QUALITY STEWARDSHIP
A 21ST CENTURY QUALITY FRAMEWORK FOR SELECTED MANUFACTURING ORGANISATIONS IN SOUTH AFRICA

BY

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Submitted in fulfilment of the requirements of the Degree

Doctor of Technology: Quality

Durban University of Technology
Faculty of Management Sciences
June 2011

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ABSTRACT

Quality management remains one of the top ranking strategic issues in all major organisations. However, at present, there is a sentiment that business priorities and quality management priorities have become non-aligned over the last two decades. It is believed that quality management is still predominately understood and practiced using the framework and direction provided historically by quality leaders such as Deming, Juran, Crosby and others. Thus, this study motivated that quality is at a crossroads and in order for it to be aligned with business priorities, once again it needs to evolve its role.

This study commenced with the review on related literature on the history of quality management. From this review, it was evident that the various evolutions of quality management were directed to meet the changing business challenges and market needs that were linked to prevailing demand and supply, customer focus, competitive advantage and profitable growth outputs. The literature review thereafter demonstrated the potential opportunities wherein quality management could be utilised to re-establish its previous relevance by supporting organisations in the management of emerging trends. This study identified globalisation, customer power and sophistication, social responsibility and environmental sustainability consciousness as emerging trends that could be the most leveraged with the use of quality management concepts, techniques and tools. Furthermore, the topics of stewardship, leadership, change management and strategy were discussed as enablers to the proposed new evolution of quality management, which should become known as "quality stewardship".

As a guideline to the "quality stewardship" strategy, a Quality Stewardship and Leadership (QSAL) framework was developed in this study. The QSAL framework incorporated Total Quality Management (TQM), systems thinking and business excellence as the underlying theoretical grounding. This framework, displaying a process approach, encapsulated the following components: inputs (risk, revenue and reputation), processes (productivity Key Performance Indicators (KPIs), technical governance, and environmental and social sustainability) and outputs (maximise value) for the proposed new scope for quality management.

The primary source of information used in this study was obtained from qualitative and quantitative research methodologies. The research instruments in this study included surveys in the form of questionnaires and an organisational assessment which was undertaken by utilising a Viable Systems Model (VSM). The organisational assessment that was part of the preliminary study was undertaken in two beverage multi-national organisations in South Africa. The pilot and principal studies consisted of surveys in the form of questionnaires. The objective of the survey was to gain an understanding of current quality management practices, current quality management thinking and acceptability of the proposed QSAL framework across selected manufacturing organisations in South Africa.

Both the preliminary and principal studies displayed variable levels of responses in quality management practices and a high level of agreement or awareness to the questions on the current thinking of quality management and acceptability of the proposed QSAL framework in the quantitative studies.

Thus, based on the review of related literature and empirical studies, the motivation for this research, that quality management was ready for the next evolution in order to support current business challenges and market demands, was validated.

ACKNOWLEDGEMENTS

I would like to express my sincere gratitude to the following people and institutions for their contribution during the course of this project:

- South African Breweries Ltd. for allowing me the opportunity to study whilst still in their employ.
- Mr. C. Raphiri, Manufacturing and Technical Director of South African Breweries Ltd., for his ongoing support and assistance throughout my studies.
- My study promoter, Dr. S. Singh, Durban University of Technology, for her guidance, patience, constructive criticism, technical and editorial assistance during the preparation of this project.
- My co-promoter, Mr. R. Naidoo, Durban University of Technology, for his guidance, and support during the preparation of this project.
- Dr. F. Dehrmann and Dr. A. Cameron-Clarke, for ongoing support.
- Mr. D. Singh, for his assistance with the statistical aspects of this thesis.
- Ms. V. Singh, for proof reading the final text.
- The participants, for taking the time to answer the questionnaire.
- Finally, to my family and loved ones, for providing me with all the love and support I could wish for. Without their understanding, sacrifices and encouragement, this project would have been virtually impossible.

Thank you all.

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ABBREVIATIONS AND ACRONYMS

AIDS	:	Acquired Immune Deficiency Syndrome
ANSI	:	American National Standards Institute
ASQ	:	American Society of Quality
CEO	:	Chief Executive Officer
COQ	:	Cost of Quality
CSI	:	Corporate Social Initiatives
CTQ	:	Critical to Quality
DFE	:	Designing for the Environment
e- Mark	:	Legal Metrology Quality Control Scheme
EMS	:	Environmental Management System
“EQ”	:	Emotional Intelligence
FMCG	:	Fast moving consumable goods
FMEA	:	Failure Mode Effect Analysis
HACCP	:	Hazard Analysis and Critical Control Point
ISO	:	International Organisation for Standardisation
IT	:	Information Technology
JIT	:	Just in Time
JMA	:	Japanese Management Association
JSA	:	Japanese Standards Association
JUSE	:	Japanese Union of Scientists and Engineers
KPI	:	Key Performance Indicator
LPS	:	Lean Production System
MBNQA	:	Malcolm Baldrige National Quality Award
MDT	:	Multi Disciplinary Team
MGT	:	Management
MSA	:	Measurement System Analysis
NOSA	:	National Occupational and Safety Association
OHSAS	:	Occupational Health and Safety Systems
PCA	:	Principal Component Analysis
R and R	:	Repeatability and Reproducibility
QA	:	Quality Assurance
QC	:	Quality Control

QCDSM	:	Quality, Cost, Delivery, Safety and Morale
QESH	:	Quality, Environment, Safety and Health
QFD	:	Quality Function Deployment
QM	:	Quality Management
QMP	:	Quality Management Programme
QMS	:	Quality Management System
QSAL	:	Quality Stewardship and Leadership
SANS	:	South African National Standard
SBU	:	Small Business Unit
SPC	:	Statistical Process Control
SPSS	:	Statistical Package for Social Science
SWOT	:	Strengths, Weakness, Opportunities and Threats
TPM	:	Total Preventative Maintenance
TQM	:	Total Quality Management
VSM	:	Viable Systems Model

GLOSSARY

Continuous Improvement:	A concept that seeks ongoing effort to improve products, services or processes. These efforts can seek "incremental" improvement over time or "breakthrough" improvement all at once.
Five S (5S):	A methodology for organising, cleaning, developing and sustaining a productive work environment.
ISO 14001:	Standard that specifies requirements for environmental management systems.
ISO 16949:	Standard that specifies particular requirements for the application of ISO 9001:2008 for automotive production and relevant service part organisations.
ISO 17025:	Standard that specifies general requirements for the competence of testing and calibration laboratories.
ISO 22000:	Standard that specifies requirements for food safety management systems for any organisation in the food chain.
ISO 26000:	Standard for the guidance on social responsibility.
ISO 9001:	Standard that specifies requirements for quality management systems.
ISO 9004:	Standard that provides guidelines for managing the sustained success of an organisation - a quality management approach.

Just-In-Time (JIT):	A concept that controls inventory and material flow throughout the entire organisation. The philosophy involves providing the required part in the correct quantity at the right point in time.
Kanban:	A Japanese word meaning “card” or “visible record” that refers to cards used to control the flow of production through an organisation. It provides signals for the manufacture and supply of components.
Lean Production System (LPS):	Originally known as the Toyota Production System or Just-in-Time production. It focuses on eliminating waste, empowering workers, reducing inventory and improving productivity within an organisation.
Mass Production:	A method of producing goods in large quantities at low cost per unit by using mechanisation, standardised work practices and careful supervision of quality standards.
OHSAS 18001:	Specifies requirements for an occupational health and safety (OH and S) management system, to enable an organisation to control its OH and S risks and improve its OH and S performance.
Process:	Any activity or group of activities that takes one or more inputs, transforms them, and provides one or more outputs for its customers. These outputs then serve as inputs for the next stage until a known goal or end result is achieved.
Quality at the Source:	A philosophy whereby every employee, work group, department, or supplier inspects and corrects the work at every stage of production.

Quality Circles:	Another name for problem solving teams; small groups of supervisors and employees who meet to identify, analyse, and solve process and quality problems.
SANS 10330:	Standard that specifies requirements for a Hazard Analysis and Critical Control Point (HACCP) system.
SANS 1841:	Standard that specifies requirements for control of the quantity of contents in pre-packed packages within the prescriptions of legal metrology legislation.
Toyota Production System:	An integrated socio-technical system developed by Toyota to organise manufacturing and logistics for the automobile manufacturer, including interaction with suppliers and customers. The system is a major precursor of the more generic "Lean Manufacturing."
Viable Systems Model:	A conceptual tool based on a combination of cybernetics and systems theory. It is used by operational researchers for understanding organisations' operations.
Zero Defects:	A way of thinking and doing production tasks right the first time without manufacturing defects. This philosophy increases the organisation's profits by eliminating the costs of failure and increasing revenues through increased customer satisfaction.

CHAPTER 1: INTRODUCTION

1. Preamble

In the last twenty years, the world of business has changed significantly; the field of quality, however, has not correspondingly changed (Gutner and Adams 2009:4). Concomitantly with the changes in the business world, stakeholders, customers and regulatory bodies have placed new demands on organisations. Therefore, it can be perceived that quality, as it was understood in the second half of the twentieth century, requires a transformation to support changing business needs. This chapter outlines the key emerging trends, business challenges and market demands relating to quality management and provides the motivation, objective and value for the research that will follow under the new definition of quality.

1.1 Background of the study

The transformation and evolutionary phases of quality can be traced from discussions of various authors such as Garvin (1988:3-20), Gummesson (1998:242-249), Dale (2003:21-26), Beecroft (2004:425-428) and Zairi (2006:1-7), who reflect continuous change in quality's philosophical ideas from functional focus, such as inspection, to external emphasis and market-based orientation. A common thread that can be followed through most of the work of these authors is the affirmation that quality management has evolved through four quality eras in the last century, namely, Inspection, Statistical Quality Control (SQC), Quality Assurance (QA) and Strategic Quality Management (SQM). The factors that influenced these phases or eras will be discussed in detail in Chapter 2.

Connecting to this transformation, quality management enjoyed support during the 1970s and 1980s, mainly in delivering the key business drivers of customer satisfaction and competitive advantage. During this period, namely between the QA and SQM eras, quality was promoted as a "process management approach" and saw the emergence of the concept of Total Quality Management (TQM). This approach advocated the principles of focusing on the importance of meeting specifications in

the first attempt; cost and waste reduction strategies; continuous improvement; and the use of the theory of "holism" and "totality" (Micklethwait and Wooldridge 1997:1-12; Gutner and Adams 2009:4; Johnson 2009:1-7).

Furthermore, the 1970s and 1980s saw an impressive growth and the sustainable success of the Japanese organisations that had implemented quality management, most notably in the automobile industry. This growth and success was later observed in the United States of America when corporations embraced the teaching and tenets of quality leaders. The results demonstrated by organisations during this period suggested that the pursuit of quality management at operational levels was the ultimate formula for customer satisfaction and profitability (Gutner and Adams 2009:4).

During the period mentioned above, quality management and the strategic needs of the organisation were seen as synonymous. However, since the 1980s, there has been very little change in the thinking and practice of quality management. The key focus of quality in the last few decades has been the development of management systems. To this end, management systems such as ISO 9001, ISO 14001, OHSAS 18001, and business excellence programmes such as the Malcolm Baldrige National Quality Award, Deming Prize in Japan, the European Quality Award in Europe, to name a few, (Taylor 2001:286-291; Martínez-Costa and Martínez-Lorente 2007:7-18) were developed.

In the last twenty years, the world of business has undergone significant changes; for example, the advent of the dot.com boom, with the acceleration of technology applications and the double digit economic growth in the new millennium. These changes created trends such as globalisation, customer power and sophistication, social responsibility and environmental sustainability consciousness and influenced organisational strategies and business results (American Society of Quality (ASQ) Futures Study 2008:43-47; Gutner and Adams 2009:6).

In order for the business world to realise growth and sustainable success in this environment, many organisations changed their strategy. The new strategies moved from being predominately product-focused, using process management and cost reduction, which used to be core functions to quality, to more risk mitigation, revenue generation and reputational focused drivers (Johnson 2009:1-7; Sheps 2010:1-10). The trends mentioned above, together with their contribution to the change in thinking in the business world, will be presented in detail in the review of literature in Chapter 2.

Although quality management is still seen as important for the governance of operations, it does not fulfil the customer satisfaction and competitive advantage drivers as it did in the past. Furthermore, quality in this form is no longer considered as an important mechanism but serves as an assumed requirement where customers take product or service quality for granted. The quality of the product or service delivery does not increase customer satisfaction but they react or express their dissatisfaction in its absence. On this basis, many authors state that quality as it was understood and practiced has lost the relevance, fame and glory that it enjoyed through the 1970s and 1980s in Japan, the United States of America and the rest of the world (Khoo and Tan 2003:14-24; Parast, Adams, Jones, Rao, Raghu-Nathan 2006:36-49; Gutner and Adams 2009:4; Johnson, 2009:1-7).

It is evident from the work of the above authors that quality and its practitioners are presently not seen as supporting current business challenges and market demands, as was the case in the past. Perhaps this could be the reason why the benefit that quality delivers to the business world has shifted priority and serves as an assumed requirement. In other words, quality at present is assumed to be an inherent characteristic of design and manufacture or operations, which is then differentiated by the cost of the product or service. This change has placed quality, as a discipline, at a crossroads. Therefore, it can be presumed that in order for quality to be seen in the same light as before and to support current business challenges and market demands, it needs to change the scope of its role once again.

According to Garvin (1988:39), no product or service can be improved without the service provider having a proper understanding or definition of what quality means to the customer. Therefore, when considering an improvement in quality by changing its current scope, an understanding of its definition should be the first step. The definition of quality has always received inordinate attention. On reviewing the writings of six "leaders of quality", namely, Shewhart (1931:53-54), Crosby (1979:7),, Ishikawa (1985:44-45),, Juran (1988: 2.2,2.8),, Feigenbaum (1991:7) and Deming (2000:5,49), the consensus is that the present and future requirements of customers, product requirements, price, statistical process control (SPC) and the price of conformance are essential components for the definition of quality.

It can be perceived from the above consensus that quality has been defined predominately through the lens of product focus and cost reduction. This definition worked adequately during the 1970s and 1980s, as stated earlier in the chapter, and, to a certain extent, still partially meets needs of organisations today. However, considering the emerging trends mentioned earlier, this definition should be further extended. This perception contributed fundamentally to the motivation for this study and will be elaborated on further in the next section.

1.2 Motivation for the study

According to Jabnoun and Sedrani (2005:8-20); Schniederjans, Parast, Mellat, Majid, Subba and Raghu-Nathan (2006:7-21); Zairi (2006:1-7); Kanji (2007:1-10), the common forming principles of quality management in the past have always been ensuring that the organisation remains competitive and demonstrates its "pursuit for excellence".

The motivation for this study is therefore based on creating a new dynamic strategy and definition of quality management that will highlight the need for organisations to move their focus from managing the production process and to begin to understand the customer and stakeholder expectations (Hillmer and Kocabasoglu 2008:51-63; Saco, 2008:8-9; Gutner and Adams 2009:3,12). This new dynamic strategy and definition will be portrayed with an aid of a framework that will be discussed in

detail in Chapter 4. Taking into consideration the emerging trends that influence organisational strategies and business results, the proposed novel dynamic strategy in this study should attend to the entire social system, where issues such as global climate change, business ethics, sustainable economies, ecology and reciprocity are addressed (Saco 2008:8-9). This thinking is consistent with Hitchcock and Willard (2002:43-47), who believe that the new role of quality in this century should include being the watchword for sustainability and that it should encompass both social and environmental issues.

Based on the background literature review and navigating the course for quality management presented above, this study will investigate the change in the concept of Quality from being predominately product and process focused to organisational results which incorporate the "triple bottom line" (economic, social and environmental) reporting requirements (Rossouw 2010:60-63). The new definition will endeavour to embrace the delivery of unimpeachable product quality, world-leading environmental and social care, cutting-edge scientific analysis, and top-notch regulatory tracking. Thus, the key outputs underlying this novel strategy will be centred upon risk mitigation, revenue growth and building reputational equity. Therefore, the motivation for this study is to position quality to adopt a new definition of "Quality Stewardship" and framework for "Leadership".

It is noteworthy that the word "stewardship" was adopted from the work of Block (1996). Although subsequent studies have embraced the concept of "stewardship", Block (1996) was found suitable as a guide during the development of the framework for this study. The description of "stewardship", provided by Block (1996:5), is that it is a set of principles and practices which have the potential to make dramatic changes in governance systems by creating a strong sense of ownership and responsibility in organisations. During the review of the literature it was found that leadership plays an important role in quality management and therefore the concept of leadership was included in the development of the framework.

1.3 Problem statement

The problem statement follows the information provided in the ASQ Futures Study (2008:43-47) and Gutner and Adams (2009:1-31) report, that quality priorities and business priorities have drifted apart over the last two decades due to current business challenges, market demands and new stakeholder requirements created by emerging trends, such as globalisation, customer power and sophistication, social responsibility and environmental sustainability. The 2008 ASQ Futures Study (2008:43-47) was undertaken with the following objectives: to identify and prioritise the key forces that will shape the future of quality; to develop scenarios that describe how the forces may unfold; and to determine the implications for organisations and the quality field, quality professionals and ASQ. This study selected ninety eight participants in the quality arena from around the world, to identify what they thought were the primary forces. The information contained in the Gutner and Adams (2009:1-31) report was the result of an intensive working session of the Conference Board's Quality Council. In preparation for this session, seventeen members of the United States (US) Quality Council were asked to answer a twelve question survey. During the working session, the Council members used results from this survey as a springboard, shaping the paper through rigorous discussion.

The outcome of the Gutner and Adams (2009:1-31) report was that it shed light on the continuing evolution of quality and the changing roles of quality professionals. Furthermore, the report suggested that due to quality priorities and business priorities drifting apart over the last two decades, the current perception was that the theory and practice of quality has become non-progressive and outdated. This belief has led to enormous uncertainty in the profession by fuelling insecurity amongst many quality professionals, thus reducing the number of young professionals attracted to the discipline.

As a result of the changing business environment, organisations in the 21st century are responding by introducing initiatives requiring new resources and systems which in many cases place a major strain on organisations already overloaded with cost and resource constraints. A doctoral study conducted by Singh (2006:231-239)

recommends that organisations introduce an integrated framework for management systems. Consequently, it may be concluded that there is a need for an integrated framework to bridge current business challenges and quality practices. This framework can be considered as a pioneering framework in the 21st century.

1.4 Aim

The aim of this study is to develop an integrated quality stewardship framework that supports change, which quality management as a discipline needs to undertake, and the development of leadership that should be adopted to achieve this.

1.5 Objectives of the study

The primary objective of this study will be to identify the various elements required to develop the quality stewardship framework and the leadership to support the change that quality management as a discipline needs to undertake.

This objective will be achieved by conducting:

- A comprehensive literature review, to determine the current perceptions and status in the discipline of quality and emerging trends that are creating current business challenges, and to identify the various elements to be considered for the development of the quality stewardship framework.
- A literature review on the topics of stewardship and leadership to demonstrate the appropriateness of the term for the new definition of quality management to support the framework.
- A principal study using the survey approach based on the Malcolm Baldrige National Quality Award (MBNQA) criteria to evaluate the current practice and the thinking in quality management.
- In addition, the survey will inquire about the acceptability of the framework as a new approach in quality management.

1.6 Rationale of the study

This study will contribute value to the discipline of quality in three ways.

The "integrated framework" will exhibit a "systems thinking" approach. Systems thinking advocates focusing on a system as a whole, with interconnected parts (Jackson 2009:S24-S32). This study will display the operation of the various components of quality within an organisation as a complete system.

It will add approaches of quality stewardship and leadership to the "body of knowledge" of quality**.**

Finally, it is hoped that the study will contribute to the re-establishment of the relevance and applicability of quality in the 21st century.

1.7 The research methodology and design

This study will adopt both the qualitative and quantitative research paradigms. The research instruments will include surveys in the form of questionnaires. The population considered for this study is defined as employees of manufacturing organisations in the FMCG sector. The sampling technique to be used is purposive sampling based on respondents who are believed to have the knowledge and background to complete the survey. This knowledge includes quality practices and leadership background. The analysis proposed will be statistically based, which will include descriptive statistics, analytical techniques and inference tests.

1.7.1 Preliminary work

A preliminary study will be undertaken on two multi-national beverage organisations in South Africa. It will evaluate the quality management practices within these organisations by conducting organisational analysis using the Viable Systems Model (VSM). This is a conceptual tool based on a combination of cybernetics and systems theory. It is used by operational researchers for understanding organisations' operations (Clemson 1984:98; Beer 1985:1-135).

These organisations were selected for the study because they have dissimilar structures and adopt different methods to implement quality. It was believed that this would provide the variety required when establishing and assessing quality

practices in organisations. Organisation 1 has seven plants; organisation 2 has five plants. Both organisations are supported by a single head office function.

1.8 The principal study

The principal study will consist of a survey which includes the two organisations studied in the preliminary work, their suppliers and other selected manufacturing organisations.

The survey will consist of a questionnaire which will be designed in three sections. These sections will gather information on the demographics, current practice and future thinking of respondents, as well as infer their perceptions of a proposed framework on quality stewardship and leadership.

1.9 Delimitations of the study

The delimitations of the study are as follows:

- The study will only focus on selected manufacturing organisations within the Fast Moving Consumer Goods Sector (FMCG). Other manufacturing sector organisations, including many organisation types within the FMCG sector, will be excluded.
- Empirical research for this study will be conducted in South Africa, although the study can be applicable globally.
- The implementation of the proposed framework on quality stewardship and leadership is excluded from the study.

1.10 Proposing an acronym for the Quality Stewardship and Leadership (QSAL) framework

The framework should be viewed in a systematic or holistic way and will be represented by an acronym. This will allow for ease of its identification and use. Therefore, in choosing the acronym for the framework, quality, stewardship and leadership as key outputs were taken into consideration.

1.11. Possible benefits of the QSAL framework for organisations

It is hoped that this framework will be recognised and adopted by manufacturing organisations and governing councils as a relevant and best-operating practice for management systems. This framework will provide clarity and thought leadership in quality management for all sizes of organisations. Although this study was undertaken in the FMCG sector within manufacturing, the generic nature of the practices it proposes is applicable to all types of organisations. As this is a dynamic framework, organisations can modify it to suit their systems without losing the integrity of the overall purpose of the framework.

Other benefits, using this framework, will allow organisations to comply with management systems, such as OHSAS 18001 and NOSA (Safety), ISO 14001 (EMS), King III Report (Corporate Governance), ISO 9001: (QMS) and legal, among others. It is anticipated that the framework could be patented.

1.12 Structure of the study

The structure of the study is as follows:

Chapter 1: Introduction

This chapter consists of the background, motivation, problem statement, aim objectives, rationale and a brief description of the research methodology and design, preliminary work, principal study, delimitations of the study, acronyms and benefits for the QSAL framework and finally, a structure of the other chapters.

Chapter 2: Literature Review - Current quality management practices and business challenges

This chapter will provide a review of literature pertaining to the evolution of quality management. It will trace the evolution of practices of quality management and take into consideration the viewpoints of several of its founders, researchers and authors. This review will illustrate the manner in which quality management remained aligned to business priorities up until the last two decades. The chapter will then

elaborate on the emerging trends identified in this study and discuss the opportunities they present to the future scope of quality management.

Chapter 3: Literature Review - Stewardship: Leadership, Change Management and Strategy that quality management must adopt

This chapter will present a comprehensive literature review on "stewardship" and thereafter draw linkages with current perceptions and status of leadership, change management and strategy.

Chapter 4: Methodology, Development of the proposed framework and preliminary work

This chapter will illustrate the flow, methodology and research design for this study. The development of the Quality Stewardship and Leadership (QSAL) framework will be presented in this chapter. Furthermore, the preliminary work and pilot study to evaluate the current practices of quality within selected manufacturing organisations will be introduced. The chapter will conclude with a brief introduction to the principal study.

Chapter 5: Principal study

This chapter will introduce and present the findings and discussion for the principal study.

Chapter 6: Summary, conclusions and recommendations

This chapter will culminate with the summary, conclusions and recommendations of the study. The chapter will include a summary of the literature review and empirical studies, the manner in which the objectives of the study were achieved, the limitations of the study, original contributions of the study to the body of knowledge, recommendations for future research and a concluding remark.

1.13 Summary of the chapter

The chapter will provide a background of the transformation and evolutionary phases of quality management. This background will commence by highlighting the

alignment between quality management and the strategic needs of the organisations. Thereafter, it will present the deficiency in alignment which emerged in the last twenty years. The chapter will then outline the details of the investigation and development of the study.

CHAPTER 2: LITERATURE REVIEW - CURRENT QUALITY MANAGEMENT PRACTICES AND BUSINESS CHALLENGES

2. Preamble

The motivation for this study was based on the argument that the heritage of many top organisations was built upon a solid quality management foundation. At present, organisations are faced with increasing new business challenges and market demands, based on emerging trends fuelled by sophisticated and informed stakeholder expectations (Zairi 2005:175-188; Saco 2008: 8-9; Gutner and Adams 2009:4).

The objective of this chapter is to conduct a literature review to support the determination of the new scope for quality management pertinent to this study. In the first part of this chapter, the review of quality management will be undertaken by tracing its evolution through the various decades. This will include the viewpoints of several prevailing founders, researchers and authors. Thereafter, the chapter will present the emerging trends identified in this study. This review will provide the characteristics, business challenges and market demands of each trend, together with the opportunities they present for the future scope of quality management.

2.1 Evolution of Quality Management Practices

Quality management, according to Kanji (1995:1), is about continuous performance improvement of individuals, groups and organisations. In keeping with this philosophy, various authors (Dale 2003:21-26; Folaron, Morgan, Chase and Company 2003:1-7 and Beecroft 2004:425-428; Johnson 2009:1-7) concur that quality management has undergone a number of changes over the last century in accordance with business challenges and market demands prevailing at the time. Examining the views presented by these authors, it can be suggested that evidence exists supporting the notion that the present approaches to quality management have emerged gradually, arriving through a steady evolution rather than through revolutionary breakthroughs.

The next section will present a review of the evolution of quality management through the various decades. Beecroft (2004:425-428) cites a model by Garvin's (1988) on "Four Major Quality Eras", which was chosen as the primary framework for this review. The choice of this model was based on its perceived simplicity and applicability to this study. This model describes the evolution of quality management through "Four Major Quality Eras"; namely, inspection, statistical quality control (SQC), quality assurance (QA) and strategic quality management (SQM).

Using this model to map the research for this study, the fundamental principles, the prevailing trends, the strengths and the weaknesses of quality management during each era, will be examined. This evaluation will consider the factors that contributed to the change of strategy in each era, which inadvertently led to various evolutions of quality management over the years. It will also assess the various management philosophies utilised during the various evolutions and review the manner in which these philosophies contributed to addressing the business challenges and market demands of the prevailing time. In addition to the four eras, this review will examine quality management practices subsequent to Era Four, namely from the 1990s until present.

It is hoped that through this review the latent potential of quality management will be revealed. Furthermore, it is anticipated that the current gaps and opportunities between quality management, business challenges and market demands will become apparent. The next section will discuss the principles, fundamental trends, strengths and weaknesses common to each era that could assist organisations to address current business challenges and market demands.

2.1.1 Fundamental principles of the evolution of quality management in the various eras

Table 1 illustrates the fundamental principles of the four eras during the evolution of quality. It is envisaged that such an illustration will provide a synopsis to display the positioning of the prevailing fundamental principles within each era.

It is evident that two fundamental principles dominated in Era One. Craftsmanship was the first principle, which started in the 1700s. It used skilled craftsmen who built and inspected their own goods (Spichiger 2002:31-32). According to Garvin (1988), during this period production was in small volumes and parts were matched to one another by hand. Therefore, customer needs and satisfaction were fulfilled through direct communication between the craftsmen and the customer.

Table 1: Fundamental principles during the evolution of quality (adapted by the researcher from Beecroft (2004:425-428); Grover and Walker (2003:8); Folaron et al (2003:38); Garvin (1988:37))

Fundamental Principle	**Era One 1700- 1800s**	**Era Two Early 1900s**	**Era Three Mid 1900s - late 1900s**	**Era Four Late 1900s**	**Post-Era Four From 1990s – 2000s**
Craftsmanship					
Inspection – Non-Conformance Detection					
SQC – Non-Conformance Control					
QA – Non-Conformance Prevention					
SQM - Strategic Impact					
QM- Continuous Improvement					

However, Pascal (2007:2-3) claims that, in the nineteenth century, the increase in demand for goods led to an increase in production volumes and ultimately the introduction of mass production techniques. Pascal (2007:2-3) mentions that the fundamental change required for these techniques was the production and testing of large quantities of interchangeable parts, which could not be accomplished totally by the craftsmanship philosophy.

This led to the next fundamental principle, which was referred to as inspection. According to Folaron et al (2003:38), the emphasis of inspection was to ensure product uniformity. The measurement criterion was to objectively verify that the manufactured parts matched the original parts or design using a predefined specification, mostly in the form of gauges or visual standards.

Inspection continued into Era Two, with a changed focus of incorporating incoming and in-process inspection. According to Beecroft (2004:425-428), in Era Two quality management was approached proactively with the adoption of the fundamental principles of Statistical Process Control (SPC) and problem solving. The stimulus for the change to SPC thinking, according to Hossain (2008:1961-1966), was research conducted at Bell Telephone Laboratories by Dr. Walter Shewhart. Statistical Process Control provided emphasis on process control through detection and prediction of non-conformance at different stages of production. However, the limitation of this era was that it was still viewed as inspecting the product after production and it did not reduce the quantity of non-conformances. Thus, this method only controlled the non-conforming product and prevented it from being shipped to customers. Thus, the amount of non-conformances and cost of quality still remained high. These became the main drivers of Era Three.

The fundamental principle of Era Three was quality assurance (QA), which was triggered by the Japanese. This era flagged a radical departure from prior practice of quality management by focusing on becoming more competitive, agile, and customer responsive through quality, cost and waste reduction. Through this approach, the Japanese changed the world view of quality and the Americans' products and positioned themselves as leaders in quality (Gryna 2001:2; Heller 2005:17-21). According to Schonberger (2007: 403-405), the Japanese, instead of competing directly with the Americans on a purely "product out" basis, adopted the learnings of Western management philosophers, such as Deming, Juran and Feigenbaum. Thus, the focus in this era changed from the product to an integrated and holistic approach to quality management through process focus (Spichiger 2002:31-35; Westcott 2004:22-32; Johnson 2009:1-7).

From Dale, van der Wiele and van Iwaarden (2007:581) it can be deduced that the evolution from Era Three was driven by the Americans who were faced with business challenges and market demands created for them mostly by the Japanese. According to these authors, during the third era, the Americans started to experience serious external factors, such as trade recalls due to defective products, each linking

to losses in profitability and market share due to poor quality. They add that the increased foreign competition from the Japanese, a sharp jump in the number of product liability suits, and pressures from the government on several fronts awakened the American organisations to quality management's competitive potential. A repercussion of this could perhaps be the reason for the evolution to the fourth era.

The fourth era was activated by the prominent television documentary "If Japan Can … Why Can't We?" (Crawford 1980: Videotape) aired by the National Broadcasting Corporation (NBC) on June 24, 1980. This documentary had a major impact on the Americans' perceptions of their manufacturing quality and symbolised the historical shift of the American quality movement (Deming, 2000:486; Gryna 2001:2; Folaron et al 2003:40; Heller 2005:17-21; Toney and Rodica 2009:2). Beecroft (2004:425-428) was of the opinion that the primary focus of the fourth era was the strategic impact of quality on the organisation. During this era, quality management was led by top management with emphasis on the market and customer needs, linking quality with competitive success.

According to Dale, van der Wiele and van Iwaarden (2007: 580) quality management in the last two decades (after the fourth era) has focused on advanced quality planning tools. Other advancements noted over the last two decades are the development and advancement of international and local standards or management systems and business awards (Vokurka, Stading and Brazeal 2000:41-49; Foloran et al 2003:41; Singh 2006:68-69; Johnson 2009:2).

From the review of each of the listed four eras it is evident that quality management evolved due to changes in supply and demand and customer needs, which purposely were linked to supporting organisations becoming more competitive and profitable. The review further illustrates that quality management after the fourth era predominately focused on continuous improvement. The changes in quality management through the various eras also led to the development and adoption of

new tools, techniques and guidelines. This can be seen from the prevailing trends, which will be discussed below.

2.1.2 Prevailing Trends of evolution of quality management in the various eras

Table 2 presents the prevailing trends of the four eras during the evolution of quality. It is intended that such an illustration will provide an account of tools, techniques and guidelines within each era.

In Era One, due to the nature of manufacture and small volume of goods produced by craftsmen, self-evaluation of workmanship was feasible to determine the acceptability of the product (Garvin 1988). Folaron et al (2003:38-43) states that as customer demand increased, this signalled a need for higher production volumes; therefore, organisations found it necessary to change their production strategy to accommodate the supply.

