management systems.

### **2.3.2 The development of safety management system -occupational health and safety assessment series (OHSAS 18001:1999)**

The Occupational Health and Safety Assessment Series (OHSAS 18001) was developed in 1999 as a code of practice for an organisation to control occupational health and safety-related risks in order to enhance its performance. This series was developed with the aid of a number of organisations (British Standards Institution, 1999). These organisations are as follows: National Standard Authority of Ireland, South African Bureau of Standards, British Standards Institution, Bureau Veritas Quality International, Det Norske Veritas, Lloyds Register Quality Assurance, National Quality Assurance, SFS Certification, SGS Yarsley International Certification Services, Asociacion Espanola de Normalizacion y Certificacion, International Safety Management Organisation Limited and the Standards and Industry Research Institute of Malaysia and International Certification Services.

The Occupational Health and Safety Act and the OHSAS 18001:1999 provide a framework for organisations to identify and manage risks associated with their operations to ensure improved safety practices. Organisations may be certified in terms of OHSAS 18001:1999. This code of practice is designed to be easily integrated with ISO 9001 and ISO 14001 (British Standards Institution, 1999:5 amendment 1). An organisation wishing to comply with this code of practice would have to comply with the following requirements: the

occupational health and safety policy of the organisation, planning, implementation, operation, checking, corrective action and management review of the activities of the organisation (British Standards Institution, 1999).

### **2.3.3 Weaknesses and strengths of the occupational health and safety assessment series (OHSAS 18001:1999)**

Holdsworth (2003:194) cautions organisations that there are distinct differences between process safety and risk management, in terms of the internationally based SHE (safety, health and environment) systems and that both systems fail to define the administrative control required to sustain them. Hence, it is encouraged that the documentation be written simply and unambiguously so that instructions can be understood by all employees.

This code of practice uses the Deming Cycle of the “Plan, Do, Check, Act” (PDCA) Model to facilitate continuous improvement (British Standards Institution, 1999). It ensures that existing business practices are reviewed and that new ones are investigated and implemented. It is worthy to note that the process approach from the ISO 9001:2000 and ISO 14001:2004 codes of practice also use PDCA Model as a basis to facilitate continuous improvement. This is perhaps one of the aspects that exhibits the opportunity to integrate these systems.

### **2.3.4 The impact of implementing ineffective safety management systems**

There is a close relationship between the impacts of neglecting safety and the operations of organisations on their surrounding environment. The section below reports on the outcome of a series of activities of different organisations on the health and safety of its employees and the environment in which such organisations operated.

#### **2.3.4.1 Sasol**

There is growing concern from employees (Unknown, 2004) and environmentalists (Kalideen, 2004) about the safety of permanent and contract employees at the Sasol petro-

chemical plant in Secunda. This emerges after a series of fatal incidents at the plant on 21 June 2004, 1 July 2004 and 1 September 2004.

According to an article published in the Business Report on 1 July 2004, a 20 year old boiler maker died after being exposed to an explosion of a chemical storage facility. Two other employees sustained injuries during this incident (SAPA) (2004) (A). A week earlier another 21 year old employee was killed during a fire in a tank on site. Seven other employees were injured during this accident (SAPA) (2004) (A). The most recent incident occurred after a gas leak during maintenance caused an explosion at a site. Six employees died while five other employees were hospitalised in a serious condition (Staff Reporter, 2004).

Barbeau and SAPA (2004:2) writing in the Sunday Tribune Herald published a report on 5 September 2004 on the cause of the explosion at this site. According to an employee, preliminary preparations for maintenance at the plant were ineffectively communicated. Subsequently, this caused gas to escape from a pipe which was being worked on. After the blast employees were hesitant to return to work because they feared for their safety. However, they were forced to return to work as it was their only source of income (Barbeau and SAPA, 2004:2).

In addition a union official expressed concern that his organisation was not informed by Sasol about investigations after the blast. He also mentioned that he was concerned with the integrity in which investigations were conducted by Sasol. He states further that after the series of incidents at the site, new safety procedures should be introduced. It was found that the number of days and employees allocated for maintenance activities had been reduced at the site (Barbeau and SAPA, 2004). The incidents at the Sasol plants were highly publicised throughout the country. The literature reveals that procedures were not adhered to. It is evident from the series of incidents during the period 21 June to 1 September 2004 that either ineffective or no corrective action investigations were conducted. Stringent corrective action investigations identifying the root-cause of incidents should be encouraged to prevent a



recurrence. It can be inferred from the review above that if an effective safety management system was in place this would have averted the problem or minimised resultant losses and damages.

In a separate incident, Khan (2005) reports that residents in Merebank were alarmed by an explosion at the Engen oil refinery on 18 January 2005. Residents mention that they felt the tremors from the explosion in their houses when doors and windows were shaken, and they saw huge flames and smoke emanating from the refinery. A spokesperson for the refinery was of the view that a solvent tank had caught alight at approximately 20h45. The cause of the fire was unknown. Apparently all the emergency procedures were followed by the employees on site and the fire was extinguished after 70 minutes without any injuries reported. Khan (2005) states that although the production manager of the refinery mentioned that the communities surrounding the organisation were not under threat from the fire, some residents were afraid of losing their lives.

To minimise and eliminate such effects mentioned above, adherence to the following requirements are encouraged. At no time should the safety of employees and the community be compromised for production. All safety procedures should always be adhered to. In addition these procedures should be reviewed regularly so that deficiencies can be identified, eliminated or corrected and preventive measures introduced. These examples serve to demonstrate the importance of effective safety management systems.

#### **2.3.4.2 Caltex**

Bailey and Smith (2004) writing in the Cape Argus on 5 July 2004 reports on the “black rain” experienced in a few suburbs in Cape Town on Sunday 4 July 2004. The droplets of “black rain” emanated from a stack at the Caltex Oil Refinery. The factory manager provided an explanation for the incident, that during normal operating conditions, steam was released through a safety release valve during the refining process of crude oil. Under these conditions no water was present in the system. However, on this occasion residual water and crude oil

emanated from the stack. Employees were under the impression that the residual water had been drained from the system and continued with the refining process (Bailey and Smith, 2004).

A resident indicated that he heard an explosion from the plant and shortly thereafter, a stream of black and white smoke emerged from a stack. The resident echoed concerns about the health hazard associated with the smell of the burning oil. Caltex staff were part of a massive clean up campaign to wash and replace the damaged items of the residents. Some residents stated that they were disturbed in that although their vehicles were washed, stains from the oil spill remained on the vehicle surfaces (Bailey and Smith, 2004).

It is evident from the case above that work instructions should always be adhered to. Mechanisms should be in place to ensure that routine operating conditions are prevented from progressing until all precautions have been addressed, especially after shut-down and during start-up procedures. This culture should ensure that employees are aware of all instructions before advancing to the next stage of the operation and prevent the recurrence of such incidents. Here again the importance of and the need for effective safety management systems are essential.

#### **2.3.4.3 Thor Chemicals**

A series of newspaper articles by Carnie (2003) reports on the plight of many employees working in a mercury and chemical plant called Thor Chemicals at Cato Ridge. According to Carnie (2003) a number of employees at this plant complained about health problems. These health problems were later associated with mercury poisoning. The unfolding of the chain of events which lead to uncovering these health related problems will be discussed below.

In 1993, Peter Cele was one of the first employees who allegedly died from mercury poisoning. This initiated a chain of activities highlighting awareness of the impact of

working with mercury. In 1998, high levels of mercury were found 15 kilometres (km) downstream from the plant. A few years later medical reports showed factory workers with levels of mercury in their test samples much higher than the recommended limit. Green Peace, an environmental awareness group, stated at the Earth Summit on Sustainable Development in Johannesburg in 2003 that Thor Chemicals failed to follow appropriate corrective action in response to the high levels of mercury detected in urine samples of employees. These employees were not adequately informed about the hazards associated when working with mercury. Consequently employees who showed signs of being unwell were moved to different areas of the plant. Green Peace claimed that the "Government" overlooked the problems experienced by employees and allowed the importation of hazardous waste until mid-1990s (Carnie, 2003).

Further in 1993 a few members of Senior Management of Thor Chemicals were arrested on charges for culpable homicide. These charges were subsequently dropped in 1995 as there was no conclusive evidence that mercury poisoning was associated with the death of employees. Thor Chemicals was fined a sum of R13 500 for not adhering to appropriate safety and labour laws. In 1997 Thor Chemicals paid 17 employees R9,4 million as a result of a class action law suit. In 2000 a further R2,7 million was paid to 21 other workers. A large part of Thor assets were said to be transferred to another organisation called Tato Holdings. Claims by Green Peace were that this move was initiated to buffer possible legal claims and protect Thor Chemicals net assets from being reduced from £19 million to £2,5 million. The Cato Ridge Plant is currently renamed Guernica Chemicals (Carnie, 2003).

Government officials in 2003 presented Guernica Chemical's legal representative with a directive to pay R60 million to clean up the actual and potential pollution on the environment as a result of their activities (Carnie, 2003). Apparently this organisation stored approximately 8 000 tons of basic sludge in warehouses and ponds near Cato Ridge. This action contravened The National Environmental Management Act of 1998 which makes provisions for a "polluter pays" policy. This policy forces organisations to carry out their

activities responsibly or expect to bear costs of subsequent clean up initiatives which was the instance in this case (Carnie, 2003).

The Occupational Health and Safety Act (OHS) includes all the information required for management and employees to comply with when working with or exposed to hazardous material. Adherence to these requirements provides employees with safer environments in which to work and could reduce the potential of litigation against management as was the case with the officials of Thor Chemicals. Management should perhaps be held accountable for their decisions. This will ensure that more responsible decisions will be made.

#### **2.3.4.4 The Bhopal Disaster**

On 2<sup>nd</sup> and 3<sup>rd</sup> December 1984 a chemical gas leak emanated from the Union Carbide factory based in a city called Bhopal, India. This incident has often been referred to as the worst form of corporate crime of all time.

Apparently forty tons of a dangerous gas called methyl-isocyanate was released from the plant. There were claims that about half a million people were exposed to the deadly gas. Of this figure twenty thousand people have died and another one hundred and twenty thousand people still experience the effects of this deadly exposure. No site clean-up procedures were introduced to the city subsequent to the events above. Consequently this sparks fears today among the residents and environmentalists that 20 000 residents may still be exposed to the effects of the gas ([www. BHOPAL.NET/gda/index.htm](http://www.BHOPAL.NET/gda/index.htm)).

Investigations into the causes of the gas leak, found that it resulted from a combination of cost saving exercises, mainly from the use of unproven and untested technologies and the lack of safety and maintenance systems. All safety systems to prevent the gas leaks were turned off and there were no sirens to warn of impending danger. An audit report issued in 1982, two years before the disaster, supported the claims above. This audit generated sixty-one hazards, thirty of these hazards were reported as major and eleven dangerous. It also

warned of recurrences if these safety procedures continued to be neglected. The findings of the report were handed to the United States (US) officials of the organisation.

After the gas leak, the Union Carbide site was abandoned by employees. The CEO was not held accountable for the activities related to the gas leak. In 2001, Union Carbide was bought by Dow Chemicals who refused to take the responsibility for any hazards associated with the activities conducted by Union Carbide. The site has never been cleaned, drinking water is not safe and victims were not compensated for the suffering due to the exposure. Union Carbide has not disclosed the composition of the gas which had emitted into the environment. If the latter was known, it could help doctors make more informed diagnosis and recommendations for treatment ([www.BHOPAL.NET/gda/index.htm](http://www.BHOPAL.NET/gda/index.htm)).

The review of literature clearly demonstrates the need for organisations to implement and adhere to effective safety management practices. Communication to all employees and communities surrounding the organisation on acceptable behaviour and emergency response around hazardous environments should be encouraged. Investigations into incidents should be comprehensive to determine appropriate corrective and preventative strategies. A problem of this nature would require that audits are conducted regularly to monitor adherence to policies. Perhaps organisations which compromise the safety of people should be prosecuted.

An examination of the literature in this section shows that although government may be serious in curbing the negative impacts of business on the environment surrounding the organisation and the health and safety of employees, the recurring incidents in some organisations such as Sasol is indicative of management's lack of commitment. This could perhaps be due to the poor enforcement of penalties by the government. It is evident from the episodes at Caltex, Sasol and Bhopal that the lack of proper training of employees was apparent. It can be inferred that when the number of employees and the number of days to complete maintenance work is reduced, employees are pressurised to meet time constraints. Consequently they may make assumptions and use their own judgements on how to reduce

the work-load with detrimental effects as seen in Caltex, Sasol and Bhopal.

## **2.4 Corporate governance**

King (2003:8) is of the view that directors should move away from situations which pose a conflict of interest. Furthermore, he mentioned that corporate governance practices be administered based on trustworthiness, transparency, interchangeability of roles, accountabilities and evaluation of performance. This section will focus on the King II Report.

### **2.4.1 The purpose of corporate governance**

It stresses the importance of implementing good corporate practice especially for the following reasons. Firstly, failure to do so leads to potential lawsuits against organisations. Secondly, failure to implement good corporate practice prevents organisations from progressing towards continuous improvement and integration of multiple systems as errors are carried forward.

The following section will highlight some of the repercussions experienced when management neglects to sign contracts between the organisation and employees and fails to disclose the effects of working in sensitive environments:

Venter (2004) highlights the work by United States lawyer Fagan, of the experiences of many South African women and their children living near activities which have allegedly had an impact on their health. Mining, crop dusting and oil refineries are some of the activities and operations which were listed as causes of these impacts. An excess of seven thousand women and children from all over South Africa have been afflicted with health problems such as respiratory diseases and cancer. He mentions that a variety of toxic, hazardous substances and a host of chemicals from the activities and operations listed above are the cause of these ailments and that certain international organisations represented by subsidiaries in South Africa who are allegedly responsible for the events above, would face multi-million dollar law-suits in New York. Some of the allegations from the women and children are that these

organisations failed to inform them of the repercussions of being exposed to certain activities related to their operations. They state that organisations should have informed them adequately, of the risks associated with these operations. The women and children are claiming monetary compensation from these organisations. They also want the organisations to pay for medical costs associated with these ailments. Fagan estimates each claim to be worth approximately R450 000 (Venter, 2004).

According to King (2003:19), the King II Report advocates the following clauses: social responsibility and integrated sustainability reporting. Both these clauses focus on the responsibility of an organisation to perform its activities with the least impact on the environment and to the communities surrounding it. In addition it encourages organisations to uplift the well-being of communities. Perhaps if organisations adhere to corporate governance practices such inconsistencies as those mentioned by Venter (2004) would not arise. The example also serves to show the importance of adherence to environment and health and safety practices. Both these management systems make provision for organisations to provide safe surroundings. From this example it is apparent that corporate governance, environment and health and safety practices lends itself to integration of these management systems.

SAPA (2004) (B) relates an incident in a Malaysian owned textile organisation where 400 Bangladeshi employees assaulted two managers during an inspection of their living facilities in Windhoek. The employees started work at the site approximately one month prior to the incident. They reported that they were promised accommodation, food and a monthly salary of \$120. However, \$45 were deducted from their salary for food. In addition they were dissatisfied with the poor living facilities and living conditions. The union representing that sector supported these claims and is investigating the incident.

It is evident from the example above that no corporate governance management system was in place and demonstrates the need for one. If a suitable management system was in place

managers would refrain from creating such environments as it reduces the morale of employees.

Shukla (1994:629) investigates why some organisations prosper while others fail and contends that the success of some organisations was due to their mastering the art of corporate change and transformation. He cites various studies and listed the principles which should be adopted by organisations to achieve corporate success. One such study indicates that 90% of organisations do not survive after 20 years.

Shukla (1994:629) also cites work by Cameron *et al.* (1988), who found that many of the organisations investigated did not consider scenarios of decline in business. All plans were based on the assumption that only growth occurs. Other reasons for corporate failure was that the organisational goals and the operating environment were not aligned.

The repercussions of corporate failure will result in the following: bankruptcy, loss of market share and lower profits. Shukla (1994:631) was initially of the view that corporate failures have often been blamed on external factors such as labour unrest or failure of a major product, to name a few. However, after a review of literature, he believes that external forces such as competition, changes in regulations, inconsistent inputs and internal factors like managerial incompetence and bureaucracy were also root causes.

Four major categories common to corporate failures emerged from Shukla's studies. These categories are: the life cycle decline of products, the organisation is trapped by past success of processes, inappropriate strategic biases and "mental models" and rigidity in response to crises.

It is apparent from this review that organisations which fail to predict future conditions of their organisations accurately are prone to failure. This example perhaps serves to reinforce the necessity of choosing appropriate business improvement tools and strategies so that the



actual performance (operating environment) of the organisation compared to the desired performance (organisational goals) can be monitored and realigned as deemed necessary and that future predictions of the organisation could be directed in order to prevent corporate failure. Hence, it is apparent from this review that business improvement tools and corporate governance practices should be encouraged.

Davies (1999:34) reports that from the earliest acts of corruption the number and the episodes of corruption within organisations has increased. People were looking for quick fixes and returns hence many organisations gained market share and capitalised in the short term only.

According to Thabo Mbeki (2003:23), the state president of South Africa, conflicts throughout Africa have impacted negatively on many countries like Sierra-Leone, Guinea and Cote d' Ivoire. Subsequently, the Secretary-General of the United Nations recommends that the root causes of conflict be investigated, eliminated and the possible promotion of peace and sustainable development in Africa must be established to restore good governance.

Terblanche (2003) mentions that legal compliance and corporate governance are the basic mechanisms which can be used to achieve sustainability of an organisation. To this end he was of the view that sustainability is composed of two factors. The first factor is the survival of an organisation and the second factor is the survival of fauna and flora. The essence of sustainability should be the ability of an organisation to practise its present operations in a manner that does not compromise development or the needs for the future. He uses an example to highlight the latter. A commercial farmer uses the land for profit. If the farmer overlooks good farming methods, over-uses the land and uses harmful chemicals in the fields, the land will soon become useless and future generations of farmers will not be able to use the land. Failure to adhere to the law results in legal action against contravening parties. This has been known to be costly. In 2003 an organisation was charged R40 million for not adhering to fishing laws and for bribing government officials. Terblanche (2003). The

fundamental teaching of corporate governance is to operate an organisation in a suitable manner in which it could achieve its goals. Following corporate governance principles has been known to enable organisations to operate globally as it shows sound legal grounding and facilitates best practice (Terblanche, 2003). This example can perhaps be compared to the essence of EMS. It serves to show the commonality between corporate governance and EMS and the progression of these systems towards integration.

#### **2.4.2 The development of corporate governance**

Davies (1999:33-34) provides some insight about the origins of corporate governance. He was of the view that civilisations evolved from an agricultural age, through the industrial age to the current information age. Each age carried specific laws that were appropriate to that time, displaying one of the earliest forms of governance. After the second world war the trade unions emerged with even more power than before. Interaction between organisations and trade unions forced more challenges on good governance practices. During the third quarter of the century the directors and managers of the organisations and the shop stewards of the trade union, emerged as major role players. The national wage agreements provided a guideline from which organisation officials and trade unions negotiated. During this time directors of the organisations were pre-occupied with preventing strikes rather than focussing on profit. Consequently, this caused the collapse of many industries namely the motor, aircraft, ship building and motor-cycle. After the war, the demand for goods was reduced and the customers stipulated their requirements. Customers became known as “stakeholders”, their needs opened new issues for the adherence to standards and specifications. This led to stringent compliance with corporate governance codes of practice.

The Cadbury Committee was established in May 1991 under the auspices of the Financial Reporting Council of London. The stock exchange and the accounting fraternity were summoned to address the financial aspects of corporate governance, namely: the responsibilities of board members, the audit committees, the responsibilities of auditors, the essence of an audit and the links between shareholders, auditors, boards and other relevant

issues. In December 1992 the committee recommended a code of practice that addressed all these issues. Accordingly, all organisations listed on the London Stock Exchange had to comply with this code of practice. Although the Cadbury Committee addressed the financial aspects of the board of directors, another body called the Greenbury Committee outlined their remuneration process (Davies, 1999:38-40 and Wixley and Everingham, 2003).

In 1995 the Hampel Committee was formed as a result of a joint recommendation from the Cadbury and Greenbury Committee to monitor the extent of compliance of organisations to the Cadbury Report. A further body called the Nolan Committee enhanced the requirements of corporate governance by adding the following principles: selflessness, integrity, objectivity, openness, honesty, leadership and accountability (Davies, 1999:41).

Although most countries used the Cadbury Committee as a framework to establish the requirements for good corporate practices, each country complies with corporate governance practices designed specifically for that country (Armstrong, 2003:12). Consequently, after several major corporate scandals these countries introduced controls for inappropriate behaviour. For example, the United States of America (USA) introduced the Sarbanes-Oxley Act subsequent to the Enron collapse. Under this Act organisations wishing to list on the stock exchange, had specific regulations which boards of directors had to follow (Armstrong, 2003:12). This Act, in conjunction with the introduction of the new rules by Patricia Hewitt, the Secretary of Trade and Industry in the United Kingdom (UK), emphasised the changes in the auditing procedure subsequent to the Enron and Worldcom scandal. This was introduced to bolster integrity in auditing and reporting in the accounting profession (Dunn, 2003:14).

#### **2.4.3 The King II Report (2002)**

The King I Report was introduced by the King Committee in South Africa in 1994. This Report was amended in 2001 and was superseded by the King II Report in 2002 ([www.iodsa.co.za/corpgov.html](http://www.iodsa.co.za/corpgov.html)). Armstrong (2003:10) recommends that the implementation

of corporate practices could be achieved by using the King II Report. The principles in the King II Report advise organisations on their conduct to carry out their duties responsibly. It provides guidelines for organisations, the boards and the directors. According to Armstrong (2003:12), although this report is designed using material from international guidelines as a framework, a few new areas of good practices were included, for example, risk management, internal control insurance, some aspects of corporate citizenship and responsibility.

In addition, the Derick Higgs Investigation of executive directors in the United Kingdom (UK) influenced many recommendations in the King II Report and governance throughout the world. Examples of these are the difference between the roles of the chairman of the organisation and the executives and the non-executive members. This investigation also emphasised that more attention should be focussed on the drivers of corporate success (Armstrong, 2003:12).

To prevent hostile take-over manoeuvres, management and the board work closely to ensure sound leadership, integrity at all levels and sound decision making to steer the organisation to business excellence, fairly and transparently. To this end the King II Report was developed based on seven fundamental characteristics, that is: discipline, transparency, independence, accountability, responsibility, fairness and social responsibility ([www.iodsa.co.za/corpgov.html](http://www.iodsa.co.za/corpgov.html)).

Armstrong (2003:10) further states that the board is requested to design an effective system to manage risks. Also share-owners should be provided with an assurance that the board is subject to an external audit. This can be achieved by following the seven principles of the King II Report. These principles focus on the following aspects: composition and behaviour of the board of directors, risk management of all activities associated with the organisation, internal auditing of financial practices, integrated sustainability reporting of social, economic and environmental activities of the organisation, accounting and auditing and compliance and

enforcement. Organisations which wish to comply with corporate governance in South Africa will have to adhere to the fundamental characteristics and the principles mentioned above ([www.iodsa.co.za/corpgov.html](http://www.iodsa.co.za/corpgov.html)).

#### **2.4.4 Weaknesses and strengths of corporate governance**

The weaknesses and strengths of corporate governance practices will be discussed according to the principles and requirements prescribed in the management system.

During the recession in the 1980s many of the organisations following corporate governance practices failed. Corporate governance has been known to fail for the following reasons: secrecy, tribal loyalties, legislative weakness and the lack of commitment. This could perhaps be viewed as a weakness. These poor practices highlighted the need for the inclusion of more stringent requirements into the corporate governance codes of practice (Davies, 1999:34). In support of this view Dunn (2003:14) and Wilson (2004: 21) mention that after the scandal associated with Enron, World Com and Tyco, many other organisations were faced with the heavy task of regaining share-holder confidence. Some of the ways these organisations used to achieve this were: changing the structure of corporate governance, tightening audit and accounting procedures and investing in social needs.

Engle (2005:20) states that many organisations depend on a governing body to monitor the well-being of all stakeholders, customers, employees and the community. This body should be responsible for reviewing management policy, setting goals, developing strategy and providing advice to management when required. He was of the view that when this governing body did not provide suitable support, the following emerged: loss of business, poor employee morale, low productivity, high employee turnover, poor customer service and ineffective management. This is evident from the review of literature in section 2.4.1 specifically Venter (2004); Shukla (1994) and SAPA (2004) (B).

Armstrong (2003:10) mentions that the board of directors play a pivotal role in the

governance of an organisation. The board of directors is totally responsible and accountable for their decisions. Their decisions should be based on "sound judgement". Communication between the share-owners, share-holders and other relevant parties are encouraged to be clear. Failure to adhere to the latter makes an organisation vulnerable to hostile take-overs which affects all share-holders and can lead to the closure of subsidiaries, loss of suppliers and unemployment (Engle, 2005:20).

Dunn (2003:13) chairperson of the task team responsible for the development of the principle "accounting and auditing", emphasises that the launch of the Report coincided with the Enron scandal. It resulted in this principle being subjected to serious scrutiny. A recommendation from the latter process was to have regular meetings with internal and external auditors to facilitate integrity and trust between key role players (Armstrong, 2003:12). According to the literature above, the Enron scandal was perhaps viewed as an opportunity for key role players who were designated to design the King II Report to bolster this requirement to prevent the chance for irregularities in the future.

Khoza (2003:18) chaired the task team when the principle "integrated sustainability reporting" was designed. He expresses the view that financial and non- financial reporting are important to investors to show short-term profits and long-term sustainability respectively. He states that this influenced the triple bottom line of social, economic and environmental performance. The following example shows the economic viability derived from integrating good practices. A carpet manufacturer in the USA supplied carpets and carpet tiles to offices. When the carpets and tiles needed to be changed, they were removed and dumped at a local municipality dump site. This imposed a burden on society because funds from tax payers are used to manage the dump site, the life-span of the dump site is shorter with every delivery and more land has to be set aside for waste. Based on an innovative decision, this manufacturer decided that this organisation would lease the carpets to customers in the future. When these carpets needed to be replaced they would recycle the old carpets. This reduced the burden of carrying inventory and huge amounts of raw

materials for the manufacturer. The profits of the organisation increased and society also benefited by saving taxes and land use. Other local initiatives reported included recycling aluminium cans and tyres.

The example above serves to reinforce the principle of Integrated Sustainability Reporting from corporate governance (King II Report) and the essence of EMS-ISO 14001:2004. Both these systems urge organisations to find creative ways to reduce the amount of natural resources they use and to recycle waste generated from their operations. The natural resources in this instance being the raw materials used to make the carpets and the land used to dump the old carpets. The reduction in the use of raw materials perhaps prolongs its availability for future generations. With the increase in the population the demand for land has increased. Hence, it is encouraged that every effort be made to prolong the life-span of the dump site. Armstrong (2003:11) states that although legislation and managing the impacts of an organisation's activities on their surroundings are mandatory and may be partially implemented within the organisation, compliance with all the principles of the King II Report will ensure that an organisation-wide win-win scenario is established.

#### **2.4.5 The impact of implementing inefficient corporate governance practices**

It is important to assess the pros and cons of any business improvement initiative. This section will highlight some of the reasons why it is imperative that these initiatives be assessed on a continuous basis.

George (2002) reports about the crisis in the corporate world, the need to restore governance and expressed public outrage about the irregularities uncovered recently. Some of these irregularities include accounting misstatements, fraud, mis-management, bankruptcy and excessive executive compensation. Enron, Worldcom, Kmart, Tyco, Merrill Lynch, Qwest, Xerox, ASEA Brown, Swiss Air, Global Crossing, Adelphia and Merck are some of the organisations associated with such irregularities. Activities such as those stated above have led people to be apprehensive about the security of their investments and life savings. He

mentions that Enron, Worldcom, Tyco, Qwest and Global Crossing represent organisations which have lost in excess of \$460 billion in share-holder value. Consequently, other top organisations like General Electric, Microsoft, Intel, Cisco and AOL/Time Warner have been affected in the wake of their activities. This has culminated in the lack of share-holder confidence in all these organisations.

Edmondson and Cohn (2004:1), report that Italian authorities were looking for reasons why between \$8,5 billion and \$12 billion of assets from the Parmalat dairy organisation could not be accounted for. Concerns emerged when the organisation did not fulfil a \$185 million bond payment to the bank. Although Parmalat showed significant assets outside the country, investigations showed that some of these assets did not exist. On 27 December 2004, the organisation was declared bankrupt and shares on the stock exchange were subsequently suspended for that day. The organisation was reprimanded by the Securities Exchange Commission and new auditors were appointed in compliance with Italian law.

The newly appointed auditors experienced difficulty uncovering and consolidating the accounts of the organisation. This clearly showed the lack of transparency in the governance of this organisation. Some of the irregularities reported were false banking accounts and assets, forged letters, the movement of millions of dollars which belonged to the organisation into personal funds and the destruction of official documents (Edmondson and Cohn, 2004:2).

According to George (2002), the fundamental criteria for investing should be built on trust to ensure that the investor receives an equitable return on investment. Recent trends however have shown that investors are moving out of this market. This can be attributed to the fact that investors no longer believe that CEOs consider their shareholder interests sincerely. Various irregularities have contributed to these insecurities. Some of these irregularities are discussed as follows: that the CEO of Global Crossing and some of his colleagues received \$5 billion in stock gains when the organisation lost \$ 38 billion in share-holder value. The



CEO of Oracle was associated with moving \$ 703 million in stocks shortly before the collapse of his stocks and slide in the organisation's earnings. In addition a top manager in Adelphia transferred his organisation's capital into a family account.

A number of reasons for such behaviour by top management were highlighted. Priority was always given to satisfy share-holder expectations. This contributed to an improvement in an organisation's performance. However, analysts' expectations apparently contributed negatively to an organisation's performance. They displayed dissatisfaction even when organisations met their predetermined targets. In some instances analysts forced the removal of CEOs. These are some of the factors that prompted the CEOs of organisations to practise in whatever manner they saw fit to keep stock prices high. In some cases the number of investments undertaken by organisations were reduced, significantly compromising them from diversifying these activities (George, 2002).

George (2002) states that deficiencies in the execution of corporate governance principles have led to such disasters. This can perhaps be prevented by reviewing corporate governance procedures and managing them. Although most countries have established corporate governance practices, it is encouraged that these practices be reviewed continuously and interrogated for potential opportunities of mismanagement. In this way authorities will perhaps have more control of the management of organisations.

Patterson (2002:20) mentions that in the current economic climate, South African business people should treat the needs of the masses of the population as a priority. He questions the ability of the old paradigms of role players to maintain good governance practices. To support this, he states that a change in management style should be implemented prior to corporate governance being embraced throughout the organisation. It is evident from this review that management culture should change to support new practices. It is worthy to note that quality management also advocates a change in conventional thinking to facilitate change and continuous improvement. The commonality between management systems, in

this instance, corporate governance and quality, is evident.

King (2003:8) reaffirms that the current time is well suited to implement corporate governance practices into organisations. Although this does not buffer an organisation against failure, it provides a framework of evidence of good practice and factual decision making. All organisations are prone to failure because of the risks taken. However, if that organisation failed, it should not be as a result of lack of integrity.

It can be inferred from George (2002) and Edmondson and Cohn (2004:1) that corporate failures are common occurrences in many countries. King (2003:8) provides a means for organisations to minimise such failures.

## **2.5 HIV/Aids management**

The spread of the HIV/Aids virus and its impact have proven to be controversial because the trade-off between human life and continued productivity do not seem justifiable. This study will focus on HIV/Aids management in certain organisations and on AMS 16001:2003 code of practice which is designed to provide the balance required between human relations and economic sustainability.

### **2.5.1 The purpose of HIV/Aids management**

This section relates some of the concerns and experiences of the public relating to HIV/Aids. A study by Kotze (2003) outlines the effects of the Aids virus to managers worldwide. He mentions that it affects all people and organisations, hence it should be seen as an epidemic which will impact on the health and productivity of the workforce of the country. Organisations therefore should consider their long term sustainability to increase the working life of their workforce so that they can continually attract investor confidence and sustain the economy of the country. He states further that this can only be achieved if management implements proactive initiatives to manage the devastation of HIV/Aids.

Management should firstly know the status of employees within the organisation. In this way they know how many key employees will be compromised in the future. In addition, training programmes for replacements may be geared for continuity. Management should develop plans to supply anti-retroviral medication to affected employees. In addition, strategies should be in place to ensure that the market in which the organisation operates, is sustainable because the people who buy the products may have died or may use their funds to buy anti-retroviral medication. HIV/Aids is a sensitive issue to many people so the perceptions of investors about an organisation's HIV/Aids management strategy should be considered cautiously during the design phase of the programmes (Kotze, 2003).

The literature above serves to highlight the need for organisations not only to review the environment in which they currently practise but to also look at the future. The latter can perhaps be achieved by using suitable business improvement tools such as scenario analysis to monitor these environments. This would set the foundation to support the HIV/Aids management system.

Sanne, Cheetham and Barker (2003) (A) cite studies conducted in South Africa by Boston University which shows that an employee with HIV/Aids will take a minimum of fifty-five days sick leave over a two year period. This figure has been known to drop productivity of that organisation by 25%. In view of this Sanne, Cheetham and Barker (2003) (B) suggest that organisations should arrange suitable intervention programmes for the employees to keep them healthier for longer. These treatment programmes are essential as studies have shown that it is difficult to process claims via most medical aid schemes (Sanne, Cheetham and Barker, 2003) (C). They contend that organisations should make testing facilities freely accessible and that the outcome of the test be confidential. Studies have shown that less than 50% of infected employees are receiving treatment. This may perhaps be because medical aid schemes are known to provide access to treatment only when certain symptoms are displayed. By this time organisations have lost significant revenue from loss of productivity.

Agence-France-Presse (AFP) (2005) states that some organisations in Africa, Asia and Russia are not making sufficient efforts to address the impacts of the HIV/Aids virus on the economy. The article reveals that fourteen thousand people are infected by HIV/Aids on average per day. Ironically, organisations have shown little commitment to HIV/Aids interventions in the past year. Seventy-one percent of organisations show no systems to address the impact from the virus. Sixty-five percent of the managers were unaware of the number of employees in their organisation who are infected by the virus. Countries such as China, Ethiopia, India, Nigeria and Russia represent areas where new cases of victims infected by the virus are expected to be the highest in the world by 2010. The study also revealed that the rate of infection of new cases is faster than initiatives to cure the virus and that managers are waiting too long to initiate policies to manage the crisis within their organisations. It is evident from the review in this section that the impact of the Aids virus on the productivity of organisations and the economy of the countries mentioned should be taken seriously if they want to be sustainable. It is suggested that countries where the spread of the virus is especially aggressive, use other organisations as a benchmark to seek appropriate intervention strategies. This example also serves to show the usefulness of business improvement tools, in this instance, the benchmarking process and stresses the need and urgency for implementing suitable HIV/Aids management systems.

The success derived from the use of an intervention strategy within a management system is highlighted in the following review. Anglo-American mining giant in South Africa has an HIV/Aids infection rate of 24% in the workforce. Management has offered extensive testing, advisory forums and anti-retroviral treatment to the employees. The senior vice-president of health at this organisation states that effective control measures of the HIV/Aids infected employees, as an internal strategy has allowed management to sustain operations in their organisation. Consequently, this organisation has also shown significant profits after the implementation of intervention programmes (AFP, 2005). This example serves to show that when an intervention programme such as the management system used by this organisation is managed suitably it is able to deliver rewards.

In addition, various guidelines and reporting mechanisms are being drafted and recommended by the South African Institute of Chartered Accountants (SAICA) and the King II Report respectively to enable organisations to calculate the HIV/Aids specific risks to their organisation (Richardson and Strugnell, 2002:10). It is suggested that organisations use these mechanisms as a basis for establishing and implementing intervention programmes and strategies.

The review of literature in this section shows consensus that the effects of HIV/Aids is going to influence absenteeism and productivity in organisations. AFP (2005), Kotze (2003) and Sanne, Cheetham and Barker (2003) (B) believe that suitable intervention programmes be implemented by organisations to manage the impact of HIV/Aids. This review serves to reinforce the need for HIV/Aids management systems within an organisation.

#### **2.5.2 Weaknesses and strengths of HIV/Aids management systems**

A weakness of HIV/Aids systems could perhaps be that organisations have been providing employees with treatment over extended periods at great cost with no consequent benefit. Investigations into the failure of these intervention programmes have shown that the treatment given was unsuitable. In some instances inadequate medical services were provided (Sanne, Cheetham and Barker, 2003) (A). In organisations where programmes have failed, perhaps a structured system such as AMS 16001:2003 would provide a more suitable alternative.

Kotze (2003) mentions that AMS 16001:2003 is applicable globally and can be integrated with environmental management ISO 14001, quality management ISO 9001 and health and safety management OHSAS 18001. It forms a framework to manage the risks associated with the HIV/Aids virus and implements cost effective interventions to add value and improve productivity to an organisation. It could be used to determine weak links in operations and support to affected employees. He indicates that management competency is the starting

point for implementing this standard.

Another strength associated with an effective intervention programme is presented in the following example. Suitable treatments are known to be effective. An organisation with a HIV/Aids treatment programme reported that their HIV negative employees take more sick leave than their HIV positive employees. This was due to the organisation starting treatment for employees early in the diagnosis of infection and hence has had minimal negative effects on productivity (Sanne, Cheetham and Barker, 2003 A). This example serves to reinforce the view of Kotze (2003), AFP (2005) and Sanne, Cheetham and Barker (2003 B) that effective management of programmes has little or no negative effect on the operations of an organisation. This can be achieved by a structured management system such as AMS 16001:2003.

### **2.5.3 The development of AMS 16001:2003 management system**

Kotze (2003) expresses the view that AMS 16001 provides specific requirements for the management of HIV/Aids. The AMS 16001 management system was introduced as a code of practice in 2003 to serve as a tool to manage the risks associated with this virus. It was developed by National Occupational and Safety Association (NOSA) and Debswana (Government of Botswana) and provides a standard against which organisations can be certified.

This standard focusses on the following requirements: the commitment of management to implementation of the standard and the organisation's policy, planning, implementation and operational control, monitoring, continual improvement and review of activities. These requirements were designed so that organisations could measure the performance of their HIV/Aids programmes. Organisations which wish to follow a structured management system specifically related to the virus can comply with AMS 16001:2003:

#### **2.5.4 The impact of implementing inefficient HIV/Aids management systems**

The report below presents the magnitude of the consequences of the HIV/Aids epidemic and it is hoped that it highlights the urgency and seriousness with which the disease should be managed.

Terreblanche (2004) indicates that studies conducted locally for the Health Department on “The Impact of HIV/Aids on this sector of a particular province” revealed in a confidential report that 46% of the patients admitted to Government hospitals are HIV positive. The impact of the HIV/Aids epidemic has begun to deplete the funds of the health sector. Hospital staff are being overwhelmed by HIV/Aids infected patients. Consequently these patients stay in hospitals longer than normal. HIV/Aids infected patients spend an average of 13,7 days in hospital while non-infected patients stay only 8,2 days. Health care employees are of the opinion that HIV/Aids affected patients come to hospital when they are extremely sick, hence the need for more time and care. This commitment burdens the employees’ workload and prevents them from nursing other patients. In view of these facts and the prediction that the percentage of infected people will increase as more people are tested in the near future, this report urges the implementation of strategies to provide more facilities to the Health Sector.

The challenges associated with the impact of this virus are not confined to the South African context. The example below will show some of the difficulties experienced by communities and authorities overseas:

There are various reports about the plight of the people suffering and living with HIV/Aids from all over the world. The following report is from a community living in China. “The HIV/Aids situation in our village is as serious as any of the villages around here.” According to Pan (2003:12), Xiong, a citizen of China, contracted the virus from selling his blood to government hospitals and private clinics. The blood was collected and mixed by unsanitary means and was administered to donors thereby infecting them. The Government reported that

one hundred of its six hundred citizens in this community are HIV positive. The lack of management of the disease is so serious that an infected father chooses to give his medication to his child with the hope that it would increase its chance of survival. In addition citizens who protested against local authorities in an appeal for a clinic and better medical care were beaten and eighteen of them were jailed. The actions above perhaps pose challenges for authorities and communities in the control of the HIV/Aids epidemic. The actions of local authorities in this case hampered China's bid for R733 million relief from the United Nation's Global Fund to fight HIV/Aids, Tuberculosis and Malaria. One and a half million people were allegedly HIV/Aids infected in China and leaders should perhaps educate citizens of the disease as the plight of these communities is severe. As a result of the plight and effects of HIV/Aids, authorities in Beijing have launched preliminary treatment programmes free or subsidised to certain areas (Pan, 2003:12).

It is hoped that the cases above show that although the impact of the HIV/Aids epidemic is predicted to cause devastation to the economy, suitable interventions strategies when implemented appropriately have been successful in maintaining the productivity of organisations as shown in section 2.5.2. These strategies can perhaps help organisations to pro-actively manage their activities with the least impact on affected employees and on the economy.

## **2.6 Integrating quality, environment and safety management systems**

From the review of literature it is evident that each management system or code of practice used in the present study provides its own contribution which is essential to an organisation. In addition some of the requirements to satisfy each of these management systems or codes of practice are duplicated. Consequently, this presents the opportunity for organisations to integrate them.

This view is supported by Stables (2001:36) who suggests that management systems serve as an assurance to customers that control mechanisms are in place to ensure that the product



or service meets requirements. This is perhaps why organisations feel obliged to conform to all the systems deemed beneficial to customers on their value chain. As many as three to five systems or codes of practice are maintained simultaneously. In some instances these systems are so closely associated that requirements are duplicated and operating them separately is difficult.

According to Tricker and Lucas (2001:106) the revised ISO 9000:2000 family was developed so that integration between quality, health and safety and environmental aspects could be managed as one system. Integration of the codes of practice or management systems in this study provides a means to streamline the number of activities to support five management systems into one consolidated system. Stables (2001:20) supports these claims and advises that it is good practice that quality management should be integrated with the general management practices. Successful organisations are integrating environment, quality and safety management systems (Stables, 2001:396).

The section below will highlight the challenges associated with integrating management systems, the synergy in the progression of integrating them and their usefulness. It will also discuss other specialised codes of practice.

#### **2.6.1 Challenges associated with integrating quality, environment and safety management systems**

Karaszewski (2004:59) investigates the challenges experienced by organisations when implementing management systems within multinational organisations. He mentions the following factors as the main source of initiating challenges: cultural limitations, insufficient management and employee preparation, employee attitude and technological limitations. Other challenges which were categorised when implementing such systems with subsidiaries were: the size of the organisation, the type of activity engaged, the economic indicator and the type of quality system.

Organisations based in Africa experienced the most obstacles due to cultural limitations during quality management system (QMS) implementation while North American organisations experienced the least. This is consistent with the findings of Boninelli (2005:42) referred to in Chapter 1. It is worth noting that management behaviour has a direct influence on the employees' opinion and behaviour towards a QMS. The study above shows that top management should be totally committed to the QMS. Insufficient preparation from management can restrict the implementation process of the QMS. It was evident that organisations showing higher profits noted that employees were better prepared for the process. Solutions for improving employee attitudes and behaviour differed between regions. Employees' attitude did not prevent the implementation of a QMS but imposed obstacles which prevented the smooth implementation process. Research has shown that specific legal regulations pertinent to a particular country hinder the QMS implementation process. In the samples studied, technological limitations did not pose many challenges in most countries except for organisations in Africa and certain organisations in the Middle East. The study concluded that most challenges like technological and legal regulations can be overcome by acquiring the funds or re-designing practices to suit authorities' requirements respectively, but changing attitudes, behaviour and mind-sets is a long and difficult process (Karaszewski, 2004:63-64). Holdsworth (2003:194) mentions other deficiencies such as difficulties with implementing certain procedures, the requirements of the management system not handled consistently and inadequate documents.

Fresner and Engelhardt (2004:624) used two Austrian manufacturing organisations representing the small and medium size enterprise (SME) as case studies to show how the challenges in operating multiple management systems have led to the natural progression of integrating pertinent ones. Anodisieranstalt- A-Heuberger one of the organisations used in the case study mentioned above, took heed of the appeals of several environmental specialists to reduce, re-use and recycle waste. As a result of this, the organisation showed savings and simultaneously made less demands on resources.

In 1997, one year after the initiation of environmental awareness programmes, Anodisieranstalt-A-Heuberger decided to pursue a formal environmental management system, namely, European Communities and Audit Scheme (EMAS) and ISO 14001. During the preparatory stages of the environmental management system the organisation found it increasingly difficult to separate quality, environment and health and safety activities. For example, in any activity the chemical quality of the materials used had to be investigated (quality management), the effects of these chemicals on the environment had to be considered (environmental management) and the role of their effects on the employees working with them had to be explored (health and safety management) by the team. The team consisted of a manager who was responsible for environmental activities of the organisation, a production foreman for overall quality assurance of the organisation and an employee from packaging and maintenance who was responsible for the health and safety aspects of the organisation (Fresner and Engelhardt, 2004:626).

During meetings and reviews, it was difficult to set boundaries between quality, health and safety and environmental issues because discussions for example were about compliance with government legislation on waste-water (environmental management), documentation of working conditions at the workplace to comply with legislation (health and safety management), training to increase the awareness of working accurately and handling of chemicals to prevent accidents (quality, health and safety and environmental management), assigning responsibilities, implementing corrective action teams and initiating auditing programmes (quality management). These discussions led to a unanimous decision by the team to consider these aspects simultaneously (Fresner and Engelhardt, 2004:626).

It is evident from the review above that the combined approach to quality, health and safety and environmental practices, lends itself to an integrated management system, which was designed and implemented in the organisation under investigation. This combined approach to operating management systems used team meetings to address quality, health and safety and environmental issues. It outlined a policy representing the organisation's pledge to

sustainability, efficient use of resources and employee empowerment. Risk reduction and controlling environmental aspects were used to show continuous improvement. Business law, environmental legislation and quality requirements were aligned to adhere with legal compliance audits using combined audits.

#### **2.6.2 The synergy between quality, environment and safety management systems**

Holdsworth (2003:194) studied the integration of health, safety, risk and environmental management systems in merging organisations in the petro-chemical industry. He states that it was necessary for organisations to integrate these management systems because audit findings revealed duplication in procedures such as inspection and testing, contractors, training and auditing, conflicts in procedures for process safety, risk, environment, health and safety management.

Fresner and Engelhardt (2004:632) mention that during investigations in the Austrian organisation, the overlap between the health, safety, quality and environmental aspects of the operations of the organisation made it possible to include quality into the programme. They re-affirm that this is especially evident when the operations of an organisation are understood, planned, implemented, controlled, audited and improved. Hence, it is urged that comprehensive checklists be designed so that any deficiencies in the department can be highlighted during internal audits as indicated by Holdsworth (2003:194) above. This can perhaps also serve as a basis for continuous improvement.

#### **2.6.3 The usefulness of business improvement tools and good practice during the integration of quality, environment and safety management systems**

The following section will show how two organisations selected suitable strategies such as lean management, value analysis, good house-keeping and waste- minimisation during the integration process to improve their performance.

According to Fresner and Engelhardt (2004:632) business improvement tools such as lean management and value analysis can be used as a starting point to facilitate the improvement of processes within an organisation with a view to implementing various management systems. The use of these improvement tools helps, management and the employees to become aware of the benefits of good operating practices such as house-keeping, waste prevention and reduction in emissions. The benefits of these good operating practices were evident from their studies in the two Austrian manufacturing organisations. Hence, they were of the opinion that integrating quality, health, safety and environmental aspects culminated in business excellence within these organisations investigated. This was achieved by systematically implementing suitable strategies. The details of how both organisations used these strategies to achieve sustainable development will be discussed below:

#### **2.6.3.1 Organisation 1-Anodoisieranstalt-A-Heuberger**

One of the key focus areas of the organisation is to deliver products to customers promptly while generating profits with the least impact on the environment and its resources. A commonly used method to achieve this is to optimise the processes within an organisation. Some of the strategies used to optimise each process within this organisation were: reduction of waste-water, reduction of hazardous waste and recycling re-usable material, covering the water-baths and switching off selected heating equipment (Fresner and Engelhardt, 2004:625). The benefit derived from each strategy will be expanded with the hope that it could enlighten other organisations using similar processes of the potential of optimisation and improving the use of resources:

- The reduction of waste-water: The residue on the components from the manufacturing process was allowed to drain for longer periods thereby reducing the need for conventional rinsing of the components. Spray rinsing was introduced. This method of rinsing effectively removed any excess chemicals off the surface of the component and the spraying system used less water than in the conventional rinsing process. The overall benefit from this innovative idea successfully reduced the amount of waste-water generated. Such good practices show the responsibility and

commitment of top management of the organisation to preserving natural resources. Other methods for improving the use of resources were covering the water-baths containing methane when they were not used. This exercise produced a 5% saving in methane and switching off the heating system half an hour before production closed for the day.

- The reduction of hazardous waste: This organisation manages an effective control of hazardous chemical and recycling programme. Annually, less than five litres of compressor oil is generated. This oil is sent to an incinerator plant where it is used to provide heat to the community. Non-hazardous waste is sorted according to paper, metal, plastic and organic waste. Paper, metal and plastic are recycled and organic waste is used as compost. Almost all the packaging material used in the organisation was designed so that it could be re-used by regular customers. Annually, only one thousand-five hundred kilograms of packaging material are generated as industrial waste. This value represents less than 50% of the weight of packaging material used before the environmental awareness programmes were initiated.

These control measures show the seriousness of management to behave in a socially responsible manner by controlling its hazardous waste with the least impact on the environment and recycling re-usable material and reducing the burden on land-fill sites.

Some of the benefits obtained from the initiatives conducted by the team according to Fresner and Engelhardt (2004:632) are:

- improved communication within the organisation
- improved skills among employees, for example, data collection
- doubling production figures
- 60% reduction in water consumption between 1996-1999 and a saving of \$20 000
- 10% reduction in use of chemicals producing a saving of \$2 000
- 10% reduction in the consumption of gas, saving \$4 000

- to highlight any gaps in the areas where work is duplicated

In addition the organisation made their suppliers aware of environmental responsibilities by ensuring the removal of toxic chemicals and heavy metals supplied in purchased material. In 2000 and 2001, this organisation received three business awards. These awards were for the following categories: best training programme, preventative environmental protection and environmental management (Fresner and Engelhardt, 2004:628). It is worth noting that this organisation included its suppliers within their EMS programme. By doing this it encourages more roleplayers on a value-chain to perform their activities in a socially responsible manner.

#### **2.6.3.2 Organisation 2-Erste-Obermurtaler-Brauereigenossenschaft**

Organisation 2 is a brewery which produces quality beer and non-alcoholic beverages. The brewery increased production by 50% between 1990-1998. Although this period represented a slump in the national beer market, the organisation was able to hold market-share. Some of the strategies used by the organisation to maintain sustainability as mentioned by Fresner and Engelhardt (2004:629) are discussed below:

In 1994, the brewery began preparations to optimise processes within the organisation. The fields which were identified as an opportunity for improvement were: input or output analyses, material flow analysis of water, assessing the chemicals used and the energy consumption.

The brewery was ISO 9001 compliant in 1995. With a view to continuously improving quality, improving profitability and being pro-active, management of the brewery decided to participate in the EMAS and the ISO 14001 programmes. The organisation initiated their environmental awareness programme by using returnable packaging material, Polyvinyl chloride (PVC) free seals and heavy metal free inks on labels. They also stopped using Aluminium (Al) film labels on the necks of bottles. From 1995 to 1999, sixty other waste minimisation initiatives were introduced by the organisation. All the initiatives above were

monitored regularly. The effectiveness of the management system was monitored in the management reviews. In 1996 Erste-Obermurtaler-Brauereigenossenschaft acquired registration for EMAS and ISO 14001 accreditation. As a result of managing an efficient system the annual saving for the brewery amounted to \$300 000 (Fresner and Engelhardt, 2004).

An analysis of the results in these two organisations after implementing integrated management systems shows according to Fresner and Engelhardt (2004:631-634) that:

- It formed a platform to communicate with employees. This helped to define the needs of employees clearly.
- The communication external to the organisation with suppliers, communities and authorities also improved.
- The resources required to solve problems were discussed in forums where management was present. This removes the barriers for procurement of resources.
- Efforts to use business improvement tools provided a mechanism to understand the interface of each process. This facilitated the optimisation of each process.
- The improvement and financial success were recorded and used as a means to motivate employees. It also encouraged efforts to continue the programme.
- Measuring and reviewing performance against objectives provided management with a foundation for improvement.
- Better understanding of processes and equipment encouraged the implementation of prevention strategies.

A review of the results from the integration of the two organisations shows the emergence of many good practices leading to business excellence. Firstly, due to the integrated approach of management systems, communication between employees improved. This is perhaps due to the formation of cross-functional teams and their interactions in forums such as corrective action and complaints analysis. Communication with the supplier also improved and this perhaps strengthens the relationship between the supplier and the organisation. In addition



a good communication with the authorities fosters a useful relationship between both parties. The authorities can also be used as a source of information when experiencing difficulties in addressing legal issues. Improved communication with communities can help organisations to be aware of the necessities of their neighbours. This could perhaps serve as a basis to satisfy the organisations' social responsibility. It also opens up channels between the organisation and the communities should there be any adverse impacts on them due to the organisations' activities in the area. It is evident that the resources which are required are negotiated and approved timeously in meetings. This discourages the conventional time lapse that was required for approval and procurement of resources. It is also evident that integration facilitated the optimisation of processes and equipment and it allowed management to align departmental goals with improvement strategies.

From the case-studies above it is evident that the organisations embarking on integrating systems should obtain management's commitment. Management should be encouraged to empower the employees, allocate suitable resources and develop and implement a clear and comprehensive integrated policy. In addition they should perhaps conduct regular feedback forums to encourage quick action to solve problems towards continuous improvement.

It is recommended that all successes be documented for reference purposes and regular communication with external and internal stakeholders is urged. Integrated management systems presented the benefits of both the organisations as reviews showed the win-win situation between the organisation and its stakeholders. It is hoped that by highlighting the usefulness of integration managers and key role players can use this information to convince top management to integrate management systems. From the literature above, it is evident that maintaining effective management systems can be useful in an organisation. However, the ease with which these systems is introduced, implemented and maintained are determined largely by the application of business improvement tools available for use.

The following review highlights other tools which could be used to support management systems. These tools are: using models as a basis for integration and training, establishing a team to manage integration, setting goals, measuring performance, corrective action and feedback. These tools will be discussed in the section below:

### **2.7 The use of models to demonstrate the integration of multiple management systems**

Portney and Watkins (1993:20) believe that models form a suitable means to simplify complicated concepts by providing a resemblance to reality. To support this they used the example where scientists compared the concept of an atom to the solar system. Models do not elaborate on the details of a concept. However, they present a conceptual structure to provide an understanding of the phenomena. Models are useful not only because they provide a means of understanding difficult tasks or problems but they also help the user to visualise tasks or problems by separating them into smaller units which are more user-friendly ([carbon.cudenver.edu/~mryder/itc\\_data/idmodels.html](http://carbon.cudenver.edu/~mryder/itc_data/idmodels.html)).

The SECQA model proposed in this study represents a schematic model which will be proposed to managers to provide them with a comprehensive representation of an integrative method to operate their business. It will illustrate the elements to comply with each code of practice as stipulated by the technical committees and governing bodies. The SECQA model is in accordance with the claims by Portney and Watkins (1993:20) who state that models are symbolic representations of elements within a system.

Holdsworth (2003:195) mentions that a team to manage integrating management system activities should be established. This team should focus on planning the integrated management system programme, setting goals and objectives and guiding the organisation. He is of the view that new models based on integrated management should be established. The new models should be able to optimise management system performance, standardise documentation, eliminate unnecessary documents and include administrative controls in the integration process. The model should be used to identify any gaps within the system. The

management systems or codes of practice used in his study were: quality, according to ISO 9000 series, process safety and risk management, according to Code of Federal Regulations (CFR) 29 1910.119 and CFR 40 part 68, EMS- ISO 14001, safety and health, materials transportation and human resources. This is consistent with findings of Fresner and Englehardt (2004:634-635) referred to in section 2.6.3.2.

The five codes of practice or management systems selected to be integrated in the present study lend themselves to the development of a model for all types of organisations. The level of competence and technology prevalent at this time in this country, are commensurate with the selection of these codes of practice. At this stage, the SECQA model will be introduced as a manual model so that it could be useful to a wider number of users. However, depending on the technology and level of resources available, management may be able to develop software appropriate to their organisation in pursuit of the requirements of the model.

#### **2.7.1 Advantages and disadvantages of models**

Bailey (1987:319-320) reviews the advantages and disadvantages of using models. He assesses the advantages in terms of economy, visibility, control and safety. The economical benefit provides the opportunity for pilot runs which prevents the outlay of huge costs. Mistakes can also be detected and corrected, for example, the suitability of prototyping a new motor vehicle before mass production. He explains that visibility is important as the model is able to highlight important information, for example, the fact that Quality Function Deployment (QFD) is an organised approach to determining customer requirements and to solving problems. Models control concepts or tasks on a small scale to determine its suitability to customers requirements. They make it easier to show reproducibility of the concept or task, for example, to determine if production runs according to predetermined technical specifications. He expressed that in terms of safety, models prevent harm and embarrassment to subjects under investigation. They also ensure that investigations are conducted morally correctly and that they adhere to ethics, for instance, to investigate a

sample of a population and to use these results to estimate the prevalence of a particular condition under study to a wider population, as is the case with HIV/Aids statistics in certain areas.

The disadvantage of models relate to complexity, artificiality, cost and training of participants (Bailey, 1987:319-320). Due to the complexity of a task, solutions provided by a particular model may not consider all factors in a given situation. For instance, external factors such as politics can impact negatively on a model that is used to plan inventory. Some models may be artificial. Models are a representation of the reality and there is a possibility that they may not represent the real phenomena accurately rendering the results invalid. For example, motor vehicle prototypes represent reality of a maximum speed of 80 kilometers per hour (km/h) under controlled crash testing. However, most accidents occur at speeds in excess of this. Some models may need large budgets to execute as in air pollution modelling, for example. Training complex concepts in large numbers may be time consuming, expensive and difficult to execute effectively, thereby compromising the validity of the model, especially when dealing with participants with a wide range of skills, educational background, expertise and personal circumstances as is the case in the South African context. Quantitative models may require specialised software and expertise, as in air pollution modelling. The envisaged advantages and disadvantages of the SECQA model will be assessed under the headings reviewed by Bailey (1987:319-320) and will be discussed in Chapter 4.

The review below highlights the challenges experienced during model development and the integration of different fields or sectors. A survey of the work cited by Norgaard (2003) reveals support for the assertions above. He mentions that ecological economists are faced with the challenge of learning and integrating the fields of economics with ecology. Several problems emerged from attempts to unify these fields. To overcome these problems, he was of the view that integrated assessment, model, and distributing a learning network, were suitable to unite these disciplines. During the integrated assessment phase, experts are able

to use models of particular fields and merge them to form a larger model to cover all aspects of the disciplines.

According to Norgaard (2003) integrated models make it easier and clearer for the experts to understand policies. The Nordhuas model used economic, atmospheric and marine systems as sub-systems to develop integrated models. The Nordhaus model has since been used to influence policy makers, interest rates and the distribution of cost and benefits to organisations. Bailey (1987:319-20) and Norgaard (2003) share a common view about the usefulness of models.

### **2.7.2 The importance of training to support effective management systems**

Literature has revealed the challenges associated with operating multiple systems, integrating pertinent ones and providing business improvement initiatives. It has also shown that these initiatives can be beneficial if implemented and maintained effectively. This can perhaps be achieved if suitable training is provided to employees. The review below will show the suitability of training programmes and their challenges:

Evans (2005:25) states that employees provide a vital resource to an organisation and that although they want to produce good work they lack the knowledge to do the job. Oakland (2003:319) is of the view that effective training can improve the performance of the employees and the organisation. He contends that training programmes should follow a logical sequence to achieve the desired learning curve for the employee. Holdsworth (2003:195), states that training should also be used as a means to elicit information from employees with a view to optimising the system. These claims can be supported by Oakland (2003:26) who mentions that training programmes should be designed to identify problem areas, diagnose and analyse the root cause of these problems. The programmes should also be able to solve quality and performance-related problems with a view to facilitating better performance or continuous improvement. Training needs should be specified and appropriate training programmes be implemented. The responsibility for these programmes should be

allocated so that they can be monitored, results can be assessed and their effectiveness can be reviewed (Oakland, 2003:320).

It is evident from the review above that training programmes need to be structured to achieve a desired outcome. Hence, it is encouraged that trainers review the problems faced by organisations and then design the training programmes to address this.

According to Oakland (2003: 321-322) every organisation should state its commitment to training in its policy. He mentions that the objectives of a training programme should be achievable and that senior management clearly states its outcomes. The training programme should be reviewed at regular intervals to evaluate its effectiveness.

The following review reveals that training programmes alone are not adequate to identify problems. It suggests that further initiatives such as resilience training are perhaps essential to ensure the sustainability of the employees in changing environments:

Greef (2002: 27-28) expresses the view that very few of the organisations which emerged twenty years ago are currently in business. She contends that it is not enough for an organisation to nurture skills development to lead the market sector but they should have the ability to be robust in times of adversity. The challenge faced by employees is that there is not enough employment. Employment is available only to those employees who add value and to those who know how to continually achieve this. In this instance training can perhaps act as a source to improve the morale of the employees as they believe that the organisation is concerned with their development. In addition employees should be able to adapt to the dynamic environment in which their organisation operates. This can be achieved by employees using their skills, emotional intelligence, having a healthy lifestyle and a passion for their work. Employees should be marketable, they should have the ability to change, confront problems and continuously improve their activities. Resilience in employees enables organisations to sustain any onslaught from technological changes to globalisation. For

resilience programmes to be effective, Greef (2002:28) indicates that employees should know what is required to be done, how it is done and why it is done.

There is always resistance from employees when any change in the routine practice is encouraged. Training is one such practice. In the section below some of the difficulties associated with training will be discussed. Oakland (2003:218) is of the opinion that training will only be successful if employees accept that it is going to be useful to them. Also trainers and trainees should be committed to the training initiative and that the information presented in the training session should not be distorted. Trainees should be able to apply the skills and techniques learnt. In some instances new initiatives should be initiated alongside old ones so that suitability of the new method can be established and trainees are confident of its benefits (Oakland, 2003:326). It is recommended that training programmes be designed tactfully to address the views of Oakland (2003:18) for them to be successful.

He suggests that there should be follow-up workshops to the initial training session to determine how much learning has occurred. This serves as a suitable indication of the effectiveness of a training programme. Thorne and Mackay (2003:25) point out that trainees will identify with training material if it helps them to overcome problems which prevented them from learning initially. In addition learning styles vary among trainees, hence it is important that training material be designed to include theoretical outputs, practical experience, application of theory and idea generation. Co-presenters can also be used as a variation in presentation style.

Oakland (2003:324) is of the opinion that training should be regarded as an ongoing process and should be constantly reviewed with a view to continuous improvement. Organisations can use suitable training programmes to develop employees' mental, physical, emotional and spiritual traits to develop resilience. Organisations need to develop employees to be resilient in any environment. Greef (2002:28) is in agreement with these views. According to Thorne and Mackay (2003:7), traditionally, the volatility of market shares were minimal, competition

was confined locally and the rules by which organisations operated were well known to that sector of the industry. In contrast with current organisations, market shares have become very volatile, competition has extended beyond the local boundaries, new rules by which organisations are operating are emerging, the variety in production has increased, changes in technology pose further challenges and the competitive market and the demands of the customers are changing.

Evans (2005:25), Oakland (2003:319) and Holdsworth (2003:195) have common views that suitable training can unlock the potential and abilities of employees to perform better work. It is apparent from the review of Thorne and Mackay (2003:7) that training programmes recommended by Greef (2002:27-28) and Oakland (2003:326) could be used to enable organisations to survive in volatile environments.

## **2.8 Other codes of practice used by some organisations**

Although this study focuses on safety, corporate governance, quality, HIV/Aids and environmental management as the key systems, organisations also subscribe to additional specialised codes of practice in accordance with their sector or to stipulations by their customers. These specialised systems and a brief overview of them is shown in the section below:

- an organisation may develop a quality management system (QMS) to show customers that they are serious in delivering a superior quality product or service
- a food industry may select a “Hazard and Critical Control Point” (SANS 10330:2006) code of practice to enhance customer confidence relating to food safety
- an organisation packaging products may follow the “Legal Metrology Quantity Control Scheme” (e- mark) specification to enhance customer confidence as far as the quantity of the contents in pre-packaged products are concerned
- a consulting or calibration laboratory will use the “General Requirements for the competence of Testing and Calibration Laboratories” (ISO 17025:2005) to instil customers confidence in so far as the result produced is valid



- the motor industry will follow the “Particular Requirements for the application of ISO 9001:2000 for Automotive Production and relevant Service Part organisations” (ISO/TS 16949:2002) to show adherence to quality requirements specific to the motor industry

### **2.8.1 Hazard analysis and critical control point (HACCP) system-(SANS 10330:2006)**

A brief background to each system mentioned above is shown in the following section:

The quest for safe food was launched in 1959 during the NASA space flights (Mtsweni, 2005:73). The implementation and management of a hazard analysis and critical control point (HACCP) system South African National Standard (SANS) (10330:2006), provides a code of practice which stipulates the requirements for a food safety management system (SABS, 2006). This management system is applicable to all types and sizes of food organisations. Hazard analysis and critical control points provides a tool for an organisation to pro-actively manage its activities by identifying critical control points that could affect food safety and manage them to minimise the possibilities from delivering unsafe food products to the customer (SABS, 2006).

Some of the advantages of a HACCP system according to (SABS, 2006:xi) are:

- resources are better utilised
- there is prompt response to deviations
- facilitates international trade by preventing re-analysis
- makes inspection easier

### **2.8.2 Legal metrology quantity control scheme-(e- mark) specification**

The “e-mark” specification is undertaken by an organisation to provide customer confidence in prepackaged products ([www.regulatory.co.za](http://www.regulatory.co.za)) (A). This can be achieved by compliance to “Measuring container bottles” (SABS 1840) and “Container contents in pre-packaged products” (SABS 1841) specifications. Accreditation to this specification is obtained by

satisfying the requirements stipulated by the Legal Metrology Department ([www.regulatory.co.za](http://www.regulatory.co.za)) (B).

Some of the benefits which can be achieved from compliance with the “e-mark” specification are ([www.regulatory.co.za](http://www.regulatory.co.za)) (A):

- it facilitates international and cross border trade
- the consumers interests are protected because the consumer will receive the quantity of the product declared on the package
- it reduces the chances of overfilling the package, which increases savings to the packaging organisation

### **2.8.3 General requirements for the competence of testing and calibration Laboratories- (ISO 17025:2005)**

The ISO 17025:2005 code of practice is recommended for use in laboratories wishing to show technical competence in the discipline of calibration and testing. This system is divided into two clauses, namely clause 4 and clause 5. Clause 4 stipulates the requirements for sound management practices. Clause 5 states the technical requirements required to show competence with the type of test/calibration a laboratory conducts (SABS, 2005:v) (B).

Some of the advantages according to SABS (2005 :v) (B) of following this system are that:

- it demonstrates the competence of the personnel performing the calibration or test
- it prevents re-work and re-analysis between laboratories nationally and internationally as test/calibration methods used for analysis were verified before use by stakeholders
- it can withstand legal scrutiny

#### **2.8.4 Particular requirements for the application of ISO 9001:2000 for automotive production and relevant service part organisations-(ISO/TS 16949:2002)**

The ISO/TS 16949:2002 is a code of practice which stipulates the requirements for all members of the value chain of an organisation in the automotive industry (SABS, 2002:xi). Organisations complying with the ISO/TS 16949:2002 code of practice are not certified to this code, it works like a management system within a management system by merely providing guidance on practices pertinent to the automotive industry. Organisations complying with these requirements are then certified in terms of ISO 9001:2000 code of practice. ISO/TS 16949:2002 was designed so that it could be easily integrated with ISO 14001:1996 (SABS, 2002:xi). Some of the benefits enunciated by SABS (2002:xii) associated with adhering to the former system are that:

- it provides an organisation with a quality management system
- it can avoid multiple audits
- it provides a common approach to quality management systems on the entire value-chain of an organisation

It is hoped that those organisations which have to implement specialised codes of practice such as those mentioned above consider the use of the model proposed in this study in Chapter 4, as the former is able to be incorporated in the proposed model.

#### **2.9 Summary of the chapter**

From a review of the related literature it is evident that many organisations follow some form of management system which is designed specifically for that organisation or is provided by an international governing body. Adherence to these management systems is either mandatory as part of a supplier chain or legislation, or as a source for business improvement. It is evident that a structured approach in managing these systems is essential to bolster the benefits to the organisation.

It shows that over decades, the fundamental requirements of these systems have evolved to adapt to changing environments. This change is consistent with the requirement "Continuous Improvement". Evidence of continuous improvement is required so that it can form part of a platform for further improvement strategies and ensure sustainability of an organisation in that discipline. Sustainability is a requirement which is common to all the management systems in this study.

Davies (1999:38), Engle (2005:20) and Armstrong (2003:10) have echoed the importance of good governance practices, sound leadership and ethical conduct to ensure that the reputation of organisations is sound so as to maintain and improve investor confidence. Each country provides a specialised list of principles for compliance and in South Africa the King II Report achieves this.

Increasing profits and maintaining competitive advantage are some of the key responsibilities of managers. However they have an added responsibility of ensuring that these responsibilities contribute to the sustainability of the economy of the country. Notwithstanding the envisaged consequences from the Aids epidemic an effective HIV/Aids management system accompanied by suitable intervention strategies is imperative to ensure the availability of workforce.

It is evident that inefficient quality management systems have caused considerable loss of profit, reputation and customer confidence in the organisations reviewed. Adherence to a few simple practices summarised in the study could perhaps have prevented unnecessary re-work, increase in cost of quality and lowered employee morale.

It appears that the maintenance of ineffective safety and environmental management systems results in huge losses in profit and reputation of the organisations. Priority should always be given to sustaining human lives, natural resources and ecosystems. Therefore, costs in maintaining and providing safe environments will not be compromised.

It is hoped that this review of literature highlights the benefits of complying with effective management systems or codes of practice. Those organisations not complying with any management system or code of practice are encouraged to use the case-studies in this section and their outcomes to get management support to implement such systems.

Each management system has its own purpose towards good practice. It is understandable that maintaining multiple management systems is difficult especially when managers are already challenged with so many aspects like lack of resources, changing customer needs and maintaining competitive advantage. It is hoped that the case-studies presented above provide an alternative by highlighting the suitability and usefulness of integrating these management systems. In addition, a few strategic changes in business tools, suitable training and sound leadership may show that integrated systems can be achieved and maintained at a profit to the organisation.

Based on the literature mentioned above safety, corporate governance, quality, HIV/Aids and environment management were selected for this study. Further, these management systems present versatility which could be suitable for a number of types of organisations. Consequently it was not appropriate to select specialised codes of practice such as HACCP and "e - mark" for integration in this study as it would have restricted the flexibility of the model, in that it would have been applicable only to certain sectors or fields of industry. Also, the unlimited integration of codes of practice pertinent to certain industries would create much confusion in the minds of managers in other non-related sectors or fields of the industry. It may have been perceived as being biased to the manufacturing type of organisation.

The inclusion of specialised codes of practice, management systems or specifications such as HACCP or ISO 17025, is not entirely impossible. When an organisation has evolved to a point where it already has an integrated system and competent managers, and shows

relatively good document requirements, then the specialised codes of practice, management systems or specifications can be included or integrated into the systems.

The next chapter will introduce business improvement tools and strategies which can be adopted by organisations in their quest to enhance business performance.

## CHAPTER 3

### BUSINESS IMPROVEMENT TOOLS

“ We all prefer copiers whose copies are clear under low power; we all prefer cars designed to steer safely and predictably, even on roads that are wet and bumpy....we say the products are robust. They gain steadfast customer loyalty.”

G.Taguchi and D. Clausing (Foster, 2001:176)

### **3. Review of literature-business improvement tools**

The various challenges faced by managers in business have been highlighted throughout this study. The activities often needed to be initiated by managers and employees lead them to explore the unknown in an attempt to show continuous improvement in performance and profit. In their quest to fulfil these responsibilities, employees and managers seek various tools and strategies which are usually complex and require many hours of focus.

#### **3.1 The need for continuous improvement in business**

Furthermore, for an organisation to maintain accreditation, it is obliged to show auditors what plans are in place to achieve "continuous improvement" which forms a component of ISO 9001:2000. This component has been selected as part of the model proposed in the present study.

#### **3.2 The business improvement tools selected in this study**

There are a variety of tools and business improvement strategies which can be used as a basis to establish the management system or codes of practice. Hence, this chapter is a continuation of the review of related literature and will present the principles of the business improvement tools selected in the present study to achieve continuous improvement.

It is hoped that the tools selected in this study will be suitable when planning strategies to implement or enhance the use of codes of practice or management systems. Some of the tools for business improvement are:

- To design a simple management system as a framework to support codes of practice.
- To use scenario analysis to assist an organisation in evaluating its current and future position in society in terms of political, economic, social, technological and environmental influences. The "5 W 2 H" Approach and Strengths, Weakness, Opportunity and Threat (SWOT) Analysis are tools which will be used during scenario analysis. Other tools which will be used in the study are: Quality Function Deployment, Gap Analysis and training.



- To implement a Benchmarking Process to identify and assess superior competitors' practices and establish their position in the market.
- To conduct a self-assessment as a means for an organisation to assess its current operations against desired practice.
- To introduce continuous improvement strategies which include the Plan, Do, Check, Act (PDCA) cycle, Brainstorming, Cause and Effect, Pareto and Cost of quality.

If all these business improvement tools are implemented effectively, it could perhaps provide organisations with factual information which forms a valuable basis for effective strategic decision making.

### **3.3 The importance of implementing management systems or codes of practice relating to business improvement**

Management systems, or codes of practice, are capable of enhancing the credibility of an organisation by showing the customers and stakeholders that they follow a structured approach in their operations (Stables 2001:36). Adherence to international codes of practice also promotes trade nationally and internationally by preventing the rework for acceptance of products in other countries (Stables 2001:39). The tools and strategic practices enable the manager to prioritise activities so that improvement initiatives can be easily implemented and monitored (Gitlow, Oppenheim, Oppenheim and Levine, 2005:27). Streamlined operation lends itself to performing only value-adding activities within the processes. This helps the organisation to save time and money and subsequently increase efficiencies and productivity (Kolarik, 1999:518).

The urgency with which these activities have to be executed places further pressure on managers and employees. Uncertainty sets in and in such a state the variety of tools and strategies available could overwhelm even the most composed manager. These tools can perhaps help organisations to streamline their operations, facilitate the implementation of management systems or codes of practice and co-ordinate the improvement processes for

implementation and maintenance of such management systems or codes of practice (Fresner and Engelhardt, 2004:202). The Austrian organisations used integrated management systems (quality, environment and health and safety), optimisation of processes, problem-solving techniques and training to achieve better performance.

This section will demonstrate how some of the simplest business improvement tools and strategies can be used by management as a starting point to achieve improvement in their processes:

### **3.4. Fundamentals to be considered during the implementation of management systems and codes of practice**

Managers need not follow all the tools recommended in this section. Those which apply will depend on the existence of a management system within the organisation, the maturity of these management systems, the complexity of the processes, the competence level of the employees, the resources available and the time-frames. The importance of each of these aspects will be discussed further in the following section.

#### **3.4.1 The importance of a simple management system**

Stables (2001:3,19) is of the view that it is useful for an organisation to have a simple management system in place as a foundation to support any initiative, even if it is as simple as daily planning of activities, because it provides a framework and structure which helps employees to operate around the core goals of the organisation. This perhaps anchors the organisation so that the complexity of the activity does not hinder its progress.

#### **3.4.2 The maturity of the management system**

During the implementation of management systems, many “teething problems” usually emerge at various stages. They are usually solved quickly so that the implementation of the code of practice or business improvement tool is not hindered (Stables, 2001:256). This perhaps takes the maturity of the management system to a higher level. It could also present

the employees with better work ethics and improves their culture on best operating practice.

### **3.4.3 The complexity of the processes**

Sometimes the operations of an organisation are so complex that only small initiatives can be introduced at a time. Small initiatives have proven to show improved performance quicker than larger ones (Kolarik,1999:512 and Gitlow, Oppenhiem, Oppenheim and Levine, 2005:27). It is hoped that this improved performance helps to capture the interest of employees and keeps them motivated for future improvement initiatives. In some instances processes are so complicated and require considerable attention from employees that only small initiatives can be introduced.

### **3.4.4 The competence level of the employees**

In some organisations highly skilled employees may not be required. Hence, it is urged that the tools be carefully selected within the ability of the employees to understand and execute tasks (Stables, 2001:265). If the organisation fails to do so, it will make them lose interest in further improvement initiatives.

### **3.4.5 The resources available**

Any initiative or instruction to an employee requires the use of resources to fulfil the activity (Gitlow, Oppenheim, Oppenheim and Levine 2005:26). In some cases the organisation may not have the ability to provide the resources to support the initiative. Hence, this could be a considerable limitation in the progress of an organisation.

### **3.4.6 The time-frame**

Each activity required to be executed by an organisation usually has a time-frame attached as a guideline as to when the task should be completed. In view of this, the type and number of tools selected will depend largely on this time-frame (Stables, 2001:260). It is imperative that organisations work towards organisational sustainability. To achieve this an organisation must identify its strengths and weaknesses so that resilience mechanisms can be developed

to minimise or combat failure during uncertain times.

This section of the study will define each tool and provide a brief explanation for their implementation to facilitate better operating practices. A schematic illustration of a simple management system was designed by the researcher, a flow diagram serving as a guideline to track these processes and business improvement tools such as: Quality Function Deployment, Gap Analysis, Scenario Analysis, a Self-Assessment checklist and methods for continuous improvement will be used to establish the foundation required to initiate the implementation and improvement of the management systems or codes of practice recommended in this study.

### 3.5 The design of a simple management system

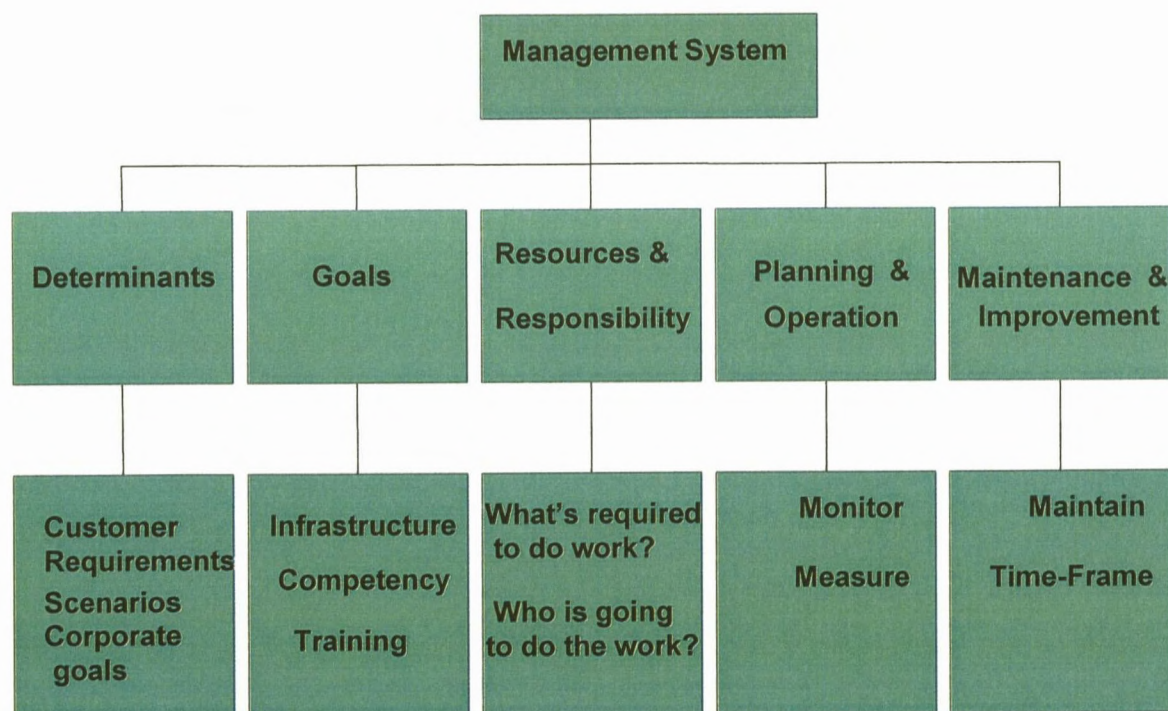


Figure 1: Design of a simple management system.

From the review of literature, it is evident that certain components are essential for the operation of management systems. These components can be organised to form a coherent management system. A simple management system was designed during this research to co-ordinate the activities of an organisation. The following example will show a hypothetical case relating to the use of a simple management system in a laboratory. It will present a scenario of the stages that a sample from production would have to follow to obtain comprehensive results from different sections of a laboratory, before the production of that product can continue:

### **3.5.1 The case**

The laboratory receives a sample from production. This sample should be shared by three different sections of the laboratory. Furthermore, the sample should be handed to the analyst conducting the most bacteriological sensitive experiment first to prevent contamination. Also the other two sections of the laboratory have to receive samples within a certain time-frame so that the time-consuming tests can commence without delay and be completed within the work day. It should be noted that the laboratory does not receive one sample at a time; a number of samples from different parts of production requiring a variety of tests are received and these tests should be conducted within a working day of an analyst.

#### **3.5.1.1 Application of the tools/principles to the case**

The scenario above needs to be resolved quickly as failure to produce the products loses money for the organisation. To this end:

- The employees and manager of the laboratory would have to follow a structured approach to facilitate the movement of the sample through the laboratory. The progression of the sample through the laboratory should be documented for continuity especially when new employees are hired and in the absence of the employees performing the test routinely. The goals of the laboratory should be clearly known during this design so that priority is given to the most significant test. The

tests should be conducted in a manner that satisfies the customer requirements. These requirements should be clearly stated before the planning stage commences (Crosby, 1984:9, Juran, 1992:17).

- A plan should be developed to ensure that the sample is able to travel to all the different sections of the laboratory without compromising the integrity of the sample. The test result is only as good as the sample. Any deficiencies in the sampling process or contamination of the sample would produce an invalid result. The repercussions of such results can perhaps increase the costs incurred by the organisation phenomenally. The laboratory manager should clearly state what is required to achieve the desired customer requirements, who is going to conduct the tests and how the test would be conducted. The analyst conducting the tests should be trained and deemed competent to conduct the test in case the sample has to face legal scrutiny. The test method selected should be adequate to achieve the result required. It is essential that the resources required to execute the tests be allocated prior to receiving the sample because in some instances the samples spoil with time (Crosby, 1984: 106, 109).
- From related literature it is evident that it is the managers' duty to ensure that the employees have all the resources required to execute the test. There should also be a documented procedure for monitoring the status of the test. An improvement strategy should also be initiated so that the samples can be analysed timeously as the growth of an organisation is inevitable and the number of samples coming into a laboratory usually increases (Crosby, 1984:117).
- A maintenance programme should also be in place to ensure that the instruments are kept in good working condition for immediate use so that when samples arrive at the laboratory, they are analysed timeously. All the requirements mentioned above should be available with the least possible delay because in most cases the production line waits for the results above before continuing with production (Juran, 1992:17).

In view of this, every department should perhaps provide employees with a framework to

conduct activities. One such framework is the simple management system illustrated in the figure 1. It is hoped that the scenario of the laboratory highlights the importance of adhering to such practice. The tools and principles discussed above, are consistent with the views propounded by Stables (2001:260).

The example above serves as a simplistic representation of a management system as a fundamental tool for an organisation wishing to embark on an improvement initiative. It shows how different levels of the simple management system requirements are addressed. It must be emphasised that as the number of management systems followed by an organisation increases and the level of integration of these systems intensifies, more sophisticated management and improvement tools should be introduced to support the systems.

The manner in which the design of the simple management system and the laboratory scenario was integrated is consistent with the teachings of quality experts, Crosby and Juran, who emphasise the steps required for quality planning and improvement in management strategies (Crosby, 1984:9, 106,109, 117 and Juran, 1992:17). The common steps from both their teachings stress the need for identifying and understanding customer needs, establishing a unit and mechanism of measurement, a means of evaluation and optimising the method to measure defined indicators effectively and proving the reliability of the method. Furthermore, it is encouraged that quality control be used when designing any management system (Crosby, 1984:54 and Juran, 1992:17). The following questions must be answered to ensure that this is satisfied:

- Was the system completed properly?
- Did the system work for your samples?
- Were the facilities adequate and instruments properly calibrated?

Each aspect mentioned above has been incorporated in the design of the simple management system and was also addressed during the progression of the sample in the different sections of the laboratory.

When a simple management system has been established it is encouraged that senior management introduce business improvement tools to support larger and more complex management systems.

### **3.6 The commonality between business improvement tools used during the study and those shown in literature**

The transition to a global economy has forced many organisations to change their traditional working methods and seek better productivity from minimal resources. In their quest, organisations have tested a number of business improvement tools and strategies. Shukla (1994:633) and Karaszewski (2004:64) express the view that one of the most common indicators for organisations to be aware of is the changing environment in which they operate. The two reviews which follow highlight the reasons for adaptation to this change and how organisations can buffer themselves against the negative impact that may arise.

Ellis and Pennington (2004:32) comment on the dynamic nature in which organisations conduct their business. They advise that for an organisation to remain in business it must be able to change, re-focus its service/product and markets according to uncertainties in the environment. Strong leadership is known to be beneficial and stringent corporate governance practices are encouraged. Further, these practices are urged in order to satisfy the demands of the twenty- first century. These demands are for organisations to behave socially, ethically and environmentally responsibly with a view to making profit.

#### **3.6.1 Quality Function Deployment (QFD)**

Quality Function Deployment is a tool that is commonly referred to as “the voice of the customer” (Reid and Sanders, 2005:153). Consequently this tool is used to determine the customer’s requirements for designing a particular product/ service. The method was developed in Japan in the 1960s and adopted by the Americans 20 years later. It is essential to understand the customers’ requirements to ensure that they are satisfied with the product/



service delivered. This ensures that customers remain loyal to the organisation thereby ensuring sustainability (Foster, 2001:127). This study will use a QFD tool called the “House of Quality” to show how the customers’ requirements are adapted to the design of a process/service within an organisation.

Quality Function Deployment is used in the early stages when designing a process (Heizer and Render, 2006:163). According to Foster (2001:127) the “House of Quality” concept is the most widely used method to achieve this. This concept enables management to match the relationship between what is required by the customer to what the organisation is able to provide in terms of the resources at its disposal. This way, any outstanding resources are identified and provisions for additional resources can be easily identified, assessed and justified.

The layout of the “House of Quality” is illustrated in figure 2. The “House of Quality” represents a typical house with roof and walls. The left wall of the house represents the customers’ requirements. The roof represents the technical requirements. The right wall represents the customers’ perceptions (Bicheno, 1994:62).

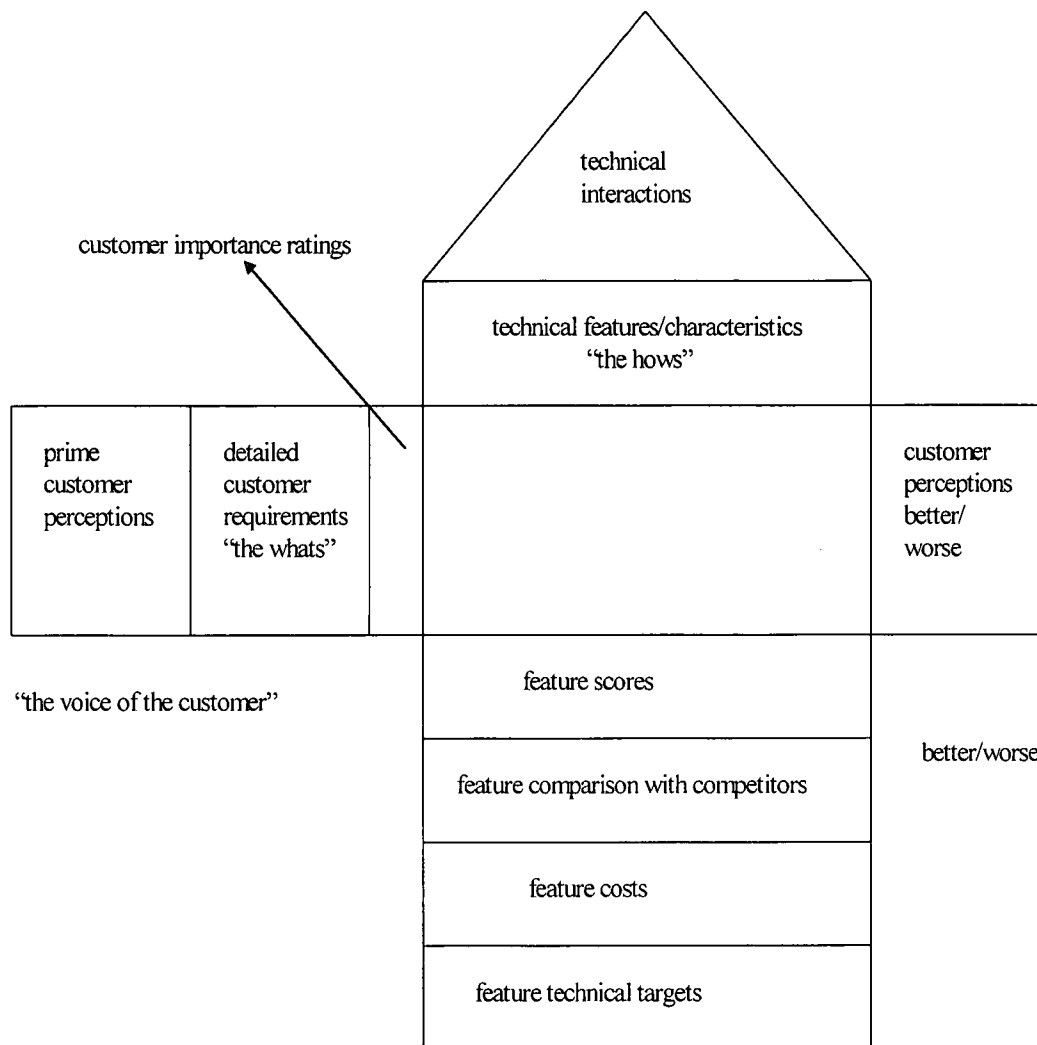


Figure 2: House of Quality (adapted from Bicheno, 1994:62)

According to Heizer and Render (2006:163), seven basic steps must be conducted during the preparations for QFD. These steps are:

- identifying customers' needs
- identifying how specific activities such as product characteristics, features and attributes satisfy customers' needs
- relating to what the customer needs, to how the product will achieve it

- identifying the relationship between all the characteristics, features and attributes
- developing importance ratings
- evaluating competitors
- determining the desired technical requirements, performance of individuals, the competitors' performance, against the attributes obtained.

The QFD -"House of Quality Concept" can be difficult to follow, therefore a simple practical example showing how the concept can be used, is shown in Appendix 3, page 265.

### **3.6.2 Gap Analysis**

Gap analysis is a useful tool to determine the desired level of performance expected by the customer against the actual level of performance delivered (Foster, 2001:28). Holdsworth (2003:195) is of the opinion that identifying gaps in the system will contribute to the success of an organisation.

According to Foster (2001:28) Fedex represents one of the leading courier organisations worldwide. It delivers 2,3 million packages overnight. This organisation believes that focus should constantly be placed on quality and customer needs. This organisation has three goals by which they operate. These goals are: 100 % on time deliveries, 100 % customer satisfaction and 100 % accurate information available on every shipment. Fedex uses a number of Quality Improvement Process (QIP) tools to achieve their goals. One such tool is the Gap Analysis. Gap analysis performs a very important task in the operation of an organisation because it allows one to determine the difference between what the customer wants from what is delivered to them. Furthermore, the managers urge all employees to ask their internal customers the following questions:

- What do you need from me?
- What do you do with what I give you?
- Are there any gaps between what I give you and what you need?