Mass production was used as a strategy to achieve the desired product volumes. Inspection for sorting product into conforming and non-conforming categories provided a solution for many years. This was a result of the customers' needs, which, though insatiable, were not very discerning; thus their interests were subsumed under those of production and demand. Inspection of finished product at the end of the production line was undertaken by quality control inspectors. Specifications were introduced to measure the acceptability of these products against predefined standards (Priestley 2005: 1-6).

Beecroft (2004:425-428) suggests that the fundamental change in Era Two was the focus on the product and the transfer of ownership of quality to process and engineering. With the change of ownership, inspections were added at various steps of the process to support the requirement; namely, incoming, in-process and final inspection at the end of the production line. This created focus on product uniformity and ensured that non-conforming products were not shipped to the customer. Furthermore, he commented that the role of the quality professional evolved to encompass SPC methods and problem solving techniques.

Table 2: Prevailing Trends during the evolution of quality (adapted by the researcher from Beecroft (2004:425-428); Grover and Walker (2003:8); Folaron et al (2003:38-43); Garvin (1988:37))

Prevailing Trends	Era One 1700- 1800s	Era Two Early 1900s	Era Three Mid 1900s - late 1900s	Era Four Late 1900s	Post-Era Four From 1990s – 2000s
Craftsmanship	• self-evaluation				
Inspection – Non-Conformance Detection	• mass production • end of the line inspection • specifications	• mass production • end of the line inspection • specifications	• mass production • end of the line inspection • specifications	• mass production • end of the line inspection • specifications	• mass production • end of the line inspection • specifications
SQC – Non-Conformance Control		• changing roles • product control • incoming and in process inspection • statistical tools • problem solving	• changing roles • product control • incoming and in process inspection • statistical tools • problem solving	• changing roles • product control • incoming and in process inspection • statistical tools • problem solving	• changing roles • product control • incoming and in process inspection • statistical tools • problem solving
QA – Non -Conformance Prevention			• process management • zero defects • COQ • TQC • reliability • LPS • quality at source • JIT • kanban • standards • changing roles	• process management • zero defects • COQ • TQC • reliability • LPS • quality at source • JIT • kanban • standards • changing roles	• process management • zero defects • COQ • TQC • reliability • LPS • quality at source • JIT • kanban • standards • changing roles
SQM - Strategic Impact				• TQM • top management commitment • strategic management • competitive advantage • customer focus • changing roles	• TQM • top management commitment • strategic management • competitive advantage • customer focus • changing roles
QM- Continuous Improvement					• benchmarking, FMEA, DOE, QFD • international and local standards or management systems • quality awards • Six-Sigma

The review of Era Two demonstrated that SPC provided emphasis on the reduction of non-conforming product and process control through detection and prediction of non-conformances at different stages of the production process. Problem solving addressed the prevention of producing non-conforming products. Thus, from this review it can be gathered that this era, in comparison to Era One, delivered better product quality, reduced the cost of poor quality, increased customer satisfaction and ultimately increased profit. However, the life-cycle of this era was short lived due to the complacent attitude it engendered in the American industry.

From Table 2 above it can be seen that the evolution to the third era changed the course of quality management significantly. Spichiger (2002:31-35); Watson (2004:54-67); Westcott (2004:22-32); Johnson (2009:1-7); Toney and Rodica (2009:2) agree that the third era required a shift in the mindset of organisations. It carried a strong message that the only way to prevent poor quality products was to control the processes used to produce them. Furthermore, the views of these authors suggest that to succeed using this principle meant the coordination and contribution of all functions throughout the supply chain from design to the final customer. They added that in this era the focus on quality management moved from detecting poor quality in products to giving prominence on achieving zero defects. The tools for achieving zero defects expanded to include elements; namely, quantifying the costs of quality, total quality control and reliability engineering.

The initiatives discussed set the platform for further improvement, which was adopted as an opportunity by the Toyota Motor Company. This led to the introduction of the Toyota Production System (TPS), also known as the "Lean Production System" (LPS). This system, according to Heller (2005:17-21); Barnwell (2007:1-16) and Schonberger (2007:403-419), which was introduced to Japan by Kilichiro Toyoda, the head of Toyota motor industries, and Taiichi Ohno, was based on the practical learning that they gained from American mass production facilities. The LPS was popularised in the 1990s, after the publication of the bestselling book, "The Machine that Changed the World: The Story of Lean Production" by Womack, Jones and Roos, (1990). This book documented how organisations could transform

their operations by adopting the LPS approach developed at Toyota. The LPS has since been widely adopted across manufacturing industries and is known for its supporting strategies; namely, quality at source, just-in-time (JIT) and demand-pull production or kanban system (Haak 2004:1-27; Pascal 2007:19, 39-46, 67-91; Magee 2007:32-33,7-39,73-83; Liker and Hoseus 2008:13; Bicheno and Holweg 2009:71-81; Larman and Vodde 2009:14-24).

According to Konning, Verver, Heuvel, Bisgaard and Does (2006:4-11) LPS was an integrated system of principles, practices, tools, and techniques that were focused on reducing waste, synchronising work flows, and managing production flows. Kumar and Bauer, (2010:29-46) maintain that the cornerstone to the LPS approach was waste reduction. According to George 2002:280; Heizer and Render 2004:596; Chase, Jacobs, and Aquilano 2007:472 and Taj 2008:219, waste can be defined as any activity that does not add value to the finished product, such as excess inventory, unnecessary operations, scrap, rework or transportation. Alukal (2003:29-35) and Bendell (2006:257) support this view that the elimination of these non-value-added activities reduces cycle time and costs, and will result in more competitive, agile, and customer-responsive organisations that make currently-used resources available to concentrate on those activities that add value to the product or service. The LPS discussed above by the various authors (Watson 2004:54-67; Schonberger 2007: 403-419; Hossain 2008:1961-1966; Toney and Rodica 2009:2) supported the step change made by quality management; namely, that the only way to prevent poor quality products was to control the processes used to produce them. Beecroft (2004:425-428) commented that the transformation of quality management during this era also notably changed the role of the quality professional. The role of quality professional was re-scoped so that he/she was transformed to an auditor, a facilitator, an educator, a project manager, a team leader or a consultant in management systems.

Table 2 depicts the fourth era as transferring and re-packaging of the original Japanese “process management” to the West, as the most popular management panacea of all, called Total Quality Management (TQM). According to Dale, vvan

der Wiele and vvan Iwaarden (2007:29-30), TQM, as a new capstone for QA, advocated that the principles of quality management should be applied organisation-wide across all departments and functions. It should drive an emphasis on integration into business practices and a balance between technical, managerial and people issues. Furthermore, they affirm that although the organisation-wide approach was a major change for quality management, the inclusion of top management to provide strong leadership in this process was argued as fundamentally important to the acceptance of the quality discipline. This changed the thinking towards quality management from being the responsibility of the manufacturing department to that of the members of the board of senior executives.

According to Conti, Kondo, and Watson (2003:21-46); Bernal, Castel, Agustin, and Aleson (2004:20-34); Jabnoun and Sedrani (2005: 8-20), the leadership by top management transformed quality management to become strategic and competitive with more customer, rather than internal standards, focus. This included market research and reviews of competitors' products and attention to product costs, which drew a clearer link between quality and profitability as key outputs for quality management. Beecroft's (2004:425-428) comments on the changed role of the quality professional in the fourth era suggested that they reflected little resemblance to their predecessors. The quality professionals became managers, not inspectors; planners or leaders, not controllers; most importantly, they became sensitive to markets as well as to manufacturing.

After the fourth era, advanced techniques, such as benchmarking, increased use of Failure Mode Effect Analysis (FMEA), Design of Experiments (DOE) and Quality Function Deployment (QFD) were introduced as advanced planning and continuous improvement tools (Dale, vvan der Wiele and vvan Iwaarden 2007: 580). The ISO 9000 series of quality standards introduced in 1987 underwent several updates with the latest revisions being ISO 9001:2008 (Cianfrani and West 2010:1-4; Sandford, 2010:46-49) and ISO 9004:2009 (Scriabina and Cort 2010:28-34). Johnson (2009:2) suggests that the ISO 9001 in the last two decades pioneered the development of other management systems relating to environmental management (ISO 14001) and

occupational health and safety (OHSAS 18001). Singh (2006:68-69) proposes that organisations subscribe to additional specialised standards in accordance with their sector or to stipulations by their customers. These specialised systems, to name a few, include, "Hazard and Critical Control Point" (SANS 10330:2006), "Legal Metrology Quantity Control Scheme" (SANS 1841), "General Requirements for the competence of Testing and Calibration Laboratories" (ISO 17025:2005) and ISO 16949, the automotive supplier requirements standard that was introduced by the U.S. automobile industry, led by the "big three" in the motor industry; namely, Ford, General Motors and Chrysler. All of the above management systems were introduced to align with the changing requirements of the business world, legislation and market demands, at the time.

More recently, several Quality Awards were introduced across the world. The most commonly known and used are the Malcolm Baldrige National Quality Award (MBNQA), the European Foundation for Quality Management (EFQM), the Deming Prize, the Canadian Quality Award and the Australian Quality Award. All these awards have undergone several updates since their introduction, as part of aligning to the changing business context (Vokurka, Stading and Brazeal 2000:41-49, Williams, Bertsch, van der Wiele, van Iwaarden and Dale 2006:1287-1300). In South Africa, the South African Excellence Framework (SAEF) was created in 1997 and was aligned to the European Award (Mohammad and Mann 2010:1). From the review of the various awards, the MBQNA is seen as the most commonly used award across the globe. Many countries adopt the MBQNA criteria and categories and make modifications to some of the criteria or scoring. A recent study suggests that the reason for the MBNQA being more universally suited than the other awards can be attributed to its suitability to many national cultures (Flynn and Saladin 2006:583-603; Evans 2008:87).

The last addition to the quality family during the 1990s was the philosophy and strategy of Six-Sigma. Larson (2003:9-12) positions Six-Sigma as a strategy and philosophy that emphasises continuous improvement using a structured approach, namely the Define, Measure, Analyse, Improve and Control (DMAIC) cycle. Mader

(2008:42) is of the view that a distinct feature of Six-Sigma is that it is built on strong executive support and a hierarchical structure of highly trained and competent people known as champions (black belts, master black belts and green belts, yellow belts and white belts). A more recent evolution of Six-Sigma was the inclusion of the Lean Production Systems (LPS) methodology. Until the mid to late 1990s, Six-Sigma and LPS systems were viewed as separate and distinct improvement methods. Presently, however, many organisations integrate Six-Sigma and LPS along with project management and business process reengineering (Pascal 2007:6; Mader 2008:44).

The review of section 2.1.2 provides evidence that each of the eras strengthened and broadened the scope of quality management significantly. Quality management as a discipline was dynamic and changed on a continuous basis to meet the prevailing business challenges and market demands. It is apparent that although several new business tools and standards were developed after the fourth era, the nature of the developments was not radical and they were more directed as continuous improvements when compared to the developments during the four eras.

2.1.3 Strengths of the various eras during the evolution of quality management

Table 3 shows the strengths of the four eras during the evolution of quality. It is anticipated that such an illustration will provide further insights on the unique contribution by quality management in each era.

In the first era, during the craftsmen period, all products were individually customised to customer requirements. The strength of this period was that each product was unique (Juran 1995: 607-608; Juran and De Feo 2010: 26-37). An example, perhaps, of what the craftsmen era looked like, could be best illustrated in present day, in the field of luxury automobile manufacturers like Lamborghini, Ferrari, and Aston Martin that continue to produce small volumes of very expensive automobiles for buyers seeking prestige and the opportunity to deal directly with the factory (Pascal 2007:1-2).

Table 3: Strengths during the evolution of quality (adapted by the researcher from Beecroft (2004:425-428); Grover and Walker (2003:8); Folaron et al (2003:38); Garvin (1988:37))

Strengths	**Era One** **1700- 1800s**	**Era Two** **Early 1900s**	**Era Three** **Mid 1900s - late 1900s**	**Era Four** **Late 1900s**	**Post-Era Four** **From 1990s – 2000s**
Craftsmanship	• customisation				
Inspection – Non-Conformance Detection	• increased customer demand • automation	• increased customer demand • automation	• increased customer demand • automation	• increased customer demand • automation	• increased customer demand • automation
SQC – Non -Conformance Control		• quality ownership change • statistical tools • product uniformity • corrective action • reduction in non-conformances • reduction in inspection • process predictability • reduced cost of quality • better product • customer satisfaction	• quality ownership change • statistical tools • product uniformity • corrective action • reduction in non-conformances • reduction in inspection • process predictability • reduced cost of quality • better product • customer satisfaction	• quality ownership change • statistical tools • product uniformity • corrective action • reduction in non-conformances • reduction in inspection • process predictability • reduced cost of quality • better product • customer satisfaction	• quality ownership change • statistical tools • product uniformity • corrective action • reduction in non-conformances • reduction in inspection • process predictability • reduced cost of quality • better product • customer satisfaction
QA – Non-Conformance Prevention			• preventative ethic • quality planning • training • empowered employees • LPS • ISO 9000	• preventative ethic • quality planning • training • empowered employees • LPS • ISO 9000	• preventative ethic • quality planning • training • empowered employees • LPS • ISO 9000
SQM - Strategic Impact				• top management commitment • stakeholder management • continuous improvement • customer focus • competitor focus • customer loyalty • improved efficiency	• top management commitment • stakeholder management • continuous improvement • customer focus • competitor focus • customer loyalty • improved efficiency
QM- Continuous Improvement					• advanced planning tools • recognised management systems and business tools • Six-Sigma strategy

Later in this era, mass production emerged as a strength based on increased customer demand. Folaron et al (2003:38-39) declare that during this period large quantities of high quality products were produced at low cost. Examples of products produced during this period include Eli Whitney's government contract to produce 10,000 muskets; customer products such as sewing machines for the Singer Company and farm equipment for the McCormick Harvesting Company, to name a few.

Henry Ford's moving automobile assembly line was recorded in history books for the early adoption and showcasing of the successes and advantages of mass production techniques. Henry Ford's moving automobile assembly line illustrated that to be efficient in mass production it was critical that only good parts be available for use. This approach supported productivity by not allowing the production assembly line to slow down or to stop while an employee sorted through piles of parts to find one that fitted (Folaron et al 2003:38-39).

Beecroft (2004:425-428) notes that a key strength in the second era was the transfer of the responsibility for quality to the manufacturing and engineering departments and the introduction of statistical techniques. These changes resulted in improved focus on product uniformity and the adoption of corrective action to improve the quality of the product, thus reducing the amount of non-conforming product and scrap produced. The use of statistical techniques further reduced the amount of inspection and the number of inspectors required for inspections. Organisations using SPC were able to better control and predict performances of their processes. This eventually resulted in better product quality, reduced cost of poor quality, increased customer satisfaction and profitable growth.

Cunningham and Ho (1996:51-65); Dale, van der Wiele and van Iwaarden (2007:27-28); Hossain (2008:1961-1966) stress that a fundamental strength of the third era was the adoption of a prevention approach to quality management. This meant more emphasis was placed on advanced quality planning, training and critical problem solving tasks rather than inspecting for non-conforming products. The following provides a summary of the comprehensive initiatives implemented by the Japanese to

train and empower employees on quality management through the 1960s (Watson 2004:54-67; Schonberger 2007: 403-419; Hossain 2008:1961-1966; Toney and Rodica 2009:2):

- Special Japanese educational organisations were created, such as the Japanese Union of Scientists and Engineers (JUSE), the Japanese Standards Association (JSA) and the Japanese Management Association (JMA), which made consistent quality control education possible for executives, managers, supervisors, and shop floor employees
- Annual programmes of quality improvement were implemented across all departments.

As a result, the training programmes delivered improvement in all functions, and it became possible to harness the input of all employees, including shop floor operators. By its nature, this annual training resulted in renewed learning and continued improvement at an increased rate. Koaru Ishikawa introduced initiatives such as organisation-wide quality control, quality circles and the seven basic tools for quality control. These initiatives created a sense of ownership and accountability across all functions within the organisations. As part of developing and driving senior management leadership and commitment to the quality culture, the Japanese Union of Scientist and Engineers (JUSE) introduced the seven management and planning tools. These initiatives set the platform for further improvements realised by the Japanese during this era.

Haak (2004:1-27) and Heller (2005:17-21) recognise the origin of LPS thinking as a strength during this era. Notably, LPS is at present widely used across the globe. Presently, according to Lewis and Bagley (2009:1-20), LPS principles, building on the success in manufacturing, are being increasingly applied to a wide range of private-sector service organisations, including some governmental entities.

Yet another strength that emerged during this era, which even at present has a major influence on quality management, was the International Organisation for Standardisation ISO 9000 family of quality standards, which have, since inception, promoted standardisation of work practices across departments, organisations and the

globe (Folaron et al 2003:41; Conti 2004:1-8). This system has been revised a number of times.

The foremost strength of the fourth era that cannot be over-emphasised was top management commitment (Dean and Bowen 1994:392-418; Kaynak 2003: 405-435; Sila and Ebrahimpour 2003: 235-268). Beecroft (2004:425-428) believes that in the first three eras, management was able to delegate the responsibility for quality tasks to the shop floor. In the fourth era, quality management was viewed as a strategic component in the overall business with the interests of all stakeholders of the organisation being addressed.

Another key strength of this era, suggested by Conti, Kondo, and Watson (2003:21-46), was the orientation to build quality into the product by embarking on improvement efforts focusing on "the voice of the customer" and reducing costs. They added that this thinking was not just restricted to product quality but also to understanding customers' behaviour (their own and their competitors' customers), which was thought to be more likely to direct customer purchases. These changes were directed at producing greater customer loyalty, which, over time, was intended to translate into an increased repurchase rate for products or services. An example of this thinking in practice is presented by Goodman and Collier (2007:22-27) for the banking industry. By analysing satisfaction and efficiency by type of transaction, a major bank learned that bounced cheques and the associated fees caused major confrontations because it took excessive time to resolve at branches and by the call centre. As a result, the bank developed several alternative responses based on customer history and value and trained a small team to handle them. Waiting time in branches declined, and call handling efficiency and customer satisfaction rose by double digits. This example serves to illustrate that listening and adapting responses to customer needs can result in a substantial payoff in loyalty long term business sustainability and profitability.

The strengths of developments after the fourth era included the development and use of advanced techniques and planning tools to deliver continuous improvement.

Management systems such as ISO 9001, ISO 22000 and ISO 14001, adopted by organisations globally, provided a systematic approach to management processes and compliance to legislative requirements (Singh 2006:68-69; Surak 2007:21-27). The introduction of quality awards, according to Vokurka, Stading and Brazeal (2000:41-49) can be seen as providing organisations with tools to promote an understanding of the requirements for the attainment of quality excellence and successful deployment of quality management. From Harry and Schroeder (2000: viii, 10, 19) and Pande, Neuman and Cavanagh (2000:11-13, 37) Six-Sigma was able to identify huge opportunities for improvement, deliver reduction of variability within processes and deliver exceptional return on investment for organisations. Organisations that have extensively used and subsequently made the Six-Sigma philosophy famous include General Electric, Allied Signal, Bombardier, Sony, Honda, Texas Instruments, Canon and Lockheed Martin, to name a few.

The review of the strengths of the various eras illustrates that quality management created distinguishable milestones through its journey. The tools, techniques and approaches developed during these eras were robust, as they exist in one form or another even in the present day. Thus, it can be inferred that these tools are still relevant and can be utilised in the current study, in the re-scoping of quality management for the future.

The next section will examine the weaknesses identified in each era and the implications of each.

2.1.4 Weaknesses of the various eras during the evolution of quality management

Table 4 exhibits the weaknesses of the four eras during the evolution of quality. It is hoped that such an illustration will reveal the limitations that either led to the next evolution or the lack of progress of quality management during the various eras.

Table 4: Weaknesses during the evolution of quality (adapted by the researcher from Beecroft (2004:425-428); Grover and Walker (2003:8); Folaron et al (2003:38); Garvin (1988:37))

Weakness	**Era One** **1700- 1800s**	**Era Two** **Early 1900s**	**Era Three** **Mid 1900s - late 1900s**	**Era Four** **Late 1900s**	**Post-Era Four** **From 1990s – 2000s**
Craftsmanship	• demand and supply constraint				
Inspection – Non-Conformance Detection	• focus on volume and output only • end of line inspection • stagnant quality • separate QC departments • sorting scrap • high cost of quality • 100% inspection	• focus on volume and output only • end of line inspection • stagnant quality • separate QC departments • sorting scrap • high cost of quality • 100% inspection	• focus on volume and output only • end of line inspection • stagnant quality • separate QC departments • sorting scrap • high cost of quality • 100% inspection	• focus on volume and output only • end of line inspection • stagnant quality • separate QC departments • sorting scrap • high cost of quality • 100% inspection	• focus on volume and output only • end of line inspection • stagnant quality • separate QC departments • sorting scrap • high cost of quality • 100% inspection
SQC – Non-Conformance Control		• poor competence • complacency • establishment of QC departments	• poor competence • complacency • establishment of QC departments	• poor competence • complacency • establishment of QC departments	• poor competence • complacency • establishment of QC departments
QA – Non-Conformance Prevention			• corrective action bias • Japanese culture	• corrective action bias • Japanese culture	• corrective action bias • Japanese culture
SQM - Strategic Impact				• forced commitment • poor implementation of quality practices • poor perception of competitive potential	• forced commitment • poor implementation of quality practices • poor perception of competitive potential
QM- Continuous Improvement					• limited development • non-alignment to business challenges and market demands

A fundamental weakness of craftsmanship in Era One was due to its inherent characteristic, which could not cope with demand in large quantities. Pascal (2007:1-2) reports that by using the craftsmanship approach, the manufacture of a single product can take a long length of time with a high accompanying cost. Thus, as demand increased, this approach was not feasible. This led to the era of inspection.

A key weakness of the inspection period, according to Dale, van der Wiele and van Iwaarden (2007:24-26) and Folaron et al (2003:39), was the system that quality management employed. It consisted only of end of the production line or final inspection. This approach was human resource intensive, very costly and did not improve the quality of the product. This led to Era Two, wherein inspection was reduced through the introduction of SPC.

A major weakness noted during the second era was the high level of competence required by everyone within the organisation for the application of SPC. As a result, manufacturing organisations did not fully utilise these techniques until the late 1940s (Ishikawa 1985:103-120; Hossain 2008:1961-1966). From the literature of Westcott (2001: xvi) and Folaron et al (2003:39), a second weakness can be implied, namely the complacent attitude towards quality by the American industry that prescribed quality control. The authors note that after the Second World War, industrial standards were declassified and most American manufacturers stopped using SPC. The Americans returned to a strong "product-out" focus, with end of the line inspection only. This allowed manufacturing operations to continue to focus on volume and output without the need to focus on quality improvement or cost reduction. Folaron et al (2003:39) state that the prevailing western business model prescribed quality control, which encouraged the development of Quality Control (QC) departments. These QC departments were essentially operated as a separate department focusing on the end of the line inspection for defects. This behaviour, similar to Era One, was human resource intensive, very costly and did not improve the quality of the product.

A weakness identified in the third era was the lack of competence in using SPC (Foloran et al 2003:40). The author adds that although SPC was re-introduced and the level of quality awareness and the use of statistical methods grew rapidly in Japan during this era, besides the statisticians, the remaining workforce felt a lack of control due to the complexity and competence required to effectively implement the use of statistics. This put the quality evolution of this era in jeopardy, until much more focused attention was provided through training and coaching.

Another weakness from the review of Beecroft (2004:425-428) is that it is apparent that the third era focused only on the production and shop floor level of the organisation. As a result, the focus could be still perceived only as the prevention of defects or driving the zero defect initiative. For this reason perhaps, a weakness of this era could be that quality still carried a defensive nuance rather than a possible basis for competition.

Ohmae (1982:221) suggests a further weakness of this era was the development of process focus strategies using Japanese terms. These terms were well suited to the Japanese way of life and therefore achieved the success that they did in Japan. However, they were not easy to accept or adopt outside Japan. These included Japanese terms such as, muda (waste), kaizen (continuous improvement), nemawarshi (consensus building) and ringi (shared decision-making). Countries outside Japan managed to use them only after much translation and understanding of the relationships between the Japanese culture and intended business philosophy.

In the fourth era, from Garvin's (1988) model, a conceivable weakness was that top management was forced into accepting responsibility for quality as part of the strategic agenda as a result of increased cost of producing defective products, increased cost of product liability suits and tremendous competitive pressures in the marketplace (Beecroft 2004:425-428). This was more real in the case of the Americans.

Although the fourth era was seen to contain the correct ingredients for success, a weakness could be that many organisations did not implement them fully. Perhaps this is a reason for the current state of quality management. Supporting this is the 2008 edition of the top ten challenges cited by CEOs (Conference Board CEO Challenge Report 2008:5), where it is evident that quality was no longer on their top ten list on the agenda as a strategic competitive potential.

A key weakness from the review of the developments in quality management after the fourth era implies that there has been little progress within the discipline over the last two decades in aligning with prevailing business challenges and market demands (Gutner and Adams 2006:9).

The review of the weakness indicated that there were some setbacks that occurred during the eras of quality management. However, in many cases, these setbacks were short term and led to the evolution of the next era or improvement to the current. From this review, it is evident that quality management has displayed resilience over the various eras and has a high level of propensity to change or adapt when required. Therefore, it is hoped that the weaknesses identified after the fourth era will be addressed similarly.

2.1.5 Conclusions on the evolution of quality management

The review demonstrates that quality management evolved rapidly over the last century in four major eras, namely Inspection, Statistical Quality Control, Quality Assurance and Strategic Quality Management. From Tables 1 to 4 above it can be concluded that the evolutions of quality management were necessary at those times to meet the changing business challenges and market needs that were linked to demand and supply, customer focus, competitive advantage and profitable growth. From this review, it can be inferred that some of these evolutions were major changes to the approach and philosophy of quality management, whilst others were minor additions and enhancements to the prevailing philosophy.

The following section provides a summary of the evolution of quality through the various eras, in chronological order:

- Craftsmanship, thereafter moving on to inspection and elimination of defects by traditional quality control and engineering standards, specification and the use of statistical process control (SPC);
- The advent of Japanese quality management and the focus on process;
- Emergence of programmes and techniques such as Toyota production system (TPS), LPS manufacturing, just-in-time (JIT), quality at source, Kanban;
- The impact of Japanese competition on businesses in the West; the influence and teachings of quality gurus such as Deming, Juran and Feigenbaum first in the East then in the West;
- Introduction of TQM as an umbrella concept in the West, included the shift in the responsibility of quality management from the manufacturing department to the boardroom, linking quality and management commitment with competitive success;
- TQM also encompassed organisation-wide quality management systems, process programmes and systems transferred from the East, focus on employee empowerment and extending quality management to include suppliers and customers;
- The introduction of international standards, specifically ISO 9001.

A common thread throughout the evolution is that each developing era incorporated important elements of the previous era. It is evident, though, that the prevailing elements did not retain their dominance from one era to the next. Most evident and relevant to this study is that the new elements in each era were aligned to changing business challenges and market demands. Reflecting on the evolution of quality management described in this review, it can be concluded that quality travelled a long journey from being an isolated, independent function, dominated by technical experts to the corporate mainstream, to becoming an activity worthy of attention in the boardroom. Also, the role of the quality professional progressed continuously.

The review above illustrates that quality management after the fourth era focused predominantly on the development of standards and business tools. It is apparent from the examination of the nature of these developments that they were not radical and were more directed as continuous improvements when compared to previous quality management standards and business tools. The review further implies that there was little progress within the discipline of quality management over the last two decades in aligning with prevailing business challenges and market demands. Thus, it can be assumed that quality management reached its climax in the fourth era. This deduction will be explored further in the next section of this study.

2.1.6 Factors contributing to the present non-alignment of quality management and business challenges and market demands

It can be inferred from Gutner and Adams (2009:1-21) that in the last two decades (after Era Four) quality management was not seen to be aligned to business challenges and market demands. The most striking reason for the difference in the last two decades, as mentioned in the motivation of this study in Chapter 1, was that quality was no longer sufficient to produce a perfect product or service; this became an assumed requirement in the marketplace. It seemed as though quality became embedded into corporate processes.

Another reason implied by Gutner and Adams (2009:5) is that the mindset of quality that has become embedded into corporate processes and taken for granted has over the last two decades led to some corporate leaders becoming unfamiliar or inexperienced with quality matrices and strategies. These authors add that this resulted in corporate leaders not fully appreciating the aspects that are required to systematically achieve and maintain defect-free products and services and enterprise improvement. Hence, when new business challenges and market demands arose from emerging trends, these corporate leaders may have not fully appreciated the benefits of quality management or how it could help improve an organisation's top-line growth and profitability. Therefore, quality management matrices and strategies were not considered for assisting organisations in addressing new business challenges and market demands. From this review, it is evident that contributing reasons for non-

alignment between quality management, business challenges and market demands could be due to the lack of proper appreciation and understanding by corporate leaders on how quality management could deliver competitive advantage, customer focus and profitable growth to organisations as done previously during the four evolutions discussed.

Hoyle (2009: vii) also provides an insight into the reasons for the current state of quality management. He mentions that for many years, the supporting functions such as finance and human resources were excluded from quality management because they did not directly contribute to product quality. However, when quality management entered into the discussions in the boardroom, as described in the fourth era, it became difficult to distinguish between quality and non-quality issues. With this outlook emerged the concept of little "q" and big "Q", which was coined by Juran (1951). Little "q" focussed on quality assurance and thus was concerned with the saleable goods, services and related processes, functions, customers, suppliers and costs. Big "Q" was concerned with business outputs and all processes, functions, stakeholders and costs.

The approach using little "q" and big "Q" advocated that every function, in some way, influenced the ability of the organisation to create and retain satisfied customers. This meant that business survival depended on the relationship with employees, suppliers, shareholders and society in general. According to Hoyle (2009: vii), big "Q" thereafter became packaged as TQM. He is of the opinion that TQM was not well understood and resulted in many misconceived but well-meaning initiatives. A reason was that it did not bridge the intellectual gap between quality management and general management. It was noticed that even though organisations implemented TQM, it mainly focused on satisfying customer requirements by improving product quality only. It can be inferred from this review that although TQM intended to move the thinking of quality management beyond the focus of the product or process (which was the thinking up until then), it was not achieved. It has been suggested by Hoyle (2009: vii) and Gutner and Adams (2009:5) that this non-alignment, namely the inexperience and lack of knowledge on quality management

matrices and strategies by corporate leaders, was the primary reason for the gap between general and quality management.

It is evident from the above points that quality management after the SQM era has become stagnant. Thus, it can be inferred that although quality remains or continues to be one of the top ranking strategic issues in all major organisations and focuses on the development of standards and business tools after the SQM era, at present it does not support organisations adequately. Presently, organisations are searching for opportunities for continuous improvements and alignment to business challenges and market demands that are more aligned to the increasingly sophisticated and informed stakeholder expectations and emerging trends. Therefore, in order for quality management to be seen as useful as it has been previously, it needs to change the scope of its role once again to align to the increasingly sophisticated and informed stakeholder expectations and emerging trends. In this way, it will support organisations to address current business challenges and market demands, as it did throughout the four eras reviewed.

2.2 Emerging trends driving current business challenges and market demands

The previous section illustrates the reasons for the existence of a gap between the current state of quality management, new business challenges and market demands resulting from emerging trends and current stakeholder expectations. This section will evaluate these emerging trends and their inherent stakeholder expectations. By describing the nature of these trends it is hoped that the future scope and alignment for quality management with new business challenges and market demands will be revealed.

Chapter 1 in this study lists the common emerging key trends that will impact quality management in the future. They are, namely, globalisation, customer power and sophistication, social responsibility and environmental sustainability (ASQ Futures Study 2008:43-46; Gutner and Adams 2009:6). A review of each of these trends will be undertaken below.

2.2.1 Globalisation

At present, globalisation affects all spheres of existence on this planet. It has effected changes in the way organisations and people operate or interact across the world. In doing so, it has at the same time created new business opportunities and challenges. This section will discuss some of the impacts and opportunities presented through globalisation and will evaluate the role that quality management can undertake in supporting organisations to address business challenges and market demands created by this trend.

This section will discuss globalisation, the challenges and risks of this trend and other trends.

2.2.1.1 The characteristics, business challenges and market demands of globalisation

Mapuva (2010:390-413) regards globalisation as a process and activity heralding a new era of interaction among nations, economies and people. Furthermore, he defines globalisation as an on-going process of international integration that encompasses economic integration through trade, investment and capital flows; political interaction; information and information technology; and culture. From this definition it can be inferred that through globalisation there is an unprecedented flow of people, capital, technology, goods and services that transcends national borders. However, an important consideration is that globalisation brings potentially large benefits as well as many challenges and risks.