The effort put into quality improvement initiatives have reaped many benefits to the organisation (Foster, 2001, Adams, Gupta and Wilson, 2003). Some of these benefits are: 99,7% on time delivery, achieving the Malcolm Baldrige Award, presented with the Quality Carrier of the Year award by Merck Pharmaceuticals and obtaining Company of the Year award for Distinguished Service.

There are a number of concepts which can be used to conduct Gap Analysis. However, this study will use the simple method by asking internal and external customers the three simple questions mentioned above. Gap Analysis can be used to detect any deficiencies which can be corrected and their recurrence prevented. Some of the benefits derived from using Gap Analysis are value-adding activities, decrease in cycle-time in all processes, improved customer satisfaction and continuous improvement.

### **3.6.3 Benchmarking**

Benchmarking is a tool which allows an organisation to look at other organisations that exhibit superior performance in pertinent practices and imitate them to enhance their performance (Kolarik, 1999:512). The benefits derived from benchmarking include: knowing what the competitor is doing and how they are operating, reducing operational costs and forming a foundation for factual decision making for initiating changes and improvements.

Shukla (1994:632) states that organisations should be aware of their competitors and performance criteria and for success should be able to outperform them. According to Yang and Maclean (2004:12), the Standard and Poors 500 index can be used as reference to select best in class organisations, for benchmarking.

Yang and Maclean (2004:11) report on the challenges experienced by organisations when assessing their performance related to health, safety and environment. Some of these challenges arose due to the lack of prescribed procedures, difficulties with data collection and proving validity of assessing the desired areas in an organisation. This investigation is based

on a template which comprises a matrix based selection system for assessing the health, safety and environment of an organisation. This is achieved by identifying organisations which display superior health, safety and environmental practices when compared to other organisations. The matrix consists of two phases. Phase 1 assesses the top hundred performing organisations according to their results. The criteria used to assess this phase are: awards, peer recognition, classical performance measures, financial results and published composite health, safety and environmental outcome indices. Each criterion is awarded a score.

Phase 2 assesses the same organisations according to their management indicators. The criteria used to assess this phase are: input variables and intervening variables. Input variables score on management support and characteristics which are specific to an organisation while intervening variables score on superior processes, technological involvement and best practices.

The organisations used during the study above were extracted from the Standard and Poors 500 (S and P 500) Index. This index focuses on manufacturing organisations and is one of the most popular references used for benchmarking superior performance.

The hypothesis of the study undertaken by Yang and Maclean (2004:12) states that if organisations were listed in the S and P 500 Index:

- they would be in possession of effective health, safety and environment systems
- they are under shareholder scrutiny

There are a number of approaches which organisations can use to adopt benchmarking strategies from other best in class organisations. Benchmarking strategies follow a specific and structured approach to gain the information required to initiate this tool.

One such approach will be discussed during this study. It emphasizes that before embarking

on a benchmarking process, the organisation must review the following aspects as postulated by Kolarik (1999:514):

- fully understand the operation that needs to be benchmarked
- identify its competitors and leaders in their field
- include the best practices of the competitor within their own organisation
- use the information above to perform better than all competitors

According to Evans and Lindsay (2005:123) compliance with this approach would prevent an organisation from repeating work already done in the field under investigation and identify performance deficiencies between the organisation and the competitor. They contended that this would aid the organisation in developing achievable goals.

The fundamental phases for the implementation of the benchmarking process are pre-planning, planning, analysis, integration, action and maturity (Kolarik, 1999:514). Adams, Gupta and Wilson (2003:10) express the view that organisations need not only look at best practice from other organisations in similar fields. They mention that organisations outside the industry could also provide useful information with respect to world-class manufacturing performance for a specific process.

#### **3.6.4 Scenario analysis**

Scenario analysis is used by managers to propose strategies which can be used in the future. These strategies are developed so that they can be used in several possible environments (Winter and Steger,1998:63). Each of these environments is assessed according to the resources and strategies required for that organisation to thrive under those predicted conditions. This method is able to identify which environment is going to present itself by looking for key indicators which were identified earlier in the formulation stage as a guide. Then the most appropriate strategy can be quickly implemented. This tool presents a robust organisation which is able to react to any uncertainty which emerges. Shukla (1994:629-639) cites a number of works which express the view that some corporate organisations fail

because they do not consider the changes in the corporate environment in their planning.

Boninelli (2005:42) believes that successful executives and managers devise strategies to scan the environment in which they operate. They also increase their network to include government, non-governmental organisations (NGOs), related and unrelated sectors, competitors internationally and nationally in order to stay ahead in business.

Studies have shown that effective and efficient execution of a strategic plan have been known to attract investors (Wixley and Everingham, 2003:6). These studies recommend that corporate governance should provide the mechanism for directors to practice. Effective and efficient execution of strategic plans must consist of a number of fundamental initiatives in strategy formulation and execution suitable for different conditions. One method of initiating a strategy is known as scenario planning.

Sunter and Illbury (2001:11) reinforce the need for resourceful thinking for the continued survival of an organisation. This can be achieved by exploring alternatives in scenario plans. The development of some of these plans is discussed below:

These authors state that before any form of action is undertaken, some vital questions should be asked. These questions are: What do you control? What do you not control? What is certain about the future and what is uncertain about the future?

Winter and Steger (1998:63) used scenario analysis and planning as a tool to identify and predict the most suitable plans they would have to implement during various conditions in the future. They mention that the future depends on the outcomes of activities of the customers, the suppliers, the banks, insurance policies and the environments in which organisations operate. These activities are mainly influenced by political actions. Shell Industries used this tool to predict their future for twenty years. Their aim was to use scenario planning to design resilient operating conditions for activities in uncertain environments (Winter and Steger,

1998:63) . Hence, it can be proposed that during the design of this tool, more than one scenario plan should be developed for a particular activity in the future so that it can provide contingency plans depending on which environment manifests itself. These are applicable when developing management systems.

Hence, when developing management systems the following steps need to be adhered to during the design of scenario analysis (Winter and Steger, 1998:65):

- The activity which needs to be monitored must be identified.
- The driving forces from a social, economic, political and technological point of view should be identified. These forces give the managers more leverage to look at issues not directly affecting their daily operations. Consequently “predetermined” factors stem from these forces. These factors are external to an organisations operations and are usually out of the control of the manager or policy maker.
- Based on these “predetermined factors” the possible uncertainties should be identified. Those uncertainties which impose a potential problem to the activity being monitored, should be selected. According to Winter and Steger, (1998:63) the most common method for identifying uncertainties are:
  - Teams are selected. Each member of the team is asked to record what he/she anticipates in the future trends or as uncertainties.
  - Each member of the team explains in detail his/her view on the uncertainties. Ideas are subsequently arranged into common groups.
  - The ideas are prioritised according to which trend or uncertainty would create the greatest impact. The two activities with the greatest effect are selected. Various scenarios are established for each trend or uncertainty selected above. These scenarios provide the managers and policy makers with a means to anticipate trends in an uncertain future.
  - The “possible environments” are plotted onto a matrix which evaluates each scenario. Scenarios are investigated and those which are favourable are selected. It is important for managers to understand the dynamics of each



scenario. This will ensure that they are able to identify which scenario is manifesting itself and respond timeously and accordingly.

The manner in which a scenario analysis can be designed is illustrated below:

The diagram below shows the layout required to formulate a scenario analysis. It displays a matrix which consists of a horizontal axis and a vertical axis bisecting each other to form four quadrants. The vertical axis represents from top to bottom an activity “in control” to one which represents an activity with “an absence of control”. The horizontal axis represents from left to right an activity of “uncertainty” to an activity representing “certainty”. Each quadrant is named according to the activity conducted in that specific area (Sunter and Illbury, 2001:38). The activities in each area are discussed in detail in the section below:

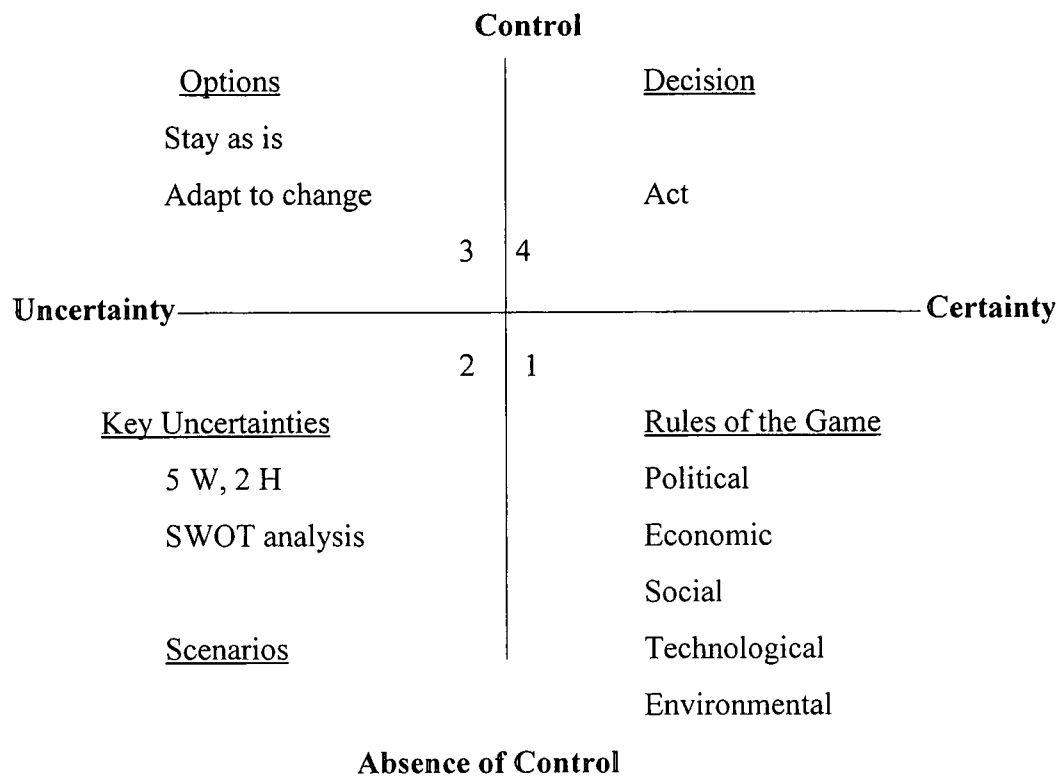


Figure 3: Scenario Analysis (Sunter and Illbury, 2001:38)

#### 3.6.4.1 Quadrant 1: Rules of the game

The bottom right hand corner represents the rules of the game. The rules of the game are identified using the “primary driving forces” which steer the activities of the organisation. The “primary driving forces” can be broken into five categories: political, economic, social, technological and environment (PESTE) (Winter and Steger, 1998:65).

Political forces are represented by electoral, legislative and regulatory issues. Economic forces include macro-economic and micro-economic issues. Some examples of the latter are watching the effects of population growth on price of products, the organisational and operational changes within industry. Population growth, the rate of immigration, and life-style preferences, are some examples of social forces. Technological forces include direct

and indirect effects of technology on the operations of an organisation. Environment represents the surroundings in which these activities will be conducted (Winter and Steger, 1998:65).

Investigating the driving forces provides an opportunity for an organisation to pre-determine factors that can emerge in the future. These pre-determined factors are important because they enable managers to focus on activities which do not form part of the core function of their organisation, but which have an impact on their operations in the long term. These factors usually occur outside the organisation and are not under the control of the organisation. Winter and Steger (1998:65) used Shell Industries, a leading petroleum industry, as an example of an organisation which assessed PESTE factors before designing future plans.

#### **3.6.4.2 Quadrant 2: Key Uncertainties**

The key uncertainties are determined by identifying all areas of strengths, weaknesses, opportunities and threats (SWOT). Another method used to assess key uncertainties in this section is the “5W, 2H Approach”. Both these tools form an integral role during strategic planning within an organisation and are discussed below:

##### **3.6.4.2.1 SWOT Analysis**

Identifying strengths, weaknesses, opportunities and threats can provide a starting point for organisations to analyse key uncertainties in changing environments. A series of questions reported by Marx and van der Walt, (1984:675) were modified to suit this study. These questions are listed in Table 1.

The letters “S” and “W” represent strengths and weaknesses respectively, which exist within an organisation. Strength and weakness assessments are based on the environment within the organisation. The letters “O” and “T” represent opportunities and threats respectively, to which an organisation is exposed. Opportunities and threats form part of an assessment

outside the organisation. The table below shows how the “SWOT Analysis” can be adopted in detail (Marx and van der Walt,1984:675).

| Strengths   | Weaknesses  | Opportunities   | Threats  |
|---|---|---|--|
| What is the current status of the organisation?                   | What is the current status of the organisation?           | Which points can success be achieved?   | Which points can success not be achieved?  |
| What are the special strengths of the organisation?               | What are the troubles experienced by the organisation?    | Which are the most suitable environmental conditions for the operation of the organisation?                       | What are the most unsuitable environmental conditions for the operation of the organisation? |
| What are the resources and special expertise of the organisation? | What are the activities the organisation is unable to do? | How do customer requirements evolve?<br><br>Where are the deficiencies in what we do and what the customer wants? | What are the current practices of competitors?   |

Table 1: SWOT Analysis (Marx and van der Walt,1984:677)

Shukla (1994:632-633) was of the opinion that organisations can only outperform their competitors, when their strengths and weaknesses are known.

#### **3.6.4.2.2 The “5W 2H” Approach**

The “5W 2H Approach” is a tool which uses the following words Who? What? Why? Where? When? How? and How much? to ask specific questions about a process or activity (Stevenson, 2002:489). The outcome of this tool is able to provide vital information about current activities of an organisation with a view to their possible improvement in the organisation. The usefulness this tool is discussed below:

The word “What?” identifies what is the current practice of an organisation. “Why?” determines the need to conduct such a practice. This step helps to identify unnecessary activities which can be eliminated thereby saving time and money.

A series of questions can be linked to the word “Where?”. Asking the questions “where is the activity being done?”. “Why is it done at that particular point?”. The outcome of the latter questions helps an organisation to determine the most suitable location for that particular activity. The word “when” looks at the timing, specifically when a particular activity is being conducted and in fact if that was the most opportune time to conduct that activity. “Who?” is related to the person/persons conducting specific tasks and whether they are the most suitable choice. “How?” is associated with the procedure followed to accomplish an activity and whether it is the most suitable method of analysis. It ultimately reveals whether a better way of conducting activities exists. “How much?” reveals the cost and benefit of current practices compared to new ones (Stevenson, 2002:489).

This approach provides outcomes which add value to the process thereby also optimising them. Furthermore, it facilitates continuous improvement in the organisation.

#### **3.6.4.3 Quadrant 3: Options**

This quadrant presents an organisation with two choices. These include the organisation conducting their daily operations with no change in practices or implementing new practices

to adapt to the scenarios which emerged from those pre-determined in section 3.2.4.1 above.

#### **3.6.4.4 Quadrant 4: Decision**

This quadrant represents the path or action the organisation has selected to continue daily operations. The matrix presented in figure 3 can assist an organisation to categorise the activities obtained during scenario analysis investigations, into a format that can aid managers in the development of management systems.

#### **3.7 Self- assessment**

Self- assessments are typically designed for organisations to look at their current results and practices and compare them with their desired objectives and use them to determine opportunities for improvement to attain the desired level of performance (South African Bureau of Standards, 2000:46).

The International Standard Organisation provides ISO 9004:2000 as a guideline for performance improvement. This guideline is two-fold. Firstly, it can be used as a self-assessment tool for organisations to determine their progress towards meeting their objectives and targets (South African Bureau of Standards, 2000:46) (B). Secondly, it can be used as a tool for continuous improvement to select specific activities called breakthrough projects to improve the performance of an organisation (South African Bureau of Standards, 2000:53) (B). This guideline can be used by all types and sizes of organisations (Tricker and Lucas, 2001:123). Although ISO 9004:2000 cannot be used for audit purposes, this guideline can be useful to an organisation to establish its efficiency and re-distribute resources (South African Bureau of Standards, 2000:46) (B). With the perception of the usefulness of the ISO 9004:2000 guideline, a self assessment was developed to serve as a tool to facilitate the implementation of the SECQA model.

Holdsworth (2003:195), highlights the importance of measuring the performance of the management system. He indicates that this can be achieved by using performance

measurement tools, checklists and audits to monitor, assess and verify the effectiveness of the system.

In view of this, the checklist (shown in Chapter 4) was developed to systematically elicit information about the codes of practice/management systems recommended in this study. It seeks information about the organisation under investigation, based on the requirements to satisfy the proposed SECQA model. Other pertinent general information on integrated systems such as the scope and goals are sourced to determine if the organisation's current management system has the framework to support an integrated management system. This provides information on which activities should be prioritised to achieve this desired level of performance.

According to the South African Bureau of Standards (2000:46) (B) a well developed "self-assessment checklist" can be useful because it can be applied to all types, sizes of organisations and can be applied to the entire or part of the organisation depending on the scope of accreditation desired. It provides a starting point for internal and external auditing, it can be conducted by its own employees to assess the organisation's progress towards achieving goals, its objectives and its ability to meet customers' requirements. Self-assessments provide real-time monitoring thereby encouraging a pro-active management philosophy. This provides an environment conducive to TQM practices and culminates in a robust organisation.

### **3.8 Continuous Improvement**

Continuous improvement is not only a mandatory requirement for organisations following the ISO 9001:2000 code of practice, but it also provides an essential means to optimise the activities of an organisation. Fresner and Engelhardt (2004:625-631) showed the benefits gained by a brewery and a galvanic manufacturing process when they embarked on various continuous improvement initiatives. Shukla (1994:629), highlighted the usefulness of continuous improvement initiatives to promote the success of an organisation. He mentioned

that time based management (value-adding) and lean manufacturing (lean production) are some key initiatives for this success.

There are a number of initiatives which managers are encouraged to adopt to improve processes. These initiatives typically commence with diagnosing problems to eliminate errors and “changing concepts” which can help. The tools which can be used to diagnose problems are to determine the common and special causes of variation, to use brainstorming, cause and effect analysis and Pareto analysis as a means for trouble-shooting. The tools which can be used to facilitate “change concepts” or improvement to processes are kaizen, a Japanese tool to show continuous improvement, lean production, the plan, do, check, act (PDCA) cycle and the Cost of Quality (COQ) technique.

A brief background, importance and method for implementation of each tool above will be discussed in this section:

### **3.8.1 Common and special cause of variation**

Before a problem can be investigated, its origin should be established. Common variations represent causes which emerge from within the process which are beyond the control of the employees. These causes are difficult to detect and remove (Reid and Sanders, 2005:174). These inherent sources of variation can arise from inadequate training of employees, inappropriate environment in which to operate in, for example, insufficient lighting, stressed employees and inappropriate design of product or service (Gitlow, Oppenheim, Oppenheim and Levine, 2005:27).

Conversely, special causes of variation are found external to the process. This form of variation is easier to diagnose and can be removed easily from the process. Special causes of variation can be attributed to the introduction of new raw materials, broken dies and equipment or a new operator (Reid and Sanders, 2005:174).



When common and special causes of variation are identified, special causes of variation should be removed before management can focus on reducing and eliminating common causes. This represents the preliminary stage of any initiative towards improving business performance.

### **3.8.2 Brainstorming**

When the causes of variation have been addressed and more problems present themselves, the “brainstorming” tool can be used to solicit information from employees and other interested parties about the possible causes of the problem. The process of brainstorming has its roots in Greece. It was used later in the 1940s by Alex Osborn in the advertising sector, before other industries latched onto it (Gitlow, Oppenheim, Oppenheim and Levine2005:27).

According to Evans and Lindsay (2005:174) a brainstorming process consists of a team leader and a team of employees from all departments of an organisation including members of the supplier chain who have a stake in the process. The number of members on a brainstorm team should not be larger than twelve members, as larger numbers hinder participation from all participants. During the preparation for the meeting the problem to be investigated should be described clearly so that all members of the team understand. The problem or a statement of the problem should be written on a flip chart so that it remains a pivotal point of focus. It is useful for the leader to research studies pertinent to the problem so that he/she is sufficiently conversant to prevent duplication of ideas. All ideas relevant to the problem derived from research above should be listed and circulated to all the team members. A date, a time and a venue must be selected to conduct the meeting (Gitlow, Oppenheim, Oppenheim and Levine, 2005:348).

In a brainstorm meeting, a statement pertaining to the problem should be displayed. Members should then list their ideas applicable to the problem on a piece of paper. Each member must read his/her idea. These ideas must be listed and displayed for all other members to see. If

required the leader is allowed to prompt new ideas from the members. Often new ideas are stimulated after hearing the list of combined ideas from other members. This concept is called "piggybacking". To maintain the momentum, the "random word technique" can be used. This technique allows the leader to provide ideas to the team with the intention of stirring a new idea (Gitlow, Oppenheim, Oppenheim and Levine, 2005:348).

Evans and Lindsay (2005:174) suggest that for the meeting to be effective, focus on the content under investigation should be maintained. The leader should prevent members of the team from being distracted by their routine activities and that there should be a constant flow of ideas maintained throughout. All the responses should be recorded for later reference. The leader should ensure that interruptions of ideas and intrusions into the meetings are prevented. The environment should stimulate creative thinking.

Each member of the team should ensure that they disclose all their ideas. These ideas should not be criticised or discussed outside the session. All members of the team should participate equally in the session. The leader should ensure that the session does not become a means for team members to express their dissatisfaction with the organisation (Evans and Lindsay, 2005:174, Gitlow, Oppenheim, Oppenheim and Levine, 2005:349).

The brainstorm team members meet at another session where they evaluate the possible causes of the problem and then rank them according to importance. A limitation of brainstorming is that some members feel that their ideas are inappropriate and suppress them. These ideas could have been useful (Gitlow, Oppenheim, Oppenheim and Levine, 2005:352).

### **3.8.3 Cause and effect diagram**

The cause and effect/fishbone diagram was developed in 1943 by Dr. Kaoru Ishikawa, a leading Japanese quality expert. He found that many employees were overcome by confusion when they were exposed to the number of activities associated with processes. He saw a

window of opportunity to develop a tool to help them cope with these processes. Consequently, the cause and effect diagram was developed to categorise possible causes of a problem and to take appropriate action to resolve them (Gitlow, Oppenheim, Oppenheim and Levine, 2005:358-359).

The data used to develop cause and effect diagrams usually emerge from brainstorm meetings and are usually categorised according to the following headings: man, method, material, money, measurement, market and environment. Sub-clauses can be assigned to each category above (Reid and Sanders, 2005:150). This is demonstrated in figure 4:

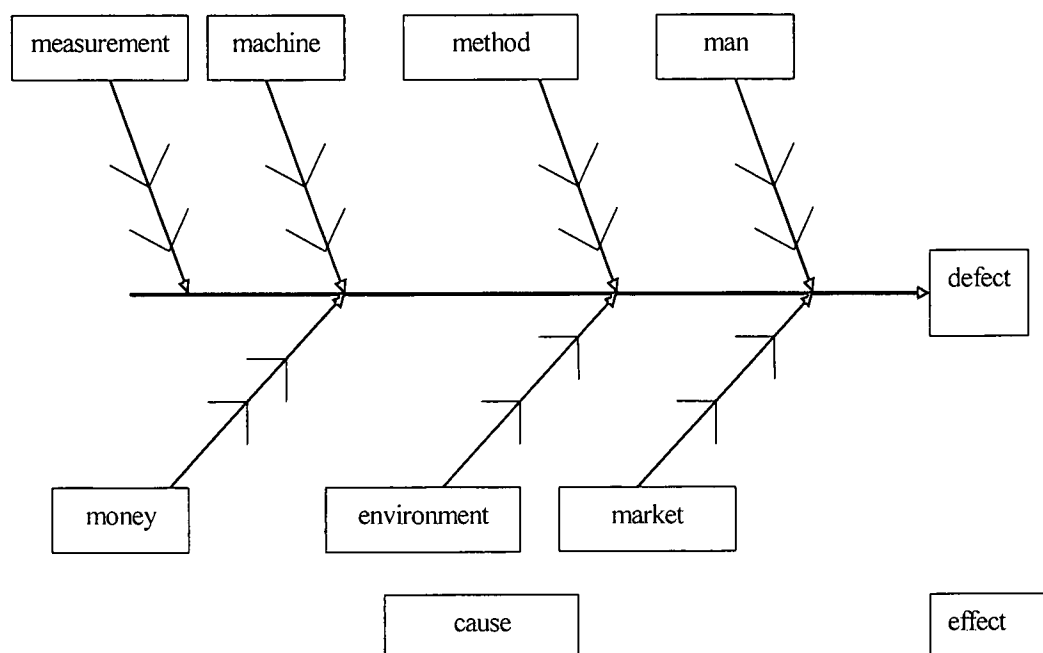


Figure 4: Cause and Effect Diagram (adapted from Bicheno, 1994:22)

Each cause is analysed and evaluated from the data. The team decides which causes have the greatest impact on the process. According to Evans and Lindsay (2005:155) cause and effect diagrams are beneficial because they can provide information for factors contributing to the root cause of a problem.

### 3.8.4 Pareto diagram

Pareto analysis is one of the simplest effective methods to identify and prioritise problems within an organisation. Pareto analysis emerged between the years 1848 to 1923 as a result of work by Vilfredo Pareto, an Italian economist. His studies concentrated on the “vital few trivial many” concept. This concept states that a small number of problem types account for a large percentage of the total number of problems that occur within an organisation. This method works on the premise that attention given to the “vital few” problems will help managers prioritise those with the greatest negative impact on the organisation (Gitlow, Oppenheim, Oppenheim and Levine, 2005:366). According to Evans and Lindsay (2005:72) the seeds for the Pareto Theory were sown from his discovery that 85% of the wealth of Milan was owned by 15% of the people.

The Pareto diagram in figure 5 represents the frequency of each problem in descending order (Gitlow, Oppenheim, Oppenheim and Levine, 2005:367). The following rules should be followed when constructing a Pareto diagram:

- classify data according to type of defect, e.g., number of scratches, number of broken edges
- choose the appropriate time period for data collection
- construct a frequency table and arrange the type of defects according to those defects with the largest number of observations to those with the smallest number
- calculate the percentage defect for each category
- plot the Type of defect on the X-axis (horizontal)
- plot percentage defect on the Y-axis (vertical)
- the highest defects should be closest to the left hand side of the graph. The other defects follow in descending order on the X-axis
- plot the bars
- when the last defect is plotted, draw a dotted line going vertically upward to the 100% defect mark, join to horizontal axis using broken lines

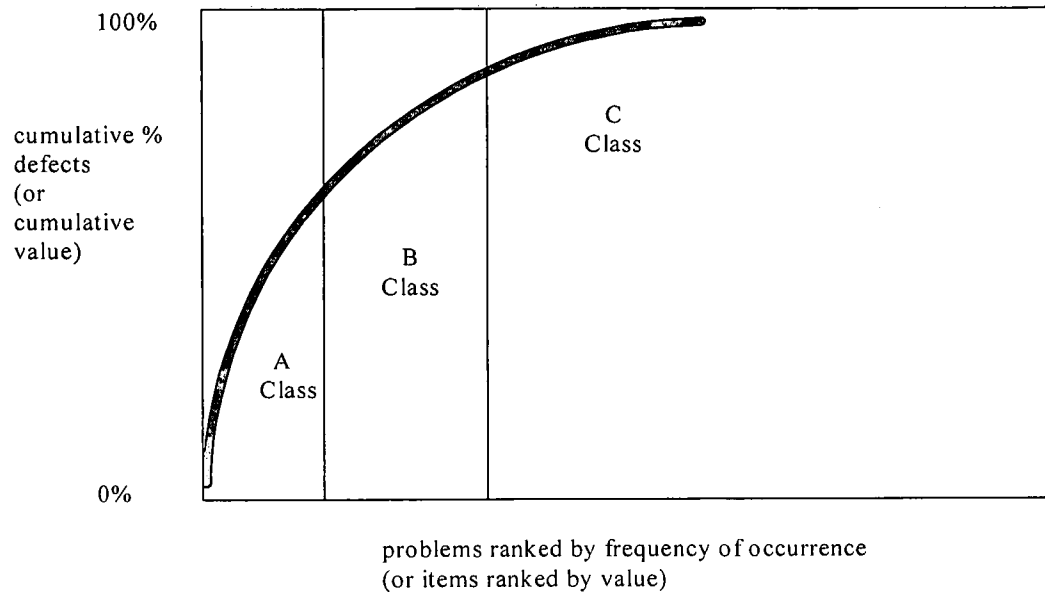


Figure 5: Pareto Diagram (adapted from Bicheno, 1994:22)

When the bars are plotted, it usually provides sufficient information to make a decision. Subsequent points above, demonstrate the cumulative frequency at which the problems occur.

### 3.8.5 Kaizen

According to Bicheno (1994:78), although Kaizen has its roots in Japan its usefulness was promoted in the west. Kaizen's popularity grew as a tool used by organisations to show continuous improvement. Imai described Kaizen as both a philosophy and a tool. When Kaizen is used as a philosophy, customers' requirements must be considered. These requirements are never stagnant and the levels of excellence are always increasing. Therefore continuous improvement is based on small increments which must be followed by all

employees throughout the organisation (Bicheno, 1994:78). Adam, Gupta and Wilson (2003:35) share the same view that Kaizen is useful because it is able to make small improvements to processes on a continuous basis. They believe that the accumulation of all these small improvements result in a large improvement to the overall process of the organisation.

Senior management is responsible for providing the resources, devising strategies and systems for the philosophy to be successful. Middle management must implement the philosophy and provide the employees with the necessary training required to sustain the practice. Supervisors must apply and maintain the momentum of the philosophy. This can be achieved by encouraging suggestions from employees, mentoring them and opening channels of communication throughout the organisation. Employees on the shop-floor must use this opportunity to provide ideas and suggestions towards business improvement, multi-tasking and use all the business tools effectively (Bicheno, 1994:78). He states further that when improvement goals have been achieved, the philosophy should not be abandoned. Instead the latter goals should be used as a basis to build further improvement strategies. According to Evans and Lindsay (2005:166), leading Japanese organisations implemented the views above and showed steady improvement in their processes thereby exceeding western competitors in terms of performance in business. In some cases the improvement process took up to 20 years to complete.

Bicheno (1994:78) suggests the following techniques which can be used as an opportunity to keep continuous improvement strategies flowing: He expresses the view that the rules laid down by an organisation must be questioned. These rules can sometimes restrict innovative thinking by encouraging employees to cling to old paradigms and conventional wisdom. Developing resourcefulness to encourage more efficient problem solving techniques is useful to get to the root cause of the problem. In-depth analysis should be investigated to remove the source of the problem. Always search for methods to combine suitable activities performed. The value of activities should be evaluated. Those activities which do not add

value should be eliminated.

Kaizen uses 5 Ss, 5 Whys and 6 Ms as tools for continuous improvement (Gitlow, Oppenheim, Oppenheim and Levine, 2005:41).

#### **3.8.5.1 The 5 “S” technique**

The 5 “S” is a method of Japanese origin which focuses on improving housekeeping within an organisation. Industries like Dunlop spent six months implementing this method before showing improvement in productivity (Gitlow, Oppenheim, Oppenheim and Levine, 2005:41). This method consists of five facets:

- Seiri (sort): focuses on eliminating unnecessary activities, tools, machinery, documents and defective products.
- Seiton (set in order): encourages labelling floor space, materials and tools so that they are readily identifiable. Tools must be placed in such a manner so that they can be easily accessed for the next activity.
- Seiso (shine): stresses the importance of having a clean work area. Seiso facilitates proactive maintenance of equipment and machinery.
- Seiketsu (standardise): promotes being a neat and clean person.
- Shitsuke (sustain): discipline and best practice must always be followed.

Organisations like Motorola, have introduced a sixth “S” called “shituke”, which translates to a person being well mannered.

#### **3.8.5.2 The 5 “Why” technique**

The “5 Why” technique represents a tool used to identify the root cause of a problem. This tool can be chosen over the cause and effect/fishbone technique, when the time constraints are tight and the possible root cause of a problem is required urgently. This method of analysis was developed by Toyota. They believe that only after a question pertinent to a particular problem is asked five times would the root cause of the problem be identified (Bicheno, 1994:58).

He was of the view that techniques such as this focus on quality at the source of the problem, promotes continuous improvement and prevents unacceptable practices. This technique was pivotal in the success of the Japanese car industry.

#### **3.8.5.3 The 5 “M” technique**

The 5 “M” technique is synonymous with the method used in the section on cause and effect.

### **3.9 Plan, Do, Check, Act (PDCA) Cycle**

Dr. Deming was a prominent quality guru who based his teachings on statistical process control (SPC) and statistical variation. He was famous for the “Deming Cycle”, his “fourteen point plan” and the “deadly disease concept” of an organisation (Bicheno, 1994:6).

The Deming Cycle, also referred to as the Plan, Do, Check, Act (PDCA) Cycle, is a common method used to achieve continuous improvement. Consequently, the requirement on “Continuous Improvement” from the ISO 9001:2000 code of practice recommends the use of the PDCA cycle for continuous improvement (South African Bureau of Standards, 2000:10).

Evans and Lindsay (2005:180) also express the view that the PDCA Cycle provides a simple tool to facilitate continuous improvement. In addition they mention that the cycle leads the process back to the “Plan” stage, which serves as a basis for further improvement opportunities. Reid and Sanders (2005:148) are in agreement with these views regarding the usefulness of the PDCA Cycle.

The PDCA cycle can be used to reduce the gap between customers’ requirements and the way the organisation performs its activities. This is applicable to internal and external customers (Bicheno, 1994:7). This technique can be implemented in the following manner:

- Plan: Plan which activity needs attention. The results of Pareto analysis will prioritise which activity needs improvement.



- Do: Conduct trials to search for the causes of the problems or potential areas for improvement, investigate them and select most appropriate activities.
- Check: Effect changes suggested from the investigations and determine if they are successful.
- Act: If successful, implement. If not revise strategy.

A new step to the cycle has been introduced:

- Standardise: When new ideas are obtained, they should be standardised and made part of the routine activities

### **3.10 Lean production**

Lean production is a relatively new philosophy which was introduced in the 1990s. It focuses on: quality, flexibility, time reduction and teamwork (Stevenson, 2005:25). Adam, Gupta and Wilson (2003:232) contend that lean production is a useful tool because it enables an organisation to produce the customer's requirements by using fewer resources.

This philosophy removes non-value adding activities and processes so that the number of resources usually required is reduced. These resources include less space, less inventory and fewer employees. Lean production is achieved by using highly skilled employees and flexible equipment. The employees are empowered with the assurance that the equipment and processes are optimised. Furthermore, they are entrusted with finding the root cause and devising initiatives to remove errors. The advantages of having skilled workers provide better quality products, reduces the amount of inspection and rework.

Flexibility is encouraged to ensure the competitive edge of an organisation. This is achieved by ensuring that the employees are able to deliver the product even when the customers' requirements change. These changes may include variation in product, changes in the number of units of the products delivered and changes in the variety of the products produced (Stevenson, 2005:25).

One of the successes of lean production can be attributed to the identification and correction of potential problems and the quick resolution of problems. To sustain the latter, teamwork among employees is crucial as they are responsible for the effectiveness of their system.

According to Adam, Gupta and Wilson (2003:232) the success of lean production is due to the organisation's ability to identify and conduct activities that add value to the process. They added that these processes should be designed in a sequence to save time and their efficiency should be reviewed continuously.

### **3.11 Cost of quality**

Perhaps one of the reasons inhibiting senior management from buying into the concept of quality is the difficulty associated with quantifying quality costs. In view of this, it is common practice among many organisations to perhaps exclude quality costs during financial planning initiatives. In addition important aspects such as quality planning, quality control and quality improvement are also left out. According to Beecroft (2005:2), this could be so because management has not linked the relationships between strategy and quality, productivity, profitability and competitive advantage. These aspects should be part of the organisation's strategic goals. The aim of most improvement strategies is to increase profits. Reducing the cost of quality or cost of poor quality, is a useful method of increasing an organisation's profits. Analysing the cost of quality provides a valuable tool to measure the performance of an organisation because it has the ability to be monitored thereby identifying and prioritising areas of improvement.

The cost of quality is categorised according failure, appraisal and prevention costs. Failure costs are further broken down into external and internal failure costs. External failure costs are those which arise when the product has left the organisation. For example: warranty claims and replacement of product. Internal failure costs are costs which emerge within the organisation or before the product has left the organisation. Some of these costs are incurred from re-work, producing scrap and conducting corrective action (Beecroft, 2005:3). Evans

and Lindsay (2005:70) contend that about 60% to 90% of the total quality costs are caused as a result of internal and external failure costs.

Appraisal costs arise from inspection or checking the product at any stage of production with an intent to prevent defective products from reaching a customer. Appraisal costs are non-value adding activities because when inspection is completed, defective finished products cannot achieve the desired levels of conformance, unless reworked. Hence, efforts should be made to minimise these costs (Beecroft, 2005:4). These can perhaps be achieved by better selection of suppliers so that the organisation can be confident of the quality of the inputs used. This will in turn allow a reduction in the number of inspections required on the product and the removal of non-value adding activities along the value chain. Prevention costs are incurred from activities to inhibit production errors for example: SPC, training, preventive maintenance. The amount of appraisal and preventative costs applied to a process or activity can be planned and hence controlled. When suitable appraisal and preventive measures are implemented, failure costs are reduced (Beecroft, 2005:4). This is evident in Figure 7.

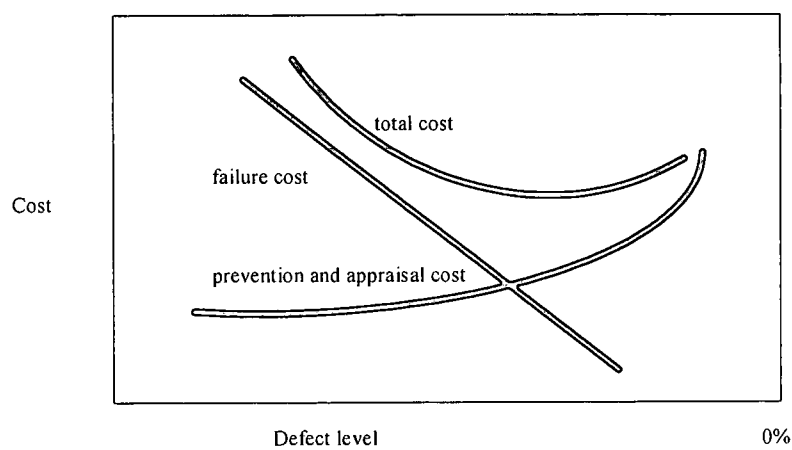
It is urged that hidden costs such as customer incurred costs, loss of reputation and customer dissatisfaction costs are also taken into consideration during financial planning. These costs are linked to external failure costs and can be reduced or eliminated as the number of external failures are reduced (Beecroft, 2005:4). Evans and Lindsay (2005:70) believe that these costs can be controlled by management intervention.

According to Bicheno (1994:60) management must be cautioned in that there comes a time when the cost of implementing appraisal and preventative measures are higher than the failure costs incurred. At this point the cost and benefit of appraisal and preventative initiatives should be re-assessed for its suitability. Traditionally this is called the "trade-off" method. Managers might argue that defective products are still being produced. The "Total Quality Method" is the preferred method. This method states that as failure costs decrease, appraisal and prevention costs level out at a certain point. This is consistent with the "total

quality” concept which involves all employees and departments where quality becomes the norm and culture of the organisation. In this way prevention measures facilitate continuous improvement of the organisation. Both the methods can be seen in figure 6.

Adam, Gupta and Wilson (2003:232) mention that organisations should identify and investigate the areas where waste occurs. They believe that improvement in these areas will improve profitability.

**The Traditional View**



**The Total Quality View**

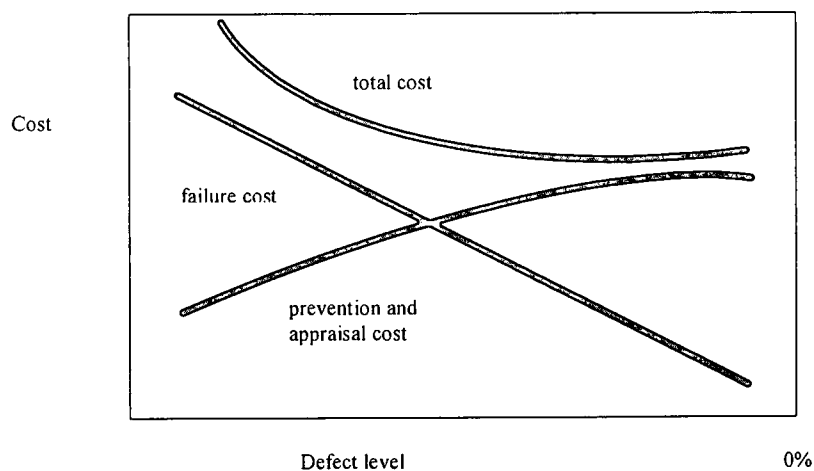


Figure 6: Cost of Quality ( adapted from Bicheno, 1994:22)

### **3.12 Training**

Training provides a vital role in the operations of an organisation. When employees are trained, they know exactly what is expected of them. Perhaps this helps to motivate employees because it helps them to identify the performance level that is required. According to Evans (2005:26), effective training programmes have been known to improve employee morale. In addition Holdsworth (2003:201-202) is of the opinion that effective training programmes can also be used as a source of solutions to optimise systems. In view of these statements, this study developed a simple integrated policy, a typical procedure and a work instruction (shown in Chapter 4) to show how integration to satisfy the five management systems proposed by this study are satisfied in making training on the SECQA model easier.

### **3.13 Summary of the chapter**

This chapter presented the fundamentals to be considered during the implementation of management systems. It looked at aspects such as the importance of adhering to management systems, its complexity, maturity, resources required for operation and time-frame to implement them.

The study went further to develop a simple management system. This would assist managers to set the foundation to support initiatives to implement management systems. A hypothetical case illustrating the use of a simple management system was demonstrated.

A review of related literature presented a series of business improvement tools such as QFD, Gap Analysis, Scenario Analysis, Self- Assessment and Continuous Improvement to support single and multiple management systems. The main features and benefits of each business improvement tool was presented so that managers are made aware of their usefulness so that an organisation can evolve from simplistic management systems to more sophisticated integrated ones.

The next chapter will demonstrate the links between the business improvement tools, the

simple management system and the SECQA model. It will also present the methodology, development of the SECQA model and preliminary work of this study.

The following chapter will introduce the design of the research for this study. It will also indicate the methodology used, demonstrate integrated documentation pertinent to the management systems in this study and finally present preliminary work conducted.

## CHAPTER 4

### METHODOLOGY AND PRELIMINARY WORK

“Experience alone, without theory, teaches management nothing about what to do to improve quality and competitive position, nor how it is done.”

W.E Deming (Foster, 2001:31)

#### **4. Methodology, development of the model and preliminary work**

This chapter will illustrate the design of this research. It will also demonstrate how related literature influenced the selection of pertinent management systems, the factors leading to the inclusion of two additional management systems namely: corporate governance and HIV/Aids and their integration, in this study. This chapter will present the integration of these management systems as a model. It will focus on the steps leading to the development of the model, the evolution of the integration process and the reasons for selecting these systems. This section will also touch on model development in general and some of their possible shortcomings. Other models/concepts and their shortcomings will also be discussed.

The envisaged advantages and disadvantages of the SECQA model, the categories of the SECQA model, an example of an integrated policy, an integrated procedure, an integrated work instruction and a self-assessment checklist, which represent fundamental documentation for the integration process, will also be presented. The strengths and weaknesses of the individual management systems used in the integration process and how these can possibly be overcome by the SECQA model, will be highlighted.

This chapter will also focus on preliminary work and their findings. It will introduce the principal study.

##### **4.1 Methodology**

This section will discuss the research methods, terminology and techniques used in this study.

##### **4.1.1 Research design**

Welman and Kruger (1999:46) are of the view that research design is made up of a logical flow of activities to obtain research participants, to collect information from them to draw conclusions relating to a research problem.



#### 4.1.2 Flow diagram of the research design

In view of this the following research design for this study is outlined in figure 7:

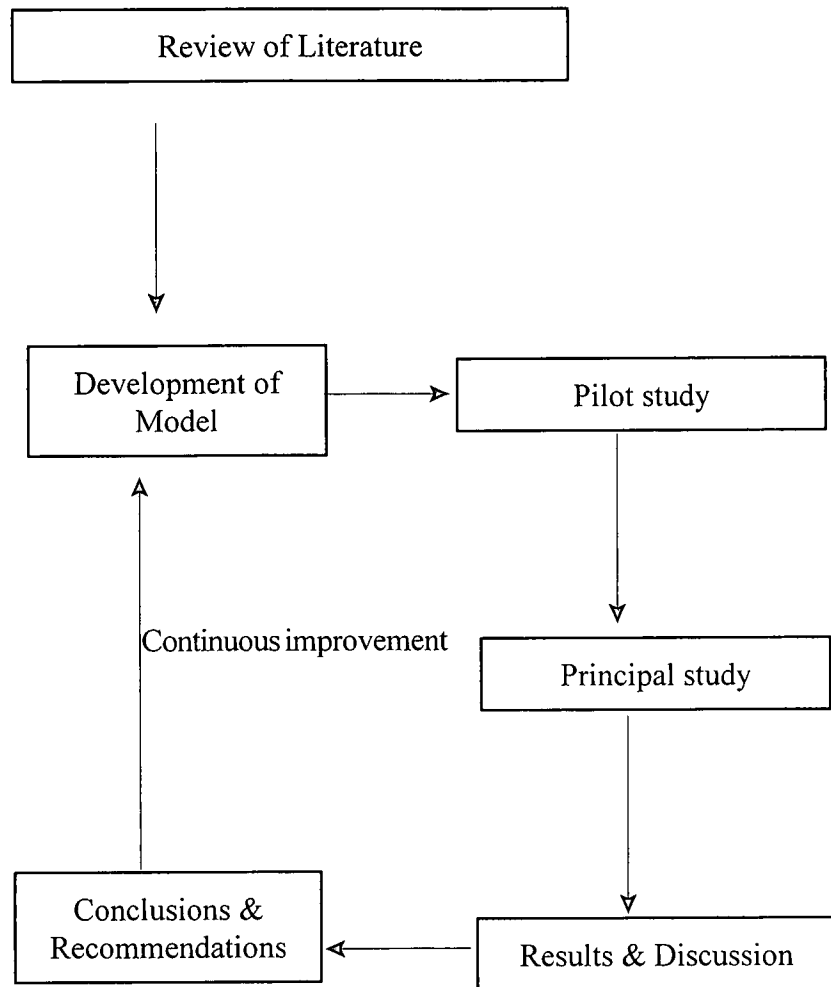


Figure 7: Flow diagram for Design of Research

A brief description of each chapter is presented in Chapter 1.