Brant (2003:607-613); Watkins (2005:24-31); Feigenbaum (2007:36-40); Saravanan and Roa (2007:15-24);, and Feigenbaum (2008:22-27) support that globalisation has transformed the world to become a global village. This new transformation now presents customers with a range of alternative suppliers for the services and products they desire. Gutner and Adams (2009:11) state that an outcome of globalisation is that customers, who once limited themselves to buying from local sources, now go to the extent of using the internet to purchase products and services that best meet their needs. Furthermore, they expand that globalisation does not stop with the customers

but also applies to organisations and manufacturing operations. In the past, organisations made their products, production materials and talent location-dependent. Factories were therefore located in close proximity to raw materials and the labour force. Presently, this has changed where both are sourced on cost-effectiveness and may be increasingly less dependent on location.

It is evident from the literature above that Mapuva (2010:390-413); Brant (2003:607-613); Watkins (2005:24-31); Feigenbaum (2007:36-40); Saravanan and Roa (2007:15-24); Feigenbaum (2008:22-27) and Gutner and Adams (2009:11) are in agreement that globalisation has changed the world significantly. It can be gathered that the changes brought about by globalisation have created a wide range of new challenges in the business world, individual lives, societal lives and the planet. Thus, in order for organisations to be successful, they need to carefully navigate these new challenges and market demands.

2.2.1.2 The relationship and opportunities between globalisation and quality management

Watson (2008:5); Sanders (2008:44) and the ASQ Futures Study (2008) emphasise that globalisation is the only force that has been listed on each of the previous four ASQ Future Studies. Therefore, they are of the opinion that globalisation will dominate the future of quality in other facets of life.

Gutner and Adams (2009:11) report that quality management can support organisations with most challenges created by globalisation (similar to those listed in section 2.2.1.1). They provide an example to illustrate their views. The example is of a United States (U.S.) furniture manufacturing organisation operating in China. Through globalisation, this organisation has become less location-dependent. Managing a furniture manufacturing plant in a Chinese province and staffing it with people indigenous to that region will be much more culturally complicated for a U.S. organisation than if the plant were located in North Carolina. Not only will the people management aspect be far different but the way in which things are done will differ dramatically. Some of the concerns raised by these authors include whether the

decision making in this organisation will be based locally or central to the U.S; whether the quality standards of the product inputs meet U.S. or Chinese standards of quality, whether the training of managers and employees be to local or U.S strategies and, most importantly, whether there be a cultural fit between the two nationalities working together.

The authors citing this example are of the opinion that as the world flattens and consumption increases across geographic regions, this trend will require quality management to think in more innovative and collaborative ways. They further add that to survive, much less thrive, in this global economy where information travels at lightning speed and consumers increasingly demand more internal and external corporate transparency, collaborative innovation will become especially critical. They are of the opinion that quality management can support organisations with this trend by developing processes and programmes that create standardised approaches that have cultural flexibilities built into them. Also, quality professionals need to keep open minds for innovations that can, and will, surface anywhere in the world. In this way, quality management will then be able to add value to the global organisation and economy.

Another opportunity for quality management resulting from the review of section 2.2.1.1 is supplier management. Watkins (2005:24-31) explains that among the many major developments in business and industry over the course of the last three decades, globalisation has significantly redefined the role of quality management in supplier relationships. His view is that conventional approaches such as system audits, product or supplier certification, mandated corrective action techniques and documentation have not produced the desired results to supplier development. Furthermore, these approaches have, instead, contributed to extraordinarily expensive inspection, defect containment and product verification activities, adding significant hidden costs to the whole value chain. Gutner and Adams (2009:11-12) cite Borawski (undated), executive director and chief strategy officer of ASQ, who comments that the role of quality leaders in this environment must be to expand the notion of management systems to include global supplier networks. The opportunity,

they believe, for the future of quality lies in supporting organisations with quality management systems and business tools to manage suppliers across geographic regions.

The review above demonstrates that the world has changed over the past few decades as globalisation became a reality. Within this reality, customers, who once limited themselves to buying from local sources, now have instant access to products and services across the globe. Thus products and services at present have less national identity to a country of origin and have become independent of location. It is apparent that the leadership and support that quality management can provide in managing this trend could be revealed through the use of management systems and management business tools, such as ISO 9001, ISO 14001 and benchmarking, to name a few. It is felt that these management systems and tools need to be leveraged in a manner in which they are seen as mechanisms that contribute to the simplification of the management of supply chains, production processes and suppliers across geographic regions. Therefore, by using this approach, it is hoped that quality management will be considered as directly supporting organisations addressing globalisation and associated stakeholder expectations, business challenges and market demands.

2.2.2 Customer power and sophistication

The identification of the customer power and sophistication as an emerging trend can be misleading. This holds true if the acceptance is that the customer has been the focal point of quality management throughout the eras discussed previously. However, Gilbert, Veloutsou, Goode and Moutinho (2004:371-383); Lee, Kim, Hemmington and Yun (2004: 75-84); Qin and Prybutok (2008: 35-50) support the notion that without the customer, there would be no organisation and that organisations that focus on customer satisfaction experience higher economic returns. Their views are consistent with the continued focus on the customer; therefore, this study will evaluate customer power and sophistication, and will explore opportunities for quality management that will assist organisations to manage emerging business challenges and market demands.

2.2.2.1 The characteristics, business challenges and market demands of customer power and sophistication

Donaldson (2006:37-43) cites ASQ 2006 Futures Survey and provides reasons for the need for continued focus on the customer. He reports that presently customers already have very high expectations of the products and services they buy, and those expectations will continue to rise and will encompass product quality, seamless delivery, ever-shorter life cycles and innovative features. Thus, quality today is necessary but no longer sufficient. The customer, under the influence of instant internet knowledge, will control markets and will willingly trade national loyalty for the right cost to benefit ratio.

Hillmer and Kocabasoglu (2008:51-63*)* and Gutner and Adams (2009:14) support Donaldson (2006:37-43) and expand the view that customer power and sophistication is on the increase, along with rising customer expectations. Customer power is driven by the new variety of products, propositions and services presented. Furthermore, the inadvertent effect is the development of a new type of customer whose needs are changing and thus placing ongoing pressure on innovation and new product development. In addition, Hillmer and Kocabasoglu (2008:51-63*)* and Gutner and Adams (2009:14) are of the opinion that this increase in customer sophistication is due to the rise in health consciousness and the focus on social and environmental sustainability of the customer.

The above review above shows the consistency in the views of Donaldson (2006:37-43); Hillmer and Kocabasoglu (2008:51-63) and Gutner and Adams (2009:14) with regard to the need for the ongoing focus on the customer. This review also touched on several other trends (social and environmental sustainability, innovation and food safety) that are currently presenting organisations with their own challenges and market demands. These trends will be discussed in the sections that follow.

2.2.2.2 The relationship and opportunities between customer sophistication, power and quality management

Gutner and Adams (2009:12) are of the opinion that the future of quality management is uniquely poised to take advantage of the changing customer expectations, which in this trend is termed customer sophistication and power. Their view is that quality management already has the expertise of understanding the customer and is well versed in the use of quality tools such as benchmarking, quality function deployment (QFD), and customer surveys. Therefore, quality management through the use of these tools can easily provide top management with the information they require to leverage this trend. As an example of the potential of quality management in this trend, these authors describe a practice implemented in the Ritz-Carlton Hotel, in which the hotel moved the quality professional from managing production processes to understanding the customer and then designing and providing a unique customer experience. It was felt that through this custom-built and unique experience, the hotel would succeed in the marketplace and provide the experience of differentiation that would instil brand loyalty among customers.

From the above review it is evident that quality management already has expertise in understanding the customer. However, the review suggests that customer needs have changed and are informed by the variety of products and services available. This increased variety and availability of products and services perhaps can be attributed to customer demands becoming more sophisticated and reaching new heights. However, although these customer changes present formidable new challenges, they also afford a renewed opportunity for quality management in the future. The opportunities for quality management are in the form of using quality tools and techniques to gather information that organisations can use to build customer intelligence, improve loyalty and experiences.

Two sub-categories or trends that are worthy of further elaboration, due to their auxiliary popularity through customer sophistication and power, which have been widely discussed in quality-related literature are innovation and food safety (ASQ

2007:1-7; Levesque and Walker 2007:18-22; Surak 2007:21-27; Bisgaard 2008:20-25; ASQ 2010:1-9). These topics will follow a similar review to the main trends.

2.2.3 Food Safety

Food safety has received much attention over the last five years, including negative publicity associated with several high profile food recalls resulting from poor food safety practices followed by producers (Surak 2007:21-27). In an FMCG-type organisation, food safety concerns itself with the stages and operations involved in the production, processing, distribution, storage and handling of a foodstuff and its ingredients, from primary production to consumption, in a manner that prevents the transfer of food-borne illness to the customer (ISO 22000:2005). The purpose of this review is to understand the current challenges associated with food safety management and how they can be managed in FMCG-type organisations similar to those related to this study.

2.2.3.1 The characteristics, business challenges and market demands of food safety

The ISO 22000 (2005:2) Standard for Foods Safety Management defines food safety as a concept that food will not cause harm to the customer when it is prepared and/or eaten according to its intended use. Surak (2007:21-27) declares that food safety has become a challenge for organisations because people all over the world have migrated to fresher and minimally-prepared foods as part of health consciousness. He adds that minimally-prepared foods refer to subjecting foods to lower cooking temperatures in which all pathogens may not be removed or destroyed, thus increasing the risk of food safety incidents. Further elaborating that today's health-conscious customers desire fresh fruits and vegetables throughout the yearand demand foods that are essentially ready to eat. However, when these fresh, ready-to-eat foods become contaminated, the likelihood that they will produce a food-borne illness is high.

Examples of food safety incidents cited by the ASQ quarterly report (2007:1-7), according to the United States Centres for Disease Control and Prevention (CDC),

include a rare strain of *Salmonella* in peanut butter produced at a plant in Georgia between August 2006 and January 2007 that sickened six hundred and twenty eight people in forty seven states. In California, fresh spinach contaminated with a pathogenic bacterium *E. coli* killed three people and sickened more than two hundred people in twenty six states in late summer 2006. There were two multistate outbreaks of pathogenic *E. coli* associated with lettuce used in fast-food restaurants and two multi-state *Salmonella* infections associated with tomatoes in 2006.

Surak (2007:21-27) mentions that while widespread media attention was focused on these human food incidents, there were several incidents recorded with pet food. At least sixteen pets died from the effects of tainted wheat gluten processed and blended into pet foods. These pet foods were manufactured in China and were sold in the United States, Canada, and Mexico under more than one hundred brand names. During the same period Bester (2007:1) reported that in South Africa, Royal Canin recalled "Vets Choice", a dog and cat dry pet food product that was manufactured between March 2007 and April 2007. These products were confirmed to contain gluten contaminated with melamine, which caused illness or death to a large number of pets who consumed the product.

Other examples of food safety concerns cited in South Africa include customer pressure driving demand for food grade lubricants (Ndaba 2007:1), the Sudan Red scare over the carcinogenic food dye found in spices (Herman 2006:1), water contamination issues as a likely cause of cholera increase (Khumalo 2009:1) and the use of genetically modified organisms (GMO) in many food crops (Kruyshaar and Ashton undated: 1-3), to name a few.

It is evident from the above review that the numerous food contamination incidents in recent years have put food safety in the spotlight as never before. The examples provided in the review illustrate that these contaminations were a result both of poor processes and ingredient issues. As the scope of this study pertains to FMCG-type organisations, products produced by them have a high probability of directly or indirectly causing contamination to the final product consumed. This can take place

at several points in the supply chain. The next section will discuss opportunities on how quality management can be leveraged to assist organisations manage this trend.

2.2.3.2 The relationship and opportunities between food safety and quality management

The ASQ Quarterly report (2007:1-7) confirms that due to the awareness of incidents such as those mentioned above, there are growing calls by the media, the public, customer groups and legislators for more focus on the safety of food supplied. The solution sought for more focus on food safety cannot be a reactive, inspection-based one but rather a preventative approach that takes into account current challenges in food production, processing and distribution. A preventative solution has a logical fit with a quality management system approach. Surak and Lorca (2007:1-7) support the views of the ASQ report and suggest that by quality management using approaches such as the newly introduced ISO 22000 Food Safety Management System, this discipline could lead organisations with quality programmes or standards that could be used on a global basis.

From this review it is evident that quality management is ideally placed to support organisations in managing this trend. The introduction of ISO 22000 confirms that quality management has already been considered as a potential means of managing this trend.

2.2.4 Innovation

The ASQ (2010:1-9) defines innovation as a means of instituting significant change that adds value to the organisation by developing new ideas that lead to new profit streams, while simultaneously increasing the efficiency and effectiveness of work, and reducing the costs of doing business. Innovation, therefore, should lead to new ideas that can be converted into products or services that people want to buy, thus adding to new profit streams.

Thus, the purpose of this review is to examine the relationship between quality management and innovation and how established quality management matrices and strategies can be used to assist organisations in leading with this trend.

2.2.4.1 The characteristics, business challenges and market demands of innovation

Keathley and Owens (2010:1-9) stress that innovation is a critical success factor for organisations. Their point is rooted in the proposition that customers' needs and expectations of a product or service are continuously increasing, whilst concomitantly they expect to pay lesser for it. They provide an example to illustrate their views through the changes in music-playing devices over time. These devices have changed from the gramophone to the eight-track tape to the audio cassette to the compact disc to the two-megabyte .mp3 file that plays on a device smaller than one's thumb. Thus, listening to recorded music has become clearer and more convenient for consumers through the generations. Concomitantly, the prices of these devices dropped dramatically as more producers adopted each new technology.

Essentially, the authors in the above example demonstrate that if organisations in these businesses were still making eight-track tapes, their appeal to the wider market of consumers would have been greatly diminished. Levesque and Walker (2007:18-22) and Bisgaard (2008:20-25) provide similar views and suggest that organisations currently have no choice but to ensure that their innovations and new product pipelines are able to respond to market demands dictated by the customer. The importance of acting on new trends in the current market is that "first movers" set the rules for a category or product/service range and this provides a position of considerable competitive advantage.

Andrew, DeRocco and Taylor (2009:1-32) comment on innovation and new products or services and state that the real drivers of wealth are those products and services that bring organisations a sustainable competitive advantage. In addition, existing intellectual property rights on products or services expire eventually, and competitors are very successful at emulating those successful products or services that were

exclusive to any single organisation, in a very short period of time. The barriers to entry in any industry have decreased in complexity as the global economy makes the world smaller. Hence, for an organisation to continue creating new value and remain profitable, innovation is fundamental.

The following quotes cited by Merill (2008:27-32) support the impact of innovation on improved profitability in a few well known organisations. These are presented below:

- According to an IBM CEO survey two years ago, organisations with the fastest profit growth emphasise innovation twice as much as those that do not (IBM - The Global CEO Survey, 2006).
- With a strategy of open market innovation, Proctor and Gamble created 100 new products in two years, and its share price doubled (Huston and Sakkab, 2006).
- Apple saw its share price move from $10 to $140 in five years through the launch of its iPod (Merrill, 2008).
- Organisations with radical innovations generate ten times more shareholder value in an initial public offering data (Stuck and Weingarten, 2004).
- An Accenture survey reports that organisations that commercialised patents fast outperformed the market by 1,000% over a 10-year period (Linder, 2006).

It is evident from the above review that innovation is a critical success factor for organisations. Therefore, it can be inferred that innovation encourages organisations to continue creating new value and to remain profitable.

2.2.4.2 The relationship and opportunities between innovation and quality management

According to Wilbur (2002:75-79) and George, Works and Hemphill (2005:15-33), quality management and innovation have a bad history. They suggest for manufacturing operations, the mainstay of the business strategies were based on highly efficient, mass production of a consumable product or service. For this type of

operation, the model of cost of quality (COQ) was a very logical one. The introduction of innovation into this model was seen as a major rival.

Another view provided by Bisgaard and Mast (2006:30-36) claims that the primary reason for referring to the term innovation was its recognised importance in economics and management theory. They cite the visionary economist Schumpeter (1950), who refers to innovation as the fundamental impulse that sets and keeps the organisation economically viable. Many business executives claim that quality management is a nuisance issue which, they hope, will lose eminence. An assessment of the above views does not favour a good relationship between quality management and innovation. It can be inferred that these views provide potential reasons for quality management not being leveraged in the past to support innovation.

However, the ASQ (2010:1-9), in a white paper titled, "Fresh Thinking on Innovation and Quality", provides a new perspective on this incompatibility. The paper offers an exceptional précis on most of the points made above by noting that there is a notion that innovation and quality are mutually exclusive. The ASQ view, however, is that quality and innovation have much in common because quality tools and approaches that transform manufacturing and service industries can play a key role in ensuring that the innovative capabilities of any organisation can be exploited for maximum value. In consideration of the new scope for quality, this new perspective is worth considering for leading innovation initiatives within organisations.

It can be seen from the above review that innovation is a critically important strategic issue, which an organisation cannot ignore. It is worth noting that although the trend of customer power and sophistication specifically includes innovation as a key element, the review of all the emerging trends in some way or the other insinuates the need for innovation. Therefore, by efficient and effective implementation of new ideas and innovation as a key platform, organisations can continuously accommodate increasing or changing customer needs to generate more profit.

The review highlighted a few key reasons for the incompatibility between quality management and innovation. However, it also offered a new perspective that supports the compatibility between quality management and innovation. Thus, by adopting this new perspective, it can be proposed that quality management can support this business challenge by leading innovation initiatives through disciplined approaches, using quality management tools and techniques.

2.2.5 Social responsibility

Social responsibility in Chapter 1 was identified as an emerging trend that at present is creating business challenges based on stakeholder and market demands. Various studies (Watson 2003:123-137; Leonard and McAdam 2003:7-32; Fahy, Roche and Weiner 2005:227-228; Hopen 2008:1-3; Leonard 2008:30-35) note that this trend is increasing rapidly across the globe. Thus, the expectation on an organisation to apply socially responsible practices is on the rise. This section will review the characteristics, business challenges and market demands associated with social responsibility and thereafter examine how quality management can be used to assist organisations to manage this trend.

2.2.5.1 The characteristics, business challenges and market demands of social responsibility

Hopen (2008:1-3) describes social responsibility as an organisation's commitment to conduct business in a consistent manner that meets or surpasses the ethical, legal, commercial or operational and public expectations with sensitivity toward social, cultural, economic and environmental issues. According to Watson (2003:123-137), the fundamental reason for the requirement of social responsibility practices was born from the failure of business leadership to provide adequate due diligence or responsible oversight in organisations. He adds that as a consequence, social responsibility provides a reform in the administration of governance with an emphasis on increasing the ethical behaviour of managers and avoiding conflict of interest among competing stakeholders.

In elevating the seriousness of social responsibility, Fahy, Roche and Weiner (2005:227-228); Leonard (2008:30-35); Leonard and McAdam (2003:7-32), declare that this trend (social responsibility) gained emphasis only when examples of fraud by executives, harmful products produced by some organisations and environmental misuse were exposed. Consequently, social responsibility or corporate governance was born out of scandals such as Global Crossing, Enron, Worldcom, Xerox and Merck, more recently Satyam India, among others (BBC News 2009:1). Corporate governance has increased focus, by both governments and organisations, on promoting and fine tuning good governance practices in many countries (King 2003:8; Dunn 2003:13-14; Edmondson and Cohn 2004:1-2; Jacobsen 2009:1-4; McKinsey 2009:1-9).

Fahy, Roche and Weiner (2005:228-229) provide two examples of globally renowned organisations, namely Coca Cola and McDonalds, which mishandled their corporate responsibility. A third example discussed by Goodden (2010:1) is a recent example of the Toyota Motor Industry. Each example will be elaborated below:

Case Study1: Coca Cola Story (Fahy, Roche and Weiner, 2005:228-229)

In 1999, amid fines and warnings from legislators over its business conduct, Coca-Cola was forced into recalling and destroying seventeen million cases of Coke after two hundred people complained of illness after consuming the product. This incident engendered a great deal of negative publicity not only because of the non-conforming product but because of the manner in which it was perceived that Coca-Cola handled the crisis. It was considered as “unsympathetic and tardy” by many media sources and customers. As a result of this, market capitalisation of the organisation fell significantly and the CEO, Douglas Ivester, was pressured into resigning by institutional investors.

In 2003, the organisation's Asian bottling operations in India were alleged to have created local water shortages, polluted water supplies and supplied local farmers with waste effluent, thought to be a good fertiliser. The effluent was later shown to contain a high level of lethal chemicals, and the practice was immediately halted.

A year later (2004) Coca-Cola launched its branded water, Dasani, into the UK market. The organisation's image was tarnished by the revelation that it was simply "purified" tap water, then matters were further complicated when weeks later the water was revealed to contain potentially dangerous levels of the carcinogen bromate. Millions of cases of water were immediately withdrawn off the shelves from retailers.

By 2004, as a result of these incidents, the organisation faced numerous accusations of corporate "irresponsibility" despite a previously consistent corporate responsibility record. However, Coca-Cola's previous Corporate Reputation initiatives were thought to have assisted the organisation counteract shareholder devaluation. The organisation is recognised for growth strategies, including an Entrepreneurs Development Programme in South Africa, designed to encourage micro-business retailers of Coca-Cola. Nearly 13,000 jobs have been created. Of 5,000 new outlets, 3,500 were part of the programme.

Case Study 2: McDonalds (Fahy, Roche and Weiner, 2005:228-229)

McDonald's is another global organisation with a long standing excellent Corporate Responsibility reputation. However, this fast food giant also found itself under the media spotlight in recent years. The first major criticism against the organisation was its lack of social responsibility over rising obesity among customers. Following this, after a series of hygiene scandals in the USA, the organisation was forced into a worldwide advertising campaign in 2004, promoting their food preparation standards.

As part of regaining the organisation's reputation, McDonalds, in the same year (2004), announced the launch of a range of "healthy options" meals and the withdrawal of super-sized drinks and fries options. They also went further in making the menus as transparent as possible by revealing energy, calorie, carbohydrates and weights on each item offered on the menu.

Case Study 3: Toyota (Goodden, 2010:1)

Toyota, the organisation that changed the thinking about quality through the implementation of the Toyota Production System (TPS) in the 1970s, was faced with major product liability crises and record-setting recalls in 2010. According to Goodden (2010:1), the chairman of ASQ, Product Safety and Liability Prevention Interest Group, the crisis management experts view Toyota's handling of the disaster as a textbook example of how not to deal with such devastation. A key pitfall observed was ill-preparedness to appear in front of the press. In the Congressional hearing, Mr. Toyoda stated that the organisation had lost sight of its original focus on quality and safety as they pursued quantity and international growth.

The Toyota crisis is of profound importance as, in the review of the evolution of quality, specifically during the eras of quality assurance and strategic quality management, the Toyota quality systems were regarded as the benchmark across the world. This incident is rich in lessons on many fronts for the current and future context of quality management.

The three examples above received amplified attention by various authors - Boehm and Ulmer 2008:8-19; Leggett 2010:8-9; Kleyner 2010:22-27; Hayes, Goodden, Atkinson, Murdock and Smith 2010:16-23; Klaber and Hawk 2010:16-21); Fahy, Roche and Weiner (2005:228-229) and Goodden (2010:1) - who all stress that the cost of "getting it wrong" is high. In addition, Goodden (2010:1) maintains that much the same can be said about the current (June 2010) British Petroleum (BP) disaster, where the organisation focused on production and was less focused on ensuring the safety and reliability of its processes, and thus was totally ill-prepared to handle a disaster. When this happens, not only do organisations face damage to their financial position, image and reputation, but it also often leads to more stringent legislation and the lowering of public opinion on governing ethics, irrespective of how quality-conscious an organisation was in the past.

From a South African perspective, another driving force for organisations to become more socially responsible and focused on sustainability is King III Report, which

officially came into effect on 1 March 2010 (Rossouw 2010:60-63). According to Rossouw (2010:60-63), the King III report is the third code of governance principles, necessitated by the new Companies Act and changes in international governance trends that are now applicable to all South African business entities since 1 March 2010. The main requirement of the King III report is that organisations should issue an annual integrated report that provides a reliable, comprehensive and holistic overview of the organisation, from both financial and non-financial perspectives. A key aspect of the King III report is that organisations must outline their impact on all three spheres of the triple bottom line, which are the economic, social and environmental aspects of the market wherein it operates.

From the above review and examples presented, the business challenges and market demands that organisations presently face under the definition of social responsibility are evident. Furthermore, it can be inferred that social responsibility, as an expectation for organisations, is likely to grow in prominence. Thus organisations need to become fully competent in managing this trend in the future.

2.2.5.2 The relationship and opportunities between social responsibility and quality management

The relevance of reviewing this trend in the current study is supported by Watson (2003:123-137) and Singh (2006:130). Watson (2003:123-137) emphasises the role of quality as a management practice to support organisations in addressing business challenges arising from this trend. His view is that quality management practices will be crucial for establishing and implementing processes that lead to good corporate governance, while ensuring customer and employee satisfaction. Singh (2006:130) describes corporate governance as a management system for ethical behaviour of directors and management executives towards shareowners and stakeholders. As a motivation for developing a model for integrating management systems, she demonstrated the synergies between quality management and this trend and the manner in which they can be managed.

Examining the contribution that quality management can offer and supporting the views of Watson (2003:123-137), is a white paper by the ASQ (ASQ, 2009: 1-5). This paper connects quality management and social responsibility as an on-going and evolving element of an organisation's overall business approach. Thus, it suggests that social responsibility can be effectively advanced with the appropriate use of the quality management.

The above points were further elaborated in the paper (ASQ 2009: 1-5) by stating that the experience gained in the establishment of international quality management systems standards can be valuable in the establishment of a coherent, systematic, common framework for social responsibility activities of both private and public sector organisations in developed and developing countries. This paper (ASQ 2009: 1-5) refers to the development of ISO 26000: Standard for Social Responsibility, which has been drafted and is awaiting comments. Other thoughts leveraging quality management practices in this paper (ASQ 2009: 1-5) included the use of quality tools such as Quality Function Deployment and the Balanced Scorecard techniques to translate key social responsibility elements into the internal language of the organisation. Also mentioned was the use of the Baldrige Criteria, which measure organisational excellence, as the overall "yardstick" for measuring progress over time. The paper (ASQ 2009: 1-5) suggests that this can be an effective way to keep score and drive continuous improvement for an organisation. The conclusion inferred from the ASQ White paper, ASQ (2009: 1-5) is that social responsibility can be seen through a quality systems lens. Quality management can bring a sense of order and clarity to a young and somewhat chaotic field.

From the above review, there is evidence that corporate strategies will become more focused on driving social responsibility. The relevance of social responsibility for this study will therefore align with the above views noted in the ASQ White Paper, ASQ (2009: 1-5), which provides a strong affirmation that quality management can be used to lead organisations in managing the challenges presented in adopting social responsibility practices.

2.2.6 Environmental sustainability

Jacobsen (2011:9) describes environmental sustainability in business as the amount of natural resources that production processes draw upon, how these resources are used and replenished, the overall impact of the final product on the environment, and where the product ends following its disposal. He adds that, in essence, an environmentally sustainable process is one that contributes to keeping the environment healthy by not over-consuming non-renewable resources or contributing in other ways to the depreciation of the environment.

Building on a broader definition of social responsibility discussed in the previous section, environmental sustainability also features highly on society and stakeholders' agenda (Hitchcock and Willard 2002:43-47). Thus, it was also identified in Chapter 1 as one of the trends that are currently creating business challenges for organisations across the globe. The purpose of this literature review will be to examine the current views and challenges presented with environmental sustainability. Thereafter, an evaluation of opportunities to support organisations managing the challenges emanating from this trend using quality management practices will be discussed.

2.2.6.1 The characteristics, business challenges and market demands of social responsibility

Authors Hitchcock and Willard (2002:43-47); Smith (2004:23-31); Friedman (2008) commented on the current status of environmental sustainability and voiced their concerns about the future management of this trend. Hitchcock and Willard (2002:43-47) maintain that our natural resources and environment have become threatened by industrial and human neglect and abuse. There is a growing understanding amongst stakeholders that on-going failure to stop this damage will result in leaving future generations with insufficient resources for survival and an unstable environment with unpredictable climate conditions.

Smith (2004:23-31) maintains that with globalisation, communities have become key stakeholders whose opinion and perceptions can impact on an organisation's success.

Stakeholders believe that all organisations globally have a vital role to play to protect both the environment and resources for the future. The implications of organisations not addressing these challenges will result in poor reputational status within the communities in which they operate.

The need for environmental sustainability consciousness is discussed by Friedman (2008) in his book "Hot, Flat and Crowded". He states that the convergence of global warming, global flattening, and global crowding is driving the five big problems of the world at large. They are energy supply and demand, petro-dictatorship, climate change, energy poverty, and biodiversity loss. These problems are well past their tipping points into new realms never seen before. An example close to South Africans, provided by Friedman (2008:45-27), proved that new demands will cause the shortage of energy supply similar to that which brought this country to a near standstill in 2007 and in early 2008. He believes that the manner in which globalisation, climate change and the soaring global population growth are managed will define what the world will become in the future. He advises that these are not ordinary problems and not managing any of them properly could cause sweeping, non-linear, irreversible disruptions that might affect multiple generations.

An article from a Trilogue (2010:4) publication provides a concise summary of the above points of view and elaborates on the challenges and opportunities associated with environmental sustainability. The article's position is that global expansion has relied on a relative abundance of natural resources such as water, coal and oil and until now organisations have profited from them being easily available. Therefore, after more than a century of unfettered production, consumption and waste, the planet's supply and reserves have diminished. Hence, natural resources that were once in abundance are now becoming scarce and expensive. As a result, organisations globally are realising that they need to revisit the manner in which they conduct their business.

The review illustrates that accepting the current state of environmental sustainability for organisations can be viewed as a significant operational risk or a situation that

presents a wealth of opportunities. When noting the Yale 2010 study (Trilogue 2010:8), South Africa's Environmental Performance Index was placed at 115 out of 163 countries measured. Therefore, organisations in this country have an opportunity to adopt environmental sustainability systems to become more responsible and conscious than they are currently.

2.2.6.2 The relationship and opportunities between social responsibility and quality management

Opportunities for quality management to support business challenges arising from this trend were cited from the literature review of Friedman (2008:27); Fiksel (2009:9) and Gutner and Adams (2009:14). Friedman (2008:27) is of the belief that the opportunity and link to quality management will become explicit through the use of new tools, infrastructure, ways of thinking, and collaborating for solutions on problems of environmental sustainability. Supporting this further, he cites Rothkopf, the US Energy Consultant, who is of the opinion that the world is at one of those bright line moments in history when things could change in ways that can hardly be imagined and across a very broad number of areas simultaneously. Rothkopf notes that these types of moments were experienced before, referring to the Industrial Revolution. From the review of the evolution of quality management through the four eras, there is evidence demonstrating that quality management, by changing its scope, played a significant role during each period. Therefore, it can be inferred that quality management can once again change its scope to incorporate the use of new tools, infrastructure, ways of thinking and collaborating as referred to by Friedman (2008:27) above.

Fiksel (2009:9) refers to sustainable development as industrial progress that meets the needs of the present without compromising the ability of future generations. Therefore, according to the author, in order to assure continued industrial growth without adverse ecological and social impacts, sustainable development has to start by designing for the environment (DFE). Presently, with the focus on sustainability issues, there is a dire need to elevate DFE into businesses strategies. This will force the breakdown of silos between departments within an organisation and allow for

active collaboration among all departments. Quality management in this case can provide the process and system for the implementation and management of all DFE issues across the business.

Gutner and Adams (2009:14), in a similar vein to their comments on the customer sophistication and power trend, assert that customers require organisations supplying their products and services to take proactive action to save the planet . These authors add that this all-encompassing mandate starts with the call to increase the amounts of recycled materials as inputs into production and reduce the amount of energy used to produce a product, to decreasing corporate carbon footprints and implementing "green innovation" techniques. Thus, as consumers insist on more transparency in corporate practices, the authors assert that organisations should increasingly use this information to make purchasing decisions. In order to provide the customers with the necessary information, the authors suggest that quality management practices should be the foundation as they is ideally suited to provide the tools, techniques, and processes for organisations to help them meet the increasing standards that consumers require. This could translate into using management systems like ISO 14001, the environmental management systems standard, to reach environmental sustainability goals and measure the results.

The relevance and alignment with the points raised in this review, on one hand is alarming from our current state of environmental consciousness and activism; however, on the other hand, it provides quality management with the perfect opportunity or springboard to push it into the next evolution. Quality management here also, as in other identified emerging trends, can use quality tools and management systems to support and guide organisations to become more responsible towards environmental sustainability.

2.3 Conclusion

It is evident that the emerging trends and opportunities presented for quality management support a strong motivation that the discipline is ready for the next evolution. The review also demonstrates that the role quality management can play in

the next evolution will be centred mainly on providing a disciplined approach through international standards such as ISO, or other recognised quality tools and techniques such as Quality Function Deployment (QFD) or Failure Mode Effect Analysis (FMEA), for example.

One of the aims of this study is to focus on the change that quality will need to undertake and the development of leadership, as well as the change management and strategy that should be adopted to achieve this. In order to understand the implications for achieving this aim for this study, the next chapter will undertake a further literature review on "stewardship", leadership, change management and strategy.

2.4 Summary of the chapter

The chapter began by offering a detailed account of the evolution of quality up to the present time. It reviewed the work of various authors who supplied both theoretical knowledge and practical examples on the history and current thinking of quality. The review demonstrates that each evolution undergone by quality management was necessary to meet the changing business challenges and market demands and to deliver competitive advantage, customer focus and profitable growth to organisations. It presents various changes undergone by quality management and quality professionals and also makes evident the details of these changes. This review illustrates the evolution, through the four eras, which has culminated in the quality philosophy as it is known today, encompassing quality control, quality assurance and strategic quality management. It demonstrates how these elements were enhanced by various supporting programmes, tools, techniques and strategies.

A conclusion drawn at the end of the review of the evolution of quality management is that in the last two decades, although quality management focused on the development of standards and business tools, there is evidence that it became stagnant. This conclusion is based on the views of authors such as Gutner and Adams (2009:4-5), who declare that business challenges and market demands resulting from

emerging trends and current stakeholder expectations are not being pursued by the use of quality management matrices and strategies.

The next section of this chapter undertook an examination of the emerging key trends that are influencing organisational strategies and business results at present. It also demonstrates the opportunities within these trends for quality management to re-establish its relevance in the future. These opportunities for quality management will essentially form the new definition and scope for the discipline in the 21st century.

CHAPTER 3: LITERATURE REVIEW – STEWARDSHIP: LEADERSHIP, CHANGE MANAGEMENT AND STRATEGY THAT QUALITY MANAGEMENT MUST ADOPT

3.0 Preamble

An aim of this study is to develop a schematic framework of an integrative approach that can assist managers to implement quality under a new definition, namely Quality Stewardship. The objective of the framework will require organisations to shift their focus from the current manner of managing quality. This chapter will therefore present a comprehensive literature review on "stewardship" and thereafter draw linkages with the current perceptions and status of leadership, change management and strategy.

There is a limited variety of literature on "stewardship" itself; however, literature associated with the topic of "stewardship" will be used as sources of information to assist in distilling a definition for the concept "stewardship" applicable to this study.

3.1 Stewardship

The discussion on "stewardship" will consist of seeking a definition for the concept, through an evaluation of the application of the concept in different environments. This will be concluded by a summary and distillation of a definition for "stewardship" in this study.

3.1.1 Application of the concept "stewardship" in organisations

Block (1996), in the preface of his book titled "Stewardship", defines "stewardship" as an umbrella idea that promises the means of achieving a fundamental change in the way organisations are governed. Thus, he refers to "stewardship" as holding something in trust of another. An example provided by Block to illustrate the concept is that historically, "stewardship" was a mechanism to protect a kingdom while those rightfully in charge were away, or, more often, to govern for the sake of an underage king. Thus, according to Block (1996), "stewardship" means service is chosen over

self-interest most powerfully when capacity is built for the next generation to govern themselves.

Building on the above definition, Block (1996:3-5) discusses the concept of "stewardship" in organisations. He mentions that the goal of an organisation and its employees is generally to invest in issues that matter and to become successful. This includes the organisation's existence for the next generation, even after the current employees have left. Block (1996:3-5) points out that organisations, specifically in the 1970s and 1980s, realised that if they did not find a way to serve their markets quickly, with higher quality and lower costs, they would not endure. The changes that organisations have faced since the 1970s and 1980s, according to Block (1996:3-5), are an outgrowth of several further fundamental crises. He is of the opinion that crises always come packaged in economic terms first. This translates, normally, to an organisation failing in its marketplace, due to new challenges and market demands created by economic crisis or other issues.

Block (1996:3-22) suggests replacing leadership with "stewardship" as an alternative for organisations to address current business and market demands. He is of the opinion that this will allow employees to live by democratic values, using the workplace as a focal point, and that this approach will transform the manner in which organisations are led. Furthermore, it will ensure the guaranteed ability of the organisation and its employees to serve customers in the broadest sense. By utilising the concept of "stewardship" in the context of an organisation, Block (1996:3-22) believes it will provide a set of principles and practices, which will have the potential to make dramatic changes in our governance systems. He views "stewardship" as being concerned with creating a way of governing employees so that it creates a strong sense of ownership and responsibility for outcomes at the bottom of the organisation.

From the above, it can be summarised that Block's (1996:3-22) theory of "stewardship" for organisations is about creating the willingness to be accountable for the wellbeing of the larger organisation by operating in service, rather than in

control. Stated simply, it is accountability and governance without control or compliance. It is also evident that Block (1996:3-22) is of the opinion that this method of accountability and governance will provide employees at the bottom and at the boundaries of an organisation with a choice of how to serve the stakeholder (customer, citizen or community). Hence, by implication, "stewardship" is also about getting organisations and their employees closer to the stakeholders and the market place, by operating in service.

3.1.2 Application of the concept "stewardship" in public service

Armstrong (1997:17-26) is of the opinion that the concept "stewardship" is most commonly used in the field of environmental protection. His views originate from associating the concept to that of overseers of estates, with a sense of caretaking for a greater good and for future generations and of religious institutions, where clergy are stewards (caretakers) of God's creations. Other uses of the word "steward" are numerous, according to Armstrong (1997:17-26) and they include: a paid manager of other's property, finances or affairs, a purveyor of provisions, an official who supervises or helps to manage an event, one in charge of other servants, a waiter on a ship or aircraft, a judicial officer at a university and a representative of a group of fellow workers, namely a shop steward.

Armstrong (1997:1-41) discusses the potential role of "stewardship" in public service. His discussion focuses on the linkages of "stewardship" and public service based on market reforms that profoundly reshaped the public service world-wide during the 1970s and 1980s. He is of the opinion that while these market reforms were necessary and have resulted in many positive outcomes, the central argument is that the market theory upon which they were built was not robust enough to embrace the full range of public sector activities such as governance and guarding the public interest. Thus, "stewardship", although an old idea, presents an alternative model that could be utilised to bridge market approaches, primarily applicable to transactional services and broader public sector responsibilities. However, he cautions that "stewardship" is not a technique or strategy that can immediately be

applied, nor is it suggested as a remedy for all ailments. His view is that it is rather a way of doing things that provides a compass rather than prescribes a route.

From the above review, it is evident that Armstrong (1997:1-41) is of the opinion that, similar to the market approach, "stewardship" could address efficiency issues. However, he notes that "stewardship" would proceed beyond self-interest and, more importantly, would provide the conditions for governance stability over a long period, something that the market model does not do. Hence, it can be inferred that according to Armstrong (1997:1-47), the concept "stewardship" in public service will act as a synthesis for the conflict between market efficiency and the cumbersome and costly task of maintaining the stability essential to public interest systems of governance.

The World Health Report (WHR) 2000 (World Health Organisation 2002: 41-50), notes the concept of "stewardship" as one of the four essential functions of the health system: service provision, resource generation, financing and stewardship. In this report, "stewardship" is defined as the careful and responsible management of the well-being of the population to be the very essence of good government. This, however, does not imply that that the government needs to fund and provide all health interventions; instead, it needs to set the direction for both public and private sectors and ensure that the health system contributes to the socially desired intrinsic goals.

After the discussion of "stewardship" in the World Health Report (WHR) 2000 (World Health Organisation 2002: 41-50), there was little published comment on the concept. Two articles were identified, which provided most commentaries and criticism. The first was by Saltman and Ferroussier-Davis (2000: 732-739), who discussed the concept of stewardship in health policy as proposed in WHR 2000, and concluded that the concept holds substantial promise if adequately developed and effectively implemented. Secondly, an editorial in the European Journal of Public Health (McKee 2001a: 122-123) also discussed the potential major implications of the concept of "stewardship" for health systems, both for countries and for the World

Health Organisation (WHO), as it seeks to strengthen its role as a credible advocate for global health.

However, the most extensive debate on stewardship after the WHO 2000 report, according to World Health Organisation (2002:41-50), was at the international technical consultation on "stewardship" in September 2001, when participants reviewed the definition of the concept and discussed its relationship to governance. During this debate, it was noted that there was difficulty in preserving the idea when translating the concept into other languages. As a result, participants referred to "stewardship" metaphorically as combining three elements; namely, "the 'glue' that holds the health system together, the 'oil' that keeps it running smoothly and the 'energy' that gives it ethical direction and momentum". According to Travis, Egger, Davies and Mechbal (2002:1-21), the outcome of the September 2001 debate led to the WHO further developing the concept of "stewardship" in the health system. These authors noted that the WHO identified the following six domains as the essential ingredients that appear to constitute good stewardship in an effective heath system: generation of intelligence; formulating strategic policy direction; ensuring tools for implementation (powers, incentives and sanctions); coalition building / building partnerships; ensuring a fit between policy objective, organisational structure and culture; ensuring accountability.

It is evident from this report (World Health Organisation 2002:41-50) that whilst "stewardship" is not that distinct from governance, it is defined to better reflect the element of leading a health system by the use of the six domains listed above. However, one commentator in the report observed that it is the "moral" aspect of "stewardship" that distinguishes it most from governance, which is seen as a more procedural notion. The report draws another distinction between "stewardship" as an "intelligent" function and governance as a more structural one, a set of activities that have to happen.

Since the further development of the concept of "stewardship" by WHO in 2001, this concept has continually been discussed in the health sector. In a report, titled Public

Stewardship of Private Providers in Mixed Health Systems (2009: 1-74), the findings from research commissioned in 2008 by the Rockefeller Foundation, in collaboration with the Results for Development Institute and the Thai Ministry of Public Health's International Health Policy Program, were summarised. This report discusses the research that consisted of fourteen papers by various institutions, examining the role of the private sector in health systems in developing countries. Once again, one of the key themes emerging from the analysis of the research was the importance of public stewardship of the non-state sector (that is, the private sector, broadly defined). This finding infers that effective government stewardship is crucial for achieving broader health objectives; given the reality that many countries already have large, complex markets for healthcare, presenting major challenges and significant opportunities. Another key theme is that many governments are not performing that stewardship role particularly well. An outcome of this research started discussions in the global health community that could lead to new steps to help bring together interested parties to develop faster progress in health system strengthening and public sector stewardship. Thus, if these discussions lead to concrete further steps, this report's (Public Stewardship of Private Providers in Mixed Health Systems (2009: 1-74), contents could be useful in suggesting promising future lines of thought and action on "stewardship" in the health sector.

3.1.3 Application of the concept "stewardship" in environmental matters

A relevant area for this study where the concept "stewardship" is common is in the management and leadership thinking regarding the environment sustainability. The most recent publication of the Environment Stewardship Strategy (2010:1-32) by the United Nations (UN), defines environment "stewardship" as the comprehensive understanding and effective management of critical environmental risks and opportunities. These are related to climate change, emissions, waste management, resource consumption, water conservation, biodiversity protection and ecosystem services. The strategy was developed utilising a list of most frequently used environmental management and sustainability practices led by a Working Group. This working group consisted of a partnership between the United Nations (UN) Global Compact, twenty-three organisations and Duke University. The working

group embarked on an ambitious project to develop an Environmental Stewardship Strategy for the twenty-first century; primary information for the development of the strategy was gained from interviews with leading and learner organisations, academic research and focus group discussions with selected organisations.

According to the Environment Stewardship Strategy (2010:1-32), the importance of the concept of "stewardship" is based on the consensus that in the global business community, only a small portion of organisations on the global market have taken strides in the direction of true "stewardship". Organisations struggle to take action because managers are not fully empowered to make meaningful changes to organisation strategy. This Environment Stewardship Strategy (2010:1-32) notes that successful CEOs and Boards illuminated four universal approaches to environmental stewardship across organisations:

1) Leaders embed environmental stewardship into all facets of the organisation;
2) They balance short-term targets and long-term goals that are both critical to performance and environmental stewardship;
3) They diffuse best practices throughout value chains and business networks by collaborating and engaging stakeholders, and;
4) They translate best practices into processes and practices that are applicable in the diverse geographic regions in which they operate.

Thus, from the above review, it is evident that the concept "stewardship" was employed to imply effective governance that is required for the management of critical environmental risks and opportunities related to climate change, emissions, waste management, resource consumption, water conservation, biodiversity protection and ecosystem services. In addition, the review demonstrated the type of leadership that will be required for the management of the environmental risks and opportunities

3.1.4 Case Study on the application of the concept "stewardship" in environmental matters

The following case study demonstrates the environmental strategy in practice. In this case study, the concept "stewardship" will be explored through the definitions provided in Oak Ridge Reservation Stakeholder Report on Stewardship (1999:1-174). This report was the product of the End Use Working Group Stewardship Committee sanctioned by the Department of Energy (DOE) in the United States, to study the contaminated areas on the Reservation and to make recommendations about future uses of the land. The concept "stewardship" in this report was defined as the acceptance of the responsibility and the implementation of activities necessary to maintain long-term protection of human health and of the environment from hazards posed by residual radioactive and chemically hazardous materials.

In this case study, "stewardship" focused on monitoring contamination, migration and remediation effectiveness, inspecting disposal cells, enforcing access restrictions and implementing permits and other legal controls to the contaminated lands. Thus, the object of stewardship planning in this case study was to ensure continued responsible long-term care of the contaminated areas, to preserve information on the location and longevity of residual contamination and to ensure that future generations do not inadvertently disturb contaminated areas. In this context, it can be inferred that "stewardship" was used as a governance system by developing a programme that was adopted to cope constructively with any negative community image associated with contamination resulting from DOE missions.

3.1.6 Summary and distillation of a definition of "stewardship" for this study

In summary, the evidence from literature suggests that there are various descriptions and contexts within which the concept "stewardship" is employed. From this review, it can also be inferred that the principles of "stewardship" can be applicable and adapted to other topics not discussed above. Therefore, based on the common thread in all of the above reviews and the aims and objectives of this study, "stewardship" could support the proposed new evolution for quality management by providing a governance framework and leadership strategy in which organisations and their

employees can engage for their continued existence. This framework and leadership strategy, through the definition of "quality stewardship", will support organisations in addressing current business challenges and market trends created by emerging trends and stakeholder requirements, as identified in Chapters 1 and 2 of this study.

The topics that emerged in this review involved leadership, change management and strategy. Therefore, these topics will be carried forward as elements of this research. The next section of the literature review will focus on leadership; this section will review the systematic relationships between leadership and quality management, theories on leadership and provide a discussion on the relevance and relationship of leadership and "stewardship".

3.2 Leadership

Leadership is associated with providing direction, mandates and inspiration to organisations and its employees. Therefore, good leadership is essential to articulate what an organisation is trying to do and where it is heading.

3.2.1 Quality management and leadership

Laohavichien, Fredendall, Stephen and Cantrell (2009:7-24) cite quality management founders (Deming 1993), quality management theoreticians (Dean and Bowen 1994:392-418; Waldman 1994:510-536; Waldman and Gopalakrishnan 1996:91-107; Luria 2008:27-40) and empirical quality management researchers (Saraph, Benson, and Schroeder 1989:810-829; Ahire, Golhar and Waller 1996:23-56; Kaynak 2003:1-31; Sila and Ebrahimpour 2003:235-268), who have emphasised the importance of the role of leadership for quality management programmes. The conclusion drawn by Laohavichien, Fredendall, Stephen and Cantrell (2009:7-24) is that leaders influence the motivation of employees, which is beneficial because motivated employees help to improve quality performance.

Similarly, a study by Roethlein, Mangiameli and Ebrahimpour (2002:48-66) reported that the quality performance of the workforce increased when top management was perceived as supportive. Another study conducted by Dale, van der Wiele and van

Iwaarden (2007:39), found that leadership commitment and attitude was important for good quality management. In addition, Conti, Kondo and Watson (2003:105) affirm that the relationship between leadership and quality management is reinforced by its prominence in current quality standards and awards. Specifically, at the core of an ISO 9000 quality system is the responsibility of leadership, which is stated as a requirement of management commitment. In the Malcolm Baldrige National Quality Award and other similar awards, this is presented as executive leadership, the primary driver in favour of success for business excellence (Chuan and Soon 2000:1065-1080, Conti, Kondo and Watson 2003:106).

Ironically, according to Laohavichien, Fredendall, Stephen and Cantrell (2009:7-24), leadership theory has not used either quality improvement or organisational performance as criteria for leadership effectiveness. This is supported by Sousa and Voss (2002:91-109), who recommend that management theories such as leadership should be used to enhance quality theory. Perhaps incorporating leadership into quality management is the first step in integrating quality management with management theory. This supports a gap highlighted by Hoyle (2009: vii) in Chapter 2 as a plausible contributing factor to the present non-alignment of quality management, current business challenges and market demands.

From the above review (Chuan and Soon 2000:1065-1080; Roethlein, Mangiameli and Ebrahimpour 2002:48-66; Sousa and Voss, 2002:91-109; Conti, Kondo and Watson, 2003:106; Dale, van der Wiele and van Iwaarden 2007:39; Laohavichien, Fredendall, Stephen and Cantrell 2009:7-24) it can be perceived that there is support for the concept that leadership is fundamental to increasing commitment and performance of quality management. Therefore, a review of the role of leadership will be fundamental to this study in supporting organisations and employees with the evolution that is proposed for quality management.

The next sections will review various leadership theories in existence and thereafter discuss the most appropriate options selected for the current study and the reason for their selection.

3.2.2 Leadership theories

Two major leadership concepts identified by Laohavichien, Fredendall, Stephen and Cantrell (2009:7-24) that emerged over the last fifty years include transactional and transformational leadership. Transactional leadership is viewed as the type of leadership used to produce incremental change, whilst transformational leadership is needed to create radical change. Furthermore, Tejeda, Scandura and Pillai (2001:31-52) define transactional leadership as an exchange process, in which leaders reward or punish employees based on the degree to which they comply with their requests and/or achieve organisational goals. The implicit importance of transactional leadership is that it assists in clarifying goals and the means of accomplishing these goals.

Although MacKenzie, Podsakoff, and Rich (2001:115-134) and Hetland and Sandal (2003:147-170) are of the opinion that there is evidence that more effective leaders exhibit higher levels of transformational than transactional leadership, they maintain that both theories are complementary and not oppositional. Thus, it can be suggested that depending on the situations and challenges, leaders will exhibit varying degrees of transactional and transformational behaviours as needed. From this review it can be inferred that both transactional and transformational leadership refer to theories or types of leadership, which are inherent in any form of leadership behaviour or process. Therefore, this review will expand on various behaviours or processes of leadership and examine the manner in which they are implemented, in order to gain insights for the current study.

Sharma (2009:49-84) is of the opinion that the role of the leader is to create a powerful inspirational vision and lead the people towards striving to achieve this vision, by linking it to their daily activities. In this way, he believes, employees within an organisation feel liberated or valued and believe that their work is appreciated. In addition, he states that employees feel that their daily outputs, irrespective of how routine in nature, contribute to a bigger purpose that the vision will deliver. Perhaps the power of this type of leadership behaviour is that it fosters a deep inner need or hunger that employees have to be part of a bigger purpose. An

example of this is an employee who captures data on water usage in an organisation; although this work is routine in nature, this person is inspired by the vision that he/she is contributing to driving environmental sustainability.

Using a different approach to leadership, Pearce and Robinson (2009:374) define leadership as the process and practice by key executives of guiding employees in an organisation towards a vision. This process and practice includes developing an organisation's future leadership and organisational culture. They further state that the leadership challenge is to kindle commitment among employees, to embrace change and to implement strategies to ensure that the organisation succeeds in a vastly different future.

Other authors (Smith and Cronje 2002:279; Hirzel and Calnan 2004:381-384) similar to Pearce and Robinson (2009:374) emphasise that the most complex challenge of leadership is in giving direction to employees, each of whom is unique with specific needs. Each employee has a different combination of interests, capabilities, habits, beliefs, skills and personal goals. Employees are motivated by different things, thus the leadership mode displayed and adopted in an organisation can be directly linked to the morale and productivity of the employees. From the views presented by Smith and Cronje (2002:279); Hirzel and Calnan (2004:381-384) and Pearce and Robinson (2009:374), it can be deduced that these authors describe leadership as a process or practice that consists of leaders and followers. In an organisation, the leaders and followers are typically management and shop floor employees, respectively. From the review of these authors, it can be inferred that in this type of leadership (process or practice), the key challenge is to motivate employees and create a culture that is aligned to both the employees and the organisation.

The next type of leadership concept, originated by Greenleaf (1990:1-22), is linked to the concept of servant leader. Greenleaf (1990:1-22) describes servant leadership as an inverted traditional leadership pyramid. The traditional leadership pyramid normally had leaders at the top and subordinate/followers at a lower level. The author declares that in this type of leadership, the difference manifests itself in the

care taken by the servant, first to make sure that other people's highest priority needs are being served. According to Barna (2010:3-4), in an organisational environment in servant leadership, the role of the leader is to serve, coach and mentor the constituency or employees they are responsible for, in order to try to make them successful. He adds that in an organisation, the sole purpose of the leader in this concept is to share decision-making authority with the employees at the shop floor. Thus, he is of the opinion that this model forwards the philosophy that if the leader serves the needs of the employees, who then serves the needs of the customer, the result would be a great organisation that would benefit all stakeholders. Hence, it is evident that in the concept of servant leadership the success of the leaders can only be gained through the success of the constituency or employees for which they are responsible.

Goleman (2004:4-12) adds a different dimension to leadership by stating that the leadership process is not only dependent on the leader possessing distinguishing attributes such as intelligence, toughness, determination, and vision, but also a high level of "emotional intelligence". Emotional intelligence, known as "EQ", includes self-awareness, self-regulation, motivation, empathy and social skill. It can be inferred that this type of leadership is reliant more on the emotive skills of the leader.

Another contrasting perspective of leadership is offered by Kotter (2001:14-24), who maintains that leadership is about coping with change. His view is based on ongoing changes that are impacting on the business world at present. Examples of these changes include the business world becoming more competitive and volatile as a result of faster technological change, greater international competition and deregulation of markets, overcapacity in capital-intensive industries and the changing demographics of the workforce.

Kotter (2001:14-24) provides a change leadership model (see Table 5, below) that identifies eight errors common to transformation efforts and offers an eight-step process for overcoming them and successfully completing the transformation. From

this review it can be concluded that this type of leadership deals with preparing organisations for change and assisting them through the process.

Table 5: Summary of Errors and Solutions in Implementing Organisational Change, (Kotter, 1996: 4-21)

Number	Errors	Solution
1	Allowing too much complacency	Establishing a sense of urgency
2	Failing to create a sufficiently powerful guiding coalition	Creating the guiding coalition
3	Underestimating the power vision	Developing a vision and strategy
4	Under-communicating the vision by the power of 10 (or 100 or even 1000)	Communicating the change vision by the power of 10 (0r 100 or even 1000)
5	Permitting obstacles to block the new vision	Empowering broad-based action
6	Failing to create short-term wins	Generating short-term wins
7	Declaring victory too soon	Consolidating gains and producing more change
8	Neglecting to anchor changes firmly in the corporation's culture	Anchoring new approaches in the culture

From the above review, it is evident that the two major leadership concepts that have emerged over the last fifty years include transactional and transformational leadership. Either of these two leadership concepts will be present in all leadership traits, behaviours and processes. The review also presents the importance of mobilisation and use of personal traits of the leader to inspire, energise and influence employees. Furthermore, it is revealed that the leader, by creating a vision, can liberate employees to achieve the fullness of their individual talents in pursuit of shared objectives. From the review, it is also evident that the leadership processes using a servant leadership model, emotional intelligence (EQ) and change management processes were developed to tailor-make leadership choices that can be adopted based on purpose and needs.

The next section will discuss the role of leadership in relation to the current study.

3.2.3 Leadership linkages to "stewardship"

The leadership association to the concept "stewardship" in section 3.1 carries a profound undertone suggesting a willingness to be accountable for the wellbeing of a larger cause by serving other people/employees, rather than by controlling them. Furthermore, the definition of "stewardship" by Block (1996) as a means of giving

employees at the bottom and at the boundaries of an organisation a choice of how to serve the stakeholder (customer, citizen or community), reinforces the leadership and service-orientated role of all employees within an organisation.

From the review of leadership theories, the leadership, or rather follow-ship, characteristics that are evident from the above definition of "stewardship" can be associated with that suggested by Sharma (2009:48-84) in section 3.2.2. In addition, it is evident that the description of "stewardship" shares a strong alignment with the concept of servant leadership discussed in the previous section (3.2.2).

Thus, to envisage leadership requirements for the current study that is aligned to the thoughts of "stewardship", the views of Ireland and Hitt (2005:63-77) and Hopen (2010:4-9) were found to be most appropriate. It is suggested that Hopen (2010:4-9) identifies the "what" that leadership needs to deliver and Ireland and Hitt (2005:63-77) provide the "how" by which it can be achieved. Hopen's (2010:4-9) views can be summarised as follows:

1) The impact of globalisation on organisations will continue: today, no organisation is immune to the global marketplace;
2) Leaders will not have all the knowledge needed to make the best decisions; they will need to engage associates and other resources in the decision-making process;
3) Organisations need to deal with a mixed composition of workforce made up of four different generations and regulations and laws that vary between countries;
4) Different systems and processes will be required to support organisations in global sourcing and leveraging of supplier management;
5) There will be additional requirements for understanding and delivering to varied customer preferences, including those that are highly dependent on cultural archetypes across different countries and lastly;
6) There will be growing demands and urgency in bearing responsibility for the impact of the organisation's decisions and activities on society and the environment.

Ireland and Hitt (2005:63-77) claim that in the 21st century, organisations' top managers will have to discharge their strategic leadership responsibilities. They will

view their leadership position as one of significant responsibility to a range of stakeholders. Also, instead of seeking to provide all the right answers, they will strive to ask the right questions of the community citizens they have empowered to work as partners with them. Most importantly, they will need to form a community of colleagues rather than an organisation of employees constrained by traditional hierarchical configurations.

In conclusion, it can be seen from the above review that the role and practices of leadership to support the current study will require changes in current thinking. From the review, it is implied that with the adoption of "stewardship" and servant leadership, the leadership role must become less dependent on the personal knowledge and skills of the leader and more dependent on the leader's ability to serve, inspire, motivate, encourage and support employees. The employees, in turn, should measure and monitor their own results and become directly accountable to their customers, co-workers, the organisation, the community and the planet.

The next section reviews the role of change and change management with respect to the current study.

3.3 Considerations of change and change management implications and influence on this study

The current study advocates change to the existing scope of quality management. Although the forces for change envisaged in this study are both internal (organisational) and external (environmental), the organisation's ability to cope with this change has to be within its boundaries. Therefore, to better support the proposed change in this study to the scope of quality management, a sound understanding of change management is essential.

A number of authors (Chan and Quazi 2002:23-49; Sinn 2002:24-29; Grover and Walker 2003:8-24), note that each time there has been a shift or migration in responsibility for quality, significant change has occurred in organisational values, norms and expectations. This change has always created major challenges for

organisations and employees. They also comment that besides the impact on employees, these changes create significant challenges for organisational leaders. For example, Grover and Walker (2003:8-24) report that in the case of the leaders, one such challenge is providing employees with the tools, techniques and methods needed to successfully guide change efforts, given the organisation's practices of the day.

Case (2002:25-29), the ASQ president-elect, raises the concern of change in the context of the future of quality management in the workplace. His view is that leaders facilitating the change, as well as the front-line employees who are expected to embrace and support this change, may come to the task with little or no understanding of quality management methods. Grover and Walker (2003:8-24), supporting Case (2002:25-29), declare that change normally needs to be undertaken with acceptance that the employees and leaders need to deal with competing priorities. These priorities normally include focusing on meeting production or service delivery expectations, using old operating practices whilst striving to change to new ones.

It is evident from the above review that quality management has had experience with change in the past. Important to the current study, the lessons from the past indicate that any change to quality management has always created major challenges for an organisation's employees and leaders. These challenges are normally a result of significant changes to organisational values, norms, expectations or a lack of understanding of what is required in the new state. Therefore, central to the success of change is the ability of both leaders and employees to successfully move from their current mindsets. The difficulty, however, is that habits and beliefs fix mindsets. These are based on conclusions that have accumulated from observations and experiences that both leaders and employees will seldom wish to relinquish. For this reason, the current study needs to undertake a comprehensive review of the changes envisaged to assist organisations with the proposed evolution of quality management.

The next two sections will look at some theories and models on change management that could support this study and assist organisations in implementing the envisaged changes in quality management.

3.3.1 Current change management theories

Any organisational change, according to Pearce and Robinson (2009:376-402), requires a transformation of some sort by employees in that organisation. They elaborate that this transformation is normally a change in an organisation's entrenched culture. These cultural variables are normally unique to each organisation and are part of the "informal organisation". Pearce and Robinson (2009:376-402) assert that culture is reflected in the way in which people within the organisation work, set objectives, allocate and manage resources and behave towards each other to achieve the objectives.

Sharma (2009:145-167) provides a view on change that has substantial bearing to this study. He declares that change can be seen in everything around us: in technology, in society, in the political landscape and even in the way people work. Furthermore, he stresses, that in order for leaders to master change, they must embrace change by being resilient and reacting to unforeseen challenges with grace, agility and speed. He suggests that adaptability is one of the most essential leadership skills and emphasises that a leader who can adapt to change and use it to his or her advantage will have a competitive edge.

Rawlinson, Harshak and Suarez (2008:1-3) provide a perspective on change, by quoting the Booz and Company survey of 2008. The survey notes that more than three hundred and fifty senior executives, who have led major transformation initiatives at large organisations around the world, indicated that four out of five transformation programmes now have dedicated employee work streams. These work streams are designed to engender changes to employees' skills, behaviours and attitudes. Also, fifty nine percent of supervising executives agree that a successful transformation is due more to the employee initiatives than to other elements of the programme.

It is evident from the above review that change is a reality that can be seen in everything around us. Change normally challenges entrenched cultures within organisations. In order for organisations to survive, they need to embrace change. Most success in change is as a result of employee initiatives. It is hoped that through the insight gained from this review, the current study will be able to support the change required by quality in a more able manner.

It can be inferred that managing change requires proper planning and implementation. Therefore, the next section will provide a review of the most common change management models that can be explored in support of this study.

3.3.2 Change management models

While initiating change is never easy, there are many models and guidelines outlining how to achieve this. The two most popular and widely used models are the Kurt Lewin Model and the Kotter Model.

3.3.2.1 Kurt Lewin model

Lewin (1947:5-41), provides perhaps the best known and enduring model for change through his force-field theory. This theory is based on the principle that change occurs at an individual level in which one needs to replace a set of habits with another. For this to take place successfully, human behaviour must first address the matter of unfreezing existing, preferred ways of doing things, followed by introducing new, desired ways of doing things (freezing), and finally, reinforcing the new methods or habits (refreezing).

3.3.2.2 Kotter model

The Kotter Model was initially published in an article for the Harvard Business Review (Kotter, 1995:59-67) and thereafter in the book, called “Leading Change” (Kotter, 1996:4-21). The model was based on observations of more than a hundred large and small corporations, comprised of failing and profitable organisations. On the scale of success, of the hundred organisations Kotter (1995:59-67) surveyed, a

few transformations were highly successful, some were moderately successful and the bulk were not.

Kotter (1995:59-67) reports that two lessons relating to "committing to the transformation process" and "following through the processes" surfaced in the case observations:
1) The change process goes through a series of phases that require a considerable amount of time and effort and
2) Skipping steps only creates an illusion of speed and inevitably produces problems. Critical mistakes can have a devastating impact since they slow momentum and/or hard-won gains. Based on the success stories, making fewer errors can determine the difference between success and failure of organisations when implementing change.

As an additional view to the above two models, Carter (2008: 20-23) offers another perspective of change models and expands the traditional shifting management model to incorporate strategy, skills and structures. He is of the opinion that change requires more than just change management approaches, as reviewed above. His view is that changing requires addressing the strategy (what capabilities the recipients of the change need for success in the new state) and structures (the long- and short-term organisational tools that support the new state). He cautions that in the event that these areas are not aligned, the desired outcome (example, a changed organisation) may never come to fruition.

From the review of this section, it can be inferred that change management will be pivotal to successfully implement the philosophy of stewardship as the key principle of quality in the future. Therefore, the management of change will need to become a key competency with which quality leaders at all levels in the organisation need to be equipped. Reflecting on the various emerging trends identified and the proposed new scope of quality, it is hoped that the change management philosophies using the discussed models will be adopted to support this study.

The next section of this chapter will discuss strategy and its relevance to the current study.

3.4 Strategy

The purpose of this review is to provide a theoretically sound foundation for supporting the development of the strategy and framework suggested in this study. For this, it is hoped that the review will provide approaches and principles that will assist in positioning the strategy for this study and for organisations in the light of the definition of "stewardship".

It is therefore necessary to begin by providing a review on the background and definition of the concept of strategy.