#### 4.1.3 Qualitative vs quantitative methodology for conducting research

Silverman (2000:1) mentions that there are two types of research methods. These methods are referred to as qualitative and quantitative research. The type of method selected depends

on the nature of information the researcher wishes to seek for the topic under investigation. Silverman (2000:1) uses specific examples to describe each method above. He states that quantitative methods for, example, are typically used if the researcher wishes to find out how many people are going to vote. He describes qualitative research as, investigating the history of the topic and the daily behaviour of the subjects (people) related to the research topic (Silverman 2000:1). Mertens (1998:3) defines the quantitative method of research as one that measures and quantifies variable, and defines qualitative methods of research as research that “ captures holistic pictures” by the use of words.

According to Neuman (1997:7), data derived from quantitative methods of research are typically expressed as numbers whereas data are expressed as words in the qualitative research style. He regards data as empirical evidence or information that has been gathered from a systematic research study. This empirical study provides proof of observation by managers (people). These observations can be obtained through touch, sight, hearing and taste.

Mouton (1996:38) mentions that there have been debates about the suitability of combining quantitative and qualitative methods of research in studies. However, he reports that there have been instances where both methods were used. These research methods are typically combined when probability sampling techniques are used with interviewing techniques or during analysis of qualitative data. Mouton (1996:39) suggests that combining methods of research techniques improved the quality of research.

From the statements provided above, both the qualitative and quantitative methods of research were selected for this study.

#### **4.1.4 Review of literature**

Lombard (1992:41) is of the opinion that a comprehensive review of related literature in the field of the desired research, can be advantageous in that it shows the relationship between

the investigation and the desired research. It helps to design the desired research by making the researcher aware of the background of the field being researched. It acknowledges other researchers' work, prevents the duplication of research already investigated and helps to justify the need to research a certain field or topic.

In view of the statements above, a review of related literature was useful for selecting the most commonly used management systems namely: safety, environment and quality in organisations and later demonstrated the natural progression of integrating these management systems. It also highlighted the deficiencies in current practice which subsequently led to the inclusion of two additional management systems incorporating corporate governance and HIV/Aids. The following two sections will demonstrate this process.

#### **4.1.4.1 The use of related literature in the selection of appropriate management systems and the factors leading to the selection of corporate governance and HIV/Aids management**

A number of organisations follow safety, quality and environmental management systems in a variety of ways. Some of these organisations integrate these systems, thereby consolidating resources whilst other organisations run them as parallel systems. Nevertheless, both methods mentioned above require a considerable amount of commitment and support from management and employees. Since safety, quality and environmental management systems are so commonly used in organisations, they formed the basis for this study. It was evident from the review of related literature that a number of corporate failures were attributed to the lack of ethical and transparent practices within organisations (Shukla, 1994:633, Davies, 1999:34, Dunn, 2003:14, Wilson, 2004:21 and Venter, 2004). Hence, it is hoped that if organisations followed a structured system, they could identify potential pitfalls and thereby avoid such negative practices. In the next phase of the investigation, a suitable management system focussing on the practices above, was sought. The King II Report (2002), which stipulated appropriate corporate governance practices, was selected as the most appropriate system. It provided all the guidelines to manage organisations with

integrity in a sustainable manner. In addition a comparison between the safety, quality and environmental codes of practice together with corporate governance guidelines, showed that the design of these management systems was consistent with each other and lends itself to integration. Consequently, the King II Report (2002) was selected to be used in this study.

During investigations it became apparent from related literature (Kotze, 2003) that the impact of the HIV/Aids pandemic is going to have devastating effects on the productivity of organisations and subsequently on the economy of the country. Several pleas were made by senior managers to introduce suitable intervention strategies as the latter has been known to minimise the effects of the HIV/Aids virus in organisations (Kotze, 2003; Sanne, Cheetham and Barker, 2003 (B) and AFP, 2005). In view of this, AMS 16001:2003 was introduced by NOSA to manage an organisation's practices in this regard. It was found that the AMS 16001:2003 management system was designed to be easily integrated with safety, environment and quality management systems and codes of practice. Based on the facts above AMS 16001:2003 was selected for integration with other systems in this study.

#### **4.1.4.2 Integration of management systems selected in this study**

From the related literature it became evident that adhering to safety, quality and environmental management systems simultaneously posed a huge challenge to employees. Although the inclusion of the King II Report and AMS 16001, imposes further challenges, this study will present methodologies to support these multiple management systems by providing a model to integrate the requirements of each code of practice. The integration process of the management systems is presented later in this chapter.

#### **4.1.5 Primary and secondary sources of information**

The investigations conducted in the study above represented primary and secondary sources of information. Welman and Kruger (1999:36) mention that primary sources of information are typically more reliable than secondary sources as the former portray the views of the respondents directly. From secondary sources of information, such events are not observed

and the risk of personal bias of the researcher is possible (Welman and Kruger, 1999:36).

#### **4.1.5.1 Primary sources of information**

The primary source of information in this study consisted of surveys using a questionnaire and interviews.

#### **4.1.5.2 Secondary sources of information**

Secondary sources of information used in the study were in the form of books, newspapers, journal articles, periodicals, internet data-bases and legislation. These sources were used to provide a background to legislation governing organisations, to highlight the current practices in organisations, to identify challenges faced by managers and employees and to select the most appropriate management systems.

Neuman (1997:7) states that researchers obtain data using specific tools to either accept or reject theories. This study used questionnaires and interviews as tools to gather information on the topic.

#### **4.1.6 Developing the questionnaire**

According to Oppenheim (2003:195) the Likert method is the most widely used method for scaling. It provides a less cumbersome procedure when compared to other ones. The Likert method does not require judges because the sample under investigation is measured on an attitude continuum. This continuum allows choices from "strongly agree" to "agree", "uncertain", "disagree" and "strongly disagree". These choices are weighted from 5, 4, 3, 2 and 1 so that they can be scored. Oppenheim (2003:195) states that this method of scoring was most useful when compared to other methods. In addition, he reports that the reliability of the Likert scale is preferable to other methods because it allows for a wide range of answers from the respondents.

The disadvantage of the Likert scale is that there is a lack of reproducibility of scores because

the same total score can be derived from combining a number of scores. However, this is overcome by two or more different scores which may have different meanings. Another disadvantage is that the scale lacks a neutral position and it makes it difficult to establish whether changes in the middle of the scale slant to the positive or negative. It is advantageous because it provides an accurate response to the degree of agreement or disagreement (Oppenheim, 2003:200).

The semantic-differential scale is another method and is composed of a bipolar system separated by seven points. An adjective is used at each end of the scale to describe extremes of each variable for example strong and weak. This method however, becomes cumbersome when several variables have to be rated (Oppenheim, 2003:239).

Factor-analysis can be used to obtain a single score to show a respondent's position on an attitude continuum. However, this technique is cumbersome (Oppenheim, 2003:245).

The Likert scale was found to be the most user-friendly method of those mentioned above and it also lends itself to statistical analysis. Hence, this method was selected to design the questionnaire in this study.

#### **4.1.6.1 Open-ended or closed-ended types of questions**

According to Neuman (1997:240) questionnaires can be designed using open-ended or closed-ended types of questions. He expresses the view that there are a number of advantages and disadvantages associated with each technique. The choice of the technique selected depends on the researcher and the information required.

A questionnaire was used for the pilot as well as the principal study during this research. The questionnaire used in the pilot study was designed using closed-ended and open-ended questions. The closed-ended questioning style was used because it presented questions which were quick and easy to answer. The open-ended questions were used so that the respondents

had an opportunity to provide answers in their own words.

#### **4.1.7 Pilot studies**

Welman and Kruger (1999:146) mention that pilot studies provide suitable instruments to test the validity of a measuring tool on a sample which is representative of a population in a particular discipline. Mertens (1998:117) defines pilot studies as research tests conducted on a small sample similar to the intended group of respondents. In this research, the pilot and the principal study were in the form of a questionnaire.

#### **4.1.8 Interviews**

Interviews are regarded as a suitable method to collect information in many sectors for example employers interviewing employees, patients being interviewed for medical information. Interviews are typically conducted between an interviewer and an interviewee or respondent. The interviewer presents questions to the respondent in a pre-arranged structured manner to gain information about a specific topic from the respondent (Neuman, 1997:254). This technique was found to be a suitable method to gather information from local experts for this study.

The next stage of the study was the development of an integrated model. The qualitative research undertaken in this study facilitated the development of the model. This can be supported by the view of Silverman (2000:283) who states that it is common practice to design models as a result of qualitative methods of research.

### **4.2 Development of the model**

Rood (2005:4) defines a model as “ a schematic description of a system, theory or phenomenon that accounts for its own or inferred properties and may be used for further studies of its characteristics.” Stevenson (2002:12) describes models as an abstraction of reality and a simplified version of reality. According to Stevenson (2002:13), models can be classified as physical, schematic or mathematical. Models can be explained further as:

- Physical: these models look like the item or structure. An example of a physical model is a miniature car, miniature aeroplane, miniature ship to name a few.
- Schematic: these models have less resemblance to the real item or structure. However, in some cases these models may have some visual resemblances to the real item or structure. These models are usually easy to develop and modify. Examples of such models are: blue-prints and pictures.
- Mathematical: these models do not resemble the item or structure. Numbers, formulae and symbols are examples of mathematical models.

Models are developed to establish an answer in a field of study where the answer is unknown. They have also been known to provide knowledge of a specific sector to highlight important features of a system. Models can be used to outline the fundamentals of a process that describe the interaction between different phenomena (Rood, 2005:4). The guidelines for model development stress that the question under investigation must be appropriate to the model being developed. The model should be simple and feedback on its suitability must be obtained ([www.oberlin.edu/faculty/petersen/ENVS340/340ModelProject.doc](http://www.oberlin.edu/faculty/petersen/ENVS340/340ModelProject.doc)).

Stevenson (2002:13) states that the use of models is less expensive when compared to the real situation. Models are useful as they provide a systematic approach to problem-solving because it increases the understanding of a problem and serves as a consistent tool for evaluation.

Hence, the development of a model was found to be suitable to present the integration of management systems/codes of practice for this study. The recommendations presented from the guidelines above were considered during the development of the SECQA model in this study.



#### **4.2.1 Possible integrated models/concepts, the problems associated with their development and the groundwork involved in the development of the SECQA model**

In examining the other models/concepts relevant to integration, a confusion with the terminology was apparent. This is highlighted in the example below:

Wilkinson and Dale (2001:318) highlight the challenges they encountered during their research in integrating quality, health and safety and environmental management systems. They found that there was a misunderstanding with the interpretation of the word "integration". The first interpretation was that integration was achieved as a result of aligning and merging documents while the second interpretation was that integration was obtained by the implementation of a management system by using a quality approach as a framework. Both views above did not hinder the integration of the management systems within the organisation. However, the shortcomings with these views were that the first view did not provide the organisation with the reduction of auditing and administration costs they were looking for. The second view shifted focus and concentrated on linking systems rather than on the benefits which could be gained from using a total quality approach. Wilkinson and Dale (2001:318) found that the scope of the management systems selected hindered the implementation of integration as all departments involved did not have common objectives. They advised that a resistant organisational culture was a deterrent in the implementation process. As cited by Wilkinson and Dale (2001:318), the views above were consistent with other integrated models.

Wilkinson and Dale (2001:319) mentioned that the Karapetrovic and Wilborn Model interlinked the requirements of ISO 9001 and ISO 14001 to form a link between both management systems. The shortcoming in this model was that it failed to consider the scope and the culture of an organisation. Wilkinson and Dale (2001:319) view the Seghezzi concept as one that requires a generic management system which forms the structure for the inclusion of other systems such as ISO 9001 and ISO 14001. They were of the opinion that although the concept proposed by Seghezzi was difficult to implement because of the

differences in the structure of the individual management systems, it presented a better system than Karapetrovic and Wilborn for integration as it included cross functional processes, the process approach and total quality management. Seghezzi includes leadership and culture in his integration process but has not formalised his model.

The groundwork involved in the development of the SECQA model is discussed in the following section:

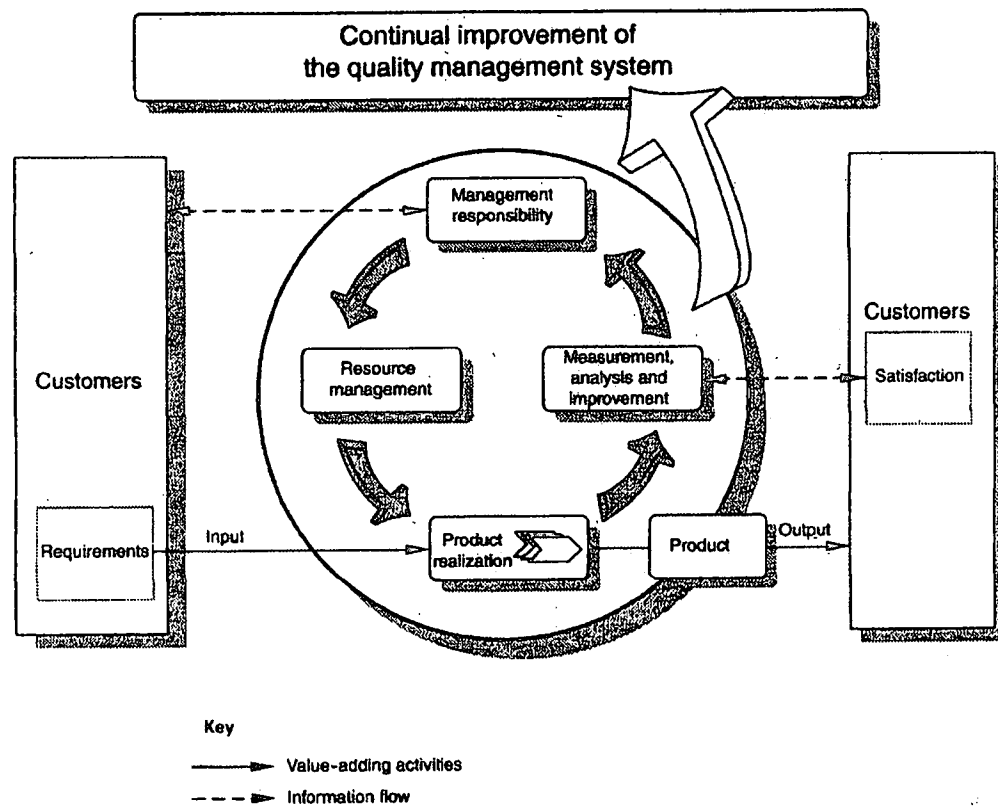


Figure 8: Process Model (South African Bureau of Standards, 2000:6) (A)

The Process Approach was introduced by the ISO 9001:2000 code of practice. The application of the Process Model was included in the ISO 9001:2000 code of practice for developing, implementing and improving the effectiveness of management systems within

an organisation, with a view to attaining business excellence and enhancing customer satisfaction (South African Bureau of Standards, 2000:6). Hence, it provides an appropriate structure to integrate safety, environment, corporate governance, quality and HIV/Aids management systems in this study.

Using the models/concepts in section 4.4 as a guide, the Process Approach was found to be most suitable to form the frame-work to aid in the development of the SECQA model. It was found to be suitable because it was applicable to all sizes of manufacturing and services types of organisations (SABS, 2000:6) (A). In addition the Process Approach lends itself to improvement because organisations consist of processes which convert inputs into outputs (Tricker and Lucas, 2001:64). Often the output from one process becomes the input to another. The progression from one process to another depends on whether the preceding process was executed effectively. Hence, a positive or negative domino effect can be experienced by subsequent activities. By adhering to the Process Approach organisations can optimise their activities associated with each process for maximum value (Tricker and Lucas, 2001:64). The integration of the management systems will be presented in section 4.5.

#### **4.2.2 The evolution of integrating management systems leading to the SECQA model**

Traditionally many organisations operated management systems officially and unofficially. In addition the different departments of the organisation operated independently, as silos. As the need for optimisation and strategic thinking arose, more organisations were forced to progress towards business excellence (Shukla, 1994:639). This prompted the need for departments to work more closely with each other and to find more innovative ways of doing business. One such way was to integrate management systems. Holdsworth (2003:199) was of the opinion that integration of management systems could improve organisational performance. This section will illustrate the evolution from the traditional organisation incorporating safety, quality and environmental management as separate systems to the more “modern approach” of integrating them. This section will go further to demonstrate the inclusion of two additional management systems focussing on corporate governance and

HIV/Aids.

Historically, in accordance with British legislation, most organisations there complied with health and safety management requirements to conduct their daily activities (British Standards Institution BSI, 1999). One such management system was the international OHSAS 18001 code of practice. In view of this, the safety code of practice OHSAS 18001:1999 will be used in the design of the SECQA model to satisfy these requirements. The NOSA system currently available was not used in this study because its application is limited to South Africa.

Later as globalisation became popular and maintaining competitive advantage became a priority for an organisation, the need for superior quality products or services became essential. To this end the awareness of quality management systems was emphasised. Hence, the ISO 9001:2000 code of practice will be included in the SECQA model.

During routine meetings and in investigation forums it became increasingly difficult to separate health and safety and quality activities. Fresner and Engelhardt (2004:626) mention the same experience during their research. In addition it was hard to separate or assign responsibility for employees to action items because the boundaries of the departments overlapped in many areas. An example which shows such an overlap can be seen in the test method for the analysis of asbestos. According to Niranjana (2003:21), the Occupational Health and Safety Act 1993 (Act 85 of 1993), which forms the basis for occupational health and safety, provides a number of regulations which the employer and the employee are bound to comply with, when working with asbestos. In this case the "work instruction" will include all the aspects to execute the test as well as the precautions such as those stipulated by the Act mentioned above. For example the recipe to conduct the test (quality), adhering to the appropriate ventilation clauses (safety) and the use of suitable personal protective clothing (safety). The merging of quality management and health and safety management systems is evident. The overlaps of activities associated with these systems forced many organisations

to merge departments and integrate the documentation, in an attempt to reduce or eliminate duplication of work. Holdsworth (2003:199) in fact indicates that integration of management systems is appropriate. The merger of these systems namely quality and health and safety marked the beginning of the integration of management systems/codes of practice.

The next management system which will be incorporated into the integration process is the EMS ISO 14001:2004. In terms of safety, EMS 14001:2004 was the most widely used management system associated with environmental activities (Sampson, 2000:3). The Rio Summit on Sustainable Development stirred interest in many organisations for them to contribute to the sustainability of the environment and they subsequently embarked on environmentally friendly initiatives (Sampson, 2000:6) (A). These initiatives were perhaps displayed to enhance stakeholder interest in the organisation. Organisations are further compelled by the authorities and even their customers to conduct their activities in a socially responsible manner. One common initiative was the implementation of an environmental management system EMS ISO 14001 (Sampson, 2000:3). To satisfy this need many organisations complied with the Environmental Management System (EMS) as expressed in the ISO 14001:2004 code of practice (South African Bureau of Standards, 2005) (A). This study will base the environmental section of the SECQA Model on this code of practice.

The same challenges experienced during the integration of health and safety and quality appeared when ISO 14001 was introduced in an organisation. The natural progression for managers was for them to integrate environmental management with the previously integrated health and safety and quality management systems. Fresner and Engelhardt (2004:624) indicated a similar chain of events in their studies. This brought about the position of the quality, health and safety and environmental facilitator or manager in many organisations. Integrated quality, health and safety and environmental systems are used in a number of organisations and have recently become a norm in many organisations. A number of successful organisations have embarked on adhering to quality, health and safety and environmental systems (Stables, 2001:396). From a review of literature it is evident that

the integration of quality, health and safety and environmental management systems represents current practice of organisations.

#### **4.2.3 Proposing the integration of two additional systems incorporating corporate governance and HIV/Aids**

The motivation for organisations to adhere to good corporate practice and suitable HIV/Aids intervention strategies is shown in Chapter 2. The following section will reiterate these sentiments to reinforce the importance of including corporate governance and HIV/Aids management systems in an organisation's daily activities. Hence, the inclusion of corporate governance and HIV/Aids management systems in the proposed SECQA model:

From the views expressed by George (2002:794); Edmondson and Cohn (2004:1) and Dunn (2003:13) it is apparent that some form of business practice is required as a guideline for managers. Dunn (2003:14), Armstrong (2003:11) and Wilson (2004:21) show the demise of many organisations to focus on cost of quality, introduction of value-adding activities, risk management and sustainability. The King II Report (2002) was subsequently investigated and a number of requirements common to health and safety, environment and quality, were found to be duplicated. For example, Integrated Sustainability, Internal Audit and Risk Management were some of the requirements that were duplicated.

Although Corporate Governance practices as stipulated in the King II Report (2002) are not mandatory in all types of organisations, many choose to follow its principles. It is however mandatory for organisations listed on the Johannesburg Stock Exchange (JSE) Securities Exchange, certain banks, insurance organisation and government departments to follow the requirements of this Report. The recommendations in the King II Report (2002) provide a foundation for ethical behaviour of directors and management executives towards share-owners and stakeholders. It also enables organisations to report on their "triple bottom line" which reflects their social, financial and environmental performances (Wixley and Everingham, 2003:8). This study incorporated the requirements of the King II Report (2002)

in the SECQA Model to satisfy the corporate governance sections. Further reading of the requirements of the King II Report (2002) advised organisations to focus on strategies to manage HIV/Aids.

An HIV/Aids code of practice which was designed to be easily integrated with Safety, Quality and Environmental code of practices (Kotze, 2003) was sourced. In view of this the AMS 16001:2003 was found to be suitable and was used in the SECQA Model to assess and control the impact of HIV/Aids in an organisation.

The requirements of the HIV/Aids management showed the commonality between the requirements of health and safety and corporate governance systems. This was confirmed by Kotze (2003) who indicated that AMS 16001:2003 was designed to be easily integrated with an EMS.

The following table was designed for this study to demonstrate the commonality between the requirements of each of the systems:

|   |   |   |   |   |
|---|---|---|---|---|
| Safety<br>(OHSAS 18001:1999)  | Environment<br>(EMS ISO 14001:2004)   | Corporate Governance<br>(King II Report)  | Quality<br>(ISO 9001:2000)                                | HIV/Aids<br>(AMS 16001:2003)  |
| Management Review<br>Policy   | Management Review<br>Policy   | Management Review<br>Policy<br>Board of Directors<br>Integrated Sustainability<br>Reporting | Management Review<br>Policy                               | Management Review<br>Policy   |
| Planning  | Planning  | Planning  | Planning (Resource<br>Management.)                        | Planning  |
| Implementation and<br>Operation<br><br>Risk Assessment<br>Compliance and<br>Enforcement | Implementation and<br>Operation<br><br>Risk Assessment<br>Compliance and<br>Enforcement | Risk Assessment<br>Compliance and<br>Enforcement  | Implementation and<br>Operation<br>( Product Realisation) | Implementation and Operation<br><br>Risk Assessment<br>Compliance and Enforcement |
| Corrective Action and<br>Check.   | Corrective Action and Check   |   | Corrective Action and Check<br>(Measurement and Analysis) |   |
| Internal Auditing   | Internal Auditing   | Accounting and Auditing   | Internal Auditing   | Internal Auditing   |
| Continuous Improvement  | Continuous Improvement  | Continuous Improvement  | Continuous Improvement                                    | Continuous Improvement.   |

Table 2: Overlap of requirements of individual management systems (devised by researcher)



It is evident from the table above that there is an overlap between the requirements of the individual management systems. From Table 2 it is noticeable that under the principle "Resource Management", the requirement "Planning" is common to all management systems. Likewise is the requirement of "Risk Assessment" and "Compliance and Enforcement". In the same way the other principles such as: "Management Responsibility", "Measurement and Analysis" and "Product Realisation" were derived. Each requirement has to be adhered to by the organisation for it to comply with that particular management system. If these systems were operated separately then each requirement would be duplicated. However, by integrating them, they can be consolidated. This reduces and avoids the large volumes of documentation generated to support these systems separately. It would also make maintaining and auditing these systems simpler. This overlap of management systems encouraged the development of the integrated SECQA model as indicated by figure 9. Silverman (2000:86) believed that models are useful in that they supply a general framework of how one looks at reality. The following section will illustrate the design of the SECQA model and present the management systems/codes of practice used.

#### 4.2.4 The SECQA model

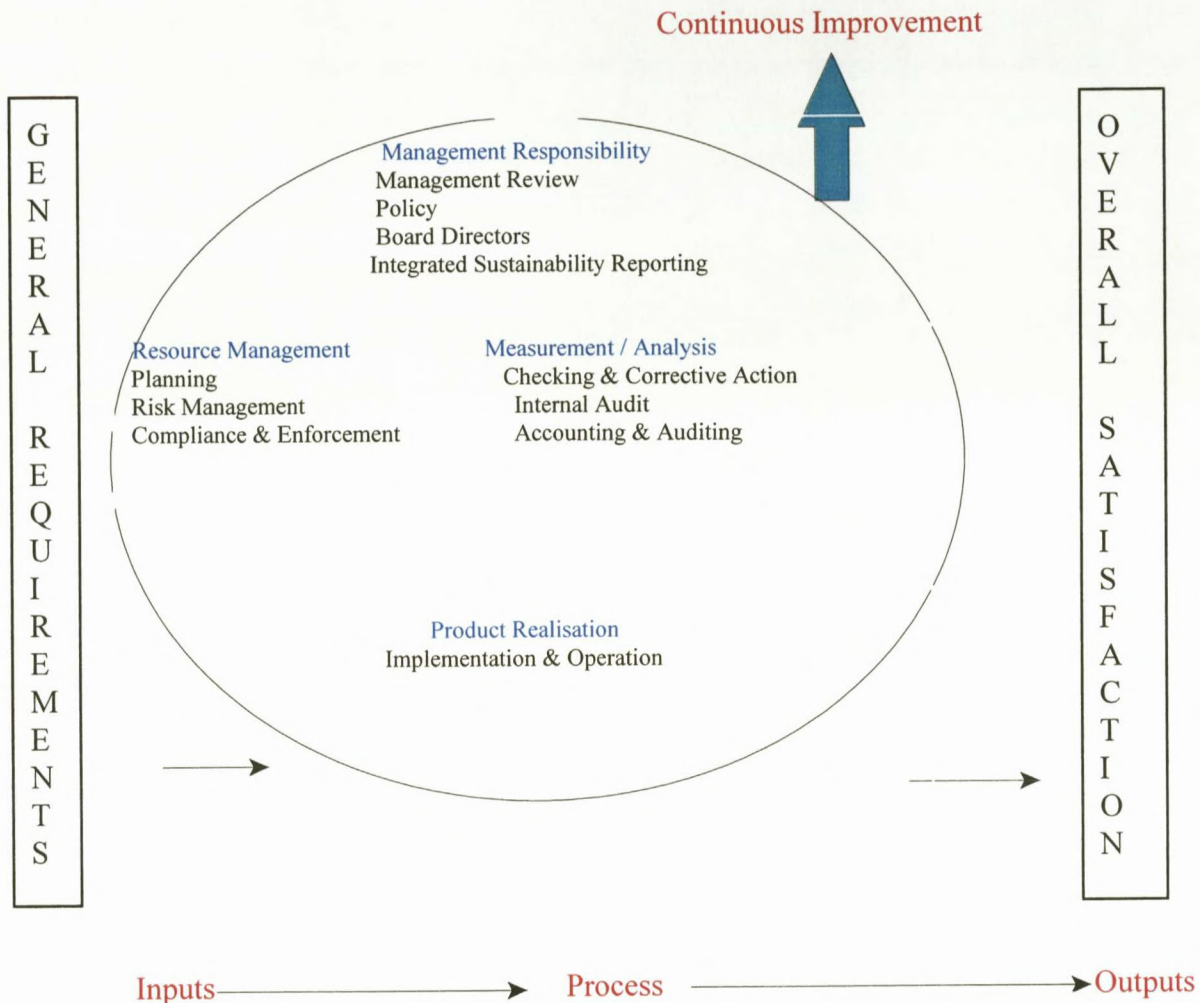


Figure 9: The SECQA Model

The schematic diagram above represents the SECQA Model. It serves as a guideline to show the overlap between the requirements of safety, corporate governance, quality, HIV/Aids and environmental management systems. Having gone through the literature, the components of the management system are assembled to design a unique, coherent model. Such design can be justified in terms of the management systems selected in this study, viz., OHSAS 18001:1999, EMS ISO 14001:2005, King II Report, ISO 9001:2000 and AMS 16001:2003.

As in any model or code of practice, a number of factors must be satisfied before attaining compliance. According to Stevenson (2002:13) the following requirements must be considered before using models:

- the purpose of the model
- how the model is used to generate results
- how these results are interpreted and used
- what assumptions and limitations apply to the model

Stevenson (2002:13) indicates that the requirements of a model must be adhered to. Failure to do so may lead to invalid results and conclusions. The SECQA model satisfies the factors suggested by Stevenson (2003:13) above by presenting a normative instruction for integrating current management systems or codes of practice within organisations. Other factors taken into consideration during the development stages of the model were the importance of document control and adhering to documented procedure, the potential of ambiguity in language and avoiding the duplication of requirements.

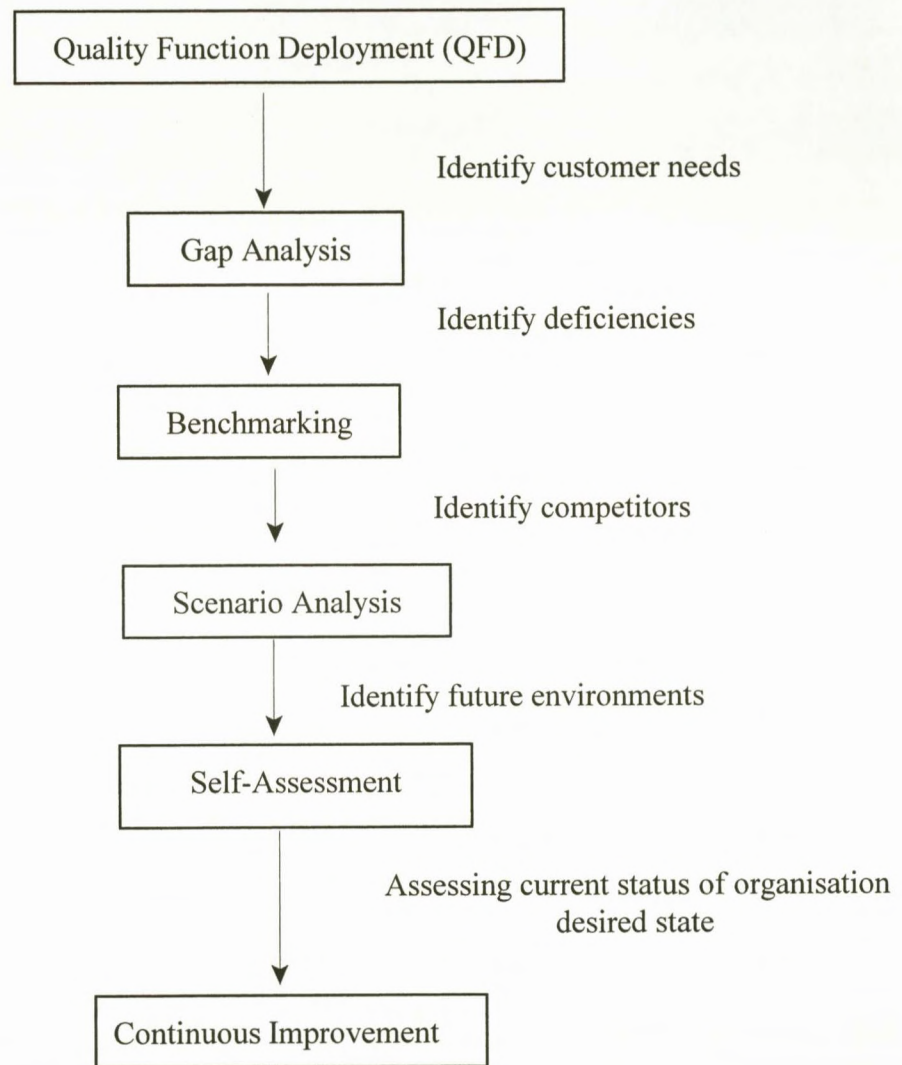
The SECQA model uses a combination of both the concepts/models cited by Dale and Wilkinson (2001:318). It used the interlinking of systems and the Process Approach from ISO 9001:2000 as a generic structure to support other systems/codes of practice.

#### **4.2.4.1 The management systems/codes of practice used in the SECQA model**

The requirements of the following management systems/codes of practice were used to develop the SECQA model: safety management based on OHSAS-18001:1999, environmental management as stipulated by EMS- ISO 14001:2004, corporate governance - provided by the King II Report (2002), quality management as expressed by ISO 9001:2000 and HIV/Aids management as recommended by AMS 16001:2003. The requirements as stipulated by each code of practice mentioned above were assigned to the most suitable category from the Process Model in figure 8, to design the SECQA model in figure 9. This is explained later in the chapter.

#### 4.2.5 A flow diagram of the business improvement tools selected in this study

The flow diagram below was designed during this research to illustrate the tools and serve as a prelude to prepare managers and employees for the integration of management systems. The sequence in which these tools have been presented has been selected to provide an organisation with a guideline to initiate, implement and improve management systems.



Business sustainability

Figure 10: Flow diagram of business improvement tools



Adherence to this flow can start from the QFD step and culminate in continuous improvement or it can be followed from any part of the diagram. The point at which an organisation starts to follow the sequence will depend on the number of customer complaints received, which quality related costs are higher, its current level of satisfying customers requirements, its evolution in the market-place, the level of improvement desired, threats from competitors and unpredictable markets.

#### **4.2.5.1 Linking the tools to the simple management system and the SECQA model**

One of the key factors contributing to a sustainable organisation is for that organisation to truly understand their customers' requirements. These requirements can be sought by using the Quality Function Deployment (QFD) tool and it can be used to determine the technical abilities of the organisation. This tool provides the organisation with a means to quickly identify their ability to satisfy customers' requirements or make known the technical areas which must be addressed to satisfy such requirements (Stevenson, 2002:170). Foster (2001:127) mentions that the Japanese have been using this method for decades. The QFD tool can be linked to the design of a management system by showing how the customers' requirements are addressed. In the integrated SECQA model, QFD is addressed as inputs from an organisational and customer's point of view and is shown on the left hand side of the model.

The QFD tool can be used in a new organisation or in an organisation wishing to improve its performance. The "House of Quality" concept recommended in this study, incorporates "Benchmarking" as a mechanism to investigate the performance of customers.

It is not mandatory to conduct such comprehensive analysis such as QFD (House of Quality). This tool may be too long, complex and certain organisations may lack the expertise to conduct the investigations as stipulated to develop the tool. Simpler tools are available.

Gap Analysis provides a simple tool which is suitable to identify customers' requirements

to highlight deficiencies in processes, potential areas of improvement and opportunities to enhance customer satisfaction.

Depending on the maturity of an organisation, either QFD or Gap Analysis can be selected to identify the requirements above. Once these requirements are established, organisations should then assess their competitors. It is crucial for an organisation to stand out among competitors in the eyes of the customers, so that the customers will select the organisation without any doubt (Shukla, 1994:631-632). One of the most widely used methods to achieve this is perhaps the benchmarking process. This process provides a means for the organisation to see how other competitor organisations appear in the market and find ways of performing better so that they become the obvious choice to the customer (Kolarik, 1999:512). The importance of sustainability in an organisation is highlighted throughout this study. Benchmarking is addressed in the simple management system under the broad heading "corporate goals". One of the objectives or goals of an organisation is for it to know how its competitors operate and try to out-perform them. Hence, benchmarking is considered under the heading "continuous improvement". Knowing how a competitor performs perhaps makes it easier for the organisation to select processes and improve on them thereby taking over the market.

Before making any drastic changes based on the tools and processes highlighted earlier, the organisation should first conduct "scenario analysis" (Wixley and Everingham, 2003:6). This analysis provides the organisation with a means to determine which of their predetermined activities are most suitable to the surrounding in which the organisation may find itself, to ensure sustained or improved performance. Scenario analysis provides a comprehensive method for an organisation to look at its performance with regard to political, economic, social, technological and environmental (PESTE) aspects (Winter and Steger, 1998:63).

This tool was found suitable because the PESTE areas will help organisations assess risks

from a more holistic perspective. Hence, this tool was selected for this study to support the SECQA model. It is urged that once scenario analysis is completed, managers should develop goals, set objectives and provide mechanisms for training staff, maintenance and monitoring performance. This will set the infrastructure upon which management practices can be implemented. The section on scenario analysis is addressed under the heading "Scenarios" in the design of a simple management system and under the headings of "Risk management" and "Integrate sustainable development" in the SECQA model.

A "self -assessment" checklist was developed to provide a tool for employees to compare their current practice against a checklist in an attempt to satisfy the codes of practice recommended in this study. It is hoped that the outcome of the self-assessment will highlight any deficiencies and the areas which need to be changed or modified to satisfy the requirements of the SECQA model. The questions used to develop the self-assessment checklist are consistent with each requirement of the simple management system and the SECQA model. Any change or modification which emerged from this exercise using the checklist could yield continuous improvement. Any such improvement would be regarded as a value-adding activity and, can be documented and presented to the internal and external auditors to satisfy the requirements of "Continuous Improvement" as stipulated in the ISO 9001:2000 code of practice. The continuous improvement aspects of the study are addressed under the heading of "Maintenance and Improvement" in the simple management system and under the heading of "Continuous improvement" in the model. The depth in which the tools presented in this study may be used, depends on the organisation and what management wishes to achieve.

#### **4.2.6 The advantages and disadvantages of the SECQA model**

The envisaged advantages and disadvantages of the SECQA model will be reviewed under the headings used by Bailey (1987:319-320) from Chapter 2.

##### **4.2.6.1 Advantages of using the SECQA model**

The SECQA model will be economical because it provides a consolidated documentation system for all five codes of practice. This will ensure traceability of queries which may arise. The SECQA model will highlight the accountability and responsibility for tasks so that any enquiries or misunderstanding can be addressed promptly. It will enable pro-active management of activities to prevent the occurrence of potential problems. Continuous improvement strategies will also be highlighted. The SECQA model provides visibility as it allocates each requirement/element of the five codes of practice in this study into suitable categories to facilitate integration. It provides control by introducing a structured mechanism so that each requirement of the five codes of practice are included in the integration process. In this way the process of integration and certification can be monitored and controlled. Safety is addressed by the inclusion of the requirement focussing on social responsibility. This requirement forms part of the King II Report, EMS and the HIV/Aids codes of practice.

##### **4.2.6.2 Disadvantages of using the SECQA model**

Due to the number of requirements stipulated by each code of practice, the SECQA model may be regarded as being complex. On the contrary, complexities may arise from the misinterpretation of the consultant developing the management system certification purposes. Often the management system/code of practice is written for compliance to auditing requirements and the logistics of the implementation are not considered. In terms of artificiality the SECQA model creates the scenario for an ideal world where all employees accept its philosophy. However, in the real world employees operating management systems/codes of practice are far from being ideal because data are manipulated, as in insider-trading. The cost of implementing the SECQA model will be high. Nevertheless, this



cost of implementation will become beneficial because of the long-term sustenance which it will derive for the organisation. Specialised expertise is required. The level of expertise will depend on the size of the organisation, the scope of the accreditation, the complexity of the system and the competency of the employees. Hiring the services of consultants and the time taken for them to learn and develop the system can be expensive.

The introduction and implementation of new practices within an organisation is often received by employees with resistance. This may be justified as the new practices may require additional commitment from them. In some instances they may already be over-worked. In addition many employees are satisfied with their performance and do not see the need to change the way in which they work. For the success of the SECQA model it is encouraged that the values of the employees be aligned with the essence of the model. A change in the culture of the employees can also be beneficial.

#### **4.2.7 Weaknesses and strengths of the management systems/codes of practice used in the integration process and how they can be overcome by the SECQA model**

This section will focus on the strengths and weaknesses of the management systems/codes of practice used in the integration process and how they can be overcome by the SECQA model. The reason for the selection of the business improvement tools used in the study will emerge from this section.

Wilkinson and Dale (1999:95) express the view that although safety management systems help to improve the image of an organisation it hinders the progress of implementation because it advocates a different culture from quality and environmental management. They believe this is so because health and safety management systems work on the conventional approach of inspection while quality and environmental management systems have evolved to an assurance perspective. The differences in these approaches create an inconsistent culture with the employees and make it difficult to manage during implementation. The SECQA model hopes to overcome this by providing extensive training on the importance of

all the management systems/codes of practice. Especially requirements such as “Integrated Sustainable Reporting”, “Risk Management” and “Compliance and Enforcement” can be used to express the urgency required to include safety management. In addition the disasters such as those in Sasol and Bhopal can be used to show the relevance and importance of adhering to procedures and how adhering to the procedures could save the lives of employees and the communities surrounding the organisation.

Rajendra and Barrett (2003:4) cite work conducted by Schaltegger and Synnestvedt (2002) who believe that although ISO 14001 certification improves factors such as saving energy, reducing the use of resources and better disposal of waste material, the benefits of the implementation of the management system depends on the legislation of the country, the culture of the organisation, the behaviour of the customers, the type of industry and the maturity of the organisation. They contend that these factors are largely dependent on the leadership abilities of managers. These abilities are very important to motivate and guide employees to ensure that goals are met. The SECQA model hopes to achieve this from the requirements “Management Responsibility” and “Board of Directors”. These requirements stipulate the responsibility of leaders thereby alleviating doubts on leadership in their minds. The responsibility of the organisation to follow legislation is also highlighted in these requirements. Specific regulations which should be adhered to by a particular sector and the latest changes applicable to that sector can be obtained from legal consultants who are updated timeously. In some organisations implementation of the management system/code of practice could be hindered due to legislation. It could also be because the organisation lacks the resources to adhere to guidelines or regulatory requirements. In some instances the legislation might perhaps be too stringent for the maturity of the organisation.

Furthermore, Rajendra and Barrett (2003:4) cite work by Kanagozoghlu and Lindell (2000) who mention that an efficient management system may not lead to improved competitive advantage. Failure to achieve competitive advantage is due to the code not addressing activities to promote competitive advantage. This does not mean that the code is ineffective.

It serves to emphasise that each code has specific functions and attaining competitive advantage in this instance was not desired. Hence, it could perhaps be viewed that Rajendra and Barrett (2003:3) encourage the need for the implementation of an integrated management system to boost profits and competitive advantage because factors not included in one management will be addressed by another. In view of this the SECQA model selected five systems in this study because each one of them has a unique function to fulfill. In this way it provides a holistic approach to sustain an organisation.

Other shortcomings of the ISO 14001 system mentioned by Rajendra and Barrett (2003:4) was that the time usually allocated for achieving certification is normally too short, documentation may not be user-friendly and the costs associated with training are high. These factors should perhaps not be regarded as a shortcoming of the code. They could perhaps be assigned to the failure of the consultant to make an accurate assessment of the organisation's current practice and the time required to provide all the documentation compliant to ISO 14001. The poor usability and versatility of the documentation can also be attributed to the poor interpretation by the consultant of the requirements of the code. It is encouraged that the consultants use simple language and formats to design supporting documentation. The initial costs associated with training are high because of the lack of competence and the quality culture of the organisation. But as these evolve and adhere to management systems, compliance by employees will be easier. Although the SECQA model allocates the categories of each requirement of the five management systems/codes of practice, caution must be emphasised during the development of the documentation to maintain a user-friendly approach. Failure to do so will encourage employees not to adhere to procedure and only comply with the system's requirements during impending audits.

The African Business Journal (Unknown Author, August 2003) reports that the inclusion of social responsibility, financial performance and environmental aspects in the King II Report are well supported according to world standards. However, it warns that the inclusion of the uniquely South African culture can be regarded as an inhibiting factor by foreign investors.

This could be overcome by the presence of ISO 9001 in the SECQA model which could provide investors with the confidence that the organisation complies with world standards.

Bhuiyan and Alam (2004:10) present their research conducted on thirty Canadian organisations during the implementation of ISO 9001. Their investigations revealed that larger organisations found the implementation of ISO 9001 easier than smaller ones because the larger organisations typically had more resources. They contend that the degree of difficulty of operation of the management system did not depend on the age of the organisation. It was found that North American organisations dealing in Europe found it easier to implement ISO 9001 than organisations operating in North America only. They believe that this was due to the European organisations being more stringent with the suppliers on their value-chain and adherence to quality practices than those in North America. This example serves to show that good business practices complement the implementation of management systems/codes of practice. Hence, the research involved during the development of the SECQA model prescribes the use of business improvement tools to facilitate the implementation of management systems.

Magd and Curry (2003:381) investigated the attitudes of thirty-eight managing directors towards ISO 9001:2000. The findings of their research show that the managing directors were of the view that ISO certification would enhance the quality of their products, improve efficiency, increase competitive advantage and market-share, facilitate better communications, reduce costs of operations, achieve higher prices for their products and encourage better supplier relations. Their findings also indicate that ISO certification working as a stand-alone system could not solve existing problems and guarantee better quality within the organisation. They suggest the ISO 9001 code of practice be used with a total quality approach and be aligned with the organisation's strategic objectives. The SECQA model and the supporting business improvement tools address these suggestions by using the process approach, QFD, Gap Analysis and cost of quality to overcome this. The simple management system and scenario analysis presented in Chapter 3 were introduced to

make provision for organisations to develop goals and devise strategies in achieving them.