3.4.1 Background on the concept of strategy

In the corporate world, strategy and its management are a priority of all business models and are under the direct supervision of top executive teams. Ungerer, Pretorius and Herholt (2007: 2-9) declare that four well-known publications have influenced corporate strategy in the last few decades. These are: Andrew's (1971) book called "The Concept of Corporate Strategy", which was instrumental in shaping thought leadership in the field of business strategy; Porter's (1980) book called "Competitive Strategy: Techniques for Analysing Industries and Competitors"; Hamel and Prahalad's (1994) book called "Competing for the Future"; and Senge, Roberts, Ross, Smith and Kleiner's (1994) book called "The Fifth Disciple Field Book".

Each of these authors explores different approaches or frameworks for strategy development and implementation. The following is a summary of their approach:

1) Andrew (1971) focused on the strength, weaknesses, opportunities and threats (SWOT analysis) of an organisation;

2) Porter (1980) was seen more as a grid positioning approach, which was based on a clear differentiating proposition of unique strategies versus existing and potential competitors;

3) Hamel and Prahalad's (1994) approach was more resource-based, with the emphasis on core competences, core processes and strategic assets that organisations need to create and secure a competitive high ground in the future;
4) Senge et al (1994) introduced strategy as a learning process, wherein organisational learning happens when people strategise together.

Other descriptions provided for the concept of strategy include strategic planning. Bryson (1995:4-5) is cited in the ASQ (2005:10) for defining strategic planning as a disciplined effort to produce fundamental decisions and actions that shape and guide what an organisation is, what it does and why it does it. This infers that strategic planning is a process for assessing an organisation's current and anticipated business environment. In this sense, the definition for strategic planning closely resembles the approach known as scenario planning or futures studying.

Watson (2008:4-10) maintains that scenario planning is about planning to address potential impacts of current trends and challenges by creating a spectrum of scenarios. These scenarios create visions of alternative, potential future states. Scenario planning is different from forecasting as there is no estimate regarding which of these alternative futures is the most likely reality. In addition, Watson (2008:4-10) remarks that scenarios are used to understand how the different forces contribute to the direction of change from the current state. Thus, essentially, the scenarios can help develop strategies to shape the capability required to achieve desirable future conditions, while helping to avoid undesirable outcomes.

After strategic planning, which includes scenario planning, strategic management is the next logical consideration that needs to be in place for a strategy to be effective. A definition for strategic management offered by Pearce and Robinson (2007:3) suggests that it is a set of decisions and actions that results in the formulation, implementation and control of plans designed to achieve an organisation's vision, mission, strategy and strategic objectives within the business environment in which it operates. Thompson and Strickland (2003:6), similar to Pearce and Robinson (2007:3), define strategic management as the managerial process of forming a

strategic vision, setting objectives, crafting a strategy and implementing and executing the strategy. They elaborate, however, that strategic management spans a period of time, initiating whatever corrective adjustments in vision, objectives, strategy and execution are deemed appropriate.

In summary, the concept of strategy can be described as a process that identifies current capability and matches it with the capability needed to address critical issues that are most likely to affect the future of an organisation. It is about making trade-offs to create and secure a competitive high ground in the future, which includes choosing what not to do. Strategic management can be summed up as a process that consists of an overall involvement in the planning, directing, organising and controlling of an organisation's strategy-related decisions, actions and deployment. Thus, as per the review in the last section, the role of the leader in providing direction to this process is critical for ensuring success.

From this review, it is evident that strategy planning and management require highly structured consideration. It can therefore be suggested that the insights from this review will have strong relevance in supporting the current study to develop and manage a strategy with an integrated framework to re-bridge the gap between quality management, current business challenges and market demands, created at present by emerging trends.

According to ASQ (2005:10), Journal for Quality and Participation, strategy management does not stop with the development of a high-level strategy document. The strategy needs to be deployed to functional workgroups, teams, programmes, projects, and individuals so that their work is realigned with the organisation’s overall direction. Therefore, a review of strategy execution will be undertaken next in order to gain insights on the implication of this to the current study.

3.4.2 Strategy execution

Regenesys Academic Team (2007:41) indicates that there are three methods of implementing a new strategy. First is the big bang model, which implies that on one

day the old system stops and on the next day the new one starts. Second is a pilot study model of implementation, which implies that an experimental project will be run on a smaller scale to see how the proposed change will work in practice. The third model is called parallel running where two or more operations are maintained simultaneously, which, consequently, is expensive.

Pearce and Robinson (2007:11) are of the opinion that the challenge with strategy implementation is that organisations have various interrelated structural forms and processes. They believe that these structural forms and processes require careful thought and leadership to assess and implement what is desired to reach the targeted objectives on schedule. This perhaps affirms the point made under the review of leadership on the diverse priorities required during the transition from the old to the new approach.

The book called "Execution: The Discipline of Getting Things Done" by Bossidy and Charan (2002:22) defines execution as a systematic process of rigorously discussing the "hows" and "whats", questioning, tenaciously following through and ensuring accountability of the workforce. He goes on to state that this includes making assumptions about the business environment, assessing the organisation's capabilities, connecting strategy to operations and the employees who are going to implement the strategy. This should include linking rewards to outcomes for employees.

Jooste and Fourie (2009:51-68) are of the opinion that leadership, and specifically strategic leadership, is one of the key drivers of effective strategy implementation. Supporting this, they cite several actions identified by Hitt, Ireland and Hoskisson (2007: 385) that characterise strategic leadership and positively contribute to effective strategy implementation; namely, determining strategic direction, establishing balanced organisational controls, effectively managing the organisation's resource portfolio, sustaining an effective organisational culture and emphasising ethical practices. The authors conclude that strategic leaders have a role to play in each of the mentioned strategic leadership actions. In turn, each of these

strategic leadership actions positively contributes to effective strategy implementation.

Included with the various views (Sull and Spinosa 2007:79-86, Mankins and Steele 2005:65-72) on implementation of strategy, there is an abundance of literature on its challenges and high failure rate. According to Sull and Spinosa (2007:79-86), execution of strategy fails due to a variety of familiar reasons. These include employees disengaging because they do not buy into the organisation's priorities, resulting in their becoming dissatisfied and unproductive. Another reason provided by Sull and Spinosa (2007:79-86) is that functional silos hinder the coordination necessary for organisations to seize new business opportunities.

A survey by Mankins and Steele (2005:65-72) provides a number of statistics pertaining to challenges associated with strategy execution. The survey suggests that organisations only realise about sixty three percent (63%) of their strategy's potential value. A breakdown of the thirty seven percent (37%) loss or gap in strategy can be seen in the chart (Figure 1) below.

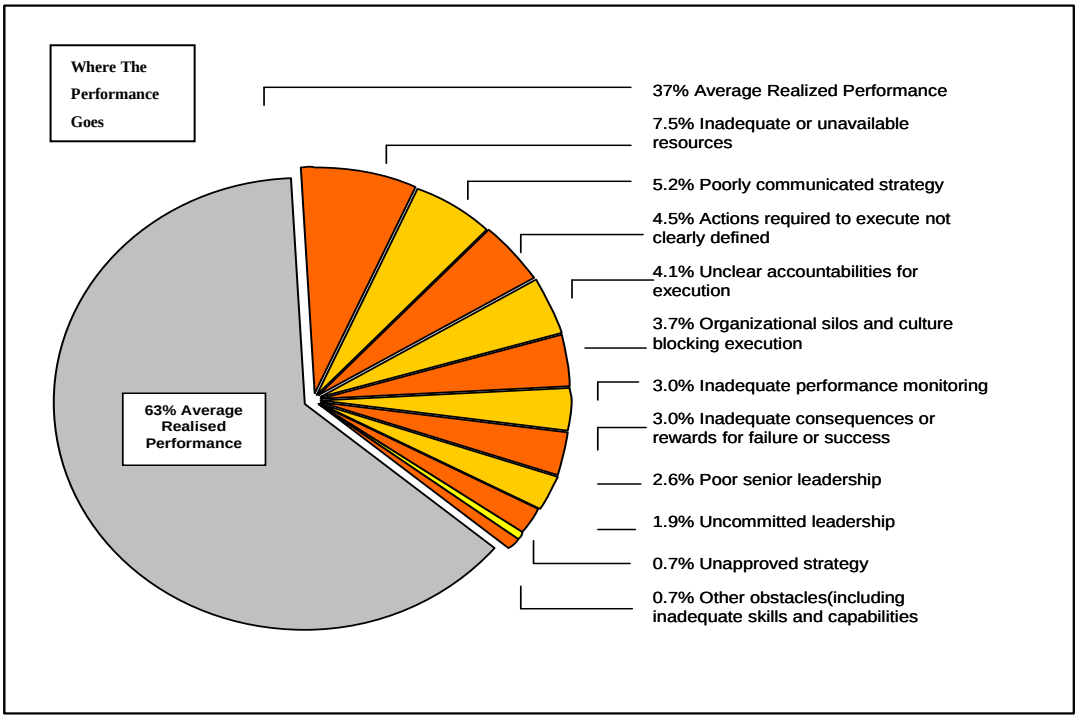


Figure 1: Strategy Execution (adapted from Mankins and Steele (2005: 68), Harvard Business Review, July-August)

They are of the view that a major reason for this outcome is the insidious support for unrealistic plans by organisations. When organisations knowingly agree to plans that will not be fulfilled, they implicitly give permission for failure to meet performance commitments. This results in organisations becoming less self-critical and less intellectually honest about their shortcomings.

Thus, the organisation loses its capacity to perform effectively. A culture of non-performance is fostered in those businesses.

The above review provides sufficient evidence to suggest that the success of a strategy is highly dependent on a properly managed execution process. Key to the execution is careful thought and leadership to assess and implement the change desired to reach the targeted objectives on schedule. This includes making assumptions about the business environment, assessing the organisation's capabilities, connecting strategy to operations and the employees who are going to implement the strategy. The role of employees is again emphasised as their engagement can result in either success or failure of a strategy's execution. For the current study, the above review demonstrates the dependency on leadership and change management processes for the planning and execution of the proposed strategy.

Part of this literature review was to develop the foundation that supports the third objective of this study, namely to develop a schematic representation and framework of an integrated approach that would assist managers in implementing "quality stewardship". The next section will review the use of frameworks and models in strategy implementation and its relevance to this study.

3.4.3 Strategy implementation using frameworks and models

Frameworks and models are very common in strategy development and implementation. Okumus (2001:327) indicates that since the early 1980s various strategy implementation frameworks have been developed. The author examined the various available frameworks and compared them with each other. The conclusions

from these studies were that the frameworks were largely conceptual or descriptive with key implementation variables. The variables themselves could vary in numbers, depending on the specific needs. For an implementation to be successful there had to be an overriding "fit" amongst the variables.

Another point of view on frameworks and their value is presented by Olsen and Haslett (2002:452). They support the notion that a framework is made up of a number of variables and express the view that the variables within these frameworks are normally in continuous interaction with each other. Their view is that these interactions are consistent with systems thinking, which brings together in one discipline, the concepts of connectedness and interdependencies, feedback and feedback processes. This supports the view that a systemic approach to, and the understanding of, the strategic management process as an integrated approach requires a holistic view.

The review of the composition and operation of frameworks is suitably aligned to concepts explored in the review and will be proposed in the current study, encompassing the development of a framework to execute an operational strategy for the implementation of Quality Stewardship.

As this study is focused on the operations aspects of an organisation, the next section will undertake a closer examination of the composition of operations strategies. It will provide examples of simplistic representations of operational strategy that can support corporate strategies.

3.4.4 Operational strategy

According to Laseter (2009:1-5), operations strategy is poorly understood by organisations. For this reason, the definition of an operations strategy is normally cited only as efforts to reduce costs or to improve quality. His view is that although reducing costs and improving quality are important, these programmes alone rarely produce a competitive advantage to support the overall corporate strategy. Therefore, based on this view, it can be inferred that operational strategies need to build

distinctive relevant capabilities, which, when implemented well, will result in creating a competitive advantage for that organisation.

To illustrate this concept, Laseter (2009:1-5) lists a few well known capabilities, with simple examples, that have provided organisations with this competitive advantage. The list offers a reasonably comprehensive coverage of most operational contexts, but more importantly, it deals with issues that are relevant to organisations in the current study. Thus, these examples will serve as guidelines to this study. A review of this list follows.

3.4.4.1 Innovation and product development. The author uses Inditex (a Spanish clothing organisation better known by its leading brand, Zara) to demonstrate that to generate competitive advantage, an organisation's capability must support its competitive position. Unlike other fashion designers, this organisation does not possess an innovation and product development capability. Inditex competes by quickly copying ideas from the Paris and Milan catwalks and the nightclubs of New York and Tokyo. This organisation achieves its competitive advantage by not using the "best practice" approach but by positioning behind the Zara brand. The Zara brand is known for its offering of a single style in a single store across the globe. This value proposition excites the customer and creates the competitive advantage for the organisation.

3.4.4.2 Customer service management. This example is of an auto insurer, Progressive Corporation in America, renowned for developing its competitive advantage through the reputation of its built-in customer service. This organisation, rather than issuing claims cheques, offers to repair damages to the vehicles with a guarantee for as long as the customer owns the car. The competitive advantage built into this process is that the customer does not pay more to cover the increased service levels provided. The organisation self-funds these capabilities through savings in managing the repair process more effectively. In this example, the value proposition is realised by both the insurance organisation and customer.

3.4.4.3 Operations planning and control. The strategic decision by Amazon, a leading internet retailing store, to vertically integrate its order fulfilment is used as the example here. The competitive advantage was in operations planning and control. This organisation leverages this process to inform the customer of the precise cut-off time for ordering in order to receive a delivery the next day. The product range for which this organisation uses this process is most daunting and includes items such as shoes and groceries, to list a few. No competitor manages such a broad product range with such precision. The competitive advantage that Amazon enjoys from this offering makes it a viable value proposition. In this example, customer satisfaction is also very high.

3.4.4.4 Purchasing and supplier development. The example here indicates the successes that Honda Motors in America achieved by investing in local supplier development. The strategic or competitive advantage in this example, over and above economies of scale, was also the local availability of raw materials meeting the required quality standards. Also, the suppliers now play a key role in working with the organisation in developing high quality, affordable, mass produced cars.

3.4.4.5 Quality management. In direct alignment with the objective of this study, the author asserts that an organisation's approach to quality management represents an opportunity to build a capability to support a differentiated competitive position. The example of the Palm Restaurant and McDonald's Corporation is supplied. Both these organisations have strong quality management capabilities, but they focus on different quality positioning. The Palm Restaurant chain, with nearly 30 locations from London to Los Angeles, is known for its reputation of ample servings of hand-cut, aged steaks cooked to the individual tastes of the customer. McDonald's quality management process, on the other hand, focuses on delivering consistent meals in 31,000 restaurants in more than 100 countries worldwide. These organisations have their unique competitive advantages; the Palm competes on "quality of spec" (short for "specification") and McDonald's competes on "quality to spec." Each has tailored its quality management capability to support its quality positioning and each value propositions works well for their different classes of customers.

3.4.4.6 Attraction and development of people. The last example provided discusses people as an organisation's most important asset. All operations capabilities depend on people and, accordingly, a comprehensive operations strategy must explicitly address how the organisation will attract, develop and retain the right people. General Electric Company's Crotonville learning centre and its succession planning process for developing executives is lauded by many management gurus. This, for General Electric, is a competitive advantage as very few competitors can match this capability to develop great executives.

The review of operational strategy confirms that there are many different capabilities that organisations can choose, singly or in combination, to create their operational strategy and competitive advantage. The choice for the development of a strategy is generally based on an industry sector, needs of the organisation, distinctive competence, desired competitive advantage, or even just on familiarity or preference. Although the examples provided above are from different industry sectors, the methodology of identification and implementation of the competitive advantages listed will be valuable to the industries and framework targeted in the current study.

3.5. Conclusion

The conclusions drawn from this section include:

- The common thread on the description of "stewardship" includes providing governance framework and leadership strategy in which organisations and their employees can engage, for the sake of their continued existence.
- The role and practice of leaders to support this study requires changes in their thinking on leadership. A servant type of leadership was most linked to the proposed scope of this study, namely "quality stewardship".
- The proposed change of scope for quality management in the current study will require structured change management strategy.
- Strategies allow organisations, individuals, researchers or anyone else, to evaluate their internal and external environments, their strengths, weaknesses, opportunities and threats.

- Strategies offer direction, options and choices to develop distinctive competencies and competitive advantages.
- The information from the review can be used to select one or a combination of approaches to develop strategy with a vision, purpose (mission) and objectives to be successful in an environment that is ever changing.
- A strategy needs to be dynamic and needs to be adjusted as required. It should not be seen as cast in stone nor considered as the final prediction of the future.

Connecting back to the problem statement, objectives and the concept of stewardship, this review presents a number of insights that provide a solid foundation for supporting the development of the strategy and framework suggested in this study.

Further, through the literature review the foundation to support the third objective of this study was formed, namely to develop and propose a schematic representation and framework of an integrated approach that would assist managers in implementing "quality stewardship".

3.6 Summary of the chapter

The chapter comprises a comprehensive literature review determining the perceptions and status of the concept of "stewardship", leadership, change management and strategy as part of the second objective of this study.

The first section of the literature in this chapter examines various descriptions and contexts within which the concept "stewardship" was employed. This includes examples from various disciplines, for example, public service, religion and environmental management. The review of the concept "stewardship" provokes ideas linked to leadership, change management and strategy. The rest of the chapter deals with the review of leadership, change management and strategy.

The second section starts with a discussion on quality management and leadership, thereafter reviewing the prevailing leadership theories and concluding with a

discussion on leadership requirements for this study, drawing from the review of the first two sections.

The third section reviews the considerations of change and its relevance to this study. This section also provides a review of two well-recognised change management models, namely the Kurt Lewin change model and the Kotter model. As part of the review of the change management models, a fresh perspective on expanding these models to improve the rate of success in implementing a strategy is also noted. All of these models are suggested as potentially applicable to the interventions proposed in this study.

The last section of the chapter reviews the background on the concept of strategy, strategy management, execution, challenges, implementation frameworks and models and definition, and components of operational strategy are discussed. From this review, it is hoped that the purpose of strategy and its implications on this study, specifically to the problem statement, objectives and the concept of “stewardship”, will be developed.

CHAPTER 4: METHODOLOGY, DEVELOPMENT OF THE PROPOSED FRAMEWORK AND PRELIMINARY WORK

4.0. Preamble

The chapter presents the research design and methodology for conducting this study. It includes an overview of the theory for data sources, preliminary work, data collection, analysis instruments, and methods to demonstrate the basis for this study. Furthermore, the chapter presents the theory of literature review, indicates its purpose and summarises the main points from the previous chapters. This chapter also proposes a framework for this study. It concludes by presenting a preliminary study and provides a brief introduction to the principal study.

4.1 Research design and methodology

Hofstee (2006:113) mentions that research design is where the overall approach to test the thesis statement, research technique, strengths and weaknesses is named and discussed. The flow diagram for this study will be discussed in the sub-section below.

4.1.1 Flow of research

The diagram below (Figure 2) illustrates the design flow of this study.

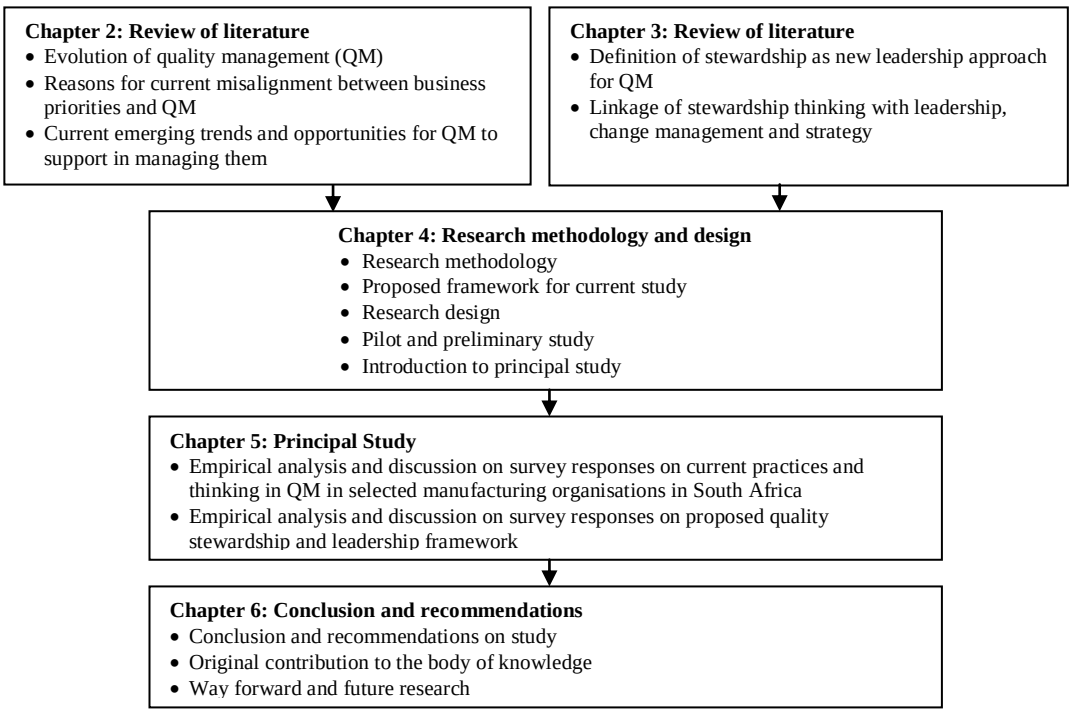


Figure 2: Research Design

4.2 Research methodology

Checkland and Holwell (1998:13) affirm that for any piece of research three main elements are necessary. These include "situation of interest" or "area of concern" (A), a "framework of ideas" (F) and a "methodology" (M). The detail of Checkland and Holwell (1998:13) is illustrated in Figure 3 and the role that these elements play in research is summarised as follows:

- A "situation of interest" or "area of concern" (A). The (A) might be a particular problem in a discipline or it could be some real-world problem situation.
- A "framework of ideas" (F) in which knowledge about the situation being researched is expressed. This could be the current theory of a particular discipline, although it could also be something less specific than this, for example literature or research surveys.
- A methodology (M) in which the F is embodied. The (M) marshals various methods, tools and techniques in a manner appropriate to the (F), and uses them to investigate the situation of interest.

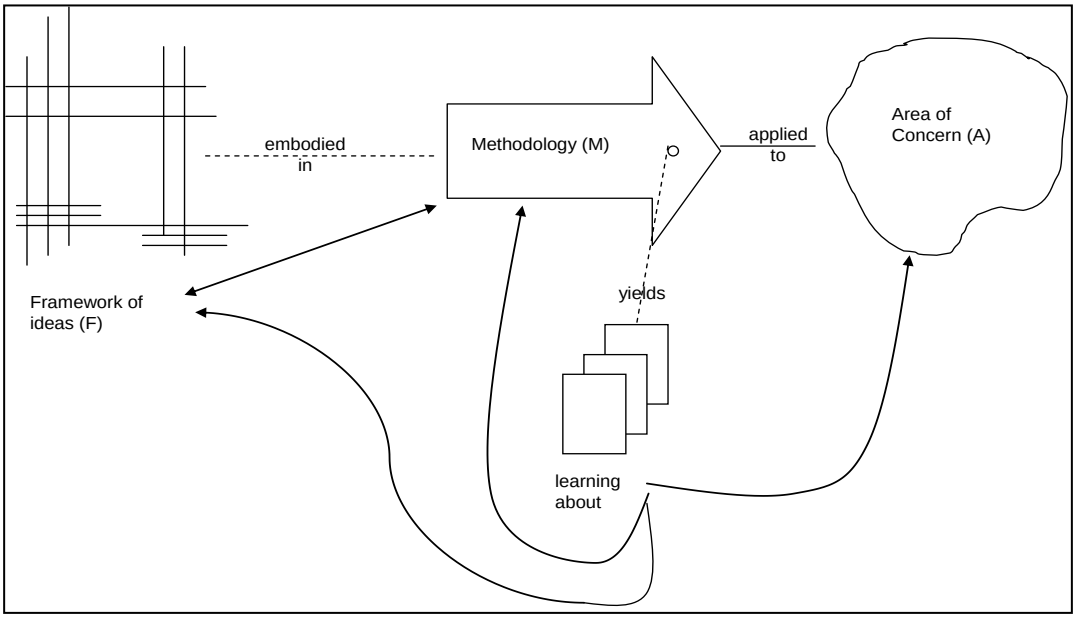


Figure 3: Elements relevant to any piece of research (adapted from Checkland and Holwell, 1998, p13)

The Framework above was found suitable to design the research in this study and its adoption is presented below:

- In this study, the **"Situation of Interest" or "Area of Concern" (A)** is to improve the perception and contribution of quality in the business world. This will include proposing and evaluating a framework for managing quality under a new definition, namely Quality Stewardship.
- **The "framework of ideas" (F)**, for this study will encompass a literature review of theory and practice in the area of quality. This will provide a theoretical base and level of awareness of current thinking and practices in quality, highlighting areas of opportunity for developing this study.
- **The Methodology (M)** will demonstrate the research type and instruments identified to collect and to analyse data to support or refute the concerns about quality raised as (A). (M) will include a proposal of how this study proposes to address (A). This will be included in the preliminary work, using the Viable Systems Model (VSM), and in the principal study, using survey questionnaires to establish current practices and thinking in quality management.

In summary, the focus of this study will be concentrated on improving (A), through the study of (F) (theory and real world), using (M).

According to Jackson (2000:11), the term methodology concerns itself with the study of the principles of the methods used. It describes the methods that might be employed within a study. There are two types of research methods in this study; namely, qualitative and quantitative. The next section will discuss these methods and their underlying assumptions, strengths and weaknesses.

4.2.1 Qualitative and quantitative methodology for conducting research

Various authors on methods employed in research (Quantz, 1992:447-505; Smit, 1983:6-13; Weinreich, 1996:1-7; Lincoln and Guba, 2000:163-188; Skinner, Tagg, and Holloway, 2000:163-180; Leedy and Ormrod, 2010:94-97) claim that all research either uses qualitative or quantitative methods. According to Smith (1983:6-13), the qualitative method was rooted in the interpretative perspective, whilst the quantitative was termed traditional, positivist, experimental, or empiricist. Creswell

(1994:1) maintains that, irrespective of whether the research is qualitative or quantitative, it is based on some underlying assumption known as a paradigm.

Lincoln and Guba (2000:163-188) affirm that the qualitative paradigm is termed the constructivist or naturalistic approach, whilst Smit (1983:6-13) regards it as the interpretative and Quantz (1992:447-505) as the post-positivist or postmodern perspective. According to Smith (1983:6-13) the qualitative paradigm began as a counter movement to the positivist tradition in the late 19th century through such writers as Dilthey, Weber, and Kant.

Strauss and Corbin (1990:3-21) believe that qualitative research requires certain essential skills typified by the ability to recognise and avoid bias, while being able to think abstractly and to critically analyse situations. They state that qualitative research is any kind of research that produces findings not arrived at by means of statistical procedures or other means of quantification. Wolcott (1994:9-54) asserts that one approach to qualitative research is "interpretive" or "hermeneutic", a perspective that assumes truth is socially constructed. Its primary goal is to discover or generate meanings held by respondents through transcending facts and causal analyses in order to investigate how they are constructed. According to Harlos, Mallon, Stablein, and Jones (2003:304-322) and Leedy and Ormrod (20105:138-145), included in interpretive research are ethnography, grounded theory, ethno-methodology, interpretive biography, and phenomenology, among others.

Creswell (1998:15), sharing similar views to Wolcott (1994:9-54) and Harlos, Mallon, Stablein and Jones (2003:304-322), suggests that qualitative research is defined as an inquiry process of understanding a social or human problem, based on building a complex, holistic picture, formed with words, reporting detailed views of participants, and is conducted in their natural setting. Weinreich (1996:1-7) elaborates that qualitative research methodologies are designed to provide the researcher with perspective of a situation and direct interaction with the participants under study. He adds that the methods used in this type of research include observations, in-depth interviews and focus groups. In the qualitative paradigm, the

researcher becomes the instrument of data collection and results may vary greatly, depending upon who conducts the research.

From the above review, it is evident that qualitative research is based on a direct interaction between the researcher and participants. Therefore, it can be inferred that an advantage of using the qualitative method is that it generates rich, detailed data based on personal interaction between the researcher and participant. A disadvantage of the qualitative method, which can be noted from the review of Weinreich (1996:1-7), is that data collection and analysis could become labour-intensive and time-consuming.

The next research paradigm is quantitative. Creswell (1994:4) supports Smith (1983:16-23) and they believe that quantitative research emerges from an empiricist tradition established by such authorities as Comte, Mill, Newton, and Locke. Creswell (2003:153-178) and Leedy and Ormrod (2010:94-95) report that quantitative methods are used mainly to test or verify theories or explanations. In this context, quantitative methods identify variables to study, relate variables in questions or hypotheses, use statistical standards of validity and reliability, and employ statistical procedures for analysis. Furthermore, quantitative research papers identify a problem and can generally be characterised by discussing, the purpose of the study; identifying the sample population and instruments used in discussing the relationship between variables, research questions, steps taken in the analysis of the data and outcomes.

Perhaps due to the ability to show validity on a numeric scale with the aid of statistical tools, Morse (1999:5-6) is of the opinion that academic and social researchers have typically been educated to show favour to quantitative methods. This is further presented by Ulmer and Wilson (2003:531-552), who are of the opinion that when data is quantifiable, the length of the research paper can be considerably shorter in size, due to its numerical depictions of new understanding. Statistical analysis and quantitative data should not be discounted and should instead be valued because of their usefulness in making comparisons across relatively large numbers of people, events, or objects. Likewise, distributions, central tendencies,

aggregate patterns, probabilities and correlations are best researched with quantitative analysis.

Weinreich (1996:1-7) provides advantages and disadvantages of quantitative methods and maintains that an advantage of this method is that it produces quantifiable, reliable data that can usually be applied generally to some larger population. Quantitative measures are often most appropriate for conducting needs assessments or for evaluations comparing outcomes with baseline data. In terms of weaknesses, this method, he believes, breaks down when the phenomenon under study is difficult to measure or to quantify. The greatest weakness of the quantitative approach is that it decontextualises human behaviour in a way that removes the event from its real-world setting and ignores the effects of variables that have not been included in the model.

From the above review, it can be suggested that quantitative research methods are more scientifically and empirically based than qualitative research methods. It can be inferred that quantitative methods are more suited for research with large sample sizes and across wide geographic regions. It appears to be a preferred method of research where there are predefined hypotheses.

Further to the above points on qualitative and quantitative methods, mixed or multiple methods are favoured. Gerhardt (2004:1-32); Hines (2000:7-16); Malterud (2001:487); Davies (2003:97-111); Creswell and Tashakkori (2007a:107-111); Creswell and Tashakkori (2007b:303-308) and Leedy and Ormrod (2010:97) support the use of mixed or multiple methods. According to these authors, mixed or multiple methods indicate the use of both qualitative and quantitative methods in a single research project. They are of the opinion that the use of these methods in combination allows for better exploration of the topic in breadth and depth, and facilitates more effective examination of complex issues. Mixed-methods research aids in reducing researcher bias and allows data to be measured and analysed more effectively.

The above review suggests that both qualitative and quantitative methods, used in combination, can be useful in research, as each will serve different purposes. It can also be inferred that the use of mixed or multiple methods in research provides further options or tools for a researcher within a single study, thus leading a researcher to a robust conclusion.

This study will therefore adopt both qualitative and quantitative methods. The qualitative method will be used in the preliminary study and the quantitative method will be used both in the pilot and principal study.

4.2.2. Primary and secondary sources of information

Hofstee (2006:120) mentions that there are potentially many ways to design a study in order to arrive at reliable, well argued conclusions. It is therefore necessary to provide primary and secondary sources of information.

4.2.2.1 Primary sources of information

Primary sources of information are original materials on which other research is based and usually the first formal appearance of results in physical, print or electronic format such as journal articles and monographs (Charles and Mertler, 2002:80). Wellman and Kruger (1999:36) state that primary sources of information are typically very reliable.

The primary source of information in this study consists of surveys using questionnaires in the pilot study and principal study and an organisational design assessment as part of the preliminary work.

4.2.2.2 Secondary sources of information

According to Charles and Mertler (2002:77), secondary sources of information portray accounts written after the fact with the benefit of hindsight. Secondary sources of information are interpretations and evaluations of a primary source by a previous researcher. Wellman and Kruger (1996:36) indicate that secondary sources of information are typically less reliable than primary sources. Due to their nature,

secondary sources of information can carry forward a risk of personal bias on the part of the researcher.

The secondary sources of information for this study were obtained from books, newspapers, journal articles, periodicals and internet databases. The information derived from these sources is used for the theoretical grounding of this study. It provides a review of the current quality practices within organisations, emerging trends that are impacting current business strategies, leadership, change management and strategy implications for the proposed study.

This study will use both primary and secondary sources of information for this purpose.

4.2.3 Preliminary work

Polit, Beck, and Hungler (2001:467) refer to preliminary work as feasibility studies that are small scale versions, or trial runs, done in preparation for a major study. Tashakkori and Teddlie (1998:47) describe preliminary work as a stage in which researchers may start with qualitative data collection and analysis on a relatively unexplored topic, thereafter using the results from that study to design a subsequent quantitative phase that will be used for the principal study.

The preliminary work for the current study will be in a form of a pilot study and an organisational assessment. The pilot study will be undertaken across selected manufacturing organisations in South Africa and the organisational assessment will be undertaken in two beverage multi-national organisations in South Africa. The organisational assessment will be conducted using the Viable Systems Model (VSM), which will be described in detail later in this chapter.

4.2.4 Data collection

There are a number of aspects associated with data collection. This section will discuss population, sampling and survey data collection.

4.2.4.1 Population

According to Bryman and Bell (2007:182), a population is the universe of units from which a sample is drawn. Therefore, it can be stated that a population literally consists of all the units that can be available for a study. As populations are exceedingly large and it would not be practical or cost effective to study an entire population, a sample is normally used to make generalisations on the population. In this study, the population will comprise of employees working in selected manufacturing organisations.

4.2.4.2 Samples and Sampling

Samples and sampling provide a viable option to spending enormous resources such as time, money and manpower to gather data from every unit of a population. Bryman and Bell (2007:185–204) and Wegner (2007:212–20) provide various sampling techniques that can be used to obtain representative samples for any study. Sampling comprises two types of formats; namely, probability sampling and non-probability sampling. When using probability sampling, all members or cases of a population have an equal and known chance of being selected in a sample. In contrast, the chance of members and cases of a population being chosen in a non-probability sampling is unknown and unequal.

Probability sampling consists of four methods of random sampling, that is, simple random sampling, systematic sampling, stratified sampling and cluster sampling. There are four types of non-probability-based sampling methods; namely, convenience sampling, judgement sampling, quota sampling and snowball sampling. Each of these sampling methods has known advantages and disadvantages and is more suited for specific purposes. Judgement sampling is also known as purposive sampling, as these sampling methods have close similarities. This study will adopt the purposive sampling method for both the pilot and principal study. Hence, a more detailed review of this sampling method will be provided.

Purposive sampling implies that the sample is chosen for a particular purpose. Sekaran (2000:278) explains that the members of a purposive sample are the best

respondents to provide the required information and expert knowledge to the researcher. This method is useful when working with small samples and selecting those respondents who are knowledgeable about the subject under investigation. Saunders (1997:145-146) indicates that a judgemental sample should be such that it is adequate to answer the research question and objectives. In addition the following five cases are described.

- **Extreme case.** The sampling focuses on unusual or special cases that can assist in answering the research question.
- **Heterogeneous.** The variations within the sample are used to examine patterns and determine themes.
- **Homogeneous.** The members of the sample are all similar, which allows for the in-depth study.
- **Critical case.** The members of the sample have a dramatic influence on the study. Each case requires close analyses to determine logical generalisations.
- **Typical case.** This sample is used to determine an illustrative profile using a representative case. The purpose of the case is to provide an illustration of a case to the readers of the research report, who may be unfamiliar with the subject matter.

In this study, purposive sampling will be used in the context of a non-experimental research design. The sample will focus on those respondents who are believed to have relevant expertise and experience in the field of quality management. In addition, the sample will be restricted to those who will be accessible, willing to participate in the research and able to respond via email. While the advantage of the approach lies in its inclusion of willing participants, the disadvantage is that the results are not representative of the wider population and generalisations should be made with caution.

4.2.4.3 Survey data collection

According to Gerhardt (2004:27-28), surveys provide a systematic and structured method for acquiring data on the same topic from a large group of people in a

relatively short space of time. Data collection in surveys can be gathered by questionnaires administered in person, personal interviews, and telephone interviews. This study will use questionnaires to obtain data for the pilot and principal studies.

Hofstee (2006:132) refers to questionnaires as a form of structured interviewing, where all participants are asked the same questions and are often offered options in answering them. As examples, these options could be in the form of "yes" or "no", "like" or "dislike"or level ranking, to list a few. These types of questions are known as closed-ended questions. In these types of questions, the Likert method is the most widely used. The Likert method is measured on an attitude continuum that 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).

In addition to closed-ended questions, there are options for open-ended questions that require participants to answer in their own words. Hofstee (2006:133) is of the opinion that it is usually better to avoid open-ended questions, as participants differ in their ability and willingness to write answers, and answers to open-ended questions can be difficult to interpret/analyse. However, he mentions that some researchers recommend always asking a few open-ended questions, as this can put participants at ease, and being able to express themselves in their own words can give them a sense of control. Open-ended questions also allow for more in-depth answers when required. Therefore, he recommends that consideration should be taken based on needs and a sample group to make a decision as to whether or not to use open-ended questions in a survey.

Ulmer and Wilson (2003:531-552) are of the opinion that, irrespective of types of surveys or questions (closed or open-ended), the data has limits. The questions require that participants answer them honestly and accurately, and researchers must be aware that questions are subject to interpretation by the participants. Questionnaires have the disadvantage of not allowing the researcher to interact, or often even to observe, participants. Also, they are limited in the depth to which the

researcher is able to probe any particular participant and does not allow for digression from the pre-defined format. Questionnaires have several advantages over verbal interviews because they can offer confidentiality to participants, and are generally easier to analyse and turn into quantitative results. They can be sent to more people, thus raising the confidence levels of the sample (Hofstee, 2006:133).

For this study, the questionnaire will use both closed-ended and open-ended questions. The majority of the questions in the study will be based on the closed-ended questions type, namely the Likert level, because it presents questions that are quick and easy to answer and lends itself to statistical analysis. The use of the open-ended type questions will be included to allow the participants an opportunity to elaborate on answers in their own words and may express ideas that were not included in the closed-ended type questions.

4.2.5 Data analysis

Data will be analysed using descriptive and inferential statistics. A brief description of the descriptive and inferential statistics that will be used in the pilot and principal study will be presented below.

According to Lind, Marchal and Mason (2004:6), descriptive statistics describe the organising and summarising of data within a study. It provides simple summaries about the sample and the measures. Together with simple graphics analysis, it forms the basis of the analysis of data. Descriptive statistics for this study will include tabulated summaries, graphical analysis and mean value analysis.

Inferential Statistics allow for making claims about the populations, beyond that of the data. This type of analysis encompasses a variety of procedures to ensure that the inferences are sound and rational. In summary, inferential statistics enable confident decisions to be made in the face of uncertainty (DeCaro, 2003:1). Inferential statistics for this study will include validity, reliability tests using the Cronbach Alpha and hypotheses tests using chi-square. In addition to these tests, factor analysis

will be attempted to explore groupings within responses in the different sections of the questionnaire.

4.2.5.1 Validity

Validity is a measurement concept that is concerned with the degree to which a measurement instrument actually measures what it purports to measure. Hair, Black, Babin and Anderson (2010:7-8) show that validity is present in many forms and the five most widely accepted forms of validity are convergent, discriminant, nomological, content and construct.

In this study, validity was ensured by consulting with an external practising statistician in questionnaire design. In addition, the questionnaires will be initially tested in a pilot study before conducting the research.

4.2.5.2 Reliability analysis

Reliability is the extent to which a variable or set of variables is consistent in what it is intended to measure (Saravanan and Rao, 2007:15-24). Cronbach Alpha calculations (Nunnally and Bernstein, 1994:84-104) are undertaken in a reliability analysis. However, there are differing views on levels of Cronbach Alpha (Gliem and Gliem, 2003:87). According to Gliem and Gliem (2003:87), the Cronbach's Alpha reliability value normally ranges between 0 and 1. A value closer to 1 indicates a greater internal reliability of the items in the scale. This is based upon the formula: rk / [1 + (k -1) r] where k is the number of items considered and "r" is the mean of the inter-item correlations; the size of Alpha is determined by both the number of items in the scale and the mean inter-item correlations. According to Grau (2007:3106) and Cronbach (1951:297-334), a value of 0.70 or above implies a strong level of reliability of items.

George and Mallery's (2003:231) definition states that a value for Cronbach > 0.9 is excellent; >0.8 is good; >0.7 is acceptable; >0.6 is questionable; >0.5 is poor, and <0.5 is unacceptable. The definitions provided by George and Mallery (2003:231), which are aligned to Gliem and Gliem (2003:87); Grau (2007:3106) and Cronbach (1951:297-334), will be used for this study. Reliability analyses in this study will be

used to test the consistency of the responses within various sections and categories of the survey questionnaire.

4.2.5.3 Chi-square test

According to Garson (2005), a chi-square test is used to determine whether a statistically significant relationship exists between groups of data. The Chi-square distribution allows the researcher to assess whether the association seen between the variables in a particular sample is likely to represent an actual relationship between those variables in the population.

The calculation of the Chi-Square statistic is quite straightforward and intuitive:

$$\chi^2(obtained) = \sum \frac{(f_o - f_e)^2}{f_e}$$

where f_o = the observed frequency (what is actually seen in the cells) and f_e = the expected frequency if NO relationship existed between the variables

As depicted in the formula, the Chi-square statistic is based on the difference between what is actually observed in the table and what would be expected if there were truly no relationship between the variables; by evaluating the size of this difference, the researcher can determine whether the variables are dependent in the population.

The Chi-square test will be used in this study to test the research hypothesis.

4.2.5.4 Research hypothesis for the principal study

According to Crossley (2000:191), a hypothesis is a systemic approach to assess beliefs about reality. It is confronting a belief with evidence and then deciding, in light of this evidence, whether the initial belief (or hypothesis) can be maintained as acceptable or must be rejected as untenable. The author defines the null and alternate hypothesis as follows:

Ho: The null is the hypothesis that is hoped to be disproven and rejected;

Ha: The alternative is the hypothesis that is hoped to be proven and accepted by developing supporting evidence.

For this study, independent variables, namely organisation type, participant position, participant experience, size of organisation, and formal quality management system (Section A) will be tested with the null and alternative hypothesis against current practices (Section B) and current thinking (Section C) in quality management. Therefore, the null and alternate hypothesises for this study are as follows:

Ho: The null hypothesis for this study is that organisation type, participant position, participant experience, size of organisation, and formal quality management programme (QMP) do not have a relationship with current practices and thinking in quality management.

Ha: The alternate hypothesis for this study is that organisation type, participant position, participant experience, size of organisation, and formal QMS do have a relationship with current practices and thinking in quality management.

4.2.5.5 Factor Analysis

Factor analysis is a statistical technique whose main goal is data reduction. A typical use of factor analysis is in survey research, where a researcher wishes to represent a number of questions with a small number of hypothetical factors; for example, as part of a national survey on political opinions, participants may answer three separate questions regarding environmental policy, reflecting issues at the local, state and national level. Each question, by itself, would be an inadequate measure of attitude towards environmental policy, but together they may provide a better measure of the attitude. In this case, they can be combined to create a new variable that contains a score for each respondent on the factor. Factor techniques can be applicable to a variety of situations (Zhao, 2009:1-6; Costello and Osborne, 2005:1-9; Whitney and Pavett, 1998:9-22).

In this study, factor analysis will be utilised to ascertain whether there is an existence of groups of correlation coefficients between responses to all variables (questions) from the survey questionnaire. According to Kakkar and Narag (2007:328-353), the presence of groups of correlation coefficients would suggest that these variables could be measuring aspects of same underlying dimensions. These underlying dimensions, or extracted factors, can then be used to summarise the important

dimensions for quality practices and thinking for selected manufacturing organisations in South Africa. In order to support factor analysis with the targeted sampling plan, similar to the Kakkar and Narag (2007:329) study, the questionnaire was administered without prior intimation to the respondents. In addition, to make the sampling random, the questionnaire made provision for any employee in an organisation, up to the Managing Director, to complete the survey questionnaire. Under this section, the following analysis will be undertaken: data screening using the correlation matrices, extraction of principal components by analysis of eigen values and scree plots, analysis of principal factors using extraction of communalities, and finally, rotation of factor structures using varimax rotation.

4.2.6 Contribution of review of literature to current study

Hofstee (2006:91) describes a good literature review as comprehensive, critical and contextualised. He adds that it provides the researcher with a good theoretical base and analysis of the work from a number of published materials pertaining to the subject being investigated. Lombard (1992:41) acknowledges that other researchers' work prevents the duplication of research already investigated and helps to justify the need to research a certain field or topic.

In this study, the literature review provided a theoretical base and level of awareness of current thinking and practices in quality management. The review also highlighted the current gap that exists between quality management, business challenges and market demands. Thereafter, it demonstrated the areas of opportunity for developing and evaluating a framework for managing quality management under a new definition and scope. The literature review in this study consisted of two chapters (Chapter 2 and Chapter 3). The contribution of each chapter to the research design of this study will be shown below.

4.2.6.1 Contribution of Chapter 2 to this study

The concept of quality management has evolved over time, existing initially as a requirement for product quality and becoming a strategic business choice providing competitive advantage. Chapter 2 consisted of two sections. The first section of the

review drew attention to the previous evolutions and current state of quality management, whilst the second section presented various opportunities for the future of quality management. From the review of the first section, it can be concluded that these evolutions undertaken by quality management were necessary at that time to meet the prevailing changing business challenges and market needs (Garvin, 1988:3-8; Dale, 2003:21-26; Folaron, Morgan, Chase and Company, 2003:1-7; Beecroft, 2004:425-428; Johnson, 2009:1-7). Furthermore, the changes undertaken during the various evolutions were linked to demand and supply, customer focus, competitive advantage and profitable growth (Gutner and Adams, 2009:5). Hence, from the literature review of the first section of this chapter, it can be perceived that maybe in this way quality management was able to re-establish itself on an on-going basis, thereby remaining relevant and seen as adding value to organisations. Therefore, the current evolution proposed by this study should serve as a natural progression in the journey of quality management.

The second section of the literature review in Chapter 2 provided examples of the manner in which quality management matrices and strategies could be utilised to address current business challenges and market demands created by emerging trends. Based on the characteristics of the various opportunities and the previous history of quality management, it was inferred that the related literature implied that the discipline was ready for a new evolution. From the examination of the nature of the opportunities and the proposed changes suggested for quality management going into the future, it was felt that "Quality Stewardship" was an apt title for the new evolution. The word "stewardship", as mentioned in the motivation of this study in Chapter 1, was adopted from the work of Block (1996), which can be described as a set of principles and practices that have the potential to make dramatic changes in governance systems by creating a strong sense of ownership and responsibility in organisations. Therefore, it can be proposed that the new definition of quality management will embrace the various opportunities highlighted by the literature in the second section of Chapter 2.

4.2.6.2 Contribution of Chapter 3 to this study

The views and practices of leadership, change management and strategy form part of the second objective of this study, hence Chapter 3 sought to consider reviews on each of them respectively. From the various types of leadership reviewed, the servant type of leadership (Barna 2010:3-4) was most closely related to the proposed "stewardship" role for this study.

As the objective of this study wished to investigate the change in scope for quality management, the second section of Chapter 3 reviewed its impact on previous evolutions of the discipline. It was evident that any changes to quality management in the past always created major challenges for employees and leaders within organisations (Chan and Quazi,;2002:23-49, Sinn, 2002:24-29; Grover and Walker, 2003:8-24). Therefore, the proposed change of scope for quality management in the current study will require structured change management models. Three popular change models, namely the Kurt Lewin model (Lewin 1947:5-41), the Kotter model (Kotter 1995:59-67) and the Carter model (2008:20-23) provided guidelines to the framework development in this study.

The last section of Chapter 3 reviewed the current perceptions and status of strategy. The authors (Bossidy and Charan, 2002:22; Thompson and Strickland, 2003:6; ASQ, 2005:10; Mankins and Steele, 2005:65-72; Hitt, Ireland, and Hoskisson, 2007:385; Pearce and Robinson, 2007:3; Regenesys Academic Team, 2007:41; Sull and Spinosa, 2007:79-86; Ungerer, Pretorius and Herholt, 2007:2-9; Watson, 2008:4-10; Jooste and Fourie, 2009:51-68; Laseter, 2009:1-5) provided various approaches to strategy planning, execution and implementation using frameworks and models. With the understanding of the various approaches above, the framework for the proposed changes to the scope of quality management for this study was developed.

4.3 Proposed framework for this study

From the related literature in Chapter 2, it became evident that presently there is a non-alignment between quality management, business challenges and market demands created by emerging trends. The related literature also offered various

opportunities for the future of quality management in assisting organisations to manage these challenges and market demands created by changing trends. Therefore, this section will discuss a proposed framework for this study that will illustrate the changes to the scope of quality management to support current business challenges and market demands created by emerging trends. This discussion will include the development of the framework, the underlying theoretical groundings adopted in its development, key components and operation of framework, linkage and influence of literature and advantages and disadvantages envisaged for the proposed framework.

4.3.1 Development of the framework

The use of frameworks is supported widely in literature as a means to simplify complex processes, entities or systems (Okumus, 2001:327; Olsen and Haslett, 2002:452). Clemson (1984:77-80) proposes that in organisations, managers are always faced with matters that require their attention. He declares that the actions taken by a manager, in all cases, are based on a framework that includes at least four elements, which are as follows:

- some image of a preferred state, this may be in a form of a goal or merely a way of behaving by the system
- some image of the current state of the system
- some image of the "way the system works"
- a belief based on the three previous images, that the situation might be improved by a given type of management.

Using the points offered by Clemson (1984:77-80), the proposed framework for this study was developed into an image depicting the operation of the preferred state for the new scope for quality management.

4.3.2 Underlying theoretical grounding adopted in the development of the framework

The development of the proposed framework incorporated TQM, systems thinking and business excellence as the underlying theoretical grounding. Each of these

theoretical groundings and the manner in which they will support the operation of the preferred state for the new scope for quality management is detailed below.

Authors (Gunasekaran and McGaughey, 2003:361; Sharma and Kodali, 2008:600; Vanichchinchai and Igel, 2009:250) define TQM as a management philosophy that supports the business practices of cost reduction, enhanced productivity, improved quality of the products/outputs, customer satisfaction, employee empowerment, and the measurement of results. Kotelnikov (2011:1) asserts that TQM refers to an integrated management approach to focus all functions and levels of an organisation on quality and continuous improvement. Furthermore, over the years, TQM has become very important for improving an organisation's process capabilities in order to achieve fitness of purpose and sustain competitive advantage. Therefore, this philosophy was used in the development of the proposed framework. This included various TQM approach-type opportunities identified in Chapter 2 for quality management to assist organisations to manage current business challenges and market demands. It was believed that in this way, quality management will be able to bridge the gaps contributing to the present non-alignment to business challenges and market demands as highlighted in Chapter 2.

Systems thinking advocates focusing on a system as a whole, with interconnected parts (Jackson, 2009:S24-S32). The work by Ackoff and Emery (1972) reinforces the view that a system is more than the sum of its parts; it is an indivisible whole, which loses its essential properties when it is taken apart. For this reason, he rejects operations research that advocates the analytic way to solve problems that addresses complex system issues by dividing them into parts and evaluating each part separately. He felt that it was not possible to improve the performance of each part of a system separately because doing so destroys the integrity of the system as a whole, and the weakest part of a system will ultimately destroy the whole. Sherman (2010:33) supports this thinking and states that by using systems thinking and focusing on the entire system, solutions, which address as many problems as possible, can be identified. Furthermore, he adds that the positive effect of those solutions leverages improvements throughout the system or organisation, not merely

paying attention to its individual parts or departments. The argument to use systems thinking for the development of the framework in this study comes from the propensity to regard organisations as organisms (Jackson, 2000:177-184), which, in order to operate effectively, need to have a purpose. Accordingly, organisations are made of highly interdependent parts that must work together to achieve the system's overall aim. Hence, system thinking was incorporated into the development of the framework for this study.

Historically, a common forming principle of quality management has been ensuring that the organisation remains competitive and demonstrates its "pursuit for excellence" (Jabnoun and Sedrani, 2005:8-20; Schniederjans, Parast, Nabavi, Rao and Raghu-Nathan, 2006:7-21; Zairi, 2006:1-7; Kanji, 2007:1-10). According to Kanji (2007:1-10), the first condition necessary to improve and ultimately to achieve organisational excellence is to measure what drives the satisfaction of the key organisational stakeholders. For this, he advocates that the first step is to develop and implement a system for performance measurement that represents the points of view of different stakeholders. Although the immediate role of any performance measurement system is to check progress towards the established goals, such a system fulfils several other purposes in the organisation. He suggested that the other main purposes of a performance measurement system can be synthesised as follows:

- to identify major improvement opportunities
- to achieve goal congruence and organisational alignment
- to enhance accountability
- to drive future resource allocation decisions
- to communicate to each individual how he/she can contribute to the overall strategy and thus to encourage and reinforce certain behaviours and attitudes

In view of the above, the framework proposed by this study will also portray a structure that could be easily adopted to incorporate performance measurement and business excellence matrices and strategies. This could also be transformed into a dashboard to align with the requirements of "triple bottom line" reporting, highlighted by Rossouw (2010:60-63) in Chapter 2.

Connecting to the underlying theoretical grounds, a conceptual framework will attempt to illustrate that the new dynamic strategy and definition for quality management is a holistic system made up of individual parts. It will also position quality management as a set of principles and practices that guides an organisation and interacts with stakeholders wherein business excellence demonstrates organisational outcomes and achievements.

4.3.3 Key components and operation of QSAL framework

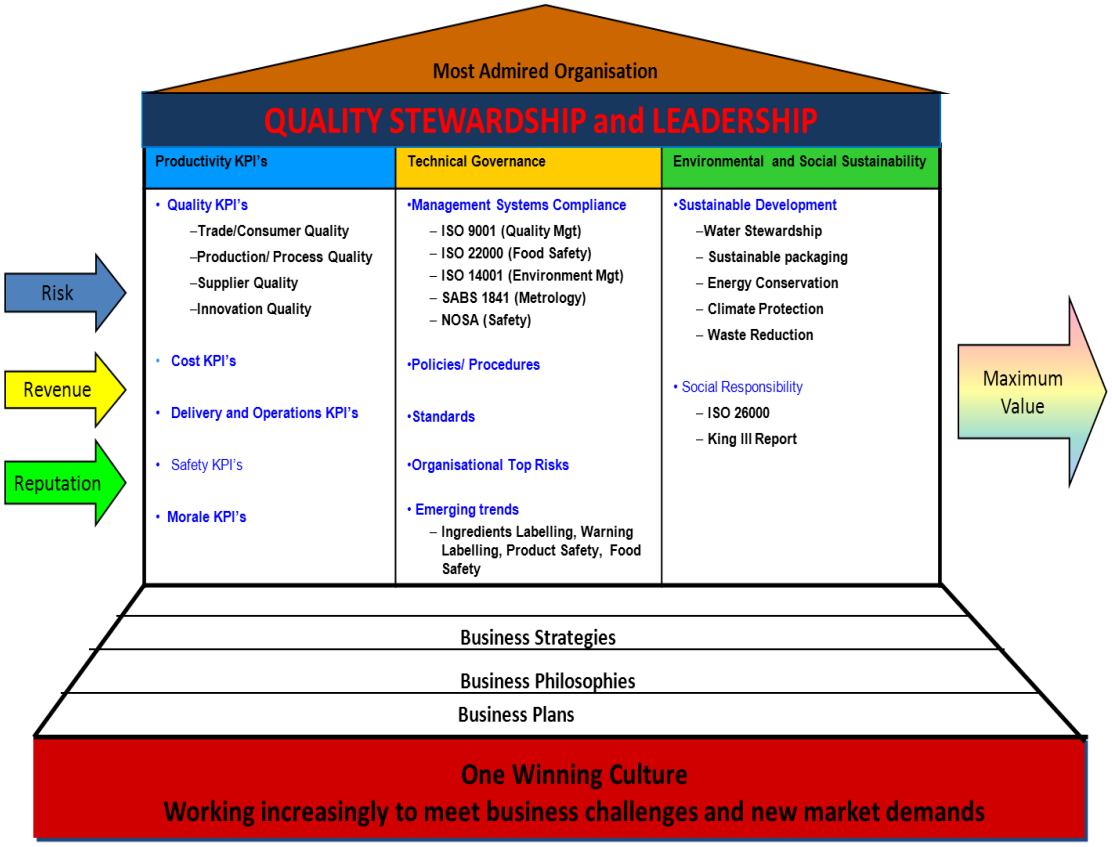


Figure 4: Quality Stewardship and Leadership (QSAL) framework

The framework (Figure 4) will adopt the name "Quality Stewardship and Leadership" and acronym QSAL. This framework will encapsulate the following components: inputs (risk, revenue and reputation), processes (productivity KPIs, technical governance, and environmental and social sustainability) and outputs (maximised value) for the proposed new scope for quality management. The process component of the QSAL framework will be informed and reviewed on an ongoing

basis as a result of business strategies, philosophies and plans that exist to meet prevailing business challenges and market demands. The schematic above (Figure 4) offers the intended structure of the proposed QSAL framework.

The layout of the interaction of the components of the QSAL framework will be highlighted. Stewardship and leadership will be discussed first to serve as a point of departure for the operation of the QSAL framework. It was felt that the word "stewardship" in keeping with the description provided in section 4.2.6.1, will be pertinent to the proposed future scope of quality management as described in the motivation of this study in Chapter 1. The word "stewardship" will thus support the proposed novel, dynamic strategy in this study that addresses issues such as climate change, business ethics, sustainable economies, ecology and reciprocity. The adoption of these issues is in accordance with Saco (2008:8-9). This also supports the thinking of Hitchcock and Willard (2002:43-47), who believe that the new role of quality in this century should include being the watchword for sustainability and should encompass both social and environmental issues.

Leadership as a concept was included in the title because the review of related literature (Chapters 1 and 3) and development of the framework revealed that leadership plays an important role in quality management. From the review of leadership theory in Chapter 3, it was believed that the description of "stewardship" shares a strong alignment with the concept of "servant leadership". Thus "stewardship" in the current study will provide the matrices and strategies for managing the emerging trends; however, the accountability for execution will remain with the operations employees. Similarly, with the concept of "servant leadership", the success of leaders can only be brought about by the support of the constituency or employees for which they are responsible. The "servant leadership" model forwards the philosophy that if the leader serves the needs of the employees, who then serve the needs of the customer, the result would be an affluent (most admired) organisation that will benefit all stakeholders.

The QSAL framework was designed using the underlying theoretical grounding described in section 4.3.2. Thus, structurally, the framework follows a basic design depicting the operation of an integrated system comprising inputs, a process and an output. The inputs, which can be viewed as the drivers for the process, are: Revenue growth through productivity; Risk mitigation through strong governance; and Building reputational equity by growing into new environmental and social spaces. These inputs are transformed and are reflected as various categories for operational business performance in the process component of the framework.

The process component of the framework was developed as categories consisting of the common forming principles of TQM as emphasised by authors Jabnoun and Sedrani (2005:8-20); Schniederjans, Parast, Nabavi, Rao and Raghu-Nathan (2006:7-21); Zairi (2006:1-7); Kanji (2007:1-10). The categories were productivity key performance indicators (KPIs), technical governance and social and environmental sustainability

Productivity KPIs was chosen as the first category within the QSAL framework. This category builds on the notion that organisations need to be cognisant of and improve in all areas to generate revenue growth and to stay in business. Traditionally, manufacturing organisations emphasised an internal focus, where operational efficiency shaped organisational performance effectiveness (Gomes, Yasin and Lisboa, 2006:323-340). In this environment, productivity KPIs; namely, quality, cost, delivery, safety and morale (QCDSM) goals (Alvord 2010:107-118) were the sole focus of manufacturing strategies. These goals provided the necessary alignment between business processes and customer requirements that in turn supported revenue growth. In the present environment, customer requirements have increased and diversified (Jochem, Menrath and Landgraf, 2010:410-422). Therefore, the alignment between business processes and customer requirements remains vital. Organisations are required to focus on the traditional productivity KPIs manufacturing to ensure alignment with customer requirements, market demands, and the organisation's objectives to ultimately generate revenue growth. Hence, productivity KPIs was adopted as a key category within the QSAL framework.

The second category was chosen to illustrate the technical governance systems and processes that will be typically required for risk mitigation in the new scope of quality management. Within this category, the design of the first of five sub-categories, which consisted of managements systems, was informed by the work of Singh (2006:127). She was of the opinion that traditionally, many organisations operated management systems officially and unofficially and different departments of the organisation operated independently, as silos. However, she noted that as the need for optimisation and strategic thinking arose, more organisations were forced to progress towards business excellence. 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. Some of the advantages of integrating management systems highlighted by Singh (2006:132) were achieved by reducing and avoiding the large volumes of documentation generated to support these systems separately; this would make maintaining and auditing these systems simpler and would reduce resource loadings on organisations that are already overwhelmed with cost and resource constraints. It is logical from this review that this category adopted the integrated approach for management systems. Several management systems that were identified in related literature in Chapter 2 as opportunities for the future of quality management were listed under this category. Further management systems common to manufacturing organisations were also incorporated. Thus, the management systems that were listed under this sub-category included ISO 9001, ISO 22000, ISO 14001, SABS 1841 and NOSA (Health, Safety and Environment).

The second and third sub-categories within the second category consisted of policies/procedures and standards. These sub-categories were designed to address new stakeholder needs such as an organisation's policies, procedures and standards on corporate responsibility or environmental sustainability and were developed to provide local intelligence that could be understood and accepted in the court of public opinion. The fourth and fifth sub-categories within this category were intended to provide a system for the identification and mitigation of business risks

and casting a broader net on emerging trends. These governance outputs and cycles were incorporated in the QSAL framework to assist continuous improvement by increasing flexibility and adaptability in a complex and rapidly changing environment. Consequently, this category was wholly based on the focus of governance systems and processes, and was entitled technical governance.

From the review of the related literature in Chapter 2 and guidelines in the newly published ISO 26000 standards (ASQ/ANSI/ISO, 26000:2010), it is evident that at present an organisation's performance in relation to the society in which it operates and its impact on the environment has become a critical part of measuring its overall performance and its ability to continue operating effectively. Social responsibility entails actions beyond legal compliance and the recognition of obligations to others that are not legally binding. These obligations arise out of widely-shared ethical and other values. The McKinsey (2009:1-9) report states that it is through similar perceived importance that environmental and social sustainability has soared in recent years, and has resulted in executives, investors, and regulators growing increasingly aware that such programmes can mitigate corporate crises and build reputations. A recent survey of 766 CEOs of organisations that signed the United Nations Global Compact, an international network of organisations focused on the environment, labour and human rights issues, showed that 93% of the CEOs believed that environmental, social and corporate governance issues covered by the compact are important to their future success (Lacy, Cooper, Hayward and Neuberger, 2010:16). In contrast, a recent ASQ/Manpower survey of more than 1,000 quality professionals found that while 70% of respondents are familiar with their organisation's social responsibility activities, only 28% viewed their organisation's social responsibility efforts as being fully integrated into daily operations and decision making. Less than half (43%) responded that quality professionals are included in their organisation's social responsibility efforts (ASQ and Manpower Professional, 2011:1-16).

Environmental and social sustainability was chosen as the third category in the process component of the QSAL framework, even though aspects of these trends

were covered in the second category within governance programmes. The first sub-category within this category, namely environmental sustainability, detailed specific areas that were highlighted in related literature that will have major impact for organisations in the immediate future. The ISO 26000 standard was included under the social responsibility sub-category and not the management systems sub-category in the second category, as this new standard, although similar to other ISO standards, is only a guideline to help manage social responsibility issues in organisations and cannot be certified against (Bowers and West, 2011:24-29). Further, the King III Report, which officially came into effect on 1 March 2010, requires South African organisations to report annually on triple bottom line aspects (Rossouw, 2010:60-63) and was therefore included in this category.

The last component of the QSAL framework was designed such that it described the outputs of the new scope of quality management that addressed current business needs and market demands. Wreder, Johannson and Garvare (2009:194-202) assert that in the present business environment, organisations need to satisfy not only their customers but also a number of other stakeholders and interested parties whose wants and expectations are often disparate, in conflict and subject to change. Hence, based on the multi-faceted needs of the various stakeholders, the term "maximum value" was selected as an overarching concept to represent the outputs of the QSAL framework. This term was based on the definition of "value", provided by Conti (2010:352-368), who maintains that it can mean economic value in the case of economic relations; it can be moral or spiritual value in the case of personal, non-economic human relations; it can be scientific or artistic value in the case of relations between man and nature or man-made objects. In addition, for an organisation to remain competitive, the word "value" will include profitable growth, excellence in execution and customer loyalty and retention (Gutner and Adams, 2009:15). In the context of the new scope of quality management, "maximising value" will also have a high weighting on the ability to achieve stakeholders' satisfaction.