Smith (2006) contends that AMS 16001:2003 provides an organisation with a formalised and systematic approach to managing HIV/Aids while other programmes are seldom reviewed. In contrast to the latter, AMS 16001 is valid for three years and it is mandatory for the system to be reviewed for compliance every six months by the licensing authority. This ensures that the system is reviewed for continued efficiency and that the goals of the organisation are met. Smith (2006) warns that for the system to be beneficial, it must be aligned to the strategic goals of the organisation otherwise it receives poor implementation and acceptance from employees.

#### **4.2.8 The influence of literature in the selection of management systems/codes of practice for integration and the selection of business improvement tools in this study**

This section will focus on the influence of literature on the selection of management systems and business tools used in this study.

The need for the integration of management systems was influenced by the work of Boninelli (2005:42), Fresner and Engelhardt (2004), Holdsworth (2003) and Rajendra and Barrett (2003). The Bhopal disaster, Kalideen (2004), articles by the Staff Reporter (2004) of the Sunday Tribune, Barbeau (2004); Khan (2005), Bailey and Smith (2004) and the SAPA (B) (2004) reports suggested the need for safety management systems.

The publications by Peters (2004), Fresner and Englehardt (2004), Ardington (2003:11), Carnie (2003, 2004), Stables (2000:392) and Sampson (2000:6) provided the insight required to select environmental management for integration. Davies (1999:33), Mbeki (2003:23), Dunn (2003:13-14), Tereblanche (2003), Armstrong (2003:10-12), Khoza (2003:18), King (2003:8), Sparks and Mayo (2003:26), Venter (2003), Engle (2005:20) and Unknown author (2005:31) were used to justify the inclusion of corporate governance in this study.

Foster (2001:351), Cokayne (2001), Reuters (2002) and Stevenson (2002:420) influenced the inclusion of the integrated-quality management system. Studies by Richardson and Strugnell (2002:10), Kotze (2003), Pan (2003:12), Sanne, Cheetham and Barker (2003) (A) (B) (C) and Tereblanche (2004) convinced the inclusion of HIV/Aids management.

The related literature, strengths, weaknesses and shortcomings of the codes of practice and their desired benefits were reviewed to determine which business improvement tools were deemed to be most appropriate for the integration in this study.

By reviewing the works of Karaszewski (2004:63), Greef (2002) and Wilkinson and Dale (1995:95) the importance of training was determined. The findings Yang and Maclean (2004:11), George (2002), Rajendra and Barrett (2003) and Patterson (2002:18) steered the focus in the direction of benchmarking as a suitable tool. The work shown in the African Business Journal, Smith (2003), Sunter and Illbury (2001) and the South African Bureau of Standards (ISO 9004:2000:46) provided the basis for the selection of scenario analysis and self- assessment. Magd and Curry (2003:381) enabled the selection of QFD, Gap Analysis, lean production, cost of quality and continuous improvement. Gitlow, Oppenheim, Oppenheim and Levine (2005) showed the suitability of Kaizen and continuous improvement. Shukla (1994) provided the insight required to select lean production, continuous improvement and scenario analysis. Foster (2001:28 and 127) showed the benefits of selecting gap analysis and QFD respectively. The findings of Stevenson (2002:420), Cokayne (2001) and Foster (2001:351) highlighted the need to select cost of quality as a tool in this study. Bhuiyan and Alam (2004:10) provided the confidence that business tools are indeed required for the effective implementation of integrated management systems.

#### **4.2.9 The requirements of the SECQA model**

In order to comply with the SECQA model the following requirements should be addressed before proceeding. The requirements stipulated below represent an integration of the

requirements of the management systems represented in the model. These requirements are derived from the individual management systems and should be documented in the organisation's integrated SECQA manual.

#### **4.2.9.1 General requirements for management systems**

- General: Contains information describing an overview of the processes the organisation engages in briefly. Any other information specific to the organisation for example, legalisation, can be included.
- Outsourcing: The organisation states its policy with outsourcing tasks.
- Documentation Requirements: The commitment to document control, records and maintaining the management systems are shown here.

#### **4.2.9.2 Management responsibility**

- General: This requirement focuses on preliminary planning of the management system. From table 2, the following aspects are included:
  - management's commitment to the integrated system (safety, corporate governance, quality, HIV/Aids and environmental management).
  - reviewing the management systems (safety, corporate governance, quality, HIV/Aids and environmental management).
  - ensuring resources are available while maintaining customer focus throughout the process (safety, corporate governance, quality, HIV/Aids and environmental management).

The method by which these activities are communicated to all the levels of the organisation, are also discussed in this section. All these activities must be consistent with the integrated policy of the organisation.

- Board of Directors: This requirement looks at the practices of the board members, the status and responsibilities of executive and non-executive directors (corporate governance).

- **Integrated Sustainability Reporting:** This section deals with the organisations' interaction and social responsibility with the employees and the community with regard to health, safety and environmental activities. It also focuses on the sustainability of transformation of the organisation from a corporate point of view, for example, creating value for the future (safety, corporate governance, quality, HIV/Aids and environmental management).

#### **4.2.9.3 Product realisation**

- **Implementation and Operation:** This section includes aspects specific to the products. These include contract reviews with the customer, any specific customer requirements, statutory requirements of the product, product design, purchasing, identification and control of equipment related to the product (safety, corporate governance, quality, HIV/Aids and environmental management).

#### **4.2.9.4 Resource management**

- **Planning:** This section focuses on identifying resources required, ensuring the competence of employees and providing an environment conducive to fulfilling the customer requirements (safety, corporate governance, quality, HIV/Aids and environmental management).
- **Implementation and Operation:** The operational controls and any emergency preparedness, are included in this section (safety, corporate governance, quality, HIV/Aids and environmental management).
- **Risk Management:** The management of assets for maximum shareholder benefit and strategies to keep the organisation operating under various unfavourable conditions are included in this section (safety, corporate governance, quality, HIV/Aids and environmental management).



- Compliance and Enforcement: Adherence to regulations are included here (safety, corporate governance and environmental management).

#### **4.2.9.5 Measurement/analysis and implementation**

- Checking and Corrective Action: How the processes are monitored, measured, audited for compliance to objectives and customer requirements, are stipulated here. The method for corrective action and the control of non-conforming product or service are also included in this section. Prevention strategies are also included in this section (safety, quality and environmental management).
- Internal Audit: Assures the credibility of the risk management, internal control and governance of the organisation. This section also focuses on the methods for improving the effectiveness of the organisation (safety, corporate governance, quality, HIV/Aids and environmental management).
- Accounting and Auditing: This section ensures that the financial standards of managing the accounts are maintained by an independent organisation (safety, corporate governance, quality, HIV/Aids and environmental management).

#### **4.2.9.6 Continuous Improvement**

- The organisation must show how policies, objectives, processes and other activities are improved with a view to enhance the sustainability of an organisation, for example, using the PDCA Cycle and business improvement tools (safety, corporate governance, quality, HIV/Aids and environmental management).

It should be emphasised that the layout above is specific to integrating codes of practice as recommended in this study. The details of each requirement must be written and adhered to, as stipulated in the separate codes for example, ISO 9001:2000 or ISO 14001:2004 and others.

#### **4.2.10 The documentation required to support integrated management systems**

The policy, procedures and work instructions of an organisation form the bulk of the documentation required to support the management system. These documents can be collated into one manual or can form three separate manuals, depending on the size and number of documents in an organisation. To facilitate the implementation of the model, an example of an integrated policy, procedure and work instruction for a hypothetical clinic are illustrated below. It must be emphasised that certain requirements may appear to be downplayed as not all five management system requirements will feature as actively as others, in all areas of an organisation. The level to which these systems will feature will depend on the activity selected and its applicability to a specific management system or code of practice. Each document follows the same template. This ensures that when employees work from one document to the next, they are able to identify information quickly because of the familiarity of the layout. This saves the organisation time as it facilitates productivity.

##### **4.2.10.1 An integrated policy**

The policy of the organisation lays down the overall intentions and direction of the organisation as stipulated by the management system (Tricker and Lucas, 2001:19). In the example below, it is assumed that senior management pledges its support to deliver on customers' requirements and states the techniques by which its team will achieve these requirements. The policy also assures the customer that his/her expectations are going to be exceeded by the superior service.

Each document must have a title. The title must indicate what type of document it represents. The example below was designed for this research to illustrate an "integrated policy" of an organisation:

ABC Clinic



An Integrated Policy Statement for  
Safety, Environment, Corporate Governance, Quality and  
HIV/Aids management.

ABC Clinic is absolutely committed to meeting and exceeding our customers' expectations by delivering world class medical service.

I personally affirm this commitment. To bolster it, I am leading the effort to integrate, implement and manage a system in terms of safety, environment, corporate governance, quality and HIV/Aids, with a view to committing ourselves to a strategy of continuous improvement.

We intend for these efforts to help:

- to meet the requirements of ISO 9001:2000, ISO 14001:2005, OHSAS 18001:1999, AMS 16001:2003 and the King II Report.
- to adhere to all legislation and statutory requirements of the country
- ensure that all the customers and employees have the same rights to liberty and autonomy, security of the person and freedom of movement as all other employees
- provide a safe and healthy working environment for all employees
- ensure that we conduct our activities in a socially responsible manner always respecting the surrounding community and environment
- to provide a framework to continually review our goals for continued sustainability
- to maintain our reputation for superior service delivery
- to communicate the organisational goals with all employees

I plan to be actively involved in building this new effort through nurturing a culture of teamwork in our organisation.

27 March 2005

\_\_\_\_\_  
J. John, CEO

Prepared by: QA Manager

Issued: 07/05/04

Approved by: General Manager

Revised: 27/03/05 (2)

Figure 11: An integrated policy statement (devised by researcher)

The first paragraph shows the commitment of the organisation to satisfying the customer's requirements. This is very significant because it emphasises the importance of the customer.

The second paragraph re-affirms for the benefit of the customer that the organisation's initiative is supported from the highest level of the organisation. It also demonstrates the seriousness of the senior manager's pledge. In addition, the CEO focusses on showing that the organisation is following a structured approach to achieving customer requirements.

The third paragraph lays down the objectives of the organisation. It shows the customers, stakeholders and others, how the organisation is going to go about achieving its goals. The social responsibility and the continuous improvement of the organisation, is also included to bolster the image and sustainability of the organisation in the eyes of the stakeholder, customer and the competitor.

The last paragraph implies that all employees have the same working ethos and the effort to satisfy the customer is an organisation-wide initiative. The document concludes with the commitment of senior management. It also confirms that the document has been distributed via a controlled system.

The different sectors of industry such as safety, quality, corporate governance, HIV/Aids and environment, highlighted in the objectives show how the management systems stipulated by the SECQA model are addressed.

#### **4.2.10.2 An integrated procedure**

The procedure represents the overall planning and administrative aspects of an organisation (Tricker and Lucas, 2001:25). The procedure in the example below is used to provide clarity to staff about how they should conduct themselves in the working environment.

The document below was designed for this study to highlight the manner in which an employee should conduct him/herself in the presence of a patient, when conducting a particular task. It stipulates who is responsible for performing the task and the manner in which the employee-patient interaction should progress. Thereafter, it states how the

interaction is recorded. The following management systems, as stipulated by the SECQA model, emerge from this document: quality, corporate governance and health and safety.

ABC Clinic

Section: Phlebotomy

Procedure



Title: Patient relations  
and rights when performing  
arm venipunctures

Ref. No: CPP05

Page 1 of 2

Issued: 05/07/04

Revised: 02/02/05 (4)

### **Purpose**

To ensure that staff conduct themselves in an acceptable manner when interacting with patients

### **Scope**

This procedure applies to staff and patients using the Clinic and its facilities

### **Definitions**

### **Responsibility**

All employees

### **Documentation**

### **Procedure**

#### **Patient Relations**

- Always portray a professional, courteous and understanding manner to the patient.
- Greet patient, identify yourself.
- Indicate medical procedure that will be conducted.
- If a patient is unable to speak, check the armband for identification. Do not draw blood from a patient with a missing armband.

Figure 12: An integrated procedure (devised by researcher)

ABC Clinic



Section: Phlebotomy

Title: Patient relations  
and rights when performing  
arm venipunctures

Procedure

Ref. No: CPP05

Page 2 of 2

Issued: 05/07/04

Revised: 02/02/05 (4)

**Procedure continued....**

- Speak to patient during the medical procedure to set them at ease.
- Always thank the patient and excuse yourself courteously when complete.

**Patient's rights**

- Refer to the Joint Commission on Accreditation of Healthcare Organisations (JCAHO).

**Records**

- Requisition form

**References**

- Blood Collection. [www-medlib.med.utah.edu](http://www-medlib.med.utah.edu). [Accessed on 24 August 2005]
- The Joint Commission on Accreditation of Healthcare Organisations (JCAHO)

Figure 12: An integrated procedure continued...(devised by researcher)

#### **4.2.10.3 An integrated work instruction**

A work instruction provides a recipe which details how an activity must be conducted in accordance to a standard (Tricker and Lucas, 2001:44). The example in this study guides the user in a step-by-step manner on how to conduct the specific task of drawing blood from a patient.

The work instruction below was designed for this study. It begins with an explanation of the task. It also highlights who should conduct the task, how often it should be conducted and the chemicals and equipment required to fulfill the task. The health and safety aspects pertinent to the employee and the patient are also reflected in detail. The manner in which the materials used in the task must be disposed of, is also clearly stated. The step-by-step method of conducting the task is shown. The manner in which the task is verified, is highlighted to ensure the credibility of the result. The results obtained are also recorded by a prescribed layout which is shown in this section.



ABC Clinic

Section: Phlebotomy

Work Instruction



Title: Performing arm venipunctures

Ref. No: CPW01

Page 1 of 4

Issued: 05/06/04

Revised: 02/02/05 (2)

### **Introduction**

To enter a vein to draw blood. The venipuncture procedure is complex and requires both knowledge and skill to perform.

### **Responsibility**

Phlebotomist

### **Frequency**

As requested

### **Chemicals**

- 70% isopropyl alcohol wipes
- 10% bleach disinfectant

### **Equipment**

- Evacuated collection tubes
- Needles
- Tourniquet
- Gauze sponges
- Adhesive bandages
- Needle disposal unit
- Latex gloves
- Syringes

Figure 13: An integrated work instruction (devised by researcher)

**Health and Safety****Hazards**

## Safety requirements

Working with blood and body fluids can be hazardous and care must be exercised during this process

## Phlebotomist

- Wear gloves, lab coat or gown when handling blood or body fluids.
- Do not bend, break, recap or re-sheath needles.
- Dispose of needles immediately upon removal from patients vein.
- Clean up any spills with disinfectant (10% bleach).

**Precautions**

## Phlebotomist

- Change gloves after each patient or when contaminated.
- Wash hands frequently.
- Do not place tourniquet too tightly or leave on more than 2 minutes.
- If you stick yourself with a contaminated needle follow procedure CPP01.

## Patient

- Ensure that blood collection equipment is placed away from patient.

**Disposal**

- Dispose of needles, gauzes and other materials used in appropriate containers.

Figure 13: An integrated work instruction continued...(devised by researcher)

**Method**

- Approach patient in calm and friendly manner.
- Identify patient correctly.
- Complete requisition form by indicating test/ tests requested.
- Verify patients condition, for example, fasting, dietary restrictions, medication.
- Position patient upright in chair or lying down on bed.
- Hyper-extend patients arm.
- Apply tourniquet 3 -4 inches above the selected puncture site.
- Tell the patient to make a fist without pumping the hand.
- Select the venipuncture site.
- Prepare the patients arm by using an alcohol prep. Cleanse in circular motion, beginning at the site and working outward.
- Allow to dry.
- Grasp patients arm firmly until skin is taut and anchor the vein.
- Form a 15 -30 degree angle with the needle on the surface of the arm.
- Swiftly insert needle through the skin and into the lumen of the vein.
- When the last tube to be drawn is filling, remove the tourniquet.
- Remove needle from patients arm using a swift backward motion.
- Press down on gauze once needle is removed from the arm.
- Apply adequate pressure to avoid a haematoma.
- Dispose of contaminated materials in as per health and safety above.
- Mix and label all appropriate tubes at the patients bedside.
- Deliver specimens promptly to the laboratory.

Figure 13: An integrated work instruction continued...(devised by researcher)

ABC Clinic

Section: Phlebotomy

Work Instruction



Title: Performing arm venipunctures

Ref. No: CPW01

Page 4 of 4

Issued: 05/06/04

Revised: 02/02/05 (2)

#### Verification

- Reference control.
- Inter-laboratory tests.
- Weekly and monthly calibrations on meters as per Calibration Manual.

#### Records

Requisition form

#### Reference

- Van Dyk, A., (2001). HIV/Aids Care & Counselling-a multi-disciplinary approach. 2<sup>nd</sup> edition. Pearson, SA.
- Blood Collection. [www-medlib.med.utah.edu](http://www-medlib.med.utah.edu). [Accessed on 24 August 2005].

Figure 13: An integrated work instruction continued...(devised by researcher)

All procedures and work instructions must show the following information to conform to documentation requirements of the code of practice:

- from where the test methods are referenced or prescribed
- the version of the document
- the date of issue of the document
- the number of pages contained in the document
- the reference number of the document

#### **4.2.10.4 The self-assessment checklist**

Holdsworth (2003:199) believes that an efficient checklist and audit are the keys to monitor an organisation's performance. To support these beliefs, the checklist below, designed for this study, provides an in-depth efficient investigation for an audit of an organisation. Adherence to the requirements on this checklist will show compliance with the requirements of the SECQA model.

Each requirement presented in the model is addressed under the corresponding heading in the self-assessment checklist. A few general requirements to facilitate documentation and logistics have also been included in the checklist. It must be emphasised that the details of individual management systems, for example, ISO 9001:2000, is assessed via the checklist supplied by the third party agency and does not form part of this study. Adherence to the checklist by the third party agency will only be pertinent to that system and will not necessarily mean that the organisation satisfies the requirements for the SECQA model.

|   |  |                     |                    |
|---|--|---------------------|--------------------|
| SECQA Model - Integrated Self Assessment Checklist  |  |                     | Page 1 of 9        |
| Name of organisation:   |  | Date of assessment: |                    |
| Name of person interviewed:   |  |                     |                    |
| Position of interviewee:  |  |                     |                    |
| Name of assessor:   |  |                     |                    |
| Key: C = Conforming   |  | NC = Non-conforming | X = Not applicable |
|   |  |                     | Findings           |
| <b>General requirements for integrated systems</b>  |  |                     |                    |
| <ul style="list-style-type: none"> <li>Is there evidence of the following management systems within this organisation?</li> </ul> |  |                     |                    |
| Safety  |  |                     |                    |
| Environment   |  |                     |                    |
| Corporate Governance  |  |                     |                    |
| Quality   |  |                     |                    |
| HIV/Aids  |  |                     |                    |
| <ul style="list-style-type: none"> <li>Do these management systems follow a code of practice?</li> </ul>                          |  |                     |                    |
| Safety (OHSAS 18001:1999, NOSA)   |  |                     |                    |
| Environment (ISO 14001:2004)  |  |                     |                    |
| Corporate Governance (King II Report)   |  |                     |                    |
| Quality (ISO 9001:2000)   |  |                     |                    |
| HIV/Aids (AMS 16001: 2003)  |  |                     |                    |
| <ul style="list-style-type: none"> <li>Are management systems integrated?</li> </ul>  |  |                     |                    |
| Safety  |  |                     |                    |
| Environment   |  |                     |                    |
| Corporate Governance  |  |                     |                    |
| Quality   |  |                     |                    |
| HIV/Aids  |  |                     |                    |

Figure 14: An integrated self-assessment checklist (devised by researcher)

| Integrated Self Assessment Checklist  |  | Page 2 of 9 |
|---|--|-------------|
| Key: C = Conforming NC = Non-conforming X = Not applicable                                |  | Findings    |
| <b>General requirements continued....</b>   |  |             |
| • Do employees understand the overlap between all 5 management systems?                   |  |             |
| <b>Scope</b>  |  |             |
| • Are the customers' requirements in terms of each management system clearly understood ? |  |             |
| Safety  |  |             |
| Environment   |  |             |
| Corporate Governance  |  |             |
| Quality   |  |             |
| HIV/Aids  |  |             |
| • Are the corporate goals in terms of each management system clearly understood ?         |  |             |
| Safety  |  |             |
| Environment   |  |             |
| Corporate Governance  |  |             |
| Quality   |  |             |
| HIV/Aids  |  |             |
| • Are the scenarios for future conditions included in goals ?                             |  |             |
| • Do employees know to which areas these management systems apply?                        |  |             |
| <b>Goals</b>  |  |             |
| • Have the organisational goals been communicated to all employees?                       |  |             |
| • Are the organisational goals clear and understood by all employees?                     |  |             |

Figure 14: An integrated self-assessment checklist continued...(devised by researcher)

| Integrated Self Assessment Checklist   |  | Page 3 of 9 |
|--|--|-------------|
| Key: C = Conforming NC = Non-conforming X = Not applicable   |  | Findings    |
| <b>Responsibility</b>  |  |             |
| <ul style="list-style-type: none"> <li>Do employees understand their roles and responsibilities with respect to?</li> </ul>                      |  |             |
| Safety   |  |             |
| Environment  |  |             |
| Corporate Governance   |  |             |
| Quality  |  |             |
| HIV/Aids   |  |             |
| <ul style="list-style-type: none"> <li>Do employees understand the reasons why they have to perform these activities with respect to?</li> </ul> |  |             |
| Safety   |  |             |
| Environment  |  |             |
| Corporate Governance   |  |             |
| Quality  |  |             |
| HIV/Aids   |  |             |
| <b>Resources</b>   |  |             |
| <ul style="list-style-type: none"> <li>Do employees know what resources are required to fulfil their task with respect to?</li> </ul>            |  |             |
| Safety   |  |             |
| Environment  |  |             |
| Corporate Governance   |  |             |
| Quality  |  |             |
| HIV/Aids   |  |             |

Figure 14: An integrated self-assessment checklist continued...(devised by researcher)



| Integrated Self Assessment Checklist   |  | Page 4 of 9 |
|--|--|-------------|
| Key: C = Conforming NC = Non-conforming X = Not applicable   |  | Findings    |
| <b>Resources continued.....</b>  |  |             |
| <ul style="list-style-type: none"> <li>Are the resources required above available?</li> </ul>  |  |             |
| Safety   |  |             |
| Environment  |  |             |
| Corporate Governance   |  |             |
| Quality  |  |             |
| HIV/Aids   |  |             |
| <ul style="list-style-type: none"> <li>Are there suitable mechanisms to inform management if the resources above are not available?</li> </ul> |  |             |

Figure 14: An integrated self-assessment checklist continued...(devised by researcher)

| Integrated Self Assessment Checklist   |   | Page 5 of 9 |
|--|---|-------------|
| Key: C = Conforming NC = Non-conforming X = Not applicable   |   | Findings    |
| Requirements to satisfy the SECQA Model  |   |             |
| <b>1. General management system requirements</b>   |   |             |
| Has organisation identified:   |   |             |
| • Processes needed for a management system ?   |   |             |
| • The sequence and interaction of processes ?  |   |             |
| • Criteria and methods to operate & control these processes ?  |   |             |
| 1.1  | Has the use of outsourced organisations been outlined ? |             |
| 1.2.   | Documentation requirements                              |             |
| • Does a manual which covers Safety, Corporate Governance, Quality, HIV/Aids and Environmental management exist ?                  |   |             |
| 1.2.1  | Control of documents                                    |             |
| Is there evidence for the control of:  |   |             |
| • Approval of documents ?  |   |             |
| • Review and update of documents ?   |   |             |
| • Change and revision of documents ?   |   |             |
| • The relevant versions at the points of use ?   |   |             |
| • Reviewing the legibility of documents ?  |   |             |
| • Provision of unintended use of obsolete documents ?  |   |             |
| 1.2.2  | Control of records                                      |             |
| • Is there a procedure in place for the identification, storage, protection, retrieval, retention time and disposal of documents ? |   |             |

Figure 14: An integrated self-assessment checklist continued...(devised by researcher)

| Integrated Self Assessment Checklist  |  | Page 6 of 9 |
|---|--|-------------|
| Key: C = Conforming NC = Non-conforming X = Not applicable  |  | Findings    |
| Requirements to satisfy the SECQA Model   |  |             |
| <b>2. Management Responsibility</b>   |  |             |
| <ul style="list-style-type: none"> <li>Management Review : Are the requirements for Management Review stated in:</li> </ul>   |  |             |
| Safety ?  |  |             |
| Environment ?   |  |             |
| Corporate Governance ?  |  |             |
| Quality ?   |  |             |
| HIV/Aids ?  |  |             |
| <ul style="list-style-type: none"> <li>Policy : Are the requirements for the Policy stated with respect to:</li> </ul>  |  |             |
| Safety ?  |  |             |
| Environment ?   |  |             |
| Corporate Governance ?  |  |             |
| Quality ?   |  |             |
| HIV/Aids ?  |  |             |
| <ul style="list-style-type: none"> <li>Board of Directors : Are the requirements for Board of Directors as required by Corporate Governance clearly stated ?</li> </ul>                                   |  |             |
| <ul style="list-style-type: none"> <li>Integrated Sustainability Reporting : Are the requirements for Integrated Sustainability Reporting as required by Corporate Governance clearly stated ?</li> </ul> |  |             |

Figure 14: An integrated self-assessment checklist continued...(devised by researcher)

| Integrated Self Assessment Checklist   |  | Page 7 of 9 |
|--|--|-------------|
| Key: C = Conforming NC = Non-conforming X = Not applicable   |  | Findings    |
| <b>Requirements to satisfy the SECQA Model continued.....</b>  |  |             |
| <b>3. Resource Management</b>  |  |             |
| <ul style="list-style-type: none"> <li>Planning : Are the requirements for Planning stated for:</li> </ul>   |  |             |
| Safety ?   |  |             |
| Environment ?  |  |             |
| Corporate Governance ?   |  |             |
| Quality ?  |  |             |
| HIV/Aids ?   |  |             |
| <ul style="list-style-type: none"> <li>Implementation &amp; Operation : Are the requirements for Implementation &amp; Operation clearly stated with respect to:</li> </ul> |  |             |
| Safety ?   |  |             |
| Environment ?  |  |             |
| Corporate Governance ?   |  |             |
| Quality ?  |  |             |
| HIV/Aids ?   |  |             |

Figure 14: An integrated self-assessment checklist continued...(devised by researcher)

| Integrated Self Assessment Checklist  |  | Page 8 of 9 |
|---|--|-------------|
| Key: C = Conforming NC = Non-conforming X = Not applicable  |  | Findings    |
| <b>Requirements to satisfy the SECQA Model continued.....</b>   |  |             |
| <b>3. Resource Management continued....</b>   |  |             |
| • Risk Management : Are the requirements for Risk Management as required by Corporate Governance clearly stated ?                   |  |             |
| • Compliance & Enforcement : Are the requirements for Compliance and Enforcement pertinent to Corporate Governance clearly stated ? |  |             |
| <b>4. Product Realisation :</b>   |  |             |
| • Are the requirements clearly stated with respect to:  |  |             |
| Environment ?   |  |             |
| Quality ?   |  |             |
| <b>5. Measurement/Analysis Implementation :</b>   |  |             |
| • Checking and Corrective Action : Is there evidence of corrective action mechanisms with respect to:                               |  |             |
| Safety ?  |  |             |
| Environment ?   |  |             |
| Corporate Governance ?  |  |             |
| Quality ?   |  |             |
| HIV/Aids ?  |  |             |
| • Internal Auditing : Have the requirements for Internal Auditing pertinent to Corporate Governance been clearly stated ?           |  |             |
| • Accounting & Auditing : Are the requirements for Accounting and Auditing pertinent to Corporate Governance clearly stated ?       |  |             |

Figure 14: An integrated self-assessment checklist continued...(devised by researcher)

| Integrated Self Assessment Checklist   |  | Page 9 of 9 |
|--|--|-------------|
| Key: C = Conforming NC = Non-conforming X = Not applicable   |  | Findings    |
| Requirements to satisfy the SECQA Model continued.....   |  |             |
| <b>6. Continuous Improvement :</b>   |  |             |
| <ul style="list-style-type: none"> <li>Is there evidence of opportunities for Continuous Improvement with respect to:</li> </ul> |  |             |
| Safety ?   |  |             |
| Environment ?  |  |             |
| Corporate Governance ?   |  |             |
| Quality ?  |  |             |
| HIV/Aids ?   |  |             |

Name of the auditor (please print)\_\_\_\_\_

Signature of auditor:\_\_\_\_\_ Date:\_\_\_\_\_

Figure 14: An integrated self-assessment checklist continued...(devised by researcher)

The results obtained from the audit findings above provide the organisation with evidence and guidance as to where potential improvements can be introduced and where possible deficiencies lie. The format in which these documents are presented is not mandatory for organisations. The documents illustrated in this study, serve as a guide to show potential users of the SECQA model how to develop documentation to support an integrated management system. The format of these documents can be used as they are presented above or they can be modified to suit the specific needs of an organisation.

The preliminary work below, will highlight the activities which lead to the confirmation of the need for the SECQA model:

### **4.3 Preliminary work**

Preliminary work in this study was in the form of a pilot study of two manufacturing organisations and interviews with key role players associated with supporting management systems.

#### **4.3.1 Pilot study**

The respondents in the pilot study were told to be aware of ambiguity and to suggest amendments which may be required for clarity. The same procedure of surveying respondents intended for the principal study was used during the pilot study. Pilot respondents were asked to read the questionnaire first without asking any questions so that any misunderstanding in the questions could emerge. The pilot study was completed and then analysed to determine if there were any shortcomings and if the objectives of the study were satisfied. Changes were made accordingly. The process for conducting the pilot study in this research were consistent with the suggestions of Mertens (1998:18) on the process for administering pilot questionnaires.

##### **4.3.1.1 The questionnaire**

The suggestions of Mertens (1998:115) were considered when the questionnaire was designed. A survey of literature was used as a basis to design the questions. The desired output of the questionnaire was decided upon prior to its design. Hence, the questionnaire was designed to obtain the current information of organisations and the respondent's perception of the SECQA model.

The questionnaire was designed to be simple, clear, unambiguous and not time consuming. The type, the length, the order of questions presented and the instructions to respondents, were also considered during the design of the questionnaire in terms of recommendations made by Steffens (1992:62). The purpose of the questionnaire was to solicit the experiences within organisations when they were operating multiple management systems or codes of practice simultaneously including safety, corporate governance, quality, HIV/Aids and

environmental management.

The questionnaire consisted of two sections and fifteen questions. The first section consisted of eight questions and sought information on the organisations' current practice applicable to management systems. The second section proposed the SECQA Model and consisted of seven questions.

#### **4.3.1.2 Sample size and types of organisations selected for the pilot study**

It was difficult to find a service organisation operating an integrated management system/codes of practice, that was willing to participate in the study. Hence, the pilot study was limited to two manufacturing organisations. Organisations selected for the pilot study represented the judgement sampling technique. This technique relies on the opinion or judgement of an expert (Levine, Ramsey and Smit, 2001:14). The samples used in this investigation can be categorised as a fast moving consumable goods (FMCG) manufacturing organisation and a hardware manufacturing organisation.

The use of one type of organisation did not favour the study because the management systems being investigated were applicable to both the manufacturing and the service sectors. Two different types of manufacturing organisations were used so that information over a wide range could be obtained. Both the organisations used in this study are standard-bearers in the industry of management systems and best operating practice. These organisations operate on the international market and the results of the pilot study would be representative of their subsidiaries performing the same functions. Hence, the results of the pilot study were considered to be more than adequate to represent the sector.

#### **4.3.1.3 The respondents used for the pilot study**

The questionnaire was administered to the manager in charge of integrated management systems in both the organisations. Both the respondents are directly involved in managing and operating safety, quality and environmental management systems. Therefore it was



considered that these respondents had suitable knowledge, skills and expertise to provide a reliable response to the questionnaire.

#### **4.3.1.4 Results of the pilot study-analysis of responses to the questionnaire**

A feedback of the responses to the questionnaire will be assessed according to the categories of the organisations.

##### **4.3.1.4.1 The FMCG organisation**

This organisation operates four of the five management systems recommended by the study. Although corporate governance practices may be followed by senior management it does not form part of the organisation's Safety, Health, Environment and Quality (SHEQ) integrated management system. In view of this, the respondent was unaware of the organisation's commitment to corporate governance. Environmental monitoring is certified externally to ISO 14001:1996 code of practice. Quality and HIV/Aids related practices follow a management system specifically designed for that organisation. Safety systems are practised according to NOSA requirements.

One person reports SHEQ matters to senior management. The response to the question on the allocation of resources to all four codes of practice were rated very poorly by the respondent. This could perhaps be attributed to the lack of buy-in, support or commitment from senior management to codes of practice or management systems. This coincides with the views of Reuters (2002), Carnie (2003), Cokayne (2004) and Peters (2004) which implied in earlier chapters that senior management has not yet accepted the importance and the benefits of implementing effective management systems and more specially the importance of quality. The respondent views the efficiencies of the four codes of practice on average from fair to good. The allocation of appropriate resources and the support from senior management, would result in the organisation being better able to cope with and improve current processes. The respondent recommends more awareness training relating to all four codes of practice to employees.

It is important that the respondent is willing to implement the SECQA Model and particularly praised the inclusion of risk assessment in the Model. Risk assessment forms part of a mandatory requirement in corporate governance, environmental monitoring, safety and HIV/Aids codes of practice. It was also recommended that one document be designed to include process monitoring, training, corrective action and internal auditing in this section as a generic form suitable for use by all five codes of practice.

#### **4.3.1.4.2 The hardware manufacturing organisation**

This organisation is certified externally in two of the five codes of practice recommended in the study, viz., ISO 9001:2000 and ISO 14001:1996. Although the remaining three codes of practice are not certified externally from the organisation by a certification body, the requirements of these codes are practised by the organisation. Three respondents report SHEQ matters to senior management. This respondent rated the resources allocated and the efficiencies of each code of practice from very poor to good.

This respondent applauds the attention that is given to operating safety, quality and environmental systems, on daily operations. In terms of safety the respondent is confused with those matters that are mandatory and those which are “nice to have”. This confusion can perhaps be rectified by reviewing and understanding the appropriate management systems/code of practice. There is growing concern from this respondent that it is difficult to maintain continuous improvement with the environmental management system.

Although the respondent applauds the attention given to management systems within the organisation, there is a growing concern that some of the employees groom the systems only before an audit is scheduled. This shows that this organisation is not serious about making the management system work for the organisation and gaining accreditation is only done for “window dressing” purposes. When initiatives are superficial and are undertaken only to satisfy the external auditing organisation for certification purposes, employees lose

motivation as they are unable to justify the need and benefits of doing additional work associated with managing these systems. The aim of an organisation adhering to a code of practice in this case ISO 9001:2000, is to develop a quality management system (QMS) which will work as a tool for improving its performance and ultimately reaping competitive advantage. However, the respondent referred to the functioning of the quality system of his organisation as “the tail wagging the dog”. An analysis of the statement showed that this respondent perceived that the organisation was working for the code of practice and not the code of practice working for the benefit of the organisation. This means that the code of practice operates as “nice to have” and is not based on operating as an efficient system with a view towards continuous improvement. This practice can become very tiresome as employees will continually operate in a “fire fighting” mode and present suitable material only to satisfy external auditors. An effort should be made by the organisation to analyse and simplify their current QMS. This will lead to pro-active management to control the number of non-conforming activities, optimisation of all processes and will ensure continuous improvement becomes inevitable. Foster (2001:351) and Shukla (1994:629) have shown the positive benefits of adherence to effective quality management systems in Chapter 2.

The implementation of the SECQA Model would be considered for use by this organisation. The respondent feels that the model is applicable in the light of current trends and also facilitates the integration of all five systems. There is, however, a concern from the respondent that caution must be exercised not to generate huge amounts of unnecessary documentation.

#### 4.3.1.4.3 Summary of the pilot study

The table below summarises the current practice in the two organisations from the field study.

| The FMCG organisation               | The Hardware organisation   |
|-------------------------------------|---|
| • operates 4 of the 5 systems       | • operates 2 of the 5 systems, other 3 systems practised unofficially |
| • 1 person responsible              | • 3 people responsible  |
| • resources allocation rated poorly | • resources allocation rated poorly                                   |
| • more awareness training required  | • ambiguity in safety procedures                                      |

Table 3: Summary of the pilot study

From the information above, it is evident that some of the challenges experienced by managers and employees possibly emerge from a lack of resources to complete tasks and a lack of training and understanding of the systems. In view of this the SECQA Model proposed during this study was explained to these managers for their views on its applicability to their organisations. All the managers accepted the relevance of the model and expressed a desire to understand the SECQA Model on a deeper level so that corporate governance and HIV/Aids management strategies can be integrated into their existing systems. An evaluation of the open-ended questions revealed that the managers indicated that it would be advantageous to integrate all the codes of practice to operate as one system simultaneously. This will alleviate duplication in documentation, make auditing more user-friendly, facilitate training and help in problem detection and resolution.

The preliminary work showed that there are indeed problems associated with operating and integrating multiple codes of practice. It also demonstrated that there is a need for the SECQA model to facilitate the integration of key codes of practice to improve user-friendliness, internal and external auditing.

### **4.3.2 The Interviews**

Interviews in this study were conducted with key role players. They from selected organisations in the field of management systems.

#### **4.3.2.1 Consultation with key role players**

The consultation with key role players from selected organisations was undertaken as a primary source of information. This was done to gain broader views of the challenges facing organisations.

#### **4.3.2.2 Open-ended questions**

One open-ended type of question was posed to the respondents in the interview. This type of questioning technique was used so that it would not intimidate the respondents. The intention of this investigation was to attain the actual experiences of managers and employees.

The question asked was as follows:

What are some of the challenges experienced in your area or organisation with regard to management systems?

#### **4.3.2.3 Sample size during the interviews**

Key role players interviewed, were two members of the national Quality Forum who represent tertiary institutions and one risk control manager of a leading national service provider. One member of the Quality Forum represents industry specifically from the Eastern Cape and the other member represents industry from a national perspective. The risk control manager represents the rail service sector in Gauteng. Interviews were conducted with representatives as they have a thorough knowledge of all the industries their ambit. Hence, it was not necessary to interview more role players. Judgement sampling was used to select role players.

#### **4.3.2.4 The respondents in the interviews**

The respondents in the interview were considered to be leaders in the sector on a national scale.

The respondents from the Quality Forum are responsible for conducting research, design and presenting best-operating practice suitable for the international market and applying it to the local industry. In addition both respondents, from the Quality Forum have extensive interaction and have conducted a number of collaborative work with the sector nationally.

The opinions of the risk control manager were solicited during this investigation because this respondent has tertiary level qualifications and extensive working experience from the service and manufacturing sectors in quality, health and safety. Hence, the responses from key role players would adequately represent the sector.

#### **4.3.2.5 Results of the interviews**

The section below represents a summary of the responses during the interview of the Quality Forum members (Ramdass, K and Murray, A). Their experiences revealed that organisations found:

- it difficult to select which processes needed to be included for certification
- that outsourced organisations providing support functions had to be certified and in most instances the latter organisations do not possess the financial resources to fund certifications
- there was a lack of understanding of the benefits of implementing the management systems referred to in terms of the anticipated cost, time and manpower required
- that adherence to the principles of codes of practice does not ensure certification or accreditation
- that they were unable to see the overlap in accountability from one discipline to the next (in this response discipline refers to quality, health and safety and environmental management).

The respondents acknowledged that not adhering to quality specifications in the manufacturing process can result in products that could be harmful to employees and customers and could have an impact on the environment as well.

The following section represents the response during the interview with the risk control manager, Naidoo, J., who is a representative of a service organisation. She mentioned that before her response can be fully understood, it must be emphasised that risk management and safety are viewed as separate disciplines.

Risk management encompasses a number of fields such as general safety, occupational health, operating safety, risk financing and corporate governance. The challenges faced by safety, health and environmental (SHE) professionals are as follows:

- the lack of understanding of risk in industry
- the risk manager not being given executive authority
- understaffed risk departments
- responsibilities are not clearly designated resulting in a lack of ownership by line management from other disciplines as some of them perceive safety as part of the risk department's duties
- more aspects of safety need to be focussed as key focus areas (KFA)
- SHE line personnel are exploited
- investigations into root causes of non-conformances are poorly conducted
- quality related issues are not seen as an integral part of the business system

It is of concern that essential activities such as risk or safety management and quality are not considered by senior management as an important part of the business. This could perhaps be one of the reasons why implementing, justifying resources and maintaining management systems are viewed as such huge challenges. The interviews were captured on a tape recorder and later transcribed.

#### **4.4 The principal study**

Mellville and Goddard (1996: 4) state that descriptive or case-study research investigates a particular situation to determine if it gives rise to any theories or to see if current theories emerge out of specific situations. According to Mertens (1998:108) the simple descriptive approach of research offers a "one-off" survey to determine the characteristics of a sample at a point in time. Hence, a survey was chosen as the method of research in this study. The survey was conducted on selected service and manufacturing organisations. The perceptions of managers, experiences and comments of the workforce during the implementation and maintenance of safety, environment and quality management systems, were sought during the survey.

##### **4.4.1 The questionnaire**

The pilot study was evaluated. It was found that the questionnaire used in the pilot study was effective to establish which management systems/codes of practice were the most commonly used, the challenges faced by employees when using multiple systems and their perceptions of the SECQA model. In view of the above the same questions with a few minor changes to the layout of the questionnaire to make it more user-friendly, were used for the principal study.

##### **4.4.2 Sample size and data collection**

Mertens (1998:259) suggests that this method of sampling allows each member of the population an equal and independent chance of being selected for the survey. A list of organisations in the area were compiled and a sample was drawn using a judgement sample. This represents a simple method of sampling and lends itself to statistical analysis specifically in this study. The sample size was determined using the Sample Size Determinator from the StatGraphics statistical software package. At the 95% level of confidence the appropriate sample size recommended was thirty.

The principal study was used to complement the findings of the qualitative research. The



feasibility of testing all the organisations in the region would have been non-value adding because the qualitative research provided the information required to conduct this research. Hence, this research sample consisted of thirty (30) organisations from the KZN region. More specifically from food and beverage, blood transfusion laboratories, pharmaceuticals, paint manufacturing, motor manufacturing, tyre manufacturing, cosmetic manufacturing, petroleum, resin, pulp and paper, electrical service provider, consulting laboratory, research laboratory, bank, municipality and a private technical college. This choice was meant to cover a cross-section of the industries operating in the region. The designation of the respondents are as follows: Quality Assurance (QA)/Quality Controller (QC), QA Manager, Laboratory Accreditation Officer, Senior Laboratory Technician, Technology/Quality Specialist, SHEQ Manager, Safety Officer, Good Manufacturing Practice (GMP) Officer, Research Officer, Engineers, Process Technicians, Project Managers and Director.

#### **4.4.3 The questionnaire used in the principal study**

Reyaldo and Santos (1999:42), cited work by Hatcher (1994) who reported that “Cronbach’s Alpha” represents an Index of Reliability which is commonly used to show the reliability of results. When a variable generated from a set of questions that returns a stable response is obtained, then the variable is said to be reliable (Reyaldo and Santos, 1999:42).

A “construct” is a hypothetical variable which is being measured. Cronbach’s Alpha is an index of reliability where the variation is accounted for by the true score of the “underlying construct”. Cronbach Alpha coefficient ranges in value from 0 to 1 and may be used to describe the reliability of factors extracted from dichotomous (that is, questions with two possible answers) and/or multi-point format questionnaires or scales. The higher the score, the more reliable is the generated scale. These authors further cited work by Nunnaly (1978) which indicated 0,7 to be an acceptable reliability coefficient but lower thresholds are sometimes used in the literature (Reyaldo and Santos, 1999:42).

The Cronbach’s Alpha Index of reliability for the questionnaire used to propose the SECQA

model is 0,979. For the data in this analysis, the value exceeds the acceptable standard. It means that the underlying construct was scored in a consistent manner and that results obtained from the analysis in this study can be considered reliable.

The hypothesis which was presented for this study was answered by the hypothesis analysis. Based on the results of the Cronbach's Alpha Index of reliability and the hypothesis test above, higher level statistics such as factor-analysis and correlation analysis were not done.

#### **4.4.4 The respondents in the principal study**

The respondents with the information desired were identified. Before the survey it was confirmed that each respondent had access to the information required. This is consistent with suggestions by Mertens (1998:110) on sample plan selection. The responses obtained were commensurate with the knowledge and experience of the respondent to the subject under investigation. Mertens (1998:105, 106) supports these views and reports that respondents reply to questions based on their knowledge, attitude and behaviour. Therefore the credibility of their responses is dependent on the honesty of the respondent.

The nature, purpose and confidentiality of the investigation was explained to the respondents. All questionnaires were answered, representing a 100% response rate. In view of the cross-section of the organisations represented and the experience of the respondents in the study, the outcomes of the investigation appears to reflect the status of the current practice and understanding of managers and workforce in the field of SHEQ management systems.

#### **4.4.5 Evaluation of the questionnaire in the principal study**

The open-ended type of questions will be evaluated from the context of the related literature. These results will be presented as a summary of all the respondents, after each question. The closed-ended type questions will be evaluated using the Statistical Package for Social Science (SPSS). These results will be presented as graphs, tables and hypothesis testing. The results will be discussed in Chapter 5.

#### **4.5 Conclusions and recommendations**

A series of conclusions and recommendations were derived from this research. These are shown in Chapter 6.

#### **4.6 Summary of the chapter**

This chapter presented the design of this research, the development of the SECQA model and preliminary work.

During the design of the research the usefulness of reviewing literature and research techniques were considered. The following sections were discussed:

- research methods such as quantitative and qualitative
- sources of information being primary or secondary
- surveying techniques, such as questionnaires and interviews

The section on the development of the model presented the steps leading to the selection of the management system used in the study, the development of the SECQA model, the use of business improvement tools and how they are linked to the model. The possible advantages and disadvantages of the SECQA model were highlighted. Furthermore, the strengths and weaknesses of the individual management systems selected in the study and how these can be overcome by the model, were also demonstrated. The requirements to comply with the SECQA model were presented. Examples of basic documentation, such as an integrated policy, procedure, work instruction and self- assessment checklist, were designed to illustrate how integrated documentation can be condensed and made more user-friendly.