Thus, the purpose of the proposed QSAL can be summarised as the implementation of the anticipated new scope of quality management that hopes to mitigate risk,

achieve revenue growth and build reputational equity by implementing and measuring productivity KPIs, technical governance, and social and environmental sustainability in order to achieve customers', employers' and shareholders' (stakeholders) satisfaction within an organisation.

4.3.4 The linkage and influence of literature in the development of the QSAL framework

This section will focus on the linkage and influence of literature in the development of the QSAL framework in this study.

The linkage and influence of literature will be presented by providing a description of the QSAL framework; namely, underlying theoretical grounding, framework title and framework structure.

Total Quality Management, systems thinking and business excellence, as the underlying theoretical grounding, were informed by various quality strategies and matrices adopted especially from the third era onwards as described in Chapter 2. The underlying theoretical grounding was influenced mainly by the work of Vokurka, Stading and Brazeal (2000:41-49); George (2002:280); Larson (2003:9-12); Haak (2004:1-27); Alukal (2003:29-35); Conti, Kondo and Watson (2003:21-46); Bernal et al (2004:20-34); Heizer and Render (2004:596); Watson (2004:54-67); Heller (2005:17-21); Jabnoun and Sedrani (2005:8-20); Bendell (2006:257); Koning et al (2006:4-11); Williams et al (2006:1287-1300); Barnwell (2007:1-16); Chase, Jacobs, and Aquilano (2007:472); Dale, van der Wiele and van Iwaarden (2007:29-30); Kanji (2007:1-10); Pascal (2007:19, 39-46, 67-91); Schonberger (2007:403-419); Magee (2007:32-33,7-39,73-83); Hossain (2008:1961-1966); Liker and Hoseus (2008:13); Taj (2008:219); Bicheno and Holweg (2009:71-81); Jackson (2009:S24-S32); Larman and Vodde (2009:14-24); Toney and Rodica (2009:2); Cianfrani and West (2010:1-4) and Mohammad and Mann (2010:1).

Although the title of the framework is essentially made up of two words, namely "stewardship" and "leadership", it was influenced by the work of various sources.

The word "stewardship" was influenced mainly by the literature of Block (1996). However, in combination with the word "leadership", the title of the framework was influenced by the ASQ Futures Study (2008:43-46) and Gutner and Adams Report (2009:1-21) and the related literature review in Chapter 3, which included the work of Chan and Quazi (2002:23-49); Sinn (2002:24-29); Grover and Walker (2003:8-24); Sharma (2009:49-84); Barna (2010:3-4) and Hopen (2010:4-9), in leadership, the work of Lewin (1947:5-41); Kotter (1995:59-67) and Carter (2009:20-23), in change management; and the work of Bossidy and Charan (2002:22); Thompson and Strickland (2003:6); ASQ (2005:10); Mankins and Steele (2005:65-72); Hitt, Ireland and Hoskisson (2007:385); Pearce and Robinson (2007:3); Regenesys Academic Team (2007:41); Sull and Spinosa (2007:79-86); Ungerer, Pretorius and Herholt (2007:2-9); Watson (2008:4-10); Jooste and Fourie (2009:51-68) and Laseter (2009:1-5), which provided various approaches to strategy planning, strategy execution and strategy implementation using frameworks and models.

The structure of the framework, consisting of the input and output processes, was informed and influenced by the insights gained from the literature review in Chapter 2. From the review of the work of Gutner and Adams (2009:1-21) and Hoyle (2009:vii), the factors contributing to the present non-alignment of quality management, business challenges and market demands were better understood and selected as inputs to the development of the QSAL framework. The literature related to the emerging trends in Chapter 2 contributed to determining the appropriate constituents that were needed to reflect the new scope and definition proposed for quality management in this study. Insights gained from the opinions of authors and other publications; namely, Watkins (2005:24-31); Watson (2008:5) and Sanders (2008:44) and Gutner and Adams (2009:11) on globalisation; Wilbur (2002:75-79); George, Works and Hemphill (2005:15-33); Bisgaard and Mast (2006:30-36); ASQ (2007:1-7); Bester (2007:1); Levesque and Walker (2007:18-22); Ndaba (2007:1); Surak (2007:21-27) and Bisgaard (2008:20-25); Gutner and Adams (2009:12); Khumalo (2009:1); ASQ (2010:1-9) and Kruyshaar and Ashton (undated:1-3) on customer power and sophistication, which included food safety and innovation; Watson (2003:123-137); Leonard and McAdam (2003:7-32); Fahy, Roche and

Weiner (2005:227-228); Hopen (2008:1-3); Leonard (2008:30-35); Boehm and Ulmer 2008:8-19, ASQ (2009:1-5); Leggett (2010:8-9); Kleyner (2010:22-27); Hayes, Goodden, Atkinson, Murdock and Smith (2010:16-23); Klaber and Hawk (2010:16-21); Goodden (2010:1) and Rossouw (2010:60-63) on social responsibility; Fiksel (2009:9); Hitchcock and Willard (2002:43-47); Smith (2004:23-31); Friedman (2008:); Gutner and Adams (2009:14); Trilogue (2010:4) and Jacobsen (2011:9) on environmental sustainability, were translated into appropriate inputs, categories and parameters for the process components and a position for the desired output as represented by the QSAL framework.

4.3.5 The Advantages and disadvantages of the QSAL framework

The advantages and disadvantages of the QSAL are discussed below. These will need to be considered during the proposal for the adoption of the framework.

4.3.5.1 Advantages of using the QSAL framework

The framework attempts to address the deficiencies that were highlighted in literature on the non-alignment between quality management, business challenges and market demands. Thus, organisations complying with the framework will operate in accordance to emerging trends that were identified from the literature, thereby giving them a competitive advantage.

The framework provided a comprehensive and holistic system with connective capability that integrates the various systems within a single framework. Therefore, it would be easier for an organisation to manage systems using this framework rather than managing them disparately.

Another advantage of the proposed framework is that it can be used as a tool for evaluating the quality management maturity of an organisation. The common approach to measures, standards and policies from the framework could enable or support meaningful benchmarking within the selected manufacturing organisations, for which this study is intended. However, the framework should not be seen as

limited only to this type of industry, but with a potential to be adapted for other industries.

The framework will enable an integrated approach among various departments within organisations that deal with similar outputs; for example, corporate affairs, risk management and legal, to name a few.

4.3.5.2 Disadvantages of using the QSAL framework

A disadvantage that can be associated with the proposed QSAL framework is that it requires ongoing maintenance and updating in order to retain usefulness and relevance in a rapidly changing environment. This could imply a need for a dedicated resource. The main inference here is that without ongoing review the QSAL framework can, over a period of time, become outdated.

The proposed QSAL framework requires a significant shift in mindset. Based on the enormity of the change, the implementation of the proposed QSAL framework will require a comprehensive change management plan. Absence of leadership or proper change management can become an impediment in the successful implementation of the proposed QSAL framework.

4.4 Research design

This section will discuss the research design adopted for this current study.

4.4.1 Preliminary work

The preliminary work for this study was in a form of a pilot study and an organisational assessment using Viable Systems Model (VSM).

4.4.2 Pilot study

The pilot study consisted of a small scale survey across selected manufacturing organisations in South Africa. These included beverage organisations, food processing and packaging organisations and their primary, secondary and tertiary supplier groups. The objective of the pilot study was four-fold:

Firstly, it was conducted to obtain responses on current quality management practices and current thinking from respondents across the identified organisations.

Secondly, it was used to evaluate the suitability of the intended questionnaire for the principal study. This included encouraging the participants to identify ambiguity and to suggest amendments that would improve the clarity of the questionnaire.

Thirdly, the study was used to assess the procedure of surveying participants intended for the principal study.

Lastly, the conclusions drawn from the pilot study were intended to form the basis for the motivation and feasibility of the principal study.

4.4.2.1 Sampling for the pilot study

A total of 25 participants were selected from the 80 South African selected manufacturing organisations that were targeted. The targeted organisations were similar to those to be surveyed in the principal study.

The sampling type for the survey can be regarded as non-probability purposive sampling, as there was a deliberate choice of the target population.

4.4.2.2 Questionnaire for data collection for the pilot study

A structured survey questionnaire was developed for the collection of data in the pilot study. According to Issac, Rajendran, and Anantharaman (2004:35-60), questionnaires are widely accepted as an efficient tool for assessing individual perceptions on quality as a research design methodology. The questionnaire in this study consisted of three sections:

- Section A—Demographic Information.
- Section B—Current Quality Practices
- Section C—Current Quality Thinking

The questionnaire was validated by an experienced statistical practitioner and thus was accepted as suitable for this study.

4.4.2.3 Data collection for the pilot study

Survey questionnaires were emailed to targeted participants. A total of 18 completed surveys were returned via e-mail. The response on the surveys was seventy two percent of the targeted participants for the pilot study. Thus, based on the high percentage of surveys returned, the sample size was deemed acceptable for the pilot study.

4.4.2.4 Data analysis for the pilot study

All data collected from the participants was analysed using the SPSS version 17.0 and presented in the form of bar graphs and tables. The layout of the pilot study consisted of statistical analysis of the data for each section (Sections A, B and C) of the survey questionnaire. Section A focused on the analysis of the demographic information. Sections B and C included mean score analysis and reliability analysis using the Cronbach Alpha values. In an attempt to understand the variation in responses for each question, results were also presented as percentage scores per question per category.

Section A

Section A of the questionnaire focused on the demographic information of the participants and their organisations. This section consisted of six closed-ended questions that requested information on participant's organisation type, participant's position in organisation, participant's experience in quality management, size of participant's organisation, whether participant's organisation implemented a formal quality management programme and the type of management system adopted by participant's organisation.

An analysis of Section A indicated that all participants who completed the survey questionnaire were responsible for some aspect of quality management within their organisation. All organisations had quality management programmes implemented either throughout the entire organisation or in selected departments. Most of these organisations were certified by some form of external management system. Management systems within these organisations included ISO 9001 (Quality), ISO

22000 (Food Safety), ISO 14001 (Environment), HACCP (Food Safety), e-mark (Metrology), NOSA (Safety) and Franchise owner internal systems. Taking into account the role and experience of the various participants who were involved in this survey (Boiral, 2003:720-737), it was assumed that their responses provided a reflection of the practices and thinking of quality management across selected manufacturing organisations in South Africa.

Section B

Section B of the questionnaire focused on current practices of quality management. This consisted of sixty one closed-ended type questions that were designed following the five point Likert level, with (5) "very high"; (4) "high"; (3) "medium"; (2) "low" and (1) "very low".

Section B was based on the 2009-2010 Malcolm Baldrige National Quality Award (MBNQA) standard published by the National Institute of Standards and Technology (2009). This standard consisted of the following categories: Leadership, Strategy Development, Customer Focus, Measure, Analysis and Knowledge Management, Workforce Focus, Quality and Process Management, and Results. The choice of the MBNQA criteria was based on favourable comments by authors such as Schniederjans, Parast, Nabavi, Rao, Raghu-Nathan (2006:7-21), and Samson and Terziovski (1999:393-409), to list a few. They all noted that the universality of the MBNQA criteria and their relationship with many quality management constructs have made the criteria a useful framework for studying quality management practices. These positive comments favouring the use of the MBNQA criteria and categories were also noted in the literature review in Chapter 2. In order to add clarity to the purpose of Section B, the last category, namely "results", was renamed as "organisational performance and improvement".

Much has been written about quality management practices (Angus, 2005:87-105; Jabnoun and Sedrani, 2005:8-20 and Prajogo and Brown, 2004:31-42). Many of these studies reported that quality management was widely accepted as a means for achieving excellence by several organisations around the world. However, according

to Jabnoun and Sedrani (2005:8-20), these studies report serious variations on the success of their practices. Therefore, section B aimed to gain a view of the level of quality management practices across selected manufacturing organisations in South Africa.

Table 6, below, provides a list of the various categories in Section B, their overall means and their Cronbach Alpha values.

Table 6: Overall Mean and Cronbach Alpha values for Current Quality Practices

	Section B: Quality Management Practices	Mean	Cronbach Alpha
B1	Leadership and Commitment of Senior Managers	3.96	0.91
B2	Strategy Development	3.46	0.83
B3	Customer Focus	3.17	0.94
B4	Measurement, Analysis and Knowledge Management	3.39	0.71
B5	Work Focus	3.86	0.87
B6	Quality and Process Management	3.83	0.92
B7	Organisational Performance and Improvement	3.70	0.81
	Overall	3.62	0.95

The Cronbach Alpha values recorded for all categories were greater than 0.70, which indicated a high level of reliability within all categories of this section. Overall, the mean value for this section was 3.62, suggesting that this section scored between "medium" and "high" levels on the Likert level across all categories. Further examination of individual mean values per category revealed a range of 3.17 to 3.96. This denoted that all categories scored mean values between "medium" and "high", with the customer focus category scoring the lowest and leadership and commitment of senior managers scoring the highest.

In order to obtain a more in-depth understanding of the scoring per question and category, Figure 5 below was examined. Figure 5 indicated that all categories, besides B3, obtained scores greater than eighty five percent, which were between "medium" and very "high" on the Likert level.

Category B1 (Leadership and Commitment of Senior Managers towards quality management) recorded the highest mean value for this section. There were no scores recorded in this category on the Likert levels of "very low" and only four percent of

scores were recorded on "low" levels. The majority of the results for this category were "high" (forty five percent) and "very high" (twenty eight percent) levels. The results of B1 implied that leadership and commitment of senior mangers towards quality were high at those organisations that participated in this study.

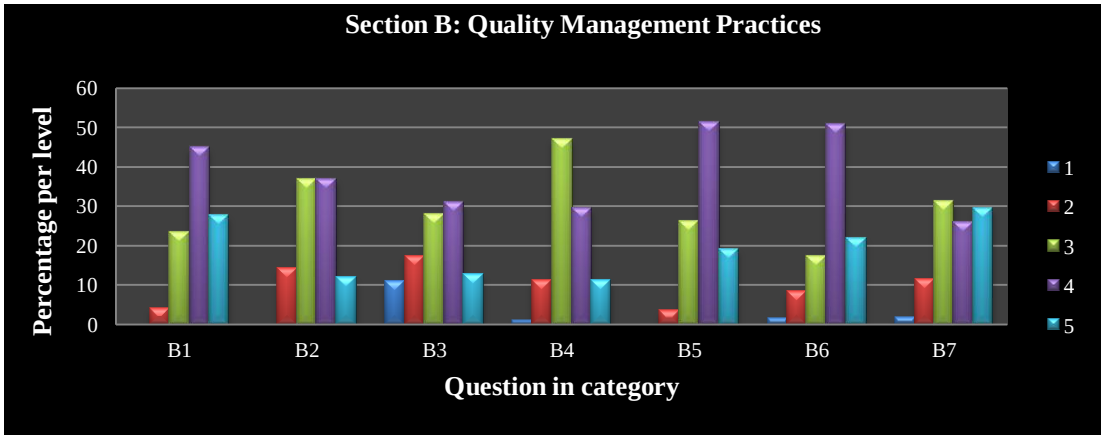


Figure 5: Percentage response per categories in Section B-Current Quality Practices

Category B2 (Strategy Development) indicated the same percentages of responses in the "medium" and "high" levels on the Likert level. These two levels made up seventy four percent of all responses in this category. There were similar percentages (twelve and fourteen) at "low" and "very high" levels, respectively. This suggested that there was an almost equal split between participants who felt that their organisations had major opportunities to those who believed their organisations performed very well in this category.

Category B3 (Customer Focus), was the lowest scoring category on mean values for this section and consisted of a wide distribution or scores across all levels on the Likert level. This category returned forty four percent of all scores between the "high" and "very high" levels. Approximately thirty percent of the results came from the "low" and "very low" levels. The results for this category suggest that customer focus was variable across all participants' organisations.

Category B4 (Measurement, Analysis and Knowledge Management) returned forty seven percent responses on the "medium" level. This was followed by thirty percent of the "high" level. The "low" level and the "very high" level score were both at

eleven percent. Similar to Category B2, the majority of the participants felt that their organisations were between "medium" and "high" level of practice, eleven percent of the participants felt that their organisation was at a "low" level and another eleven percent felt that their organisation was at a "very high" level of practice.

Categories B5 (Workforce) and B6 (Process and Quality Management) both returned forty one percent each at "high" levels on the Likert level for the participants' organisations. Also, very similar scores were realised for "very high" levels for both categories. It was evident from the results that more than seventy percent of the participants in the study felt that their organisations were at "high" or "very high" levels of practice for these categories. The "low" and "very low" levels for both these categories scored less than ten percent in total. The last category of this section, B7 (Organisational Performance and Improvement) returned similar scores in the "medium", "high" and "very high" levels on the Likert level. These three levels made up eighty seven percent of all responses, of which the "high" and "very high" contributed to fifty six percent.

From the analysis of Section B, it can be inferred that participants in this study felt that quality management practices were between "medium" and "high" levels across their organisations. The percentage breakdown analysis for Section B demonstrated a range of results mainly from "low" to "very high". However, the majority of the results still maintained the average mean values between "medium" and "high" levels. The results obtained in this section support the comments by Jabnoun and Sedrani (2005:8-20), who assert that various studies on quality management report serious variations on the success of their practices.

Section C

Section C of the questionnaire focused on current thinking on quality management, emerging trends and a proposed framework for quality management for the future. This section consisted of three categories (C1, C2 and C3) and a total of twenty seven questions on two types of Likert levels. The Likert levels were as follows:

- Category C1, sub-category C2.3 in category C2 and category C3 were constructed using the "strongly agree", "agree"; "unsure"; "disagree" and "strongly disagree" level.
- Sub-category C2.1 and C2.2 of category C2 were constructed using the "highly aware"; "aware"; "neither aware nor unaware"; "somewhat unaware" and "totally unaware" levels.

For the ease of statistical analysis, the scores on the Likert level were converted to numeric values. On a scale of one to five, one represented either "strongly disagree" or "totally unaware" and five represented "strongly agree" or "highly aware".

Table 7: Overall Mean and Cronbach Alpha values for Current Thinking on Quality Management

	Section C: Current Thinking on Quality Management	**Mean**	**Cronbach Alpha**
C1	Current Views on Quality Management	4.34	0.72
C2	Emerging Trends	4.20	0.84
C3	Views on Proposed Framework	4.13	0.86
	Overall	4.22	0.94

Table 7, above, provides a list of the various categories in Section C, their overall means and their Cronbach Alpha values. The Cronbach Alpha values for all of the categories were greater than 0.70, thus indicating a high level of reliability within all categories of this section. All categories achieved a mean value greater than four and the overall mean value for this section was 4.22. This result reveals a high level of agreement or awareness for the respective question and categories.

Figure 6 provides a more detailed analysis of Section C. The first category of Section C requested responses on current views in quality management. This category explored the views of participants that quality management had outgrown its current role over the last two decades; that quality management today was embedded in the process and managed as a routine output; and that the way forward for quality management was to move from production and process focus, to become more consumer, community and planet focused. The response to this category returned twenty seven percent at the "agree" level and fifty seven percent at the "strongly

agree" level. This infers that over eighty percent of the participants agreed that current quality management practices are outdated and the discipline is ready for an evolution.

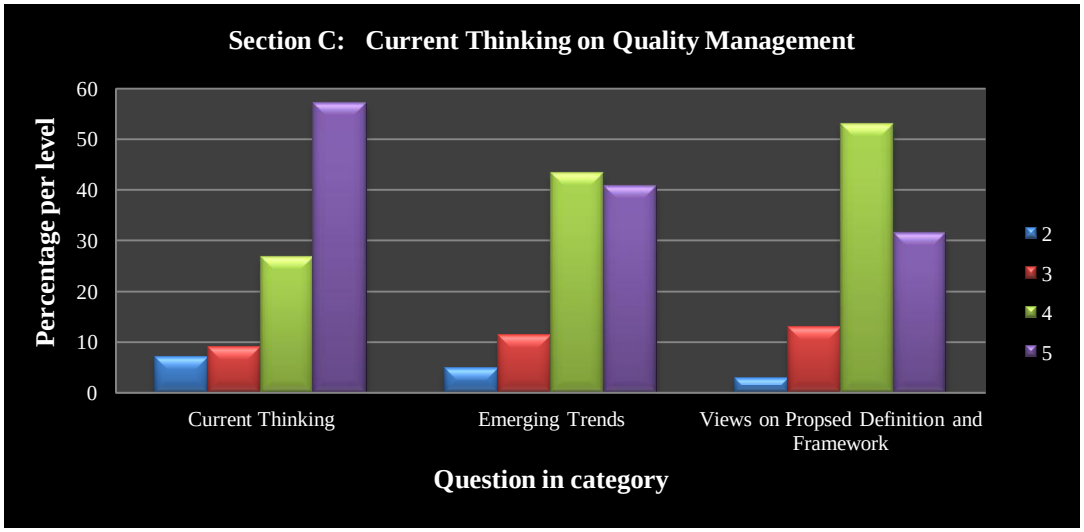


Figure 6: Percentage responses per category for Current Thinking on Quality Management

Category C2 requested responses on the identified emerging trends. Overall, this category returned eighty four percent of all scores between level four and level five. Because this category comprised three parts and two types of Likert levels, a further breakdown of results was undertaken as per Figure 7, below.

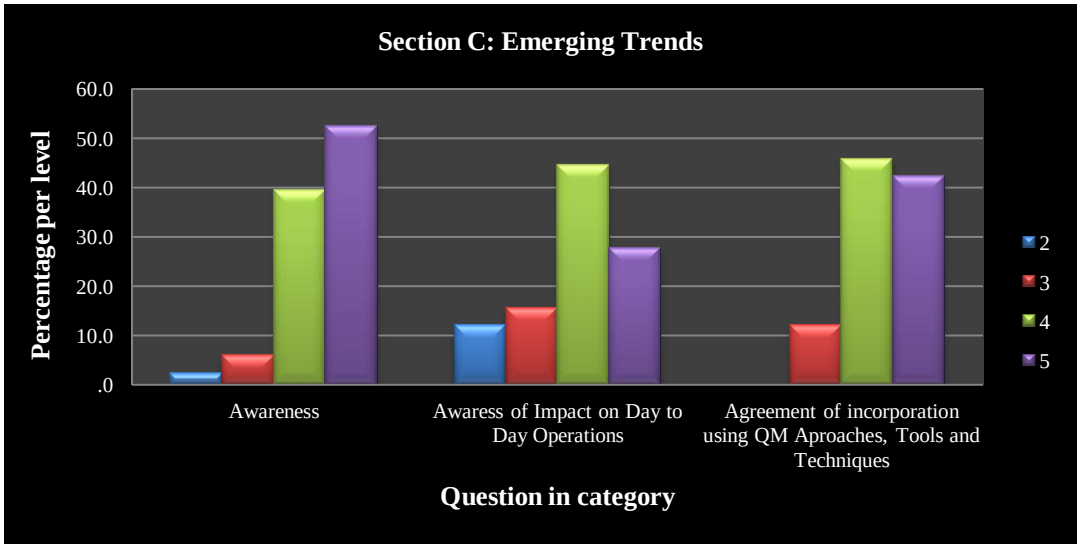


Figure 7: Percentage responses per sub-category Emerging Trends

Sub-category C2.1 pertained to the awareness of emerging trends. Ninety one percent of all responses were above the “aware” levels; namely thirty nine percent “aware” and fifty two percent “highly aware”. These scores indicated that the majority of the participants displayed high levels of awareness to the identified emerging trends.

Sub-category C2.2 focused on the awareness of the impact of these trends on the daily operations of the participants’ organisations. The responses indicated a much lower mean score in comparison to sub-categories 3.88 versus 4.22. Seventy two percent of responses were recorded at the “aware” and “highly aware” levels in total. There were sixteen percent at the “unsure” level and twelve percent at the “somewhat unaware” level. These results imply that although some of the participants were aware of the emerging trends, they were less aware of the impact these trends had on their organisations' operations.

The last sub-category C2.3 of category C2 probed the level of agreement that the identified emerging trends could be better managed using quality management approaches, tools and techniques. Eighty eight percent of the responses were in agreement; namely, forty six percent “agree” and forty two percent at “strongly agree” levels. These scores indicated that the majority of the participants were in agreement that quality management approaches, tools, techniques could be incorporated into their organisations to manage the identified emerging trends.

The last category of Section C, category C3, as per Figure 6 comprised of four questions requiring participants’ views of the proposed QSAL framework. Eighty four percent of all participants responded in favour of the QSAL framework. Thirteen percent responded “unsure” and three percent “somewhat disagree”. The results obtained from this sub-section indicated high agreement to questions relating to the proposed QSAL framework.

From the review of Section C, it can be inferred that the majority of the participants’ responses supported the thinking that quality management required a change from its current approach; they were in agreement that the identified emerging trends could

be better managed using quality management approaches, tools and techniques; and they favoured the proposed QSAL framework.

Conclusion

Prajogo and Brown (2004:31-42), report that despite the positive relationship between quality management and performance, there is still a lack of clarity on the implementation of quality management in organisations. The results of section B from the pilot study indicated between "medium" and "high" levels of quality practices within the participants' organisations. The individual responses per question and category displayed a notable amount of variability.

Section C of the questionnaire, which consisted of three categories; namely, current views in quality management, emerging trends and views on the proposed definition and a framework for quality management, returned an overall mean value of 4.22 and a mean score >4 for each category. Thus, it can be inferred that the three categories in Section C returned responses that demonstrated a high level of agreement or awareness to the questions posed on current thinking of quality management.

The Cronbach Alpha values for all categories in Section B and Section C were greater than 0.7. This confirmed that the questionnaire had a high reliability capability for scoring in all categories in Section B and Section C.

An evaluation of all of the above results and objectives of the pilot study led to the conclusion that a principal study was feasible. No further adjustments were made to the Likert type questions in the survey questionnaire. However, due the variability between the participants in response to many of the questions in the pilot study, it was felt that there was an opportunity to introduce a few open-ended questions to the survey questionnaire. The purpose of the open-ended questions was to delve further and gain more information from participants on certain aspects of quality management that were vital to the current study.

As part of the motivation for the principal study, a more detailed assessment on current quality practices was undertaken. This assessment will be detailed in the next section (4.4.3).

4.4.3 Organisational assessment using the viable systems model (VSM)

This section will discuss the second part of the preliminary study of two beverage organisations, operating as subsidiaries throughout South Africa, using the VSM.

4.4.3.1 The suitability of using the viable systems model for this study

The Viable System Model (VSM), developed by Stafford Beer, draws on the science of cybernetics and is applied to the management process of an enterprise. Beer (1985:1-135) argues that an enterprise must conform to certain invariant laws to maintain a separate, although not independent, existence from a supporting environment, and thus remain viable. Therefore, an organisation must have the capability to respond to changes in the environment, even if such changes could not be foreseen. This is supported with a fundamental cybernetic law, Ashby's Law of Requisite Variety.

According to Ashby (1956:206), Ashby's Law of Requisite Variety looking at an organisation through the VSM theory involves understanding how much complexity, variety and regulation is required to ensure that the system is viable. This law suggests that to control a situation, the variety of control systems must at least match the variety of potential disturbances likely to come from the system to be controlled.

Clemson (1984:98-143), using the theory of the VSM, advocates that for any social system to be viable, it needs to have five key functions in place to operate effectively in its environment. Similarly, the VSM consists of five functions, commonly known as levels, respectively responsible for "Implementation" (S1), "Co-ordination" (S2), "Control" (S3), "Intelligence" (S4) and "Policy" (S5). He states that the viability of the system is dependent on all functions (S1 to S5) being present and fully effective. Thus, in the event of any of the functions not being present, having inadequate

capacity, or becoming disturbed, the viability of the entire system will operate at risk and is likely become impaired or endangered.

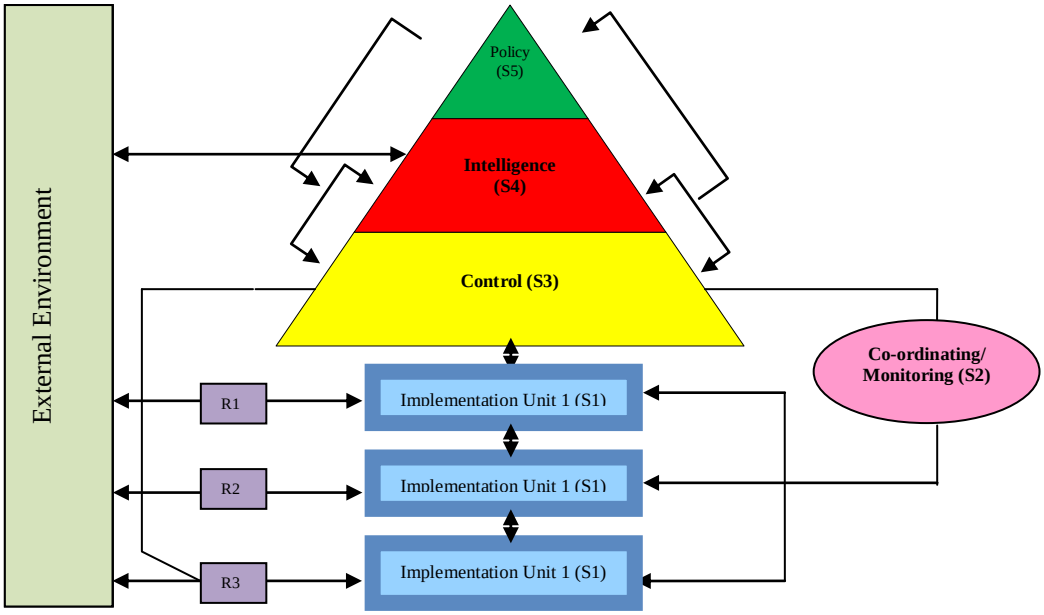


Figure 8: VSM Model Operation (adapted from Clemson 1984:108)

Figure 8 creates a pictorial view that demonstrates the operating patterns or interaction between all five functions (S1 to S5) for the VSM. Essentially, in order to be viable, a system must incorporate all five inter-connected functions.

- System 1 (operation) comprises those parts of the organisation directly involved in implementation, with each of these parts autonomous.
- System 2 (co-ordination) provides co-ordination between the sometimes many parts in System 1, to prevent oscillations.
- System 3 (control) provides short term control of internal stability.
- System 5 (policy) is responsible for policy.
- System 4 (intelligence) acts as a switch between the lower levels and System 5, and is the point where internal and external information can be brought together, with consideration of future requirements.

Table 8, below, provides a summary of the five functions that are required for operating according to the VSM.

Table 8 - The Framework of the Viable System Model

Function	Description
S1	**System one, Implementation unit** • Primary operational units, namely shop floor • Autonomous in its own right • Connects to its local environment and absorbs much of the overall environmental variety
S2	**System 2, Co-ordination/ Monitoring Function** • Co-ordinates the parts that make up System 1 in a harmonious manner • Provides standards, systems and structure for S1 • Audits and monitors the operating units for variations from standards
S3	**System 3, Control Function** • Management function that acts as command channel for giving orders to S1 • Ultimately maintains internal stability and day-to-day management • Interprets policy decisions of higher management • Allocates resources to System 1 • Ensures effective implementation of policy at S1 • Conducts reviews and occasional in-depth exploration of operational units
S4	**System 4, Strategic or Intelligence Function** • Is concerned about the future & flexibility • Captures all relevant information about the systems' total environment , scans both internal and external environments. • Provides a model of the organisation's environment including bringing in new systems for implementation • Rapidly transmits urgent information between Systems 1,2 & 3, and System 5
S5	**System 5, Policy Function** • Responds to significant signals that pass through "filters" of Systems 1,2,3 & 4 • Arbitrates between the demands on the organisation as represented respectively by Systems 3 and 4 • Represents the essential qualities of the "whole system" to any "wider system" of which it is a part.

The VSM advocates multiple functions that operate at different levels. The model does not focus on the hierarchy of power and the number of managerial levels within any organisation, as with traditional organisations. It is concerned with the hierarchy of viability of each function. The author further mentions that the levels of organisations, as expressed in organisational charts, are rarely identical with the hierarchy of viability of each function (Clemson 1984:98-143).

The VSM has been extensively used by operational researchers as a conceptual tool for understanding organisations, redesigning them where appropriate and supporting the management of change, with a view to ensuring sustainable survival (Clemson, 1984:98; Beer, 1985:1-135).

4.4.3.2 Strengths and weaknesses of the viable systems model (VSM)

The choice of VSM as the tool for assessing the viability of key functions within organisations is supported by Schwaninger (1997:126). He asserts that management

is about the design, control and development of complex, dynamic, and, in the case of organisations, productive social systems. The VSM carries characteristics of Cybernetics and Systems Theory and these theories have become increasingly popular as a frame of reference for management studies for two reasons. Firstly, management deals with complexity as a primary output. Secondly, the words "comprehensive", "holistic" and "integral" are normally quite commonly associated with management perspectives. Due to the large "connective capability" of these words and their association to systems theory, the use of systems-oriented perspectives renders VSM exceedingly suitable for transduction and thus for integration of functions.