Preliminary work consisted of a pilot study with two manufacturing organisations and interviews with key role players in the field of safety, health and environmental management. It was evident from the results of the interviews that employees lacked the understanding of

the benefits, the implementation and maintenance of management systems. They were also unable to see the areas of overlap between the individual systems.

The results of the pilot study showed that although one employee reports to senior management, there are several employees deputised to manage the codes of practice and this can pose problems if training is not conducted. Due to the duplication and complexity of documentation there is not enough time to complete tasks and to meet production targets. The duplication of internal and external auditing and of training are time-consuming. Ambiguity in language from one code of practice to the next creates confusion with documentation on the shop-floor. The efficiency of the codes of practice hoped to have been achieved were not.

The next chapter will present the findings of the questionnaire.

## CHAPTER 5

### RESULTS AND DISCUSSION

“When we introduce a particular method of doing a job, it is natural to consider whether the method is appropriate or not. The decision is usually based on past results and experience, or perhaps on conventional methods. Procedures will be most effective if a proper evaluation is made, and on-the-job data are essential for making a proper evaluation.”

K. Ishikawa (Foster, 2001:281)

## 5. Results and discussion

This chapter will evaluate the questionnaire and review the comments of the respondents relating to the current management systems they used and the challenges they encountered when operating multiple systems or codes of practice. It will also investigate the most common business improvement tools used by organisations and those which were not included in this study which respondents would prefer using. Finally, this section will determine the views of respondents relating to integration and their perception of the proposed SECQA model. Where possible these comments will be linked to the findings in the review of literature in order to support the results of this study.

### Section 1: Pre the SECQA model

#### 5.1 Section 1 Question 1 : State the management systems/codes of practice currently used by your organisation.

This question was used to determine which systems were currently used by organisations. It was also used as an indication of which systems were most commonly used.

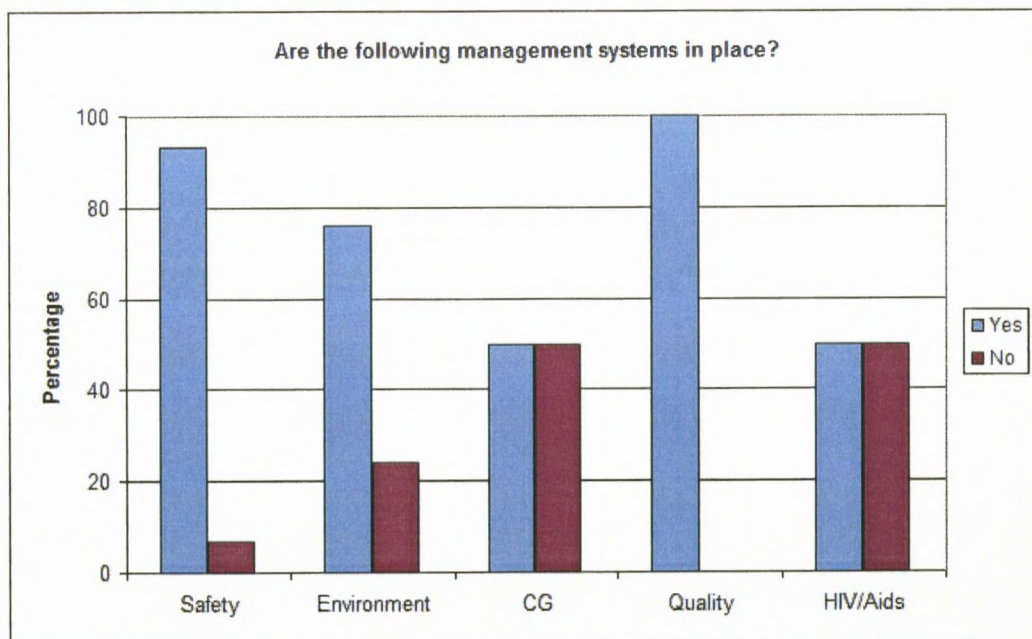


Figure 15: Systems currently in use.

Key: CG : Corporate Governance

It is evident from the figure above that 90 % of the organisations in the principal study had safety structures implemented. Environmental practices were followed by 73% of the organisations. Corporate governance was adhered to by 50% of the organisations. 100% of the organisations complied with quality practices and 50 % followed HIV/Aids programmes. Although all the organisations adhere to some form of management system related to safety, the environment, corporate governance, quality and HIV/Aids, a reflection on the cases reviewed in the literature in Chapter 2, reveal that HIV/Aids management, should receive more focus and should be implemented more rigorously to experience its benefits. In addition the failures experienced by the organisations such as Land Rover, Jeep, Sasol and others indicate that existing management systems should be reviewed and improved to prevent non-conforming products and their recurrence. It is apparent that auditing, management reviews, corrective action and preventative maintenance procedures were not comprehensive to highlight the deficiencies which emerged in these organisations.



**5.2 Section 1 Question 2: Indicate the number of people assigned to report to senior management on these management systems/codes of practice.**

This question was proposed to determine the number of people assigned to report to senior management on these management systems/codes of practice.

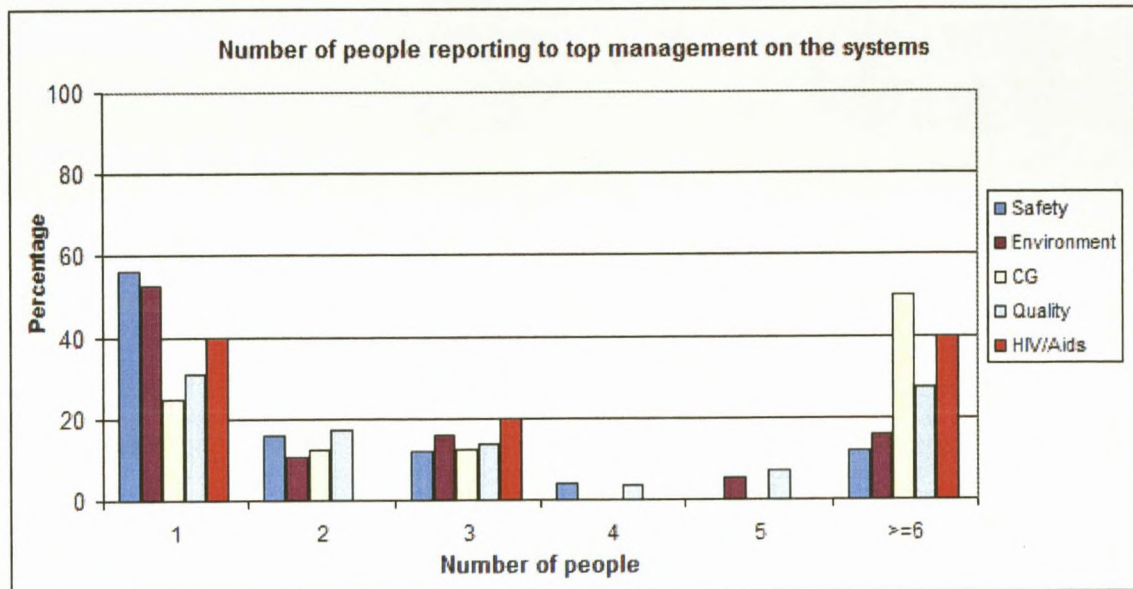


Figure 16: Number of employees reporting to senior management

It is apparent from the figure above that the percentage of organisations that had one person reporting to senior management is 58% on safety, 50% on the environment, 25% on corporate governance, 30% on Quality and 40% on HIV/Aids management.

The figure shows that the percentage of organisations that had two people reporting to senior management were 17% on safety, 10% on the environment, 15% on corporate governance and 18 % on quality. None of the organisations in the study mentioned two people reporting to senior management on HIV/Aids management.

The percentage of organisations that had three people reporting to senior management were



15% for safety, 17% for the environment, 15% for corporate governance, 16% for quality and 20% for HIV/Aids.

The figure above also revealed that the percentage of organisations that had four people reporting to senior management were 4% for safety and 3% for quality. None of the organisations in the study mentioned four people reporting to senior management on the environment, corporate governance and HIV/Aids management.

The percentage of organisations that had five people reporting to senior management are 5% for the environment and 6% for quality. None of the organisations in the study mentioned five people reporting to senior management for safety, corporate governance and HIV/Aids.

Finally, the percentage of organisations that had more than or equal to six people reporting to senior management were 15% for safety, 18% for the environment, 50% for corporate governance, 25% for quality and 40% for HIV/Aids.

It can be inferred from the data above that if most of the organisations investigated complied with all five management systems proposed by the SECQA model, then at least five employees will be assigned to operate management systems which are not integrated. Fresner and Englehardt (2004:624), Holdsworth (2003:194) and Stables (2001:389) demonstrated the overlap between the requirements of safety, quality and environmental management and how it lends itself to integration. This could possibly reduce the number of people required to manage the systems presented in the graph above. In addition, the results of the pilot study indicated that operating management systems individually was cumbersome in terms of monitoring them, training employees, corrective action and auditing.

### 5.3 Section 1 Question 3 : What length of time has the management system/code of practice been implemented in your organisation?

This question established how long each system had been implemented within an organisation. Any new practice experiences “teething problems”. Hence, the length of time in which these systems have been operating, can provide a reliable indication of the maturity of a system and its supporting structures. It can also indicate how these systems have evolved with time and how they should typically be performing.

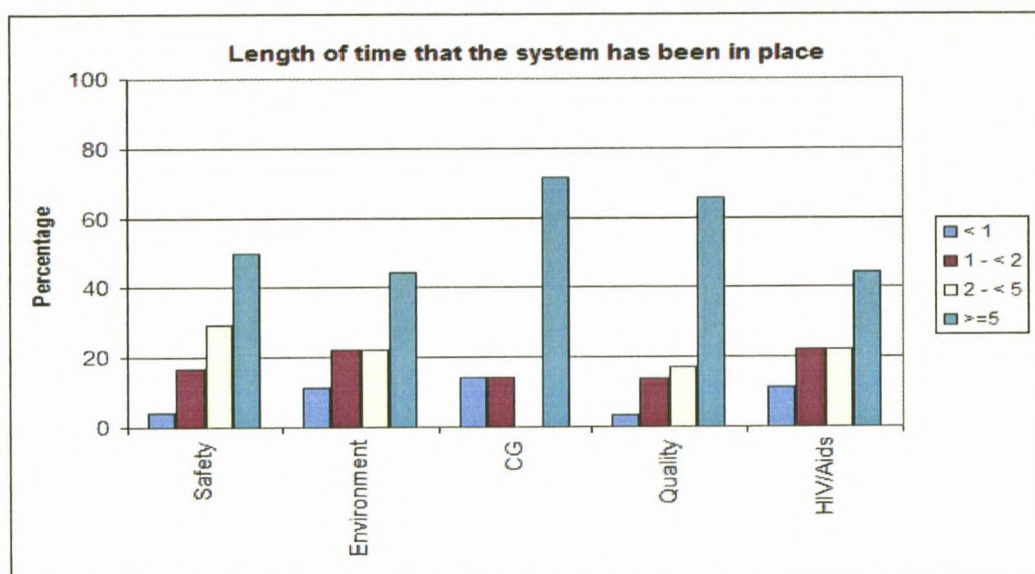


Figure 17: Length of time system has been implemented

From the figure above the percentage of organisations that have had systems in place more than 5 years is approximately 50% for safety, 45% for the environment, 70% for corporate governance, 65% for quality and 45% for HIV/Aids management. For the most part, a combination of the two time periods (1- < 2 years and 2- < 5 years) shows a percentage of 45% for safety, 44% for the environment, 12% for corporate governance, 29% for quality and 44 % for HIV/Aids. The percentage reported for the period < 1 year is 4% for safety, 10% for the environment, 12% for corporate governance, 4% for quality and 10% for HIV/Aids.



The results presented by >5 years reveal that approximately half of the organisations have mature systems in place. A 0,514 Pearson Correlation value at a confidence level of 0,01 reveals that there is a strong correlation between the length of time a management system is implemented and its efficiency. Refer to Appendix 4 for raw data.

**5.4 Section 1 Question 4: The current management system/code of practice in place is efficient.** The respondents had to rate their responses on a five point Likert scale ranging from “strongly disagree” to “strongly agree”.

This question was used to determine the efficiency of current management systems. The level of efficiency of the current systems can be used as a means of justification for management and employees to introduce business improvement tools and strategies.

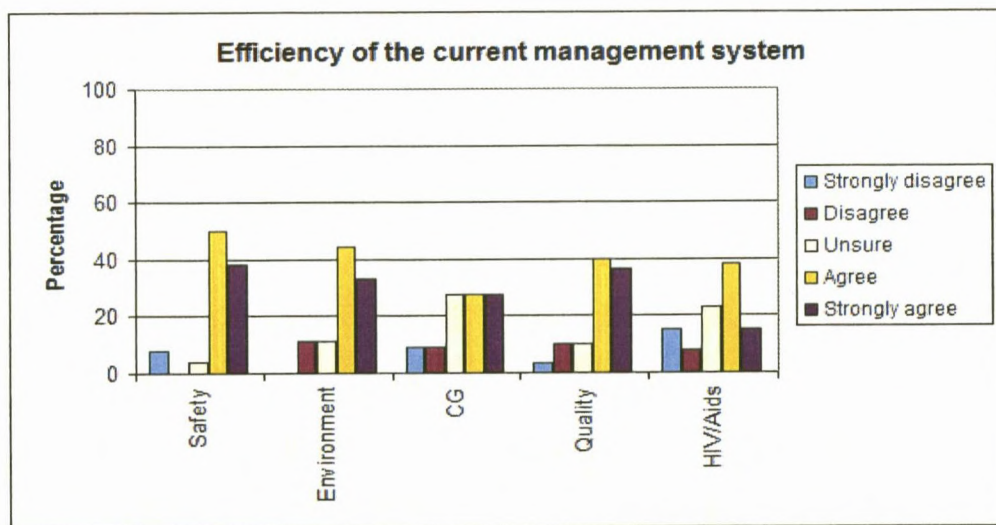


Figure 18: Efficiency of current management systems

It is evident from the figure above that a combination of the “Agree” and “Strongly Agree” response shows that 83% of the respondents are of the view that their safety systems are

efficient. 60 % of the respondents believe that their corporate governance practices are efficient. The environmental management system is rated as being 80 % efficient while quality was rated at 78 % and HIV/Aids management at 56% efficient.

The combination of the “Strongly Disagree” and “Disagree” response reveals that 7% rated safety, 10% rated the environment, 16% rated corporate governance, 14% rated quality and 21% rated, as not being efficient. Five percent on safety, 10% on the environment, 30% on corporate governance, 10% on quality and 22 % on HIV/Aids were unsure of the efficiencies of their current systems. The results reveal that all organisations which had management systems in place were operating at above average efficiency.



**5.5 Section 1 Question 5: Resources allocated to manage each management system/code of practice are adequate.** The respondents had to rate their responses on a five point Likert scale ranging from “strongly disagree” to “strongly agree”.

This question was used to determine if respondents felt that management provided adequate resources to manage these systems.

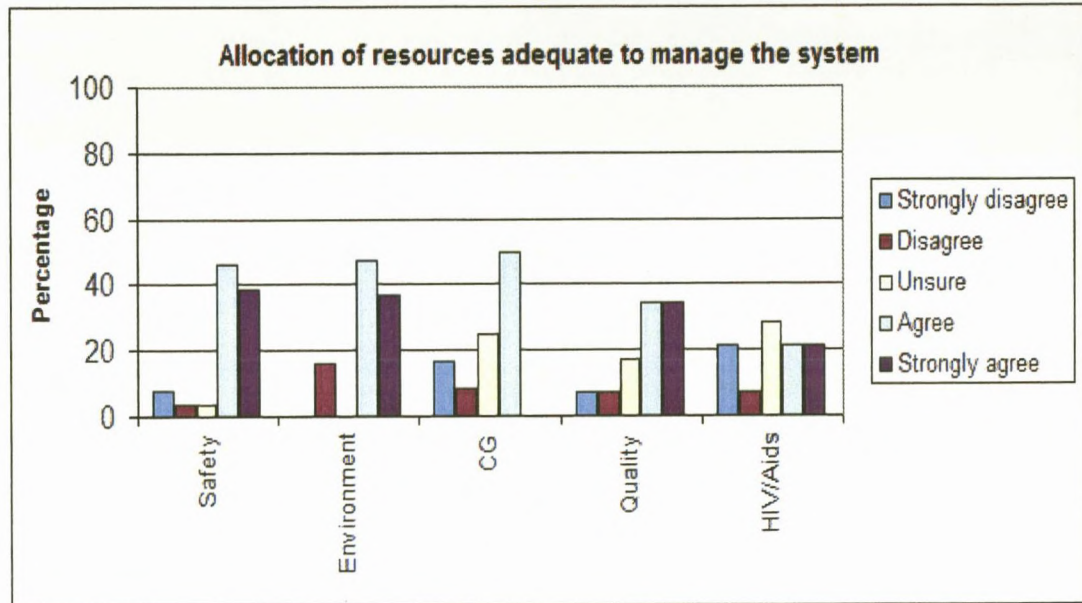


Figure 19: Allocation of resources to systems

A combination of the “Agree” and “Strongly Agree” response from the figure above shows that approximately 80% of the respondents believe that the resources that are made available to manage safety and environmental systems are adequate. Approximately 75% of the respondents agree that corporate governance practices have adequate resources allocated to manage them. 70% of the respondents believe that quality management systems have adequate resources assigned to manage them while approximately 44% of the respondents believe the same for the HIV/Aids management system.

The combination for the “Strongly Disagree” and “Disagree” response shows that 7,5% on safety, 15% on the environment, 21% on corporate governance, 10% on quality and 26% on HIV/Aids of the respondents did not believe that they had adequate resources to operate management systems, 2,5% on safety, 22 % on corporate governance, 18% on quality and 28% on HIV/Aids were not sure about the adequacy of their resources to manage systems. There was no response for environmental management systems.

The table below demonstrates the relationship between the efficiency of the management system and the resources used to manage them. Refer to Appendix 4 for Raw Data.

| Management system    | Correlation |
|----------------------|-------------|
| Safety               | 0,810       |
| Environment          | 0,766       |
| Corporate Governance | 0,953       |
| Quality              | 0,743       |

Table 4: Efficiency of management systems and resources allocated to manage them

The results above reveal that the respondents found the management systems performed efficiently when suitable resources were allocated. There was inadequate data on HIV/Aids management to provide a correlation relationship for this system. This is probably due to organisations not having formal systems in place for HIV/Aids as indicated in the figure above. The correlations above are significant at a confidence level of 0,01.



**5.6 Section 1 Question 6: The management system/code of practice is beneficial to the organisation.** The respondents had to rate their responses on a five point Likert scale ranging from “strongly disagree” to “strongly agree”.

This question was posed to determine whether respondents were of the view that current management systems were beneficial or not. It was also used to determine the suitability of the management systems selected for this study.

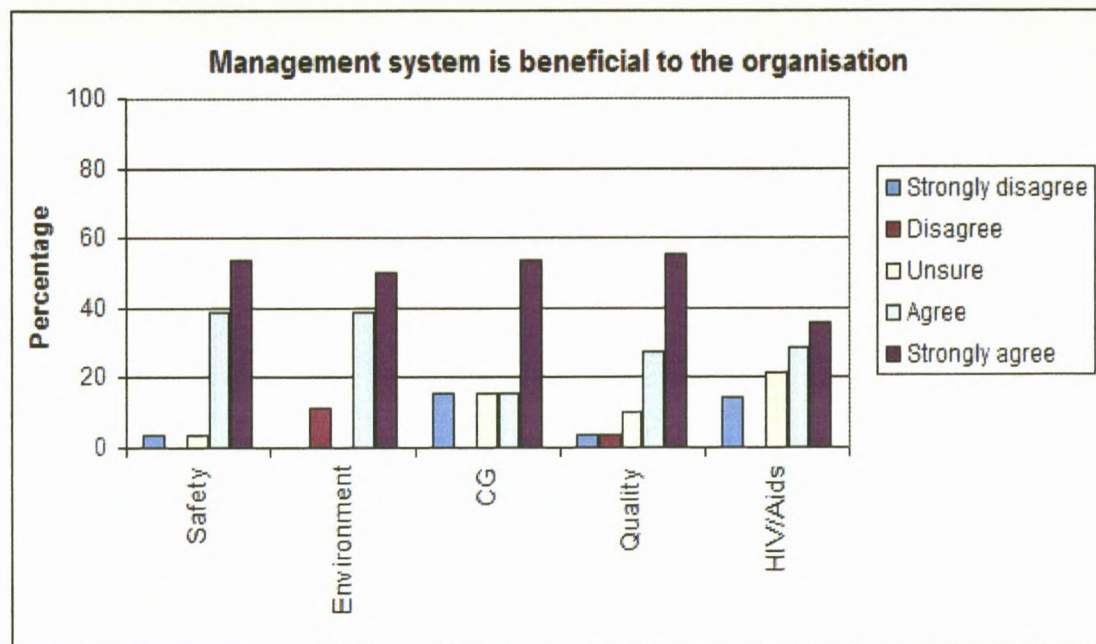


Figure 20: Management system is beneficial to the organisation

From the figure above a combination of the “Agree” and “Strongly Agree” response shows that approximately 90% of the respondents believe that their safety and environmental systems are beneficial to their organisations. Lower percentages for the same combination were recorded for corporate governance (67%), quality (82%) and HIV/Aids (63%) management systems. It is apparent from these results that the management systems selected for inclusion in the SECQA model in this study are relevant to the needs of organisations.

**5.7 Section 1 Question 7 :** What in particular are the advantages/disadvantages of each system?

This question was posed to determine the advantages and disadvantages of the management systems currently used by organisations. The advantages and disadvantages will be discussed for each management system selected in the study.

#### **5.7.1 Advantages of management systems currently used**

The advantages of current management systems were sourced so that positive elements experienced by employees while operating these systems could be included in the development of the SECQA model:

##### **5.7.1.1 Safety management systems**

Eleven respondents found safety management systems to be advantageous because it provided them with a safe and healthy environment to work in. It is evident from the findings that these employees are confident about their health and safety in their working environment. It is worthy to note that these findings are consistent with Niranjana (2003:2) on the recommendations stipulated by the OHS Act no 85 of 1993 relating to safe and healthy environments which should be provided by employers.

Six respondents reported that safety management systems were beneficial because they made all employees aware of the importance of following safety procedures. They also mentioned that safety practices were adhered to by all employees. It may be inferred from these findings that suitable training in safety practices were conducted that is why employees adhered to protocols as they understood the impact of not doing so. This can be supported by the view of Oakland (2003:319) that suitable training improves the performance of employees and organisations.

Three respondents found that documentation was beneficial because it acted as a guide for



activities performed by the employees. This finding suggests that the organisation had control of operating their activities because of adherence to documented protocols.

Four respondents were of the view that monitoring safety practices was advantageous for their organisation because it reduced the number of on-site injuries. These views are in agreement with the British Standard Institution (1999:5 amendment 1). It is possible that the reduction of on-site injuries was due to the organisation adhering to a safety framework or management system.

Three respondents were of the view that their safety systems led to pro-active management of their activities, this facilitated the prevention of accidents and continuous improvement. These findings are consistent with the British Standard Institution (1999) as one of the strengths of the OHSAS 18001. Hence, it can be implied from the statement above that the safety management systems in these organisations are effectively implemented to achieve continuous improvement. It possibly also ensured the sustained safety of employees, as the management system exhibited pro-active control of procedures because it was continuously reviewed.

#### **5.7.1.2 Environmental management systems (EMS)**

Five respondents believed that following an EMS enabled their organisation to perform its activities in an environmentally-friendly manner. Two respondents were of the view that their EMS ensured their organisations adherence to legal requirements and legislation. Five respondents contended that documented procedures helped them to monitor and control their activities possibly enabling them to manage their resources more effectively. The statement "environmentally-friendly manner" suggests that the organisation was able to minimise and control the waste and hazards they generated. Two respondents commented that EMS made all employees aware of their responsibility to the environment. Two respondents mentioned that their EMS helped them to manage their activities pro-actively and prevent the occurrence of hazards. One respondent viewed their EMS as their contribution towards

sustaining the environment.

The results obtained above are commensurate with the views of Sampson (2000:6), South African Bureau of Standards (2005) (A) and Stables (2001:396) pertaining to the usefulness of environmental management systems and the benefits of implementing an efficient EMS. Some of the benefits mentioned were that: the EMS was able to highlight potential problem areas; reduced site clean-up costs; and it helped to manage resources and waste.

#### **5.7.1.3 Corporate governance**

Twenty-four respondents did not have comments on their organisation's corporate governance practices. One respondent was of the view that corporate governance practices stipulated guidelines which prevented the discrimination of employees in his/her organisation. Another respondent mentioned that corporate governance was beneficial because it increased their organisation's market-share. Two respondents reported that corporate governance encouraged their organisation to perform their activities in an ethical manner. One respondent indicated that adhering to suitable corporate governance practices enabled his/her organisation to maintain a good reputation among potential investors and shareholders because it enhanced the integrity by which they performed their activities. One respondent believed that sound corporate practice enabled his/her organisation to increase management control. Another respondent contended that good corporate practice facilitated fair labour practice in his/her organisation.

The results above are commensurate with the views expressed by King (2003:8); Khoza (2003:18) and Armstrong (2003:10). It is evident that corporate governance provided structures for these organisations to perform their activities with transparency, integrity, increased sustainability and competitiveness.

#### **5.7.1.4 Quality management systems (QMS)**

Three respondents reported on an improvement in the quality of their product as a result of

adhering to a QMS. One respondent stated that documentation provided uniformity in his/her activities and it also facilitated traceability. Another respondent reported that implementing a QMS improved traceability and improved the work-flow. The implementation of a suitable QMS enabled one organisation to achieve the desired specification of its products. Two respondents reported on an increase in the efficiency of processes and continuous improvement after the implementation of a QMS. Three respondents viewed their QMS as beneficial because it provided them with a systematic approved method to perform their processes. This enabled them to have more control of their processes and activities. One respondent reported that adherence to the “process approach” facilitated an improvement in a number of activities within his/her organisation. A QMS helped another organisation to improve its sustainability and to perform activities according to “world class manufacturing” levels. One respondent mentioned that the organisation’s QMS enabled employees to assign responsibilities to activities timeously. Another respondent was of the view that the QMS helped them to highlight potential problem areas. Three respondents stated that their organisations showed brand superiority and improved market-share after implementing a QMS. Five respondents mentioned that adherence to a QMS encouraged customer confidence in their products. One respondent reported that their QMS enabled them to manage their activities pro-actively and prevent non-conforming products. Two respondents mentioned that the amount of re-work decreased after they implemented a QMS. One respondent found that all departments in their organisation engaged in quality management.

The findings above are consistent with the views of Evans and Lindsay (2005:19), Tricker and Lucas (2001:1) and Gitlow, Oppenheim, Oppenheim and Levine (2005:27) on the reduction of re-work and increased productivity with an effective quality management system. The success achieved from the organisations above in terms of continuous improvement, brand superiority and customer satisfaction are consistent with the declarations of the South African Bureau of Standards (2000:5). Hence, it can be inferred that the organisations portraying these traits have implemented effective and successful quality management systems.

#### **5.7.1.5 HIV/Aids management systems**

Twenty-two respondents were either not aware if their organisation complied with an HIV/Aids management system or the status of a system, if it existed. Three respondents highlighted that their system was beneficial because it educated employees about the virus. It also helped them to understand how to prevent and manage the spread of and the risks associated with the disease.

One respondent reported that their HIV/Aids management system helped them to decrease the number of deaths in their organisation. This finding is consistent with the view Kotze (2003) on the ability of a structured HIV/Aids management system to manage risks associated with the virus.

Another respondent was of the view that implementing an HIV/Aids management system helped them to fulfill their social responsibility. Two respondents found that their system helped to decrease the overall sick leave of employees by educating them on how to maintain a healthy lifestyle. One respondent mentioned that their management system helped employees be more open about their status. Hence, this helped their organisation to manage the impact of the disease and the organisation was able to report on uninterrupted productivity.

The findings above are consistent with the views of Kotze (2003), AFP (2005) and Sanne, Cheetam and Barker (2003) who share common beliefs about the benefits of effective HIV/Aids management systems. These benefits are continued good health of employees, increased profit, and reduced absenteeism and profit.

#### **5.7.2 Disadvantages of current management systems used**

The disadvantages of current HIV/Aids management systems were sourced so that difficulties experienced by employees while operating these systems will not be repeated in the development of the SECQA model.

#### **5.7.2.1 Safety management systems**

Eighteen respondents did not report on any disadvantages of their safety management system. Three respondents were of the opinion that more resources and training were required to support their safety management system. From the review of literature it is apparent that the lack of resources to support safety practices was reported as one of the reasons for the Bhopal Disaster in India in 1984. This example served to show the importance of adequate resources to support practices.

One respondent reported that their safety system was poorly implemented. No further explanations were provided to substantiate these views. The impact of poorly implemented systems was shown by Bailey and Smith (2004), Carnie (2003) and Barbeau and SAPA (2004:2) who presented case-studies on the "black rain" experienced by communities surrounding Caltex in Cape Town, the problems experienced by Thor Chemicals and their employees due to the alleged poisoning by mercury and the explosions experienced at the Sasol plants. These case-studies served to show that inappropriately implemented management systems can have devastating repercussions to the organisation.

Two respondents were of the opinion that employees do not adhere to safety procedures. It can be inferred from these responses that there is a lack of adherence to procedures or written protocol in these two organisations. Barbeau and SAPA (2004:2) and Bailey and Smith (2004) reported on the explosions, loss of life and damage to private property as some of the possible consequences of not adhering to procedures.

One respondent mentioned that training regarding the safety of employees was confined to certain departments. Hence, many employees working in hazardous areas were not adequately trained to do so. The repercussions of not training employees adequately is evident in the reports of Staff Reporter (2004), Kalideen (2004), Bailey and Smith (2004),

Carnie (2003) and [www.Bhopal.net](http://www.Bhopal.net) (2003). They highlighted the impact of employees not following laid down procedures, as was the case in the Sasol, Caltex and Thor Chemicals incidents as well as in the Bhopal Disaster. These reviews reinforce the importance that the training of employees should not be compromised.

Two respondents reported that their management system was too paper-based. Two respondents stated that their costs increased during the implementation of their safety management system. Another two respondents mentioned that employees did not want to disclose or report on incidents as they were afraid of losing their jobs or being victimised. Although two organisations reported on the increase in implementation costs of safety systems and two other organisations viewed that their system was too paper-based. Khan (2005) shows that effectively implemented management systems, adhering to protocols and adequate training can reduce the impact of potential accidents.

#### **5.7.2.2 Environmental management systems (EMS)**

Twenty- three respondents did not report on any disadvantages of their EMS. One respondent mentioned that there was no follow up to poor results in their organisation. The review of literature on the Bhopal Disaster portrays the importance of follow up action to audit findings and poor results.

One respondent stated that documented protocols were not adhered to. Three respondents were of the view that they were dissatisfied with their EMS because they found it difficult to keep track of current legislation. Also the threat of being sued and the possible closure of the organisation for lack of compliance to legislation was imminent. Peters (2004) and Stables (2001:392) reported on the pollution caused by the waste-water sewage plant on the ecosystem in a lagoon in Cape Town and the Brazilian organisation which had to relocate because it contaminated the water table, respectively. These examples show the effects of poorly implemented and inefficient management systems and the outcomes of not adhering to legislation.

Another respondent was of the view that the cost of implementation and the amount of paperwork associated with maintaining their management system, was too high. One respondent mentioned that the management system must be "alive". This respondent did not substantiate his/her response.

#### **5.7.2.3 Corporate governance**

Twenty-three respondents did not comment on the disadvantages of corporate governance in their organisations. One respondent stated that employees were told to resign if they did not like the management style. Patterson (2002:20) and Armstrong (2003:10) are in agreement that managers review their style of management in an attempt to alleviate employees' morale and share-holders', stake-holders' and related parties' confidence.

One respondent stated that corporate governance should be a "live" system. This respondent did not substantiate his/her response. Another respondent reported that only selected employees were involved with corporate governance. One respondent maintained that the cost of running corporate governance practices in his/her organisation was too high.

Two respondents mentioned that corporate governance protocols were not adhered to. One respondent was of the view that his/her organisation did not enforce punishment when protocols were not adhered to. Venter (2004) and George (2002) share a common view about the repercussions of the lack of enforcement in organisations. They showed how failure to adhere to good governance practice have lead to potential lawsuits in a number of organisations and bankruptcy of others such as Parmalat, as well as the lack of investors.

One respondent was of the view that corporate governance controls were too stringent. Although the respondent above was of the opinion that corporate governance practices are too stringent, Armstrong (2003:12), Davies (1999:34), Dunn (2003:14) and Wilson (2004:21) favour stringent corporate practice and showed how organisations such as Enron, Worldcom, Kmart, Tyco among others which failed to adhere to corporate governance

practice were faced with corporate failure, lawsuits or loss of reputation.

#### **5.7.2.4 Quality management systems (QMS)**

Twelve respondents did not report on any disadvantages of their QMS in their organisations. Three respondents mentioned the lack of support and commitment from management to maintain their QMS. Four respondents reported that employees did not adhere to protocols. The QMS of four organisations were too tedious because it generated huge amounts of paperwork. One respondent was of the view that management, in their organisation, did not lead by example. Two respondents stated that they considered their QMS disadvantageous because organisations were at risk of losing certification. Three respondents were of the opinion that the implementation costs of the QMS were very high. Two respondents were of the view that they were misinformed about the benefits of quality and that there was lack of understanding of quality within their organisation. One respondent was of the view that employees were over worked and that they did not have the time to support the QMS. Another respondent reported that the QMS should be a "live system". This respondent did substantiate his/her response.

The results above reveal that the respondents were dissatisfied with their QMS and its demands. Cokayne (2004) and Reuters (2002) presented some of the repercussions, such as, product recalls of Land Rover and Jeep vehicles when organisations failed to implement effective QMS.

#### **5.7.2.5 HIV/Aids management systems**

Twenty- six respondents did not report on disadvantages with their HIV/Aids management systems. Two respondents mentioned that the implementation of an HIV/Aids management system increased their operating costs. One respondent mentioned that the HIV/Aids management system should be a "live system". This respondent did not substantiate such response. Sanne, Cheetham and Barker (2003) (A) (B) (C) reported on the high cost of implementing HIV/Aids programmes. They showed how these programmes helped to



maintain the productivity of an organisation. Kotze (2003) supported these views and suggested that a structured management system would help organisations manage risks associated with the virus.

### **5.8 Section 1 Question 8 : What aspects would you recommend for change?**

This question was used to elicit the factors which employees would want to change in the management systems currently used by their organisations.

#### **5.8.1 Safety management systems**

Fourteen respondents did not comment on any aspects of their safety management systems they would change. This may suggest that the respondents who did not comment on any changes to their management systems were either satisfied with their management systems or were unaware of their deficiencies.

One respondent reported that protective clothing issued by the organisation is not comfortable. This respondent indicated that suitable protective clothing be issued to employees. Four respondents were of the opinion that training was restricted to certain departments. These respondents shared a common view and recommended that training be implemented throughout the organisation so that the safety management system could be utilised to its full potential.

Three respondents mentioned that contractors were not adequately inducted on the safety aspects of the organisation. They recommended that more stringent training be conducted with contractors before they are allowed to commence work. One respondent indicated that the current induction programme presented by his/her organisation was not effective. This respondent suggested that video tapes should perhaps be used to supplement the training programme.

It can be gathered from the responses above that training was restricted to certain departments

in an organisation and that inadequate training was provided to contractors. The repercussions of the lack of suitable training was demonstrated by Barbeau and SAPA (2004) in their report on the incidents at Sasol and by Bailey and Smith (2004) on incidents at the Caltex plant.

Another respondent reported that resources allocated for safety activities were not managed appropriately. This led to a lack of resources in certain areas. The allocation of resources to manage safety systems is very important, failure to do so can lead to devastating effects such as those encountered in the Bhopal Disaster.

A respondent stated that only one employee was designated to manage the safety management system within their organisation. This respondent was of the view that the safety department in his/her organisation was under-resourced and that more employees should be appointed to help to manage safety activities. One respondent recommended that his/her organisation should integrate their safety, quality and environmental management systems. The recommendation by the respondent to integrate safety, quality and environmental systems is consistent with the views of Holdsworth (2003:194) and Fresner and Engelhardt (2004:624) who demonstrated the natural overlap of the requirements in these systems and how they lend themselves to integration to prevent duplication of work.

Another respondent mentioned that there was lack of commitment from management to support the safety system. This respondent also indicated that management failed to communicate safety practices to employees. One respondent was of the opinion that his/her safety management system needed to be improved. Another respondent reported that his/her safety system did not enable them to prevent incidents pro-actively and that the system is not reviewed continuously. The respondent indicated that the system is reviewed only when an accident has occurred. It is apparent from these findings that some organisations did not have procedures in place to review their systems regularly. It may also imply that some systems were inefficiently designed because they did not help to prevent accidents proactively.

### **5.8.2 Environmental management systems (EMS)**

Fifteen respondents did not comment on the aspects they would change. Seven respondents were of the view that ISO 14001 should be implemented in their organisation. One respondent indicated that their current environmental system should be integrated with safety and quality management systems. Three respondents reported that there was not adequate training presented on EMS as many employees lacked the awareness of its practices. One respondent mentioned that contractors were not adequately trained on EMS in his/her organisation. Another respondent indicated that their existing management system needed to be improved. One respondent observed that there was a lack of follow up on results which were out of specification.

These findings suggest that some respondents find ISO 14001 useful. It is also evident that one respondent acknowledges the need to integrate safety, quality and environmental management systems. A lack of training, continuous improvement and follow up to non-conformances was also reported. It is worth noting that these findings are common with the findings of safety management systems above.

### **5.8.3 Corporate governance**

Twenty-three respondents did not comment on corporate governance within their organisation. One respondent mentioned that their organisation follows a code of conduct tailored for his/her organisation. Another respondent felt that corporate governance practices were too autocratic. In addition he/she believed that these practices were limited to certain levels of employees. He/she indicated that employees at all levels should be empowered to maintain and comply with corporate governance practices.

One respondent stated that corporate governance practice was not user-friendly. Another respondent indicated that the corporate governance practice in his/her organisation needed to be improved.

The large number of respondents who failed to comment on their organisations' corporate governance system is possibly an indication of their lack of knowledge of corporate practice within their organisations. It can be inferred from a lack of a recommendation for integration of corporate governance, as was the case for safety and environmental systems above, that the respondents did not understand the requirements of the King II Report (2002). The example reviewing the re-cyclable carpets presents the requirements on "Integrated Sustainability Reporting" (Khoza, 2003:18) and highlights the overlap between environment and corporate governance requirements. Armstrong (2003:11) showed that it is in an organisation's own interest to review and adhere to good governance practice for the sustainability of an organisation.

#### **5.8.4 Quality management systems (QMS)**

Six respondents did not report on any changes to their quality management system. Two respondents recommended that their organisation should implement ISO 9001. Another two respondents indicated that their quality management system should be integrated with their safety management system. Two respondents expressed that there was a lack of quality management training on the shop floor.

Three respondents indicated that quality activities were limited to the quality department and hence, other departments did not associate themselves with activities related to this department. Three respondents mentioned that the documentation procedures, especially document control procedures, were too tedious and should be streamlined. One respondent reported that there was lack of teamwork to support the quality system. Another respondent indicated that no improvement was derived after the implementation of their quality system. These results offer support for an integrated management system.

Three respondents stated that there was a lack of resources to support the system. For example, more employees were required. In addition, management neglected the quality of the product and was focussed on achieving efficiency targets. One respondent mentioned that

although their quality system helped them to achieve the customers' specifications in the product, it failed to provide them with any improvement in their processes. Another respondent stated that their system was inappropriately designed. One respondent was of the view that his/her management system needed to be improved. Another respondent indicated that quality was controlled from a branch of the organisation outside the province. This respondent indicated that each region should have control of its own system. One respondent indicated that his/her supplier ran out of raw material on a number of occasions.

The findings above show that some respondents recommended the integration of quality and safety within their organisations. Other findings revealed that the implementation of a quality management system failed to provide the organisation with process improvement. According to SABS (2005:5) the requirement "Continuous Improvement" provides the opportunity for the organisation to optimise its processes with a view to improvement. Perhaps failure of a management system to achieve this implies that its design be reviewed.

Failure to focus on quality and only on productivity, as was the instance in one organisation, would produce non-conforming products or service. This is consistent with the views of Tricker and Lucas (2001:1) who believed that failure to adhere to good quality encourages scrap products to be made and consequently, reworking them adds to the "cost of quality". Hence, the importance of adhering to good quality practice should be encouraged.

#### **5.8.5 HIV/Aids management systems**

Twenty-one respondents did not report on their HIV/Aids management systems. Three respondents mentioned that their organisations did not comply with any HIV/Aids management system but encouraged their organisations to follow AMS 16001. Five employees indicated that although a system to manage HIV/Aids was in place in their organisation, it was either ineffective or employees were unaware of it. Even though HIV/Aids is a highly published risk, it is surprising that a large proportion of the respondents did not respond to this question. It could possibly reveal that they do not have such

programmes in place or may not be aware of them.

Kotze (2003) highlighted the seriousness of the impact of the pandemic on organisations and urged managers to consider suitable HIV/Aids management strategies to increase the sustainability of their organisations.

### 5.9 Section 1 Question 9: What tools do you currently use to support management systems in your organisation?

This question was posed to organisations to determine which tools were used to support their management systems.

|                   | Safety | Environment | Corporate Governance | Quality | HIV/Aids |
|-------------------|--------|-------------|----------------------|---------|----------|
| “SWOT”            | 5      | 4           | 5                    | 11      | 4        |
| “5W2H”            | 5      | 4           | 1                    | 6       |          |
| “5Why”            | 11     | 7           | 3                    | 10      | 2        |
| QFD               |        |             |                      | 2       | 1        |
| Gap Analysis      | 14     | 8           | 1                    | 17      | 1        |
| Benchmarking      | 18     | 10          | 7                    | 23      | 3        |
| Scenario Analysis | 9      | 5           | 1                    | 11      | 3        |
| PDCA cycle        | 4      | 5           | 1                    | 9       | 1        |
| Brainstorming     | 12     | 7           | 2                    | 16      | 4        |
| Cause & Effect    | 15     | 8           | 2                    | 20      | 3        |
| Pareto            | 4      | 4           | 1                    | 10      |          |
| COQ               | 5      | 3           | 1                    | 8       |          |
| Other             | 1      | 1           |                      | 2       | 1        |

Table 5: Business improvement tools used by organisations.

Key:

“SWOT” : Strength, Weakness, Opportunities and Threats Analysis

QFD : Quality Function Deployment

PDCA cycle : Plan, Do, Check, Act cycle  
COQ : Cost of Quality

It evident from the table above that benchmarking, cause and effect diagrams and brainstorming are the most popular business improvement tools used. It can be observed that the latter are popular in safety, corporate governance, quality, HIV/Aids and environmental management systems.

Kolarick (1999:512) and Shukla (1994:632) share common views that organisations should be aware of the activities of their competitors. They believed that that can be achieved by the benchmarking process. Kolarick (1999:514) demonstrates a process for the implementation of the benchmarking.

Gitlow, Oppenheim, Oppenheim and Levine (2005:347-348) reported on the usefulness of brainstorming and cause and effect diagrams to help employees solve problems. The large number of organisations using this tool may suggest that it is beneficial to the organisation.

The results above reveal that Gap Analysis is also a popular tool in safety, environment, corporate governance, quality and HIV/Aids management systems. Foster (2001:28) highlighted the benefits of this in Chapter 3.

The usefulness of each tool mentioned in the table above is confirmed by Marx and van der Walt (1948:677), Stevenson (2002:489), Bicheno (1994:6, 7, 22, 60, 62), Heizer and Render (2006:163), Winter and Steger (1998:63, 165), Sunter and Illbury (2001:38), South African Bureau of Standards (ISO 9001:2000, 2000:10) and Beercroft (2005, 43), as mentioned in Chapter 3.

**5.10 Section 1 Question 10 : In addition, which tools do you think are necessary to support management systems in your organisation?**

Question 10 is a follow up from question 9. It was used to elicit which tools mentioned in question 9 were not used but which would be beneficial to the organisation.

|                                 | Safety | Environment | Corporate Governance | Quality | HIV/Aids |
|---------------------------------|--------|-------------|----------------------|---------|----------|
| “SWOT”                          | 1      | 1           |                      | 1       | 2        |
| “5W2H”                          | 1      |             |                      |         |          |
| “5Why”                          |        |             |                      |         | 1        |
| QFD                             |        |             |                      | 2       |          |
| Gap Analysis                    | 1      |             |                      | 1       |          |
| Scenario Analysis               | 2      | 1           |                      | 2       | 1        |
| PDCA cycle                      | 1      | 1           |                      | 3       | 1        |
| Brainstorming                   | 1      | 1           |                      | 3       | 1        |
| Cause & effect                  | 2      | 2           | 1                    | 4       | 3        |
| Pareto                          | 2      |             |                      | 1       |          |
| Cost of Quality                 |        |             |                      | 2       | 1        |
| Taguchi Quadratic Loss Function |        |             |                      | 1       |          |

Table 6: Business improvement tools respondents would like to use

It is encouraging to note that the respondents found that a number of the tools used in this study could be beneficial to their organisation. One respondent recommended the use of the Quadratic Loss Function which was not presented during this study. The Quadratic Loss Function focusses on the variation of results around a target value. This concept states that there is noticeable loss of quality around the control limits even when results are within



specification. Hence, results should be closer to the target value (Reid and Sanders, 2005:145-146). This study focuses on two approaches to determine the cost of quality. Both methods are presented in Chapter 3 and the most appropriate method is recommended.

#### **5.11 Section 1 Question 11 : Do you think streamlined /integrated documentation would aid operating multiple management systems?**

This question was used to determine if respondents were of the view that integration was useful when operating multiple management systems.

Twenty-nine respondents were in favour of integrating multiple systems. Ten respondents mentioned that integration would help them to reduce the amount of documentation generated within their organisations. Two respondents were of the view that integration would prevent the duplication of work in their organisation. Two respondents stated that integration provided one consolidated, comprehensive system which made management of the system easier. Two respondents were of the view that integration encouraged several activities to be conducting simultaneously. They believed that this presented a more holistic management system.

One respondent encouraged integration for the reason that he/she believed that it enabled better control of activities within the organisation. Two respondents were of the view that integration would facilitate the reduction of the number of employees managing the systems. Three respondents reported that integration provides a better understanding of managing systems as opposed to operating them separately. One respondent expressed the need to integrate a specialised code such as HACCP into his/her integrated management system. The review of literature in Chapter 2 outlines how specialised systems such as HACCP can be integrated with other management systems in this study. One respondent mentioned that integration made auditing systems easier. Another respondent was of the view that integration was not suitable to all types of organisations. This respondent did not substantiate his/her answer.

It is may be inferred from the results above that majority of the respondents found integration of management systems suitable. Stables (2001:396) and Tricker and Lucas (2001:106) were of the view that quality, environment and safety management systems lend themselves to integration. This is perhaps one of the reasons why these respondents encouraged the integration of the management systems.

Fresner and Engelhardt (2004:624) and Holdsworth (2003:194) showed that integration of management systems reduced the demands on resources. These views are consistent with the findings of the responses presented above which focussed on, ease of auditing, better control of activities, less duplication of paperwork and documentation.

## **Section 2 :Post implementation of the SECQA model (Perception)**

The first section of the questionnaire was used to determine which management systems were currently used by organisations, what challenges employees faced when operating these management systems and the tools which were used to support them.

The second part of the questionnaire proposed an integrated model incorporating safety, corporate governance, quality, HIV/Aids and environmental management systems. It was used to elicit whether the management systems included in the model were suitable for organisations in the present trend of South Africa, whether they thought the integration of these systems were beneficial in terms of reducing resources and duplication of work and whether they would use such a model.

### **5.12 Section 2 Question 1: Will the number of people assigned to report to senior management on these management systems/codes of practice decrease ?**

This question was included to determine whether the respondents would find a reduction in the number of employees assigned to manage the model if implemented as compared to their current practice.

It is evident from the findings that 10 respondents did not perceive that the implementation of the SECQA model would reduce the number of employees reporting to senior management in their organisation. Eleven respondents were of the opinion that the implementation of the SECQA model would enable them to reduce the number of employees reporting to senior management. Nine respondents were unsure about whether the implementation of the model would reduce the number of employees reporting to senior management.

In response to these findings perhaps respondents who did not perceive a reduction in the employees with the implementation of the model and those respondents who were unsure,

are sceptical about an unproven tool. These respondents could be cautious because management systems are known to have the high implementation costs as they mentioned in section 5.7.2.4. In addition, the model proposes integration of management systems that are not typically seen in the trends of this country and managers would have difficulty accepting this concept.

The Cronbach's Alpha Index of Reliability scored a value of 0,718 showing that the results obtained from this analysis in this section can be considered reliable.

### 5.13 Section 2 Question 2: The resources required to manage each management system/code of practice will reduce

This information was used to determine if the respondents would find a reduction of resources if the SECQA model was implemented.

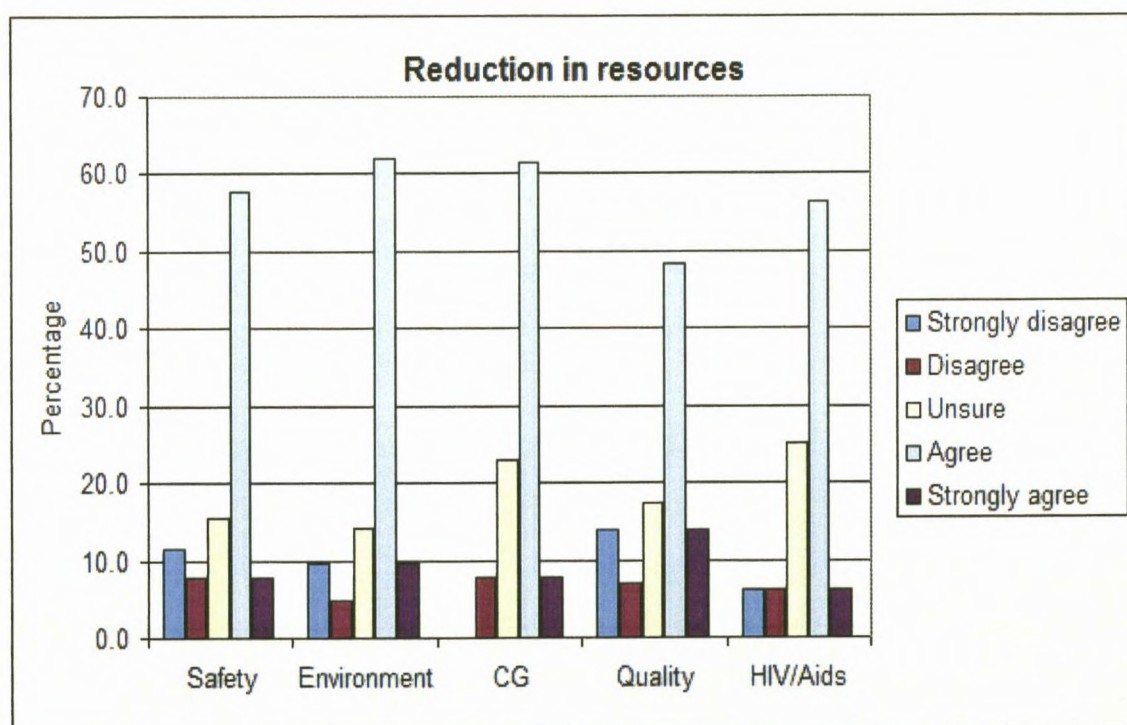


Figure 21: Reduction of resources with the SECQA model

From the figure above a combination of "Agree" and "Strongly Agree" shows that approximately : 66 % for safety, 73 % for environment and quality and 72 % for HIV/Aids, of the respondents are of the opinion that the implementation of the new model would result in the reduction of resources. The Cronbach's Alpha Index of Reliability scored a value of 0,997 showing that the results obtained from this analysis can be considered reliable. The result 0,768 indicates that there is a strong correlation at a confidence level of 0,01 between the reduction of resources with the implementation of the SECQA model. There was a lack of response to corporate practice. With such confidence presented by the respondents above, it is hoped that the reduction of resources can provide a convincing motivation to senior management to accept the SECQA model.

### 5.14 Section 2 Question 3 : The management systems/codes of practices selected for the SECQA model are beneficial to the organisation?

This question was included to determine whether the respondents would find the model beneficial.

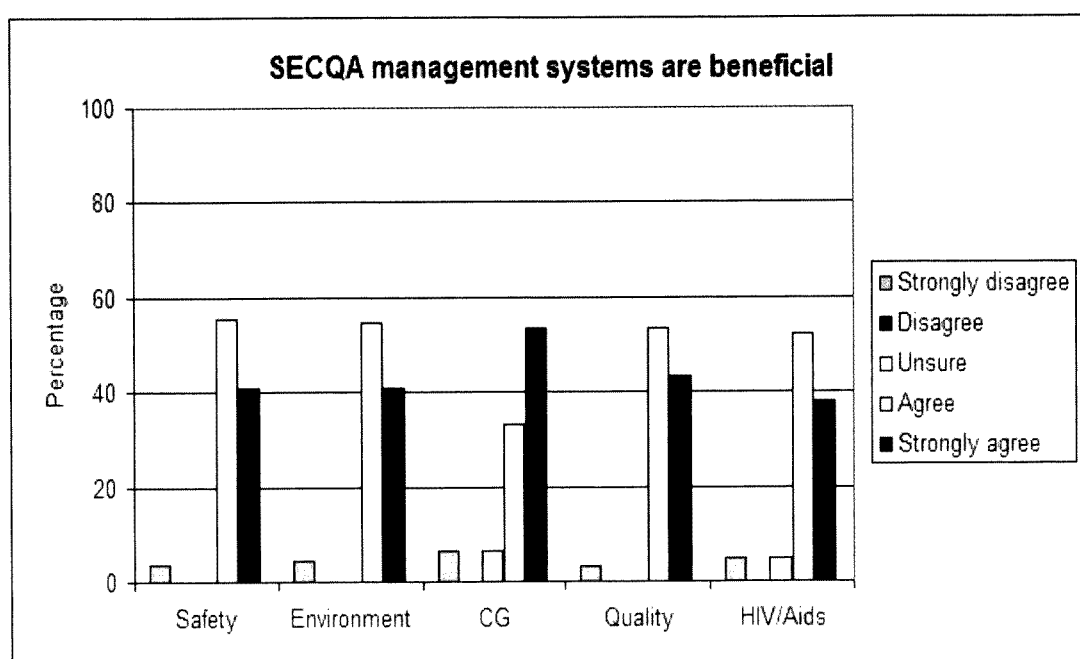


Figure 22: Is the SECQA model beneficial

From the figure above a combination of “Agree” and “Strongly Agree” shows that there is an approximately: 97 % for safety, 98 % for the environment, 87 % for corporate governance, 100% for quality and 93 % for HIV/Aids, agreement that the SECQA management systems are more beneficial than the existing systems. The Cronbach’s Alpha Index of Reliability scored a value of 0,938 showing that the results obtained from this analysis can be considered reliable.

The high scores above are an indication of the suitability of the management systems included in the model. The suitability of the model can be supported statistically by the table presented below. These findings are commensurate with the perceived advantages of the model presented in section 5.16.1.

The following table demonstrates the view of the respondents to the appropriateness of the management systems selected for this study.

| Management system    | Correlation |
|----------------------|-------------|
| Safety               | 784         |
| Environment          | 696         |
| Corporate Governance | 968         |
| Quality              | 597         |
| HIV/Aids             | 891         |

Table 7: The management systems included in the SECQA model were appropriate

The correlations above are significant at the level 0,01. The results reveal that respondents were of the view that the management systems included in the SECQA model were appropriate.



#### 5.15 Section 2 Question 4: Is the proposed model better than current practice in your organisation?

This question was posed to determine whether the respondents were of the view that the model was better than current practice.

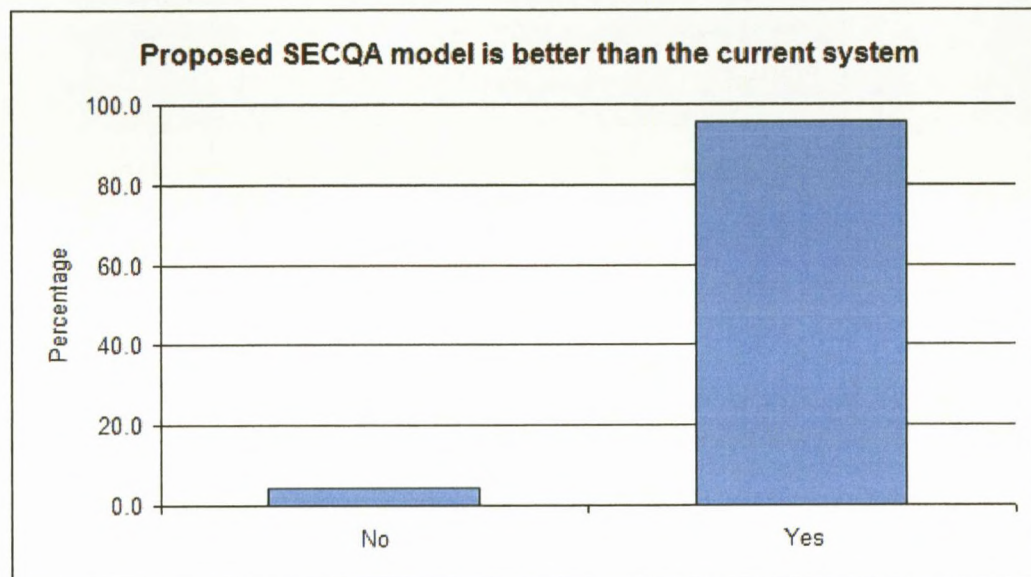


Figure 23: Is the SECQA model better than current practice

The figure above indicates that 97% of the respondents (29 respondents) believe that the SECQA model is a better model than the existing ones. One percent of the respondents (1 respondent) indicated that the proposed model was not better than current practice.

The Cronbach's Alpha Index of Reliability scored a value of 0,979 showing that the results obtained from this analysis can be considered reliable. In terms of management systems being of benefit, the SECQA model appears to be favoured more than individual systems. This can be verified by an average "p value" of 0,000 which indicates that there is a difference between the two methods and the advantages highlighted in section 5.16.1.



### **5.16 Section 2 Question 5: What in particular are the advantages/disadvantages of each system?**

This question was posed to determine if respondents found the management systems selected in the SECQA model appropriate. Respondents had to also indicate what they saw as the advantages and disadvantages of such a model.

#### **5.16.1 Advantages of systems used in the SECQA model**

Seven respondents did not comment on the advantages of the SECQA model. One respondent mentioned that the model could be useful because each management system presented serves as a strategic tool in sustaining an organisation. Another respondent was of the view that the management systems are appropriately selected because a deficiency of one system in the model is enhanced by the inclusion of another.

Three respondents envisaged a reduction in the amount of paperwork with use of the SECQA model. Another three respondents were of the view that the model was comprehensive. Four respondents stated that they believed the model will enable them to utilise their resources more efficiently.

Two respondents mentioned that continuous improvement would be encouraged by adhering to the model. Two other respondents mentioned that the model would encourage better employee participation in the activities of the organisation and improve teamwork. One respondent stated that adherence to the model would improve the sustainability of an organisation.

Five respondents were of the view that integration provided management with more control and individual systems. One respondent found the model is advantageous because areas of overlap between individual systems were consolidated and the status of the organisation could be assessed at a glance. Another respondent viewed the model as promoting better

working conditions for employees. One respondent mentioned that adherence to the model encouraged a safe and healthy working environment for all employees. One other respondent commended the inclusion of HIV/Aids and corporate governance in the model. One respondent mentioned that the inclusion of risk management in the model helps in good business decision-making to promote the sustainability of an organisation.

One respondent stated that the model would provide better employee participation. Another respondent was of the view that the model would reduce production time and increase the revenue of the organisation. Two respondents were of the view that adherence to the model would facilitate one person to report to senior management.

One respondent viewed the model as being advantageous because of its inclusion of HIV/Aids management. He/she stated that it will make future planning of the organisation more responsive to the actual trends of the country in terms of the virus. This respondent was also of the opinion that adherence to the model would encourage the development of skills of their employees. The responses above are consistent with the intention with which the SECQA model was designed.

The dominant thinking of the respondents was that the inclusion of corporate governance and HIV/Aids management systems with safety, quality and environmental management in the model can provide a consolidated view of the status of an organisation, it can be used on a strategic level as the deficiencies of any one system can be supported by the range selected. The reduction in the resources used and the reduction in the duplication of work, increased teamwork, improved skills development and productivity with the model also featured prominently.

#### **5.16.2 Disadvantages of the management systems used in the SECQA model**

Twenty- two respondents did not report on any disadvantages. One respondent was of the opinion that the ISO 9001 system was very labour intensive if it was not designed

appropriately.

Another respondent felt that due to the reduction of manpower, job losses could be experienced. One respondent mentioned that due to the constraints of production and the need to achieve production targets, employees do not have the time to learn how to maintain and operate management systems.

Another respondent complained that the implementation costs of the model could be high. One respondent expressed the view that training in the SECQA model may be difficult. A respondent stressed that punishment should be enforced for failure to adhere to the requirements of the systems. One respondent mentioned that due to the inclusion of five systems, the focus on individual systems may be lost thereby resulting in the loss of accreditation. This respondent was also of the opinion that the responsibility of activities may not be clearly defined and that the employee's workload may be increased.

In response to the views expressed by the respondents, each code of practice in the SECQA model is not prescriptive. It merely provides a guideline for adhering to the management system. The design of the management system is usually done by consultants or a member of the organisation. The design of the management system is dependent on the experience and knowledge of the latter. Hence, responses like tedious paperwork or poorly designed systems can perhaps be attributed to such lack of knowledge. Implementation costs of management systems are usually high. This is perhaps mostly due to the development of new documentation, increased training and acquiring of additional resources. However, an effectively designed management system will reap profits quickly, which will outweigh the implementation costs. Support for this contention can be found in Stevenson (2002:420), Gitlow, Oppenheim, Oppenheim and Levine (2005:27), AFP (2005), Khoza (2003), Sanne, Cheetam and Barker (2003) (A) (B) (C) and Akass (1994:3).

It is suggested that training programmes be designed to accommodate the competency level

of the employees. Generic training programmes may be designed for certain departments or competency level of employees and may not be suitable for others.

All five management systems in the SECQA model must be reviewed via internal audits. This process should be adequate to determine compliance to the management system. If not, it is suggested that the checklist used during this process be redesigned to be more rigorous to highlight potential findings. In addition “corrective action forums” and “management reviews” are suitable platforms to investigate possible shortcomings of the management system. The “responsibility” of employees to conduct activities or tasks is addressed in the integrated work instruction referred to in Chapter 4. In this way, all employees will be aware of their responsibilities.

#### **5.17 Section 2 Question 6: What aspects would you recommend for change?**

This question was used to elicit any changes the respondents would like to see in the SECQA model. Twenty-one respondents reported that they would not make any changes to the model. One respondent recommended that unnecessary documents be removed from the system and only value-adding activities be conducted. This study provides a number of business improvement tools which can be used to optimise activities and discard unnecessary steps thereby ensuring that only value-adding initiatives be maintained. Chapter 3 outlines each business improvement tool and how it can be used.

Three respondents urged that intensive training to maintain the model be implemented. Greef (2002:27-28), Holdsworth (2003:202), Oakland (2003:324) and Evans (2005:25) shared common beliefs on the benefits of training. To support their belief, this study designed documentation such as an integrated policy, integrated procedure, integrated work instruction and an integrated checklist to serve as fundamental documents to support management systems, as a means to assist employees in the development of an integrated management system.

One respondent recommended that flow charts and simple procedures be designed to facilitate the implementation and maintenance of the model. Another respondent was of the view that each management system be allocated a weighting. The respondent did not substantiate his/her view.

One respondent expressed the view that certification to the management systems used in the model be achieved from one audit. At this stage the SECQA model cannot be audited as a stand-alone model for certification purposes because it is still "research in progress". The implementation of the model will have to be tested. However, adherence to the model will make auditing and maintaining multiple systems separately much easier as it provides more control and consolidates practices such as documentation, auditing and training. It is hoped that as the benefits of the model are accepted, an integrated audit can be conducted to certify the model. This could perhaps provide an opportunity for future research.

One respondent was of the view that incentives be awarded to employees to increase their morale. The review of literature did not discuss incentives for employees. It was confined to improving profits of the organisation. The review, however, highlighted additional training and employee empowerment as a method to improve employee morale.

One respondent stated that managers should review and change their style of management to support integration such as the SECQA model. These findings are consistent with the view propounded by Karaszewski (2004:59) that management behaviour, commitment and style influences the employees' impressions on the implementation of management systems.

One respondent expressed the view that the more competent employees of the organisation be used to maintain the integrated management system. Another respondent urged that the integrated management system be implemented throughout the organisation. Holdsworth (2003:194) and Fresner and Engelhardt (2004:624) are in agreement about the synergy of quality, environment and safety management systems. Hence, in response to the findings

above perhaps integration of management systems should be implemented throughout the organisation as the activities associated with these management systems manifest themselves in all departments.

#### **5.18 Summary of the chapter**

An evaluation of the questionnaire presented some of the challenges faced by managers and employees with regard to implementation and maintaining multiple management systems. Statistical analysis of the responses were conducted using the SPSS package. Where possible the results were supported by using correlations and reliability indexes.

All organisations in this study adhered to a quality management system. Environment and safety management were popular to a lesser extent than quality. Only 50% of the organisations investigated adhered to corporate governance and HIV/Aids management systems. It was evident that at least one employee was responsible for maintaining each management system. Almost 75 % of the organisations had systems in place for longer than two and a half years.

For the most part respondents were satisfied with the resources allocated to their systems. However, fewer respondents indicated that this was not so with quality and HIV/Aids management systems.

The lack of suitable training and employee empowerment also featured with all the systems. Although some respondents mentioned that there was a lack of resources, most of the respondents felt that the management systems they used currently were efficient and beneficial to their organisations.

Other respondents expressed the view that their management systems were perceived to be beneficial because it provided a healthy and safe working environment for employees and communities living in the vicinity of the organisation and it helped organisations satisfy their

social responsibility while enabling them to produce good quality products at a profit.

There was a strong view from respondents in support of integrating safety, quality and environmental management systems. A lack of follow-up to incidents and poor implementation of systems were mentioned in almost all management systems. The study demonstrated how the proposed SECQA model was able to accommodate the challenges and difficulties expressed by the respondents above.

This chapter also investigated which business improvement tools were used to support management systems in current practice. Benchmarking, cause and effect diagrams and brainstorming appeared to be the most common tools used to support current management systems.

Although 11 respondents were of the view that the SECQA model would reduce the number of employees, 10 respondents did not agree with this view while 9 respondents were unsure. Approximately 70 % of the respondents mentioned that the model could reduce resources when compared to current practice. 95% percent of the respondents found that the management systems incorporated in the model were suitable to the present trends of the country. 97% percent of the respondents indicated that the SECQA model is better than current practice. For the most part, respondents did not recommend any changes to the model. However, they advised that extensive training for the implementation of the model be administered. There was a common view that the model could reduce the duplication of work and that it also facilitates the auditing process, encourages teamwork and skills development, provides for risk assessment and enhances continuous improvement.

A comparison of the views of the respondents from the preliminary work and the principal study share a number of experiences. A summary their views from the pilot study, interviews and principal study were:

- Safety, quality and environmental management systems were the most commonly

used.

- There was also consensus among the respondents that there was a lack of integration of the management systems.
- Other responses were that: there was a lack of commitment and support from senior management, there was limited awareness of corporate governance practices, there was a lack of resources and suitable training to support the management systems.
- Respondents also shared that they failed to see the overlap between safety, quality and environmental management.
- All respondents reported that their management systems were operating with a “fair” to “good” efficiency.

The respondents from the interview and the pilot study concurred that safety management systems were ambiguous and that they had great difficulty in understanding explicitly what was required of them. The respondent from the service organisation in the preliminary work and the respondents from the main study were in agreement that there was a lack of follow-up investigations to complaints or incidents.

The findings of the principal study confirmed the inadequacies and challenges revealed by the preliminary work. It also established the need for integration of management systems. The final chapter will provide conclusions and recommendations derived from this study. It will also reflect on future research relating to integrated management systems.



## CHAPTER 6

### CONCLUSIONS AND RECOMMENDATIONS

“Teamwork is sorely needed throughout the company. Teamwork requires one to compensate with his strength someone else’s weakness, for everyone to sharpen other’s wits and questions.”

W.E Deming (Foster, 2001:323)

## **6. In closing the study**

This chapter will discuss the conclusions and recommendations under the three broad sections represented in this study, viz., review of related literature, the design of the SECQA model and the principal study. It will highlight the way forward for industry in terms of integration of pertinent management systems and business improvement with a view to world-class manufacturing. Possible future research will also be presented.

In this highly competitive world, the progression from single function technology to multi-function technology has become a way of life. The essence behind the integration of multi-functional tasks, is to simplify daily operations with a view to free more time to focus on value-adding activities. To this end, the study devised a simple strategy by defining the suitable management systems for integration, acquiring appropriate business improvement tools and developing an integrated model to support them.

A review of related literature and an empirical study was conducted to determine the most commonly used management systems implemented by organisations and the challenges experienced by managers and employees when they were operating multiple systems simultaneously.

### **6.1 Review of related literature**

A sub-objective of this study was to review related literature to establish the most commonly used management systems and the challenges associated with their operation. The following conclusions can be drawn from the review of related literature.

From this review it was found that many organisations comply with some form of management system. These systems may be designed specifically for an organisation or are provided by an international standard organisation such as ISO. It was also apparent that adherence to these systems was due to legislation, the desire to be included in a particular supplier-chain or the need for business improvement.

The benefits of adhering to these systems which emerged were: a safe and healthy working environment for employees and communities residing in the vicinity of the organisation, motivated staff, customer confidence in the product, environmental preservation and increased profit and organisational sustainability. The benefit in terms of the requirement "Continuous Improvement" was highlighted in the review. It is important that continuous improvement was encouraged by the respondents in respect of all management systems in this study.

During the operation of these systems a number of challenges experienced by employees managing them were presented. Some of the challenges found were: changing customer needs, lack of resources, maintaining competitive advantage, lack of training, duplication of work and lack of management commitment.

The value of suitable training in respect of management systems was also evident from the review of related literature. Similarly Karaszewski (2004:63), Greef (2002) and Wilkinson and Dale (1995:95) show that training is vital to supporting management systems. This review established that a structured approach to managing these systems is imperative to achieve high levels of efficiency.

It can also be concluded from the review of literature that safety, environment and quality management systems were found to be the most commonly used in business presently. Organisations complying with safety, environment and quality management systems found that due to the overlap of requirements of each of these management systems it was practical to integrate them rather than operate them separately. In addition, these investigations showed that managing multiple management systems imposed boundaries and limited corrective action and continuous improvement initiatives. Fresner and Engelhardt (2004:624) came to the same findings in their research. Hence, it was concluded that leading organisations found it suitable to integrate health and safety, quality and environmental management systems.

The review of related literature also concluded that each management system is designed to achieve a particular function. Therefore careful selection and integration of specific management systems are desirable in attaining a holistic approach to business. These conclusions are commensurate with that of Rajendra and Barratt (2003:1-5) and is cited in Chapter 4.

The need for good governance, sound leadership and ethical conduct emerged strongly in this review. Further it has also revealed the importance of HIV/Aids management in helping organisations increase the life-span of their workforce and to reduce absenteeism. Hence, to suit the current climate in business, this research concluded that it was suitable to include corporate governance and an HIV/Aids management system in the integration process.

## **6.2 Model development**

The information presented above presented the merits of complying with corporate governance and HIV/Aids management systems. In view of this a mechanism to include these two additional systems was researched.

Models were found to provide a systematic approach to solving and increasing the understanding of a problem. This contention is supported by Stevenson (2002:13), referred to in Chapter 4. The Process Approach as illustrated in ISO 9001:2000 code of practice was found to form a suitable platform to incorporate safety, corporate governance, quality, HIV/Aids and environmental management. The use of the Process Approach was consistent with the findings of Wilkinson and Dale (2001:318) in Chapter 4. In view of this, the SECQA model was developed to include safety, corporate governance, quality, HIV/Aids and environmental management systems. The model illustrated the overlap between the requirements of the individual systems. It went further to reveal how the requirements from the individual systems could be integrated into the SECQA model without duplication of work.

A set of documents such as an integrated policy, an integrated procedure, an integrated work-instruction and an integrated checklist together with business improvement tools such as Gap Analysis, Quality Function Deployment, Benchmarking, Scenario Analysis and Continuous Improvement was introduced as supporting structures for organisations hoping to implement the SECQA model. These tools were selected to streamline the operations of an organisation to support management systems to ensure that only value-adding initiatives were pursued. The use of these tools is consistent with the views of Bhuiyan and Alam (2004:10) referred to in Chapter 4. Hence, it was concluded that the use of business improvement tools is advantageous because it makes more time available for managers and employees to concentrate on core activities and to develop strategic thinking. The importance of making maximum time available to focus on core competence was reiterated by Shukla (1994) and is demonstrated in Chapter 2.

### **6.3 The preliminary work and the principal study**

Current practice and its advantages and disadvantages, the concept of integration, the applicability of the SECQA model and the advantages and disadvantages were tested in a pilot study and a principal study. The pilot study and the principal study were in the form of a questionnaire. The questionnaire was designed in two sections. The first section was used to elicit information on current practice (pre-model) and the second section was used to determine the perceptions of organisations if they used the model (post-model).

Preliminary work was in the form of a pilot study and interviews with key role players from different areas in the country were conducted to establish first hand the trends of current practice. The pilot study consisted of two manufacturing industries. It can be concluded from the pilot study that there was a lack of resources, lack of training and understanding of management systems. Managers also recommended the integration of management systems in an attempt to reduce duplication of work, to make the auditing process easier, to facilitate training and to aid in problem-detection and resolution. Other conclusions from the pilot

study were that the integrated management systems proposed in the study were applicable and they addressed the challenges of employees. However, there was a need to investigate the usefulness of the SECQA model on a broader scale.

Similar conclusions mentioned in the pilot study were found during the interviews with key role players. It is worth noting that these conclusions are consistent with some of those mentioned in the literature review such as: lack of resources, lack of training and understanding systems.

The principal study focused on investigating current practice, the most commonly used management systems, the challenges associated with operating them and the business improvement tools used to support them.

#### **6.3.1 Pre the SECQA model**

This section of the questionnaire was used to determine the current practice of organisations. The following conclusions can be drawn from this section regarding the:

##### **6.3.1.1 Management systems/codes of practice currently used by organisations**

- The majority of the organisations in the study adhered to safety and environmental management systems but to a lesser extent than quality management. Corporate governance and HIV/Aids management systems did not feature as prominently as safety, environment and quality management.

##### **6.3.1.2 Number of employees reporting to senior management**

- At least one employee was designated to manage each system. These may be an over allocation of employees that report to management.

##### **6.3.1.3 Length of time management system was implemented**

- Most organisations had mature systems (>2 years) in place.

#### 6.3.1.4 Efficiency and benefits of current practice.

- The majority of respondents felt that their management systems were beneficial and efficient.

#### 6.3.1.5 Adequacy of resources allocated to each management system

- It can also be concluded that respondents were satisfied with the resources allocated to safety, environment and corporate governance systems. However, they were dissatisfied with those allocated to HIV/Aids and quality management.
- There was agreement from all respondents that there was a lack of training and employee empowerment with all systems.

#### 6.3.1.6 Advantages of the management systems

- It was found that respondents also mentioned that there was a lack of follow-up investigations to incidents and poor implementation of existing systems.
- The inclusion of corporate governance and HIV/Aids management with safety, quality and environmental systems provided the organisation with a holistic perspective to management.

#### 6.3.1.7 Tools currently used

- Benchmarking, cause and effect diagrams and brainstorming emerged as the most common business improvement tools.

#### 6.3.1.8 Whether integration is useful when operating multiple management systems

- There was consensus among many of the respondents that the integration of safety, quality and environmental management systems must be encouraged.

From the conclusions above the following recommendations can be made:

- in the light of the significance of corporate governance and HIV/Aids, in terms of the literature review, more organisations are encouraged to implement such management

- systems as part of their strategy for sustainability
- organisations should aim to integrate management systems in an attempt to reduce the number of employees operating systems, to reduce the resources allocated to manage them and to improve their efficiency

The next section presents the perceptions of the respondents on the SECQA model. The SECQA model was presented and explained to the respondents. This model incorporated the three commonly used management systems, viz., safety, quality and environment and recommended two other systems such as corporate governance and HIV/Aids.

### **6.3.2 Post the SECQA model**

The following conclusions can be drawn regarding:

#### **6.3.2.1 The effect of the number of people assigned to report to senior management**

- Most respondents agreed that the SECQA model would reduce the number of people reporting to senior management.

#### **6.3.2.2 The effect of resources**

- Some respondents concluded that the SECQA model would reduce resources, fewer respondents did not believe the same and some respondents were unsure.

#### **6.3.2.3 Whether management systems selected for the SECQA model are beneficial**

- The majority of the respondents found that the management systems incorporated in the model are beneficial for the organisation and are suitable to the trends in the country.

#### **6.3.2.4 The advantages/disadvantages of the model**

- The advantages of the SECQA model as identified by the respondents included: reduction in the duplication of work, facilitation of the auditing



process, encouragement of teamwork, skills development, risk assessment and continuous improvement.

- A disadvantage is that the organisations under investigation may not have had suitable platforms to support integrated management systems, hence they experienced problems. These structures will have to be put in place before implementing the SECQA model.

#### 6.3.2.5 Aspects recommended for change

- As none of the respondents recommended any changes to the SECQA model it may be inferred that they have confidence in the existing format.

#### 6.3.2.6 Whether the proposed SECQA model was better than current practice

- The respondents concluded that there is a difference between current practice and situation when the proposed model was implemented
- The majority of the respondents found that the SECQA model was better than current practice

Hence, the study supports the implementation of the SECQA model.

From the conclusions above, the following general recommendations in terms of integrating management systems can be drawn:

- Organisations should perhaps take heed that induction programmes that are presented to employees before they are hired, may not necessarily be sufficient to highlight all the precautions required to prevent accidents such as those in Sasol, Caltex and Bhopal, from occurring. In view of this, rigorous training should be provided especially in areas where the threat to life is imminent. It is encouraged that all successes of the training programmes be documented for reference purposes and regular communication with external and internal stakeholders be urged. In this way any gaps in service delivery or product requirements can be highlighted and addressed.

- Employees should be informed of the potential impact of their not adhering to the precautions and the rules laid down by the organisation.
- It is suggested that if expertise is not available within the organisation to design management systems, suitable consultants can be employed. Perhaps organisations should ensure that these consultants designing the management systems for compliance purposes are experienced in their area of expertise. In addition the consultants should have sufficient experience in designing management systems which would enable them to design the processes to add value to the organisation. It could also be useful if the organisation verified the credibility and track record of the consultant in previous tasks undertaken. The efficiency of the latter can act as an indication of the ability of the consultant.
- It was concluded that respondents also faced many limitations because of a lack of resources, inappropriate suppliers, poor corrective action and a lack of training which probably stemmed from the failure of management to accept the benefits of operating effective management systems. This could perhaps contribute to the loss of productivity and loss of profit. To prevent such misunderstandings, it is recommended that management should perhaps ensure that contracts be drawn, accepted and signed between potential employees and the organisation before commencement of employment.
- Where there is inadequate response to incidents within the organisation as a result of not conforming with management systems, stringent corrective action could also reduce and eliminate the production of non-conforming products and possibly serve as a means of dismissing any claims against the organisation. Any value below 100% conforming products allows employees to manufacture defects or perform below perfection. This promotes a culture which moves away from excellence.

#### **6.4 The Way forward**

Although corporate governance and HIV/Aids management were adopted informally by many organisations, related literature showed the urgency of including them in the traditional integrated Safety, Quality and Environmental management systems. It is hoped that this research provided a breakthrough of new material with the SECQA model and it is hoped that it will take the concept of integrated management one step further because it provides a system which advocates similar requirements to the South African Excellence Model (SAEM). It would be encouraging to see organisations wishing to achieve SAEM status using the SECQA model as a method for preparation for the above accreditation process.

Although there is a natural progression of organisations to move from integration of activities to optimising them, and recently, innovating new products and services, there have been no known studies proposing corporate governance and HIV/Aids management with Safety, Quality and Environmental management systems and a model of this nature is applicable locally, nationally and even internationally.

#### **6.5 Future Research**

As organisations progress towards optimisation, achieving business excellence becomes the next focal point as a key factor to winning new customer contracts. Many American organisations have sought to achieve accolades in business excellence. Every effort was made by these organisations to achieve the Malcolm Baldrige certification.

It is hoped that the SECQA model be implemented and tested within an organisation as part of further research studies to determine its full potential. The model is versatile so that any management system specific to an organisation can be included in the model, for example, the HACCP management system, which is specific to the food industry.

The SECQA model provides a comprehensive model in terms of the range of management systems selected to provide a holistic integrated management system to promote the

sustainability, productivity and competitiveness of an organisation. All the respondents were of the opinion that the integration of these management systems was the most amicable solution to their challenges. Finally, it is hoped that managers will use the SECQA model proposed in this study as a springboard to prepare organisations for sustained quality improvement and business excellence accreditation.

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P. Shenge (Foster, 2001:387)

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**Interviews were conducted with the following interviewees:**

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- Naidoo, J. (2005). Interviewed by Singh, S. Roodepoort Shopping Centre, Roodepoort, 29 April 2005, 19h00.
- Ramdass, K. (2005). Interviewed by Singh, S. Unisa Office, Roodepoort, 28 April 2005, 15h00.

Appendix 1:

Covering Letter

20 April 2005

\_\_\_\_\_

\_\_\_\_\_

Sir/Madam

Research Questionnaire

I am currently conducting research as part of my doctoral studies on integrated management systems and the challenges they impose on organisations. A number of organisation in the Kwa- Zulu Natal region form part of my study.

I would appreciate if you would kindly complete the questionnaire. The questionnaire would take approximately twenty minutes to complete. I will be present to clarify any problems you may experience during this session. You have the opportunity to request a summary of the results of the study, if so desired.

Confidentiality of the information will be respected.

Thank you for your co-operation.

Your sincerely

\_\_\_\_\_

Shalini Singh  
Tele: 031-3085159 (O)

Appendix 2:

Questionnaire

Questionnaire  
An Integrative Approach to Quality

Date: \_\_\_\_\_ Designation: \_\_\_\_\_ Organisation: \_\_\_\_\_

**Section 1: Current practice**

1. State the management systems/codes of practice currently used by your organisation.

|                      | Yes | No | Unsure |
|----------------------|-----|----|--------|
| Safety               |     |    |        |
| Environment          |     |    |        |
| Corporate Governance |     |    |        |
| Quality              |     |    |        |
| HIV/AIDS             |     |    |        |

2. Indicate the number of people assigned to report to senior management on these management systems/codes of practice.

|                      | 1 | 2 | 3 | 4 | 5 | >5 |
|----------------------|---|---|---|---|---|----|
| Safety               |   |   |   |   |   |    |
| Environment          |   |   |   |   |   |    |
| Corporate Governance |   |   |   |   |   |    |
| Quality              |   |   |   |   |   |    |
| HIV/AIDS             |   |   |   |   |   |    |

3. What length of time has the management system/code of practice been implemented in your organisation?

|                      | < 1yr | 1-<2yr | 2-<5yr | ≥ 5yr |
|----------------------|-------|--------|--------|-------|
| Safety               |       |        |        |       |
| Environment          |       |        |        |       |
| Corporate Governance |       |        |        |       |
| Quality              |       |        |        |       |
| HIV/AIDS             |       |        |        |       |

Rate questions 4, 5 and 6.

4. The current management system/code of practice in place is efficient.

|                      | Strongly Disagree | Disagree | Unsure | Agree | Strongly Agree |
|----------------------|-------------------|----------|--------|-------|----------------|
| Safety               |                   |          |        |       |                |
| Environment          |                   |          |        |       |                |
| Corporate Governance |                   |          |        |       |                |
| Quality              |                   |          |        |       |                |
| HIV/AIDS             |                   |          |        |       |                |

5. Resources allocated to manage each management system/code of practice are adequate.

|                      | Strongly Disagree | Disagree | Unsure | Agree | Strongly Agree |
|----------------------|-------------------|----------|--------|-------|----------------|
| Safety               |                   |          |        |       |                |
| Environment          |                   |          |        |       |                |
| Corporate Governance |                   |          |        |       |                |
| Quality              |                   |          |        |       |                |
| HIV/AIDS             |                   |          |        |       |                |

6. The management system/code of practice is beneficial to the organisation.

|                      | Strongly Disagree | Disagree | Unsure | Agree | Strongly Agree |
|----------------------|-------------------|----------|--------|-------|----------------|
| Safety               |                   |          |        |       |                |
| Environment          |                   |          |        |       |                |
| Corporate Governance |                   |          |        |       |                |
| Quality              |                   |          |        |       |                |
| HIV/AIDS             |                   |          |        |       |                |

7. What in particular are the advantages/disadvantages of each system ?

|                      | Advantages | Disadvantages |
|----------------------|------------|---------------|
| Safety               |            |               |
| Corporate Governance |            |               |
| Environment          |            |               |
| Quality              |            |               |
| HIV/AIDS             |            |               |

8. What aspects would you recommend for change ?

|                      | Current Practice | Recommended Change |
|----------------------|------------------|--------------------|
| Safety               |                  |                    |
| Corporate Governance |                  |                    |
| Environment          |                  |                    |
| Quality              |                  |                    |
| HIV/AIDS             |                  |                    |



9. What tools do you currently use to support management systems in your organisation?

|                   | Safety | Environment | Corporate Governance | Quality | HIV/AIDS |
|-------------------|--------|-------------|----------------------|---------|----------|
| "SWOT analysis"   |        |             |                      |         |          |
| "5W2H"            |        |             |                      |         |          |
| "5 Why"           |        |             |                      |         |          |
| QFD               |        |             |                      |         |          |
| Gap analysis      |        |             |                      |         |          |
| Benchmarking      |        |             |                      |         |          |
| Scenario analysis |        |             |                      |         |          |
| PDCA cycle        |        |             |                      |         |          |
| Brainstorming     |        |             |                      |         |          |
| Cause-Effect      |        |             |                      |         |          |
| Pareto            |        |             |                      |         |          |
| COQ               |        |             |                      |         |          |
| Other             |        |             |                      |         |          |

10. In addition, which tools do you think are necessary to support management systems in your organisation ?

|  | Safety | Environment | Corporate Governance | Quality | HIV/AIDS |
|--|--------|-------------|----------------------|---------|----------|
|  |        |             |                      |         |          |
|  |        |             |                      |         |          |
|  |        |             |                      |         |          |
|  |        |             |                      |         |          |

11. Do you think streamlined/integrated documentation would aid operating multiple management systems?

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## Section 2: Post implementation of the SECQA Model (perception)

1. (a) Will the number of people assigned to report to senior management on these management systems/codes of practice decrease ?

|             | Yes | No | Unsure |
|-------------|-----|----|--------|
| SECQA model |     |    |        |

- (b) If your answer above is yes, how many people would be assigned to operate the SECQA model ?

|                      | 1 | 2 | 3 | 4 | 5 | >5 |
|----------------------|---|---|---|---|---|----|
| Safety               |   |   |   |   |   |    |
| Environment          |   |   |   |   |   |    |
| Corporate Governance |   |   |   |   |   |    |
| Quality              |   |   |   |   |   |    |
| HIV/AIDS             |   |   |   |   |   |    |

### Rate questions 2 and 3

2. The resources required to manage each management system/code of practice will reduce.

|                      | Strongly Disagree | Disagree | Unsure | Agree | Strongly Agree |
|----------------------|-------------------|----------|--------|-------|----------------|
| Safety               |                   |          |        |       |                |
| Environment          |                   |          |        |       |                |
| Corporate Governance |                   |          |        |       |                |
| Quality              |                   |          |        |       |                |
| HIV/AIDS             |                   |          |        |       |                |

3. The management systems/code of practices selected for the SECQA model are beneficial to the organisation ?

|                      | Strongly Disagree | Disagree | Unsure | Agree | Strongly Agree |
|----------------------|-------------------|----------|--------|-------|----------------|
| Safety               |                   |          |        |       |                |
| Environment          |                   |          |        |       |                |
| Corporate Governance |                   |          |        |       |                |
| Quality              |                   |          |        |       |                |
| HIV/AIDS             |                   |          |        |       |                |

4. Is the proposed model better than current practice in your organisation ?

|             | Yes | No | Unsure |
|-------------|-----|----|--------|
| SECQA model |     |    |        |

5. What in particular are the advantages/disadvantages of each system ?

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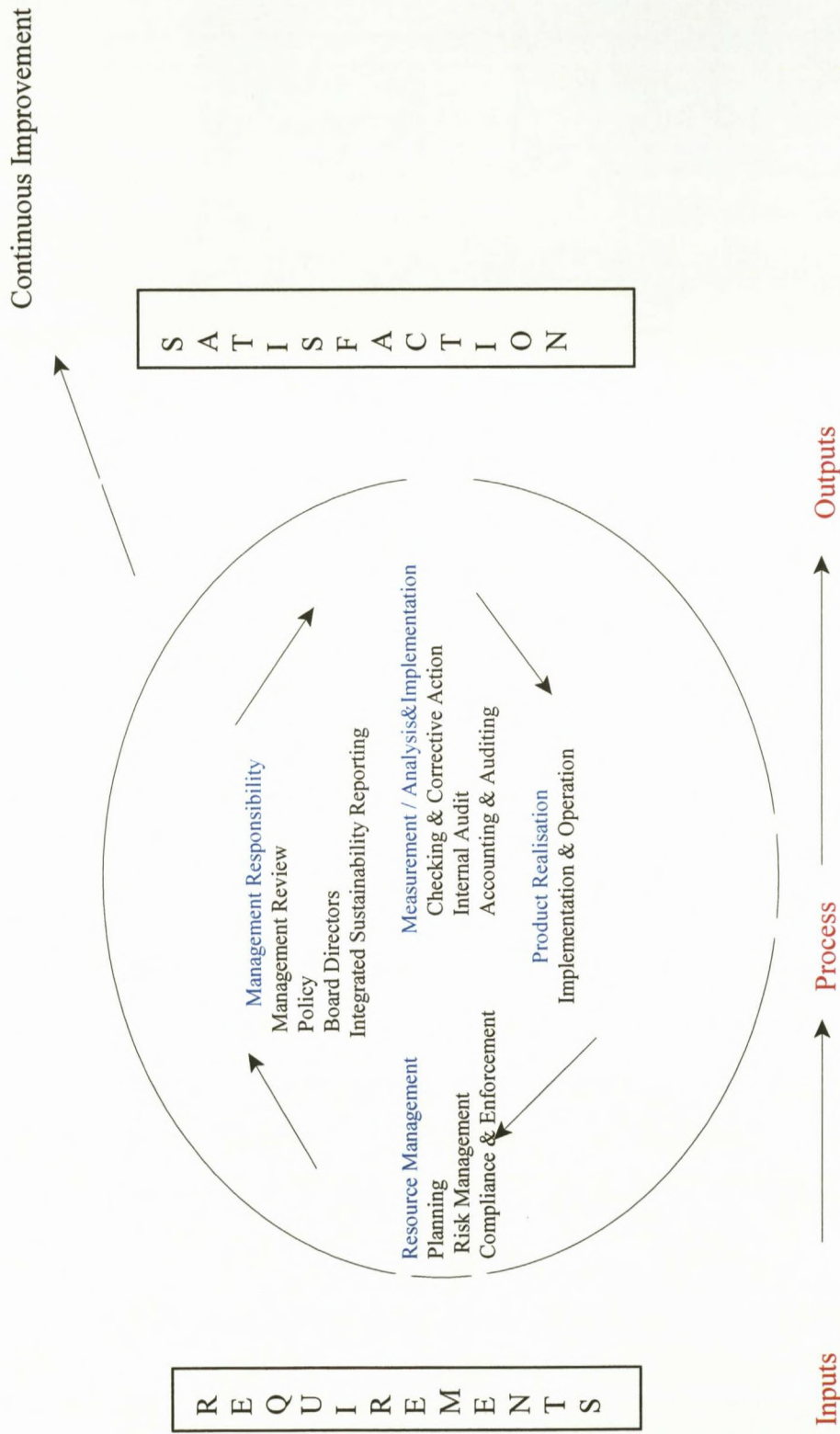
6. What aspects would you recommend for change ?

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The Safety (OHSAS 18001), Environment (ISO 14001), Corporate Governance (King II Report) Quality (ISO 9001:2000), AIDS (AMS 16001) Management Systems (SECQA Model).



The SECQA Model  
“Thanks very much for the co-operation”

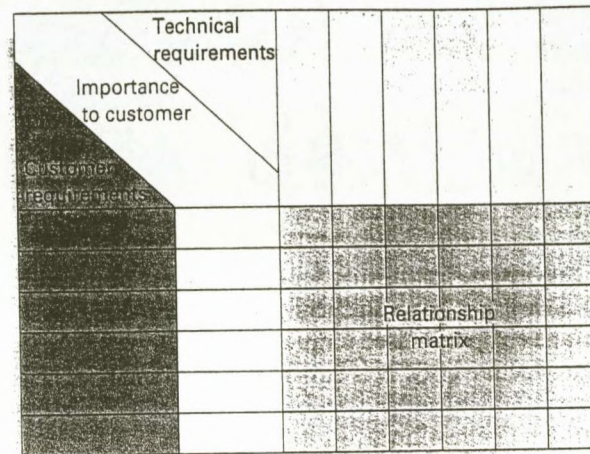
## Appendix 3:

### Quality Function Deployment (QFD)



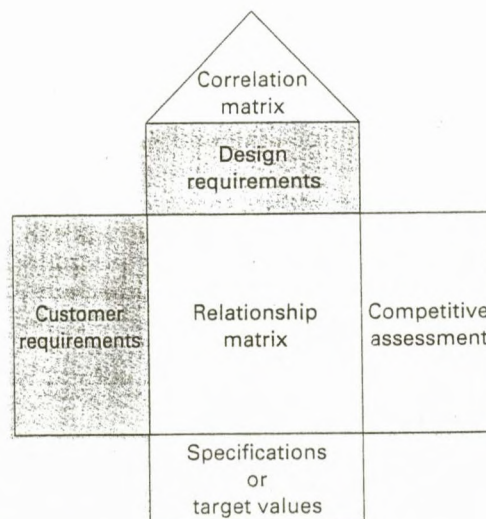
### QFD- "The House of Quality"

The structure of QFD follows a main matrix which represents "what must be done" to the organisations technical requirements which shows "how it is done". This is represented in the figure below.



The QFD Matrix

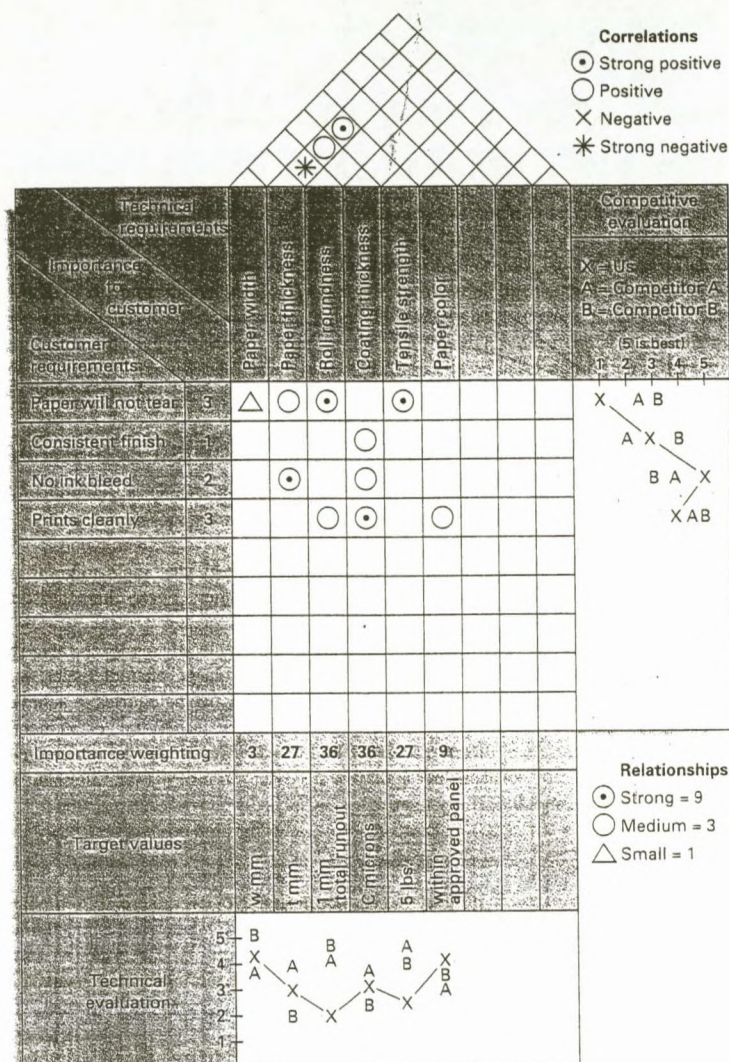
Other features to the QFD structure are weighting and competitor evaluations. A correlation matrix is used to show the technical requirements. This part of the matrix shows when the technical requirements are in conflict. The figure below illustrates the sections of the QFD structure Stevenson (2002:172-174).



The House of Quality



The example below represents a printer (customer) and a paper manufacturer (supplier) Stevenson (2002:172-174).



## The House of Quality

A brief explanation of the QFD structure is listed below:

- The customer requirements are shown on the left side of the figure.
- The technical requirements are listed vertically at the top of the figure.

- Their relationship is shown in the centre of the figure
- Each relationship and correlation is denoted by a symbol which has a numerical value. Eg. A circle with a dot inside indicates strong positive relationship, presenting the most important technical requirement to the customer.
- The “importance to the customer” column carries ratings of its own. For example three represents “most important”.
- The importance values and the correlation strengths are used to determine which areas the designers should focus their attention on.
- From the diagram, there is a strong negative correlation between “paper thickness” and the “roll roundness”. This information is used by the designers. They would try to find ways of overcoming difficulties or use trade-offs.
- A competitive evaluation is done between the performance on customer requirements of two competitors and the paper supplier. This is represented on the right side of the figure. The example shows that organisation B is the worst performing on the first customer requirement and best on the third customer requirement.
- The base of the diagram represents importance weightings, target values and technical evaluations. The target values usually represent the specifications of a product. The technical evaluations are interpreted similarly to the competitor evaluation above. The importance weightings are represented by the sum of the values assigned to the relationships.
- The weights and target values represent the desired results. The QFD tool can be very useful, especially when the process above has been understood.

Stevenson (2002:172-174)



## Appendix 4:

### Raw Data

## Reliability

**Case Processing Summary**

|       |                       | N  | %     |
|-------|-----------------------|----|-------|
| Cases | Valid                 | 13 | 43.3  |
|       | Excluded <sup>a</sup> | 17 | 56.7  |
|       | Total                 | 30 | 100.0 |

a. Listwise deletion based on all variables in the procedure.

**Reliability Statistics**

|                  |            |
|------------------|------------|
| Cronbach's Alpha | N of Items |
| .578             | 5          |

## Reliability

**Case Processing Summary**

|       |                       | N  | %     |
|-------|-----------------------|----|-------|
| Cases | Valid                 | 2  | 6.7   |
|       | Excluded <sup>a</sup> | 28 | 93.3  |
|       | Total                 | 30 | 100.0 |

a. Listwise deletion based on all variables in the procedure.

**Scale Statistics**

|       |          |                |            |
|-------|----------|----------------|------------|
| Mean  | Variance | Std. Deviation | N of Items |
| 30.00 | .000     | .000           | 5          |

## Reliability

**Case Processing Summary**

|       |                       | N  | %     |
|-------|-----------------------|----|-------|
| Cases | Valid                 | 2  | 6.7   |
|       | Excluded <sup>a</sup> | 28 | 93.3  |
|       | Total                 | 30 | 100.0 |

a. Listwise deletion based on all variables in the procedure.

**Scale Statistics**

| Mean  | Variance | Std. Deviation | N of Items |
|-------|----------|----------------|------------|
| 20.00 | .000     | .000           | 5          |

## Reliability

**Case Processing Summary**

|       |                       | N  | %     |
|-------|-----------------------|----|-------|
| Cases | Valid                 | 7  | 23.3  |
|       | Excluded <sup>a</sup> | 23 | 76.7  |
|       | Total                 | 30 | 100.0 |

a. Listwise deletion based on all variables in the procedure.

**Reliability Statistics**

| Cronbach's Alpha | N of Items |
|------------------|------------|
| .643             | 5          |

## Reliability

Case Processing Summary

|       |                       | N  | %     |
|-------|-----------------------|----|-------|
| Cases | Valid                 | 8  | 26.7  |
|       | Excluded <sup>a</sup> | 22 | 73.3  |
|       | Total                 | 30 | 100.0 |

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

|                  |            |
|------------------|------------|
| Cronbach's Alpha | N of Items |
| .514             | 5          |

## Reliability

Case Processing Summary

|       |                       | N  | %     |
|-------|-----------------------|----|-------|
| Cases | Valid                 | 8  | 26.7  |
|       | Excluded <sup>a</sup> | 22 | 73.3  |
|       | Total                 | 30 | 100.0 |

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

|                  |            |
|------------------|------------|
| Cronbach's Alpha | N of Items |
| .514             | 5          |

## Reliability

**Case Processing Summary**

|       |                       | N  | %     |
|-------|-----------------------|----|-------|
| Cases | Valid                 | 8  | 26.7  |
|       | Excluded <sup>a</sup> | 22 | 73.3  |
|       | Total                 | 30 | 100.0 |

a. Listwise deletion based on all variables in the procedure.

**Reliability Statistics**

| Cronbach's Alpha | N of Items |
|------------------|------------|
| .718             | 5          |

## Reliability

**Case Processing Summary**

|       |                       | N  | %     |
|-------|-----------------------|----|-------|
| Cases | Valid                 | 3  | 10.0  |
|       | Excluded <sup>a</sup> | 27 | 90.0  |
|       | Total                 | 30 | 100.0 |

a. Listwise deletion based on all variables in the procedure.

**Reliability Statistics**

| Cronbach's Alpha | N of Items |
|------------------|------------|
| .997             | 5          |

## Reliability

**Case Processing Summary**

|       |                       | N  | %     |
|-------|-----------------------|----|-------|
| Cases | Valid                 | 11 | 36.7  |
|       | Excluded <sup>a</sup> | 19 | 63.3  |
|       | Total                 | 30 | 100.0 |

a. Listwise deletion based on all variables in the procedure.

**Reliability Statistics**

| Cronbach's Alpha | N of Items |
|------------------|------------|
| .938             | 5          |

## Reliability

**Case Processing Summary**

|       |                       | N  | %     |
|-------|-----------------------|----|-------|
| Cases | Valid                 | 14 | 46.7  |
|       | Excluded <sup>a</sup> | 16 | 53.3  |
|       | Total                 | 30 | 100.0 |

a. Listwise deletion based on all variables in the procedure.

**Reliability Statistics**

| Cronbach's Alpha | N of Items |
|------------------|------------|
| .979             | 5          |

## Frequencies

### Frequency Table

**Management system being used - Safety**

|         |        | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|--------|-----------|---------|---------------|--------------------|
| Valid   | No     | 2         | 6.7     | 6.9           | 6.9                |
|         | Yes    | 27        | 90.0    | 93.1          | 100.0              |
|         | Total  | 29        | 96.7    | 100.0         |                    |
| Missing | System | 1         | 3.3     |               |                    |
| Total   |        | 30        | 100.0   |               |                    |

**Management system being used - Environment**

|         |        | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|--------|-----------|---------|---------------|--------------------|
| Valid   | No     | 6         | 20.0    | 24.0          | 24.0               |
|         | Yes    | 19        | 63.3    | 76.0          | 100.0              |
|         | Total  | 25        | 83.3    | 100.0         |                    |
| Missing | System | 5         | 16.7    |               |                    |
| Total   |        | 30        | 100.0   |               |                    |

**Management system being used - Corporate Governance**

|         |        | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|--------|-----------|---------|---------------|--------------------|
| Valid   | No     | 9         | 30.0    | 50.0          | 50.0               |
|         | Yes    | 9         | 30.0    | 50.0          | 100.0              |
|         | Total  | 18        | 60.0    | 100.0         |                    |
| Missing | System | 12        | 40.0    |               |                    |
| Total   |        | 30        | 100.0   |               |                    |

**Management system being used - Quality**

|       |     | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------|-----|-----------|---------|---------------|--------------------|
| Valid | Yes | 30        | 100.0   | 100.0         | 100.0              |

**Management system being used - HIV/Aids**

|         |        | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|--------|-----------|---------|---------------|--------------------|
| Valid   | No     | 10        | 33.3    | 50.0          | 50.0               |
|         | Yes    | 10        | 33.3    | 50.0          | 100.0              |
|         | Total  | 20        | 66.7    | 100.0         |                    |
| Missing | System | 10        | 33.3    |               |                    |
| Total   |        | 30        | 100.0   |               |                    |

**Number of people reporting to top management on these systems - Safety**

|         |        | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|--------|-----------|---------|---------------|--------------------|
| Valid   | 1      | 14        | 46.7    | 56.0          | 56.0               |
|         | 2      | 4         | 13.3    | 16.0          | 72.0               |
|         | 3      | 3         | 10.0    | 12.0          | 84.0               |
|         | 4      | 1         | 3.3     | 4.0           | 88.0               |
|         | >=6    | 3         | 10.0    | 12.0          | 100.0              |
|         | Total  | 25        | 83.3    | 100.0         |                    |
| Missing | System | 5         | 16.7    |               |                    |
| Total   |        | 30        | 100.0   |               |                    |

**Number of people reporting to top management on these systems -  
Environment**

|         |        | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|--------|-----------|---------|---------------|--------------------|
| Valid   | 1      | 10        | 33.3    | 52.6          | 52.6               |
|         | 2      | 2         | 6.7     | 10.5          | 63.2               |
|         | 3      | 3         | 10.0    | 15.8          | 78.9               |
|         | 5      | 1         | 3.3     | 5.3           | 84.2               |
|         | >=6    | 3         | 10.0    | 15.8          | 100.0              |
|         | Total  | 19        | 63.3    | 100.0         |                    |
| Missing | System | 11        | 36.7    |               |                    |
| Total   |        | 30        | 100.0   |               |                    |



**Number of people reporting to top management on these systems -  
Corporate Governance**

|         |        | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|--------|-----------|---------|---------------|--------------------|
| Valid   | 1      | 2         | 6.7     | 25.0          | 25.0               |
|         | 2      | 1         | 3.3     | 12.5          | 37.5               |
|         | 3      | 1         | 3.3     | 12.5          | 50.0               |
|         | >=6    | 4         | 13.3    | 50.0          | 100.0              |
|         | Total  | 8         | 26.7    | 100.0         |                    |
| Missing | System | 22        | 73.3    |               |                    |
| Total   |        | 30        | 100.0   |               |                    |

**Number of people reporting to top management on these systems - Quality**

|         |        | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|--------|-----------|---------|---------------|--------------------|
| Valid   | 1      | 9         | 30.0    | 31.0          | 31.0               |
|         | 2      | 5         | 16.7    | 17.2          | 48.3               |
|         | 3      | 4         | 13.3    | 13.8          | 62.1               |
|         | 4      | 1         | 3.3     | 3.4           | 65.5               |
|         | 5      | 2         | 6.7     | 6.9           | 72.4               |
|         | >=6    | 8         | 26.7    | 27.6          | 100.0              |
|         | Total  | 29        | 96.7    | 100.0         |                    |
| Missing | System | 1         | 3.3     |               |                    |
| Total   |        | 30        | 100.0   |               |                    |

**Number of people reporting to top management on these systems - HIV/Aids**

|         |        | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|--------|-----------|---------|---------------|--------------------|
| Valid   | 1      | 4         | 13.3    | 40.0          | 40.0               |
|         | 3      | 2         | 6.7     | 20.0          | 60.0               |
|         | >=6    | 4         | 13.3    | 40.0          | 100.0              |
|         | Total  | 10        | 33.3    | 100.0         |                    |
| Missing | System | 20        | 66.7    |               |                    |
| Total   |        | 30        | 100.0   |               |                    |

**Length of time that the system has been implemented - Safety**

|         |         | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|---------|-----------|---------|---------------|--------------------|
| Valid   | < 1     | 1         | 3.3     | 4.2           | 4.2                |
|         | 1 - < 2 | 4         | 13.3    | 16.7          | 20.8               |
|         | 2 - < 5 | 7         | 23.3    | 29.2          | 50.0               |
|         | >=5     | 12        | 40.0    | 50.0          | 100.0              |
|         | Total   | 24        | 80.0    | 100.0         |                    |
| Missing | System  | 6         | 20.0    |               |                    |
| Total   |         | 30        | 100.0   |               |                    |

**Length of time that the system has been implemented - Environment**

|         |         | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|---------|-----------|---------|---------------|--------------------|
| Valid   | < 1     | 2         | 6.7     | 11.1          | 11.1               |
|         | 1 - < 2 | 4         | 13.3    | 22.2          | 33.3               |
|         | 2 - < 5 | 4         | 13.3    | 22.2          | 55.6               |
|         | >=5     | 8         | 26.7    | 44.4          | 100.0              |
|         | Total   | 18        | 60.0    | 100.0         |                    |
| Missing | System  | 12        | 40.0    |               |                    |
| Total   |         | 30        | 100.0   |               |                    |

**Length of time that the system has been implemented - Corporate Governance**

|         |         | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|---------|-----------|---------|---------------|--------------------|
| Valid   | 1 - < 2 | 1         | 3.3     | 14.3          | 14.3               |
|         | 2 - < 5 | 1         | 3.3     | 14.3          | 28.6               |
|         | >=5     | 5         | 16.7    | 71.4          | 100.0              |
|         | Total   | 7         | 23.3    | 100.0         |                    |
| Missing | System  | 23        | 76.7    |               |                    |
| Total   |         | 30        | 100.0   |               |                    |

**Length of time that the system has been implemented - Quality**

|         |         | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|---------|-----------|---------|---------------|--------------------|
| Valid   | < 1     | 1         | 3.3     | 3.4           | 3.4                |
|         | 1 - < 2 | 4         | 13.3    | 13.8          | 17.2               |
|         | 2 - < 5 | 5         | 16.7    | 17.2          | 34.5               |
|         | >=5     | 19        | 63.3    | 65.5          | 100.0              |
|         | Total   | 29        | 96.7    | 100.0         |                    |
| Missing | System  | 1         | 3.3     |               |                    |
| Total   |         | 30        | 100.0   |               |                    |

**Length of time that the system has been implemented - HIV/Aids**

|         |         | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|---------|-----------|---------|---------------|--------------------|
| Valid   | < 1     | 1         | 3.3     | 11.1          | 11.1               |
|         | 1 - < 2 | 2         | 6.7     | 22.2          | 33.3               |
|         | 2 - < 5 | 2         | 6.7     | 22.2          | 55.6               |
|         | >=5     | 4         | 13.3    | 44.4          | 100.0              |
|         | Total   | 9         | 30.0    | 100.0         |                    |
| Missing | System  | 21        | 70.0    |               |                    |
| Total   |         | 30        | 100.0   |               |                    |

**Efficiency of the current management system - Safety**

|         |                   | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|-------------------|-----------|---------|---------------|--------------------|
| Valid   | Strongly disagree | 2         | 6.7     | 7.7           | 7.7                |
|         | Unsure            | 1         | 3.3     | 3.8           | 11.5               |
|         | Agree             | 13        | 43.3    | 50.0          | 61.5               |
|         | Strongly agree    | 10        | 33.3    | 38.5          | 100.0              |
|         | Total             | 26        | 86.7    | 100.0         |                    |
| Missing | System            | 4         | 13.3    |               |                    |
| Total   |                   | 30        | 100.0   |               |                    |

**Efficiency of the current management system - Environment**

|         |                | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|----------------|-----------|---------|---------------|--------------------|
| Valid   | Disagree       | 2         | 6.7     | 11.1          | 11.1               |
|         | Unsure         | 2         | 6.7     | 11.1          | 22.2               |
|         | Agree          | 8         | 26.7    | 44.4          | 66.7               |
|         | Strongly agree | 6         | 20.0    | 33.3          | 100.0              |
|         | Total          | 18        | 60.0    | 100.0         |                    |
| Missing | System         | 12        | 40.0    |               |                    |
| Total   |                | 30        | 100.0   |               |                    |

**Efficiency of the current management system - Corporate Governance**

|         |                   | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|-------------------|-----------|---------|---------------|--------------------|
| Valid   | Strongly disagree | 1         | 3.3     | 9.1           | 9.1                |
|         | Disagree          | 1         | 3.3     | 9.1           | 18.2               |
|         | Unsure            | 3         | 10.0    | 27.3          | 45.5               |
|         | Agree             | 3         | 10.0    | 27.3          | 72.7               |
|         | Strongly agree    | 3         | 10.0    | 27.3          | 100.0              |
|         | Total             | 11        | 36.7    | 100.0         |                    |
| Missing | System            | 19        | 63.3    |               |                    |
| Total   |                   | 30        | 100.0   |               |                    |

**Efficiency of the current management system - Quality**

|       |                   | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------|-------------------|-----------|---------|---------------|--------------------|
| Valid | Strongly disagree | 1         | 3.3     | 3.3           | 3.3                |
|       | Disagree          | 3         | 10.0    | 10.0          | 13.3               |
|       | Unsure            | 3         | 10.0    | 10.0          | 23.3               |
|       | Agree             | 12        | 40.0    | 40.0          | 63.3               |
|       | Strongly agree    | 11        | 36.7    | 36.7          | 100.0              |
| Total |                   | 30        | 100.0   | 100.0         |                    |

**Efficiency of the current management system - HIV/Aids**

|         |                   | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|-------------------|-----------|---------|---------------|--------------------|
| Valid   | Strongly disagree | 2         | 6.7     | 15.4          | 15.4               |
|         | Disagree          | 1         | 3.3     | 7.7           | 23.1               |
|         | Unsure            | 3         | 10.0    | 23.1          | 46.2               |
|         | Agree             | 5         | 16.7    | 38.5          | 84.6               |
|         | Strongly agree    | 2         | 6.7     | 15.4          | 100.0              |
|         | Total             | 13        | 43.3    | 100.0         |                    |
| Missing | System            | 17        | 56.7    |               |                    |
| Total   |                   | 30        | 100.0   |               |                    |

**Allocation of resources adequate to manage the system - Safety**

|         |                   | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|-------------------|-----------|---------|---------------|--------------------|
| Valid   | Strongly disagree | 2         | 6.7     | 7.7           | 7.7                |
|         | Disagree          | 1         | 3.3     | 3.8           | 11.5               |
|         | Unsure            | 1         | 3.3     | 3.8           | 15.4               |
|         | Agree             | 12        | 40.0    | 46.2          | 61.5               |
|         | Strongly agree    | 10        | 33.3    | 38.5          | 100.0              |
|         | Total             | 26        | 86.7    | 100.0         |                    |
| Missing | System            | 4         | 13.3    |               |                    |
| Total   |                   | 30        | 100.0   |               |                    |

**Allocation of resources adequate to manage the system - Environment**

|         |                | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|----------------|-----------|---------|---------------|--------------------|
| Valid   | Disagree       | 3         | 10.0    | 15.8          | 15.8               |
|         | Agree          | 9         | 30.0    | 47.4          | 63.2               |
|         | Strongly agree | 7         | 23.3    | 36.8          | 100.0              |
|         | Total          | 19        | 63.3    | 100.0         |                    |
| Missing | System         | 11        | 36.7    |               |                    |
| Total   |                | 30        | 100.0   |               |                    |

**Allocation of resources adequate to manage the system - Corporate Governance**

|         |                   | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|-------------------|-----------|---------|---------------|--------------------|
| Valid   | Strongly disagree | 2         | 6.7     | 16.7          | 16.7               |
|         | Disagree          | 1         | 3.3     | 8.3           | 25.0               |
|         | Unsure            | 3         | 10.0    | 25.0          | 50.0               |
|         | Agree             | 6         | 20.0    | 50.0          | 100.0              |
|         | Total             | 12        | 40.0    | 100.0         |                    |
| Missing | System            | 18        | 60.0    |               |                    |
| Total   |                   | 30        | 100.0   |               |                    |

**Allocation of resources adequate to manage the system - Quality**

|         |                   | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|-------------------|-----------|---------|---------------|--------------------|
| Valid   | Strongly disagree | 2         | 6.7     | 6.9           | 6.9                |
|         | Disagree          | 2         | 6.7     | 6.9           | 13.8               |
|         | Unsure            | 5         | 16.7    | 17.2          | 31.0               |
|         | Agree             | 10        | 33.3    | 34.5          | 65.5               |
|         | Strongly agree    | 10        | 33.3    | 34.5          | 100.0              |
|         | Total             | 29        | 96.7    | 100.0         |                    |
| Missing | System            | 1         | 3.3     |               |                    |
| Total   |                   | 30        | 100.0   |               |                    |

**Allocation of resources adequate to manage the system - HIV/Aids**

|         |                   | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|-------------------|-----------|---------|---------------|--------------------|
| Valid   | Strongly disagree | 3         | 10.0    | 21.4          | 21.4               |
|         | Disagree          | 1         | 3.3     | 7.1           | 28.6               |
|         | Unsure            | 4         | 13.3    | 28.6          | 57.1               |
|         | Agree             | 3         | 10.0    | 21.4          | 78.6               |
|         | Strongly agree    | 3         | 10.0    | 21.4          | 100.0              |
|         | Total             | 14        | 46.7    | 100.0         |                    |
| Missing | System            | 16        | 53.3    |               |                    |
| Total   |                   | 30        | 100.0   |               |                    |

**Management system is beneficial to the organisation - Safety**

|         |                   | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|-------------------|-----------|---------|---------------|--------------------|
| Valid   | Strongly disagree | 1         | 3.3     | 3.8           | 3.8                |
|         | Unsure            | 1         | 3.3     | 3.8           | 7.7                |
|         | Agree             | 10        | 33.3    | 38.5          | 46.2               |
|         | Strongly agree    | 14        | 46.7    | 53.8          | 100.0              |
|         | Total             | 26        | 86.7    | 100.0         |                    |
| Missing | System            | 4         | 13.3    |               |                    |
| Total   |                   | 30        | 100.0   |               |                    |

**Management system is beneficial to the organisation - Environment**

|         |                | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|----------------|-----------|---------|---------------|--------------------|
| Valid   | Disagree       | 2         | 6.7     | 11.1          | 11.1               |
|         | Agree          | 7         | 23.3    | 38.9          | 50.0               |
|         | Strongly agree | 9         | 30.0    | 50.0          | 100.0              |
|         | Total          | 18        | 60.0    | 100.0         |                    |
| Missing | System         | 12        | 40.0    |               |                    |
| Total   |                | 30        | 100.0   |               |                    |

**Management system is beneficial to the organisation - Corporate Governance**

|         |                   | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|-------------------|-----------|---------|---------------|--------------------|
| Valid   | Strongly disagree | 2         | 6.7     | 15.4          | 15.4               |
|         | Unsure            | 2         | 6.7     | 15.4          | 30.8               |
|         | Agree             | 2         | 6.7     | 15.4          | 46.2               |
|         | Strongly agree    | 7         | 23.3    | 53.8          | 100.0              |
|         | Total             | 13        | 43.3    | 100.0         |                    |
| Missing | System            | 17        | 56.7    |               |                    |
| Total   |                   | 30        | 100.0   |               |                    |

**Management system is beneficial to the organisation - Quality**

|         |                   | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|-------------------|-----------|---------|---------------|--------------------|
| Valid   | Strongly disagree | 1         | 3.3     | 3.4           | 3.4                |
|         | Disagree          | 1         | 3.3     | 3.4           | 6.9                |
|         | Unsure            | 3         | 10.0    | 10.3          | 17.2               |
|         | Agree             | 8         | 26.7    | 27.6          | 44.8               |
|         | Strongly agree    | 16        | 53.3    | 55.2          | 100.0              |
|         | Total             | 29        | 96.7    | 100.0         |                    |
| Missing | System            | 1         | 3.3     |               |                    |
| Total   |                   | 30        | 100.0   |               |                    |

**Management system is beneficial to the organisation - HIV/Aids**

|         |                   | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|-------------------|-----------|---------|---------------|--------------------|
| Valid   | Strongly disagree | 2         | 6.7     | 14.3          | 14.3               |
|         | Unsure            | 3         | 10.0    | 21.4          | 35.7               |
|         | Agree             | 4         | 13.3    | 28.6          | 64.3               |
|         | Strongly agree    | 5         | 16.7    | 35.7          | 100.0              |
|         | Total             | 14        | 46.7    | 100.0         |                    |
| Missing | System            | 16        | 53.3    |               |                    |
| Total   |                   | 30        | 100.0   |               |                    |

**Number of people assigned to SECQA - Safety**

|         |        | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|--------|-----------|---------|---------------|--------------------|
| Valid   | 1      | 5         | 16.7    | 55.6          | 55.6               |
|         | 2      | 3         | 10.0    | 33.3          | 88.9               |
|         | 6      | 1         | 3.3     | 11.1          | 100.0              |
|         | Total  | 9         | 30.0    | 100.0         |                    |
| Missing | System | 21        | 70.0    |               |                    |
| Total   |        | 30        | 100.0   |               |                    |



**Number of people assigned to SECQA - Environment**

|         |        | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|--------|-----------|---------|---------------|--------------------|
| Valid   | 1      | 6         | 20.0    | 66.7          | 66.7               |
|         | 2      | 1         | 3.3     | 11.1          | 77.8               |
|         | 3      | 1         | 3.3     | 11.1          | 88.9               |
|         | 6      | 1         | 3.3     | 11.1          | 100.0              |
|         | Total  | 9         | 30.0    | 100.0         |                    |
| Missing | System | 21        | 70.0    |               |                    |
| Total   |        | 30        | 100.0   |               |                    |

**Number of people assigned to SECQA - Corporate Governance**

|         |        | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|--------|-----------|---------|---------------|--------------------|
| Valid   | 1      | 2         | 6.7     | 66.7          | 66.7               |
|         | 6      | 1         | 3.3     | 33.3          | 100.0              |
|         | Total  | 3         | 10.0    | 100.0         |                    |
| Missing | System | 27        | 90.0    |               |                    |
| Total   |        | 30        | 100.0   |               |                    |

**Number of people assigned to SECQA - Quality**

|         |        | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|--------|-----------|---------|---------------|--------------------|
| Valid   | 1      | 2         | 6.7     | 18.2          | 18.2               |
|         | 2      | 6         | 20.0    | 54.5          | 72.7               |
|         | 3      | 1         | 3.3     | 9.1           | 81.8               |
|         | 4      | 1         | 3.3     | 9.1           | 90.9               |
|         | 6      | 1         | 3.3     | 9.1           | 100.0              |
|         | Total  | 11        | 36.7    | 100.0         |                    |
| Missing | System | 19        | 63.3    |               |                    |
| Total   |        | 30        | 100.0   |               |                    |

**Number of people assigned to SECQA - HIV/Aids**

|         |        | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|--------|-----------|---------|---------------|--------------------|
| Valid   | 1      | 2         | 6.7     | 40.0          | 40.0               |
|         | 2      | 2         | 6.7     | 40.0          | 80.0               |
|         | 6      | 1         | 3.3     | 20.0          | 100.0              |
|         | Total  | 5         | 16.7    | 100.0         |                    |
| Missing | System | 25        | 83.3    |               |                    |
| Total   |        | 30        | 100.0   |               |                    |

### Reduction in resources - Safety

|         |                   | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|-------------------|-----------|---------|---------------|--------------------|
| Valid   | Strongly disagree | 3         | 10.0    | 11.5          | 11.5               |
|         | Disagree          | 2         | 6.7     | 7.7           | 19.2               |
|         | Unsure            | 4         | 13.3    | 15.4          | 34.6               |
|         | Agree             | 15        | 50.0    | 57.7          | 92.3               |
|         | Strongly agree    | 2         | 6.7     | 7.7           | 100.0              |
|         | Total             | 26        | 86.7    | 100.0         |                    |
| Missing | System            | 4         | 13.3    |               |                    |
| Total   |                   | 30        | 100.0   |               |                    |

### Reduction in resources - Environment

|         |                   | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|-------------------|-----------|---------|---------------|--------------------|
| Valid   | Strongly disagree | 2         | 6.7     | 9.5           | 9.5                |
|         | Disagree          | 1         | 3.3     | 4.8           | 14.3               |
|         | Unsure            | 3         | 10.0    | 14.3          | 28.6               |
|         | Agree             | 13        | 43.3    | 61.9          | 90.5               |
|         | Strongly agree    | 2         | 6.7     | 9.5           | 100.0              |
|         | Total             | 21        | 70.0    | 100.0         |                    |
| Missing | System            | 9         | 30.0    |               |                    |
| Total   |                   | 30        | 100.0   |               |                    |

### Reduction in resources - Corporate Governance

|         |                | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|----------------|-----------|---------|---------------|--------------------|
| Valid   | Disagree       | 1         | 3.3     | 7.7           | 7.7                |
|         | Unsure         | 3         | 10.0    | 23.1          | 30.8               |
|         | Agree          | 8         | 26.7    | 61.5          | 92.3               |
|         | Strongly agree | 1         | 3.3     | 7.7           | 100.0              |
|         | Total          | 13        | 43.3    | 100.0         |                    |
| Missing | System         | 17        | 56.7    |               |                    |
| Total   |                | 30        | 100.0   |               |                    |

### Reduction in resources - Quality

|         |                   | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|-------------------|-----------|---------|---------------|--------------------|
| Valid   | Strongly disagree | 4         | 13.3    | 13.8          | 13.8               |
|         | Disagree          | 2         | 6.7     | 6.9           | 20.7               |
|         | Unsure            | 5         | 16.7    | 17.2          | 37.9               |
|         | Agree             | 14        | 46.7    | 48.3          | 86.2               |
|         | Strongly agree    | 4         | 13.3    | 13.8          | 100.0              |
|         | Total             | 29        | 96.7    | 100.0         |                    |
| Missing | System            | 1         | 3.3     |               |                    |
| Total   |                   | 30        | 100.0   |               |                    |

### Reduction in resources - HIV/Aids

|         |                   | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|-------------------|-----------|---------|---------------|--------------------|
| Valid   | Strongly disagree | 1         | 3.3     | 6.3           | 6.3                |
|         | Disagree          | 1         | 3.3     | 6.3           | 12.5               |
|         | Unsure            | 4         | 13.3    | 25.0          | 37.5               |
|         | Agree             | 9         | 30.0    | 56.3          | 93.8               |
|         | Strongly agree    | 1         | 3.3     | 6.3           | 100.0              |
|         | Total             | 16        | 53.3    | 100.0         |                    |
| Missing | System            | 14        | 46.7    |               |                    |
| Total   |                   | 30        | 100.0   |               |                    |

### SECQA management systems are beneficial - Safety

|         |                   | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|-------------------|-----------|---------|---------------|--------------------|
| Valid   | Strongly disagree | 1         | 3.3     | 3.7           | 3.7                |
|         | Agree             | 15        | 50.0    | 55.6          | 59.3               |
|         | Strongly agree    | 11        | 36.7    | 40.7          | 100.0              |
|         | Total             | 27        | 90.0    | 100.0         |                    |
| Missing | System            | 3         | 10.0    |               |                    |
| Total   |                   | 30        | 100.0   |               |                    |

**SECQA management systems are beneficial - Environment**

|         |                   | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|-------------------|-----------|---------|---------------|--------------------|
| Valid   | Strongly disagree | 1         | 3.3     | 4.5           | 4.5                |
|         | Agree             | 12        | 40.0    | 54.5          | 59.1               |
|         | Strongly agree    | 9         | 30.0    | 40.9          | 100.0              |
|         | Total             | 22        | 73.3    | 100.0         |                    |
| Missing | System            | 8         | 26.7    |               |                    |
| Total   |                   | 30        | 100.0   |               |                    |

**SECQA management systems are beneficial - Corporate Governance**

|         |                   | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|-------------------|-----------|---------|---------------|--------------------|
| Valid   | Strongly disagree | 1         | 3.3     | 6.7           | 6.7                |
|         | Unsure            | 1         | 3.3     | 6.7           | 13.3               |
|         | Agree             | 5         | 16.7    | 33.3          | 46.7               |
|         | Strongly agree    | 8         | 26.7    | 53.3          | 100.0              |
|         | Total             | 15        | 50.0    | 100.0         |                    |
| Missing | System            | 15        | 50.0    |               |                    |
| Total   |                   | 30        | 100.0   |               |                    |

**SECQA management systems are beneficial - Quality**

|       |                   | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------|-------------------|-----------|---------|---------------|--------------------|
| Valid | Strongly disagree | 1         | 3.3     | 3.3           | 3.3                |
|       | Agree             | 16        | 53.3    | 53.3          | 56.7               |
|       | Strongly agree    | 13        | 43.3    | 43.3          | 100.0              |
|       | Total             | 30        | 100.0   | 100.0         |                    |

**SECQA management systems are beneficial - HIV/Aids**

|         |                   | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|-------------------|-----------|---------|---------------|--------------------|
| Valid   | Strongly disagree | 1         | 3.3     | 4.8           | 4.8                |
|         | Unsure            | 1         | 3.3     | 4.8           | 9.5                |
|         | Agree             | 11        | 36.7    | 52.4          | 61.9               |
|         | Strongly agree    | 8         | 26.7    | 38.1          | 100.0              |
|         | Total             | 21        | 70.0    | 100.0         |                    |
| Missing | System            | 9         | 30.0    |               |                    |
| Total   |                   | 30        | 100.0   |               |                    |

Proposed SECQA model better than the current

|         |        | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|--------|-----------|---------|---------------|--------------------|
| Valid   | No     | 1         | 3.3     | 4.3           | 4.3                |
|         | Yes    | 22        | 73.3    | 95.7          | 100.0              |
|         | Total  | 23        | 76.7    | 100.0         |                    |
| Missing | System | 7         | 23.3    |               |                    |
| Total   |        | 30        | 100.0   |               |                    |

**Correlations**

**NPar Tests**

**Wilcoxon Signed Ranks Test**

# Ranks

|  |                | N              | Mean Rank | Sum of Ranks |
|--|----------------|----------------|-----------|--------------|
| Number of people assigned to SECQA - Safety - Number of people reporting to top management on these systems - Safety                             | Negative Ranks | 4 <sup>a</sup> | 2.50      | 10.00        |
|  | Positive Ranks | 0 <sup>b</sup> | .00       | .00          |
|  | Ties           | 4 <sup>c</sup> |           |              |
|  | Total          | 8              |           |              |
| Number of people assigned to SECQA - Environment - Number of people reporting to top management on these systems - Environment                   | Negative Ranks | 5 <sup>d</sup> | 3.30      | 16.50        |
|  | Positive Ranks | 1 <sup>e</sup> | 4.50      | 4.50         |
|  | Ties           | 2 <sup>f</sup> |           |              |
|  | Total          | 8              |           |              |
| Number of people assigned to SECQA - Corporate Governance - Number of people reporting to top management on these systems - Corporate Governance | Negative Ranks | 0 <sup>g</sup> | .00       | .00          |
|  | Positive Ranks | 0 <sup>h</sup> | .00       | .00          |
|  | Ties           | 2 <sup>i</sup> |           |              |
|  | Total          | 2              |           |              |
| Number of people assigned to SECQA - Quality - Number of people reporting to top management on these systems - Quality                           | Negative Ranks | 5 <sup>j</sup> | 6.20      | 31.00        |
|  | Positive Ranks | 4 <sup>k</sup> | 3.50      | 14.00        |
|  | Ties           | 1 <sup>l</sup> |           |              |
|  | Total          | 10             |           |              |
| Number of people assigned to SECQA - HIV/Aids - Number of people reporting to top management on these systems - HIV/Aids                         | Negative Ranks | 1 <sup>m</sup> | 1.50      | 1.50         |
|  | Positive Ranks | 1 <sup>n</sup> | 1.50      | 1.50         |
|  | Ties           | 2 <sup>o</sup> |           |              |
|  | Total          | 4              |           |              |

- a. Number of people assigned to SECQA - Safety < Number of people reporting to top management on these systems - Safety
- b. Number of people assigned to SECQA - Safety > Number of people reporting to top management on these systems - Safety
- c. Number of people assigned to SECQA - Safety = Number of people reporting to top management on these systems - Safety
- d. Number of people assigned to SECQA - Environment < Number of people reporting to top management on these systems - Environment
- e. Number of people assigned to SECQA - Environment > Number of people reporting to top management on these systems - Environment
- f. Number of people assigned to SECQA - Environment = Number of people reporting to top management on these systems - Environment
- g. Number of people assigned to SECQA - Corporate Governance < Number of people reporting to top management on these systems - Corporate Governance
- h. Number of people assigned to SECQA - Corporate Governance > Number of people reporting to top management on these systems - Corporate Governance

# Test Statistics<sup>c</sup>

|                        | Number of people assigned to SECQA - Safety - Number of people reporting to top management on these systems - Safety | Number of people assigned to SECQA - Environment - Number of people reporting to top management on these systems - Environment | Number of people assigned to SECQA - Corporate Governance - Number of people reporting to top management on these systems - Corporate Governance | Number of people assigned to SECQA - Quality - Number of people reporting to top management on these systems - Quality | Number of people assigned to SECQA - HIV/Aids - Number of people reporting to top management on these systems - HIV/Aids |
|------------------------|--|--|--|--|--|
| Z                      | -1.841 <sup>a</sup>  | -1.276 <sup>a</sup>  | .000 <sup>b</sup>  | -1.040 <sup>a</sup>  | .000 <sup>b</sup>  |
| Asymp. Sig. (2-tailed) | .066   | .202   | 1.000  | .298   | 1.000  |

a. Based on positive ranks.

b. The sum of negative ranks equals the sum of positive ranks.

c. Wilcoxon Signed Ranks Test



**NPar Tests**

**Wilcoxon Signed Ranks Test**

# Ranks

|  |                | N               | Mean Rank | Sum of Ranks |
|--|----------------|-----------------|-----------|--------------|
| Management system is beneficial to the organisation - Safety - Management system being used - Safety                             | Negative Ranks | 1 <sup>a</sup>  | 1.50      | 1.50         |
|  | Positive Ranks | 25 <sup>b</sup> | 13.98     | 349.50       |
|  | Ties           | 0 <sup>c</sup>  |           |              |
|  | Total          | 26              |           |              |
| Management system is beneficial to the organisation - Environment - Management system being used - Environment                   | Negative Ranks | 0 <sup>d</sup>  | .00       | .00          |
|  | Positive Ranks | 16 <sup>e</sup> | 8.50      | 136.00       |
|  | Ties           | 2 <sup>f</sup>  |           |              |
|  | Total          | 18              |           |              |
| Management system is beneficial to the organisation - Corporate Governance - Management system being used - Corporate Governance | Negative Ranks | 0 <sup>g</sup>  | .00       | .00          |
|  | Positive Ranks | 8 <sup>h</sup>  | 4.50      | 36.00        |
|  | Ties           | 2 <sup>i</sup>  |           |              |
|  | Total          | 10              |           |              |
| Management system is beneficial to the organisation - Quality - Management system being used - Quality                           | Negative Ranks | 1 <sup>j</sup>  | 2.50      | 2.50         |
|  | Positive Ranks | 27 <sup>k</sup> | 14.94     | 403.50       |
|  | Ties           | 1 <sup>l</sup>  |           |              |
|  | Total          | 29              |           |              |
| Management system is beneficial to the organisation - HIV/Aids - Management system being used - HIV/Aids                         | Negative Ranks | 0 <sup>m</sup>  | .00       | .00          |
|  | Positive Ranks | 10 <sup>n</sup> | 5.50      | 55.00        |
|  | Ties           | 2 <sup>o</sup>  |           |              |
|  | Total          | 12              |           |              |

- Management system is beneficial to the organisation - Safety < Management system being used - Safety
- Management system is beneficial to the organisation - Safety > Management system being used - Safety
- Management system is beneficial to the organisation - Safety = Management system being used - Safety
- Management system is beneficial to the organisation - Environment < Management system being used - Environment
- Management system is beneficial to the organisation - Environment > Management system being used - Environment
- Management system is beneficial to the organisation - Environment = Management system being used - Environment
- Management system is beneficial to the organisation - Corporate Governance < Management system being used - Corporate Governance
- Management system is beneficial to the organisation - Corporate Governance > Management system being used - Corporate Governance
- Management system is beneficial to the organisation - Corporate Governance = Management system being used - Corporate Governance

Test Statistics<sup>b</sup>

|                        | Management system is beneficial to the organisation - Safety - Management system being used - Safety | Management system is beneficial to the organisation - Environment - Management system being used - Environment | Management system is beneficial to the organisation - Corporate Governance - Management system being used - Corporate Governance | Management system is beneficial to the organisation - Quality - Management system being used - Quality | Management system is beneficial to the organisation - HIV/Aids - Management system being used - HIV/Aids |
|------------------------|--|--|--|--|--|
| Z                      | -4.534 <sup>a</sup>  | -3.624 <sup>a</sup>  | -2.640 <sup>a</sup>  | -4.685 <sup>a</sup>  | -2.879 <sup>a</sup>  |
| Asymp. Sig. (2-tailed) | .000   | .000   | .008   | .000   | .004   |

a. Based on negative ranks.

b. Wilcoxon Signed Ranks Test