A weakness that can be attributed to VSM is that it is not widely used or known outside the management science and operational research community. Another weakness is that many people can become confused on whether VSM is a stand-alone method or must be used in combination with other tools (Jackson, 2000:11).

4.4.3.3 Sampling and types of organisations selected for the assessment using the VSM

This study consisted of two beverage organisations that operated as subsidiaries throughout South Africa. For the purposes of this study, the organisations in this assessment will be referred to as Organisation One and Organisation Two for confidentiality. These organisations respectively comprised seven and five production plants. Organisation Two operated under a franchise licence from a multinational organisation and is owned by Organisation One in South Africa. The sampling type for the survey can be regarded as non-probability purposive sampling, as there was a deliberate choice of the target population.

The reason for choosing these two organisations was that they operated differently with regard to quality practices, even though they are both from the manufacturing FMCG sector. In view of their differences in quality practices, it was deemed that they would be able to provide a range of data that could highlight the current state of quality management across the selected manufacturing organisations in South Africa.

4.4.3.4 Data collection for the assessment using the VSM

Data collection for this assessment was based on information obtained from the organisations' structure charts, strategy documents and goals for each organisation.

4.4.3.5 Objective of the VSM assessment

The VSM assessed the quality management practices within the two organisations. The assessment included the interaction with the Head Office of both organisations as well as the Franchise owner for Organisation Two. The study was conducted to determine if it was feasible to pursue this research and the principal study. It should be noted that the VSM tool was used only for the diagnosis and drawing conclusions on the assessment. It did not consider the improvement and redesigning phase for the organisations in this study. The improvement and redesigning phase for the organisations is normally a natural next step of a VSM assessment.

4.4.3.6 Evaluation and findings of the VSM assessment

The evaluation and findings for the VSM assessment will be undertaken and discussed for each organisation in Table 9. Table 9 will evaluate the organisations using the functions illustrated in Table 8 in Section 4.4.3.1.

Table 9: Evaluation and findings of the VSM Assessment

VSM Level	Organisation 1 Analysis	Organisation 2 Analysis
S1—Shop Floor Operations	Quality outputs of the S1 function in this organisation were undertaken by a shift-based production team as part of quality, cost, safety, delivery and morale (QCSDM) goals. The team, called Small Business Unit (SBU), consisted of a team leader, process operators and artisans. Quality management at this level was based on quality control principles using the philosophy of "quality at source". In Organisation One, the production employee was the process operator. The S1 function team met daily to review progress on key performance indicators (KPIs) relating to the QCDSM goals. For quality, it included the review of problem solving, non-conformances and corrective actions that transpired over the previous shift. The production team was supported by a laboratory technician from the Quality Department who assisted with more complex queries and problem solving with which the operator required support. The S1 function demonstrated very limited knowledge of quality assurance outputs, besides those incorporated into their routine activities. Adherence to other organisational policy, procedures and management systems by the S1 function, including external certification requirements, was achieved through clear work instructions. Very limited quality improvement and problem solving activities were noticed at the S1 function. Those undertaken utilised, for example, the "five why" technique from the basic quality toolbox (Tague, 2005:513-516) for root cause analysis. This S1 function demonstrated very little knowledge and consciousness on the current or future thinking around quality. It can be inferred that the S1 function viewed quality as just another KPI measure, mainly limited to product quality.	Quality outputs of the S1 function in this organisation were undertaken by the Quality Department, which operated as a separate entity to production. The S1 function consisted of shift-based quality inspectors who reported to shift-based quality supervisors. This organisation adopted a QC approach using the philosophy of "end of the production line" measurement. This philosophy measures quality after the product is completely manufactured. The quality inspectors undertook all quality measurements, dealt with non-conformances and corrective actions that occurred during their shift and those carried over from the previous shift. This team was totally focused on quality goals and not on any other production goals. All quality results and corrective action information were passed onto the production SBU or S1 function on a daily basis for consolidation as part of their daily reviews. The S1 function demonstrated very limited knowledge of quality assurance outputs, besides those incorporated into their routine activities. Adherence to other organisational policy, procedures and management systems by the S1 function, including Franchise owner requirements, were achieved through clear work instructions. Quality improvement and problem solving activities were limited at this level and normally included the verification and improvements to accuracy of measurement at the S1 function. Process issues were dealt with by production employees. The S1 function also demonstrated very little knowledge and consciousness on the current or future thinking in quality. It can be inferred that the sole purpose of the employees at the S1 function was routine quality control, and the sorting of good and defective products for this organisation.

S2—Co-ordination or Monitoring Function	The S2 function in Organisation One for quality management was undertaken by a Multi Disciplinary Team (MDT). This team comprised cross-functional expertise from the production, engineering and quality departments. The team met daily to review the last twenty four hours of production. They also focused on QCDSM goals. The goals at the S2 function were focused on ensuring that all resources were provided to the S1 function for them to perform their duties correctly. The S2 function for management systems within this organisation rested with the Quality Department. This department was responsible for the implementation, maintenance and monitoring/auditing of the Quality (ISO 9001), Metrology- e-Mark (SANS 1841), HACCP-Due Diligence (SANS 10330), Environment (ISO 14001) and Health & Safety (NOSA) management systems, to which the organisation was externally certified. All management systems within this were developed and managed in the form of an integrated business management program (IBMS). At the time of the evaluation, this organisation was about to change certifications to ISO 22000 (Food Safety) as a replacement to ISO 9001 and HACCP certifications. The quality department was supported by a Head Office that monitored the external environment and revised the management systems requirements as and when required. The plant quality department effected the necessary changes into plant process documentation, as required. This change was thereafter implemented by the production departments. The S2 function activity within this organisation was considered to be operating adequately. However, evidence was observed of repeat findings, highlighted both by the internal and external audits. Reviewing the IBMS programme, these did not seem to significantly impact the effectiveness of the programme. It can be cautioned, however, that the S2 function needed to manage this better in order to avoid their external certifications being revoked by the certification bodies.	The S2 function in Organisation Two for quality management was undertaken by the quality shift supervisor. Any problem/s that was not solved by the quality inspector was elevated to the quality shift supervisor. The supervisors either solved the problem themselves or sought support from the production MDT. This production MDT, comprising cross-functional expertise, met daily to review the last twenty four hours of production. They also focused on QCDSM goals. The accountability for the S2 management systems function rested with the Quality Department. The quality management approach within this organisation was based on the Franchise owner's quality management system and standards, which in turn were based on ISO 9001, ISO 14001 and OHSAS 18001. These standards were adopted as an integrated approach to Quality, Environmental and Health and Safety. The Quality department was responsible for the implementation and maintenance of these programmes. This organisation, although they were evaluating external certifications at the time of this assessment, did not subscribe to any. The quality department, supported by a Head Office, translated changes to standards and management systems provided by the Franchise owner as and when required. The plant quality department effected the necessary changes into plant process documentation as required, which was thereafter implemented by the production departments. The S2 function of monitoring compliance to standards and management systems was directly undertaken by the Franchise owner. Reviewing the reports by the Franchise owner audits, all systems seemed to be working adequately and were well entrenched. It was evident that the importance of the effective operation of all systems was fundamental for this organisation, as failure of compliance to any of the required systems could result in the bottler franchise license being revoked by the Franchise owner.

S3—Control Function	The S3 function in Organisation One was also known as the Departmental/Functional management teams. This S3 function comprised members from production, engineering, quality, information technology (IT) and finance. The role of the S3 function in this organisation was to manage the S1 function. Thus, S3 goals were focused on QCDSM goals in the same way as the S1 function. This level consisted of a team of people who were predominantly equipped with production skills and had very little quality management expertise. Perhaps, due to this, their focus was more operations-biased; that is, their priority was production volume and cost over quality. However, it was noted that product quality performance at each stage of the process and corrective action did receive a fair amount of attention. Team goals for the S3 function were intended to provide systemic leadership to the organisation. This level met on a weekly basis to conduct performance reviews and follow up on action items pertaining to their goals and issues not solved by the S1 and S2 functions. With regard to quality, this encompassed reviewing of quality performance against agreed targets and ensuring they continued to be aligned with the organisation's strategy. The review also ensured these goals were realistic and drove continuous improvement. As a management team, the S3 level was responsible for providing the S1 function with all necessary enablers and resources to achieve their goals. Resources were generally used in justifying and getting the next level in the organisation to support funding for operations; for example, in equipment and technology replacement and training. This also included requirements for the implementation of management systems such as ISO 9001, ISO 14001 and Supplier Management, as examples, which were implemented within this organisation. At a systemic level, the S3 function demonstrated little or no evidence of leveraging very obvious opportunities, new challenges, emerging trends or interventions. There was no evidence that the S3 function was applying any thought around integration of other outputs and systems with quality. Perhaps this was the reason for the many disparate systems observed within this organisation. Examples of these disparate	The S3 function in Organisation Two was also known as the Departmental/Functional management teams. This S3 function comprised members from production, engineering, quality, information technology (IT) and finance. Although the S1 function for measuring quality outputs was managed by the Quality Department, the S3 function, as in Organisation One, was integrated with production and focused on QCDSM goals. A reason for this integration was perhaps due to the Franchise owner's interventions, which were heavily biased towards product quality. Evidence of this bias was also visible through the extent that the Franchise owner incentivised all production staff on product quality in trade. However, due to the very traditional approach of "end of the line" inspection, large quantities of waste were produced to achieve this high level of product quality in trade. Team goals for the S3 function team were intended to provide systemic leadership to the organisation. This team met on a weekly basis to undertake a performance review against goals and to follow up on items that were not solved by S1 and S2 functions. The outputs of this review were related to resource provision associated with the 5Ms; namely, man, machine, material, measurement and method. In the case of quality management, for example, this included training, auditing, standards, procedures, test equipment and implementation of the Franchise owner's management systems. Systemic thinking around quality in this organisation was found to be at a low level. Perhaps this was because the strategy was provided from the Franchise owner and this organisation adopted a compliance approach. Thus, there was evidence that systems were implemented by the S3 function merely in the form of goals and standards, with very little thought or translation. At the systemic level, there was no evidence indicating that the function was applying any thought around integration with quality of other outputs and systems. As a result, this organisation, like Organisation One, displayed huge opportunities to combine many disparate systems under the umbrella of existing quality management, especially issues

	systems included the organisation's approach towards managing water and energy as engineering department projects rather than managing them holistically under the ISO 14001 management system. As a result, the ISO 14001 system was seen rather as an add-on system driven by the Quality Department. From the above, it was evident that product quality was owned by production and was managed using a process approach. Management and support to S1 and S2 levels to achieve existing goals and strategy worked well. However, Organisation One exhibited ample opportunity for improvement and optimisation of resources in the manner in which various disparate systems were developed and implemented.	such sustainable development, which was on the top of the Franchise owner's agenda. It was evident that all strategic thinking for this organisation was left to the Franchise owner. It can be inferred that, unfortunately, the opportunities for integration were not fully explored or leveraged as their goals and strategies were very focused on the Franchise owner's requirements. Based on the Franchise owner's operating model at the time, it was not viewed as a priority. In Organisation Two, it was evident that the S3 function for quality management, although integrated as part of the production MDT, was owned by the Quality Department. Similar to Organisation 1, Supplier Management also was the responsibility of the Quality Department.

S4 and S5— Strategic or Intelligence Function	The S4 and S5 functions in Organisation One were considered as the role of top management or leadership team at the production plant level. This team consisted of executive managers, who were departmental heads from the various functional departments; for example, packaging, engineering, quality, IT and finance. The responsibilities of this team were to provide alignment between production plants and divisional goals. Goals at this level were also focused on QCDSM outputs, as per S1 and S3 functions. In this team, the Quality Assurance (QA) Manager was responsible for working in conjunction with the Head Office team to translate the quality strategy and implement it into quality goals at the plant level. As top management, this team also fulfilled the role of communicating relevant statutory and regulatory requirements and organisational policies to the production plant. They also reviewed these requirements for relevance and applicability to the production operations for which they were responsible. This team was also involved in reviewing the local management systems at planned intervals, to ensure their continuing suitability, adequacy and effectiveness. This review included assessing opportunities for improvement and the need for changes to the quality management system, including the quality policy and quality objectives. All opportunities and changes identified were passed on to Head Office for further review and sanction as deemed appropriate.	The S4 and S5 functions in Organisation Two were considered to be the role of top management or the leadership team at the production plant level. This team consisted of executive managers, who were departmental heads from the various functional departments; for example, packaging, engineering, quality, IT and finance. The responsibility of this team was to provide alignment between production plants and yhe Franchise owner's strategy. Goals at this level focused on QCDSM outputs, as per S1 and S3 functions. In this team, the QA Manager, working in conjunction with the Head Office function, translated all requirements on management systems, policy and standards dictated by the Franchise owner. These requirements were then converted into goals or incorporated into operations standards and managed using the process approach. Similar to Organisation One, this team also fulfilled the role of communicating relevant statutory and regulatory requirements and organisational policies to the production plant. They also reviewed these requirements for relevance and applicability to the production operations for which they were responsible. Organisation Two also displayed clear evidence of the absence of S4 and S5 functions at a production plant level and Head Office level. It was evident that the S4 and S5 functions were provided to this

S4 and S5—Strategic or Intelligence Function (continued)	In view of the operations described above it was evident that at a production plant level the S4 and S5 levels operated in a similar way to the S3 level. The production plants depended on the Head Office to provide the S4 and S5 level leadership. For quality management, the S4 and S5 functions were undertaken by Head Office and focused on quality control (measurement of test equipment, measurement methods, training and competence), quality assurance (external certifications) and quality improvement (World Class manufacturing practices and Six-Sigma implementation). Strategic thinking with regard to direct identification of current emerging key trends discussed in this study was not apparent either at Head Office or production plant level. Evidence of consideration of these trends was only found through the virtue of requirements within management systems or from legislation. It can be inferred that at a plant level there was a collapse of the S4 and S5 levels into S3. Thus, the entire management team, including the senior executive team at the production plants in Organisation One, operated as an S3 function. The gaps in strategic and policy functions at both production plant and Head Office can perhaps be remarked as the possible reason for quality management in Organisation One to be described as outdated. Also, it is a plausible reason for the observation that this organisation continues to scan the internal and external environments and implements disparate interventions and systems to address current business challenges and market demands.	organisation by the Franchise owner. The Franchise owner, on the other hand, demonstrated a remarkable strategy that embodied the S4 and S5 functions. This strategy provided strong views on the current and future thinking of quality. It contained very clear linkages to the current emerging key trends identified in this study that are at present shaping organisational strategies and business results. The strategy also consisted of policies and targets developed to support current business challenges created by these emerging trends. From the review, it was ascertained that the strategy from the Franchise owner was translated into goals and standards by the Head Office in Organisation Two. At the plant level in Organisation Two, the strategy from the Franchise owner was known only as goals or standards. Thus, it can be inferred that although the production plants within Organisation Two undertook outputs against an excellent strategy, they did not carry immense awareness of what they did and why they needed to do this. This also supports the theory that there was a collapse of S4 and S5 functions into S3. In other words, the entire management teams at the production plants and Head office in Organisation Two operated as an S3 function, managing quality as a routine output. It was evident that Organisation Two, as Organisation One, exhibited huge opportunities to consolidate various disparate interventions and systems developed to address franchisor requirements and current business challenges and market demands.

Table 10, below, summarises the current practice in the two organisations from the VSM assessment.

Table 10: Summary of Quality Management practices in the two organisations assessed

Organisation One	**Organisation Two**
Multi-National subsidiary	Multi-National subsidiary of Organisation One and Franchisee of another Multi-National
Seven plants	Five Plants
External certifications of 5 management systems	No external certification—operated only on Franchise owner management system requirements
"Quality at source" philosophy	"End of the line" inspection philosophy
Evidence that quality strategy incorporated quality control, quality assurance, quality improvement at plant level	Quality strategy reflected current and future thinking at Franchise owner level. Strategy not understood or communicated well at plant level
Current strategy did not address current identified business challenges and market demands well	Current strategy at Franchise owner level addressed current identified business challenges and market demands adequately

4.4.3.7 Conclusions of the VSM assessment

The VSM was effectively utilised as a tool in this assessment to examine the quality practices at both Organisations One and Two. The findings in this assessment indicated that quality management in both organisations was still mainly focused on cost reduction by implementing defect and waste reduction strategies. Also, quality management in both organisations assessed still carried a strong product and process governance focus. According to literature (Ogden, Wallin, and Foster Jr. 2010:21-34, Gutner and Adams, 2009:3), these practices portray an outdated traditional practice of quality management.

The information from the above assessment and the pilot study provided evidence supporting the need to undertake a principal study, which will provide more data relating to more reliable conclusions connecting to the motivation for this study.

4.5 Introduction to principal study

Chapter 5 contains the principal study, which focuses on the findings of the survey questionnaire. The survey questionnaire was modified slightly from the pilot study, with the inclusion of four open-ended questions in Section C. These questions will be discussed as part of the principal study. The following details pertain to the principal study.

4.5.1 Sampling for survey questionnaire

The principal study encompassed participants from Organisation One, Organisation Two, Head Offices of Organisations One and Two, Suppliers of Organisations One and Two and other FMCG organisation types in South Africa. This included beverage organisations, food processing and packaging organisations and their primary, secondary and tertiary suppliers. The sampling type, used for the survey, can be regarded as non-probability purposive sampling, as there was a deliberate choice of the target population (Steyn, Smit, du Toit and Strasheim 1994:21-39). A sample size of 150 participants was targeted across selected manufacturing organisations in South Africa.

4.5.2 Preliminary analysis of data

A total of 127 survey questionnaires were distributed, of which 79 were returned. This was a success rate of sixty two percent. Using comments on response rates published by the Division of Instructional Innovation and Assessment, The University of Texas in Austin (2007), this response can be noted as very good. Of the 48 questionnaires not recovered, 19 were from FMCG industries, 11 from Suppliers, 6 from Organisation One, 8 from Organisation Two and 4 from the Head Offices of Organisations One and Two. A poor response from other FMCG organisation types resulted in having to make repeated requests before receiving ten of the twenty nine questionnaires sent out.

The preliminary analysis indicated that in some cases, participants failed to answer every question, most notably all of the open-ended questions. There is no plausible reason that can be attributed to this, other than that, the open-ended questions take more time and effort to answer. Some of the other questions may not have been answered because they were not applicable to the participant. However, these omissions were limited and it was concluded they did not have a significant impact on the overall study.

All data collected from the participants were analysed using the SPSS version 17.0.

4.6 Conclusions and recommendations

A series of conclusions and recommendations were derived from this research. These will be reflected in Chapter 6.

4.7. Summary of the chapter

This chapter presents the research design and methodology, the development of the QSAL framework and preliminary work. The research design and methodology section of the chapter reviews the following methodologies and research techniques and tools:

- research methods such as quantitative and qualitative
- sources of information being primary or secondary
- surveying techniques, such as questionnaires
- data analysis tools, such as descriptive and inferential statistics.

This study utilised both quantitative and qualitative research methods, questionnaires for the pilot and principal studies, a VSM model as an organisational assessment tool, and descriptive and inferential statistics.

The review in this section culminates in an evaluation of the theory of literature review, focusing on its purpose and usefulness, including a summary of the contribution of the literature reviews undertaken in Chapters 2 and 3 of this study. This review highlights the current gap that exists between quality management, business challenges and market demands and the opportunities that were available to re-position the discipline in the future.

The next section of this chapter focuses on the development of the framework. It presents the underlying theoretical groundings adopted for the development of the QSAL framework, the key components and operations of the QSAL framework and the linkage and influence of literature in the development of the QSAL framework. The possible advantages and disadvantages of the QSAL framework model are highlighted. This section demonstrates that the proposed QSAL framework is poised to address the new scope motivated for quality management in this study.

Thereafter, the preliminary work for this study, which consisted of a pilot study and an organisational assessment, is presented. The pilot study consisted of a small scale survey across selected manufacturing organisations in South Africa and the organisational assessment was undertaken with two beverage organisations operating as subsidiaries throughout South Africa.

The results of the pilot study illustrate that quality practices across the selected manufacturing organisations that participated ranged between "medium" to "high" levels. Quality thinking also displayed a range of results across a five point Likert level; however, the overall mean value represented between "high" to "very high" levels of agreement or awareness to questions posed in favour of the new scope of quality management proposed in this study.

It is evident from the organisational assessment of the two beverage organisations that these organisations were still mainly focused on traditional quality management practices that consisted of quality control, quality assurance and quality improvement philosophies. Also, from a production focus, these organisations were very operational with very little evidence of strategic goals or thinking on emerging trends identified in this study. All goals for both organisations were based on the QCDSM outputs.

The conclusions drawn from the preliminary studies are in support of a larger principal study, which would provide more reliable information on the practices and thinking of quality management across selected manufacturing organisations in South Africa.

The next chapter will present the principal study.

CHAPTER 5: PRINCIPAL STUDY

5.0 Preamble

Chapter 5 consists of the principal study that was undertaken across a sample of selected manufacturing organisations and their suppliers. A research questionnaire was employed as the instrument for the study. The objective of the principal study was to gain an understanding of views on the current practices and current thinking of Quality Management within these organisations operating in South Africa. This will include an inquiry about the acceptability of the framework as a new approach in quality management.

All data collected from the participants were analysed using the SPSS version 17.0 and presented in the form of bar graphs, tables and figures. Section A focused on the analysis of the demographic information pertaining to the independent variables identified for hypothesis testing. Sections B and C analysed the current practices and current thinking of FMCG organisations, respectively. Reliability analysis using the Cronbach Alpha values, mean score analysis and hypothesis testing using chi-square p-values were used to analyse data. In an attempt to understand the variation in responses for each question, results were presented as percentages.

Furthermore, Factor Analysis was undertaken to explore the existence of correlation coefficients in the different sections and categories of the survey questionnaire. A detailed summary of this chapter is presented at the end.

5.1 Section A

Section A of the survey questionnaire sourced demographic data to provide independent variables for the research hypothesis (see Figure 9) developed for this study. The independent variables were incorporated into questions A1 to A5 of the survey questionnaire. They were extracted as the following list of variables; namely, Industry type (A1), Position in organisation (A2), Experience in quality management (A3), Organisation size (A4) and whether or not the organisation implemented a

formal quality management programme (A5). Appendix 3 and Appendix 4 list all hypotheses aligned to the following mathematically formula based on the chi-square test:

H_0: A_0 ã B_1 There is an association between the two groups of variables.

H_1: A_0 Nã B_1 There is no association between the two groups of data.

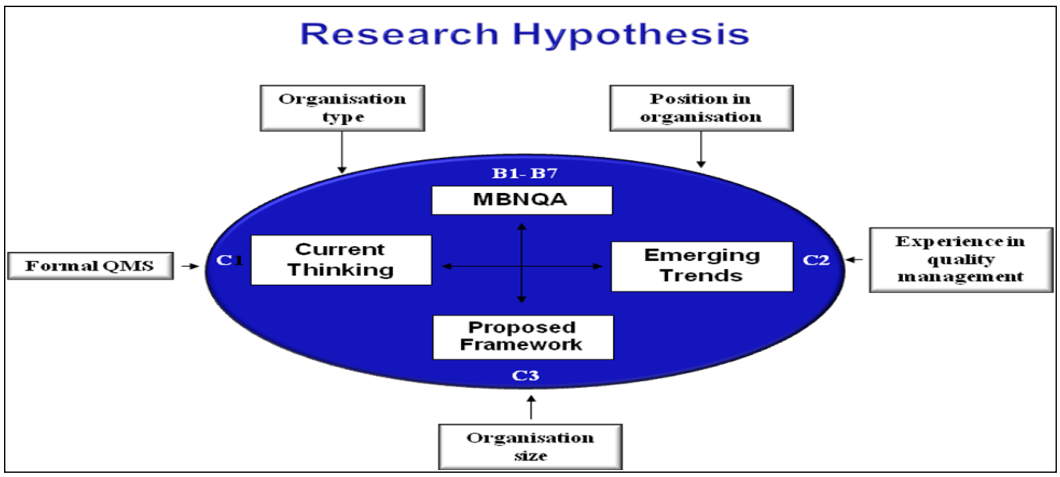


Figure 9: Research Hypotheses

The information gleaned from the analysis of each of the independent variables provided the context and formed part of the hypothesis in Sections B and Section C. In the hypothesis analysis, the null and alternative hypothesis using these variables were tested against the current practices (Section B) and current thinking (Section C) of QM using the chi-square p-values with ninety five percent confidence and examined whether or not there was a relationship between the five listed independent variables and the various questions in the respective sections.

5.1.1 Question A1: Please indicate your organisation type?

This question was intended to establish to which type of organisation the participant belonged. The intention for this was to determine whether there was a relationship between current practices and current thinking for QM in a specific type of industry. The choices for respondents to this question were: Organisation One, Organisation Two, Head Office, Supplier and other FMCG. Hence, based on the responses displayed in Figure 10, it can be inferred that there was adequate representation from

all industry types to undertake the planned hypothesis testing to establish whether there was a relationship between current practices and current thinking for QM in a specific type of industry. As there were no respondents from the choice "other organisations" in the survey questionnaire, it was not indicated on the graph.

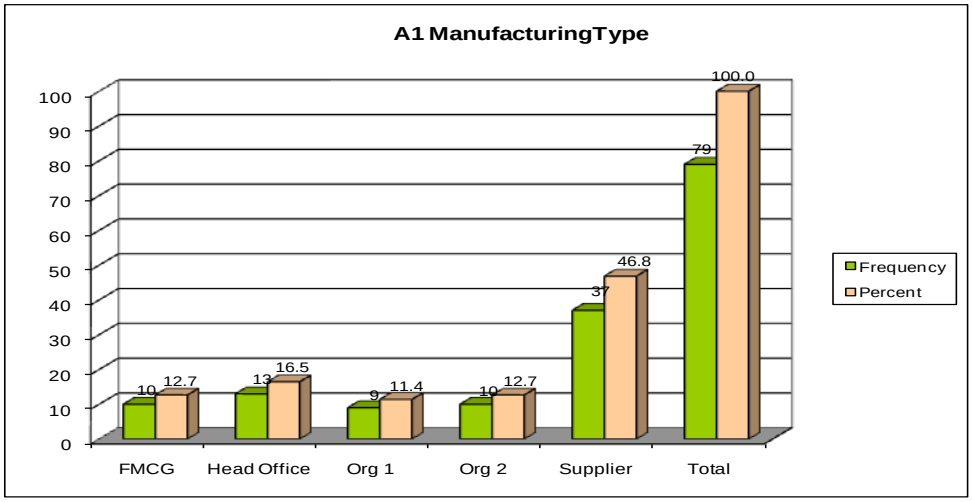


Figure 10: Respondents per different manufacturing organisation types

5.1.2 Question A2: Please indicate your position in your organisation?

This question was posed to determine if the designation of the participant was related to the current practice and current thinking for QM within these organisations. In text, the word "position" will be referred to as "designation" and will be used interchangeably. The choices for this question were: General Manager, Quality Assurance Manager, Functional Manager (Finance, Marketing, Operations, etc.), Area/Business Sector/Product Manager, Consultant, or other.

Table 11 illustrated that the largest group of participants consisted of Quality Assurance Managers (thirty nine percent), followed by the Functional Manager group (nineteen percent) and then Consultants (fourteen percent), who were directly associated with quality management within their organisations. These results suggested that the sample of participants was well spread amongst senior leaders and practitioners who were associated with Quality Management in different ways. Therefore, it is plausible to perceive that the responses from the participants in this study would provide useful data to undertake hypothesis testing to determine if the

designation of the participant was related to the current practice and current thinking of QM within these organisations.

Table 11: A2 Respondent Position in organisation

	Frequency	Percent	Valid Percent	Cumulative Percent
Account Manager	1	1.3	1.3	1.3
Area / Business Sector / Product	5	6.3	6.3	7.6
Consultant	11	13.9	13.9	21.5
Functional Manager	15	19.0	19.0	40.5
General Manager	5	6.3	6.3	46.8
Lab Manager	2	2.5	2.5	49.4
Managing Director	3	3.8	3.8	53.2
QESH Specialist	1	1.3	1.3	54.4
Quality Assurance Manager	31	39.2	39.2	93.7
Quality Assurance Supervisor	1	1.3	1.3	94.9
SHERQ Controller	1	1.3	1.3	96.2
SHERQ Manager	1	1.3	1.3	97.5
Technical Assistant	1	1.3	1.3	98.7
Technical Director	1	1.3	1.3	100.0
Total	79	100.0	100.0	

In some instances, there was more than one participant per organisation who contributed to the survey from differing designations. All participants were considered as the evaluations were based on perceptions and awareness of current practices and current thinking of QM.

5.1.3 Question A3: Please indicate your experience in quality management by selecting the number of years involvement in these activities?

This question was intended to establish whether there was a relationship between the experience of each participant and current practices and current thinking of QM. The choices for this question were: <1 years, 1-2 years, 3-5 years, 6-10 years, >10 years.

Table 12, below, combined the relationship between experience in QM and industry type. From Table 12, it was evident that more than two-thirds (77.2 %) of the participants had more than 6 years experience in the field of QM and of this 53.2 % had over 10 years experience. This vast experience was not specific to any single industry type. The main contributors to the group of participants with over 10 years

of experience were supplier's organisations (47.6 %) and Head Office organisation (21.4%). In addition, the majority of the participants from the Head Office organisation (69.2 %) had over 10 years experience.

Table 12: Respondent Experience in QM and Industry Type Cross Tabulation

			Industry Type					
			FMCG	Head Office	Org 1	Org 2	Supplier	Total
Experience QM	>10 years	Count	5	9	4	4	20	42
		%	11.9%	21.4%	9.5%	9.5%	47.6%	100%
	6 - 10 years	Count	3	2	3	4	7	19
		%	15.8%	10.5%	15.8%	21.1%	36.8%	100%
	3 - 5 years	Count	2	2	0	2	2	8
		%	25.0%	25.0%	0.0%	25.0%	25.0%	100%
	1 - 2 years	Count	0	0	1	0	4	5
		%	0%	0%	20.0%	0%	80.0%	100%
	<1 year	Count	0	0	1	0	4	5
		%	0%	0%	20.0%	0%	80.0%	100%
Total		Count	10	13	9	10	37	79
		%	12.7%	16.5%	11.4%	12.7%	46.8%	100%

5.1.4 Question A4: Please indicate the size of your organisation (i.e. part or business unit) by number of employees?

This question intended to gain an understanding of whether the size of an organisation influenced the current practices and current thinking of QM adopted by an organisation. The choices for this question were: <50 employees, 50-100 employees, 101-250 employees, 251-1000 employees, >1000 employees.

Table 13 : Respondent Organisation Size and Industry Type

			Industry Type					
			FMCG	Head Office	Org 1	Org 2	Supplier	Total
Organisation Size	>1000 employees	Count	4	13	9	6	6	38
		%	11%	34%	24%	16%	16%	100%
	251 - 1000 employees	Count	0	0	0	2	12	14
		%	0%	0%	0%	14%	86%	100%
	101 - 250 employees	Count	3	0	0	2	15	20
		%	15%	0%	0%	10%	75%	100%
	50 - 100 employees	Count	3	0	0	0	4	7
		%	43%	0%	0%	0%	57%	100%
Total		Count	10	13	9	10	37	79
		%	13%	16%	11%	13%	47%	100%

It was evident from the results in Table 13 that although the majority of the participants in this study were from medium to large-sized organisations (Gattiker, 2008:1), small sized organisations were also represented. Thus, the spread of participants across the various organisation sizes, as listed in Table 13 above, was deemed suitable to undertake hypothesis testing in this study in order to gain an understanding of whether the size of an organisation influenced the current practices and current thinking of QM adopted by an organisation.

5.1.5 Question A5: Does your organisation have a formal quality management programme (QMP)?

Table 14: Organisation Formal QMS in respondent Organisation

	Frequency	Percent
Yes, in some parts	6	7.6
Yes, organisation-wide	73	92.4
No	0	0
Total	79	100.0

The assumption of this question was that if an organisation had a formal QMP, it would possess mature quality processes. Hence, there was a belief that responses would be from an informed perspective. The choices for this question were: "yes-organisation-wide", "yes- in some parts of the organisation" and "no". Responses can be seen as per Table 14. From the results, it is very evident that all organisations had some form of QMP in place, which was either organisation-wide or in some parts of the organisation. Based on the responses, it was inferred that the proposed hypothesis testing would yield the desired results intended for this variable even though there was no organisation without any QMP in place.

5.1.6 Question A6. If (A5) is "yes", which of the following does your organisation subscribe to?

Although this question was not listed as an independent variable for the hypothesis test, it was included to provide more clarity on the previous question with regard to types of management systems or programmes implemented. The choices for this

question were: ISO 9001, ISO 22000, ISO 14000, HACCP, e-MARK, Safety, MBNQA, or other management systems. It was felt that the responses to this question could assist in explaining the responses, as per the hypothesis, more logically. Analysis in Figure 11 listed the various management (MGT) systems as per organisation types.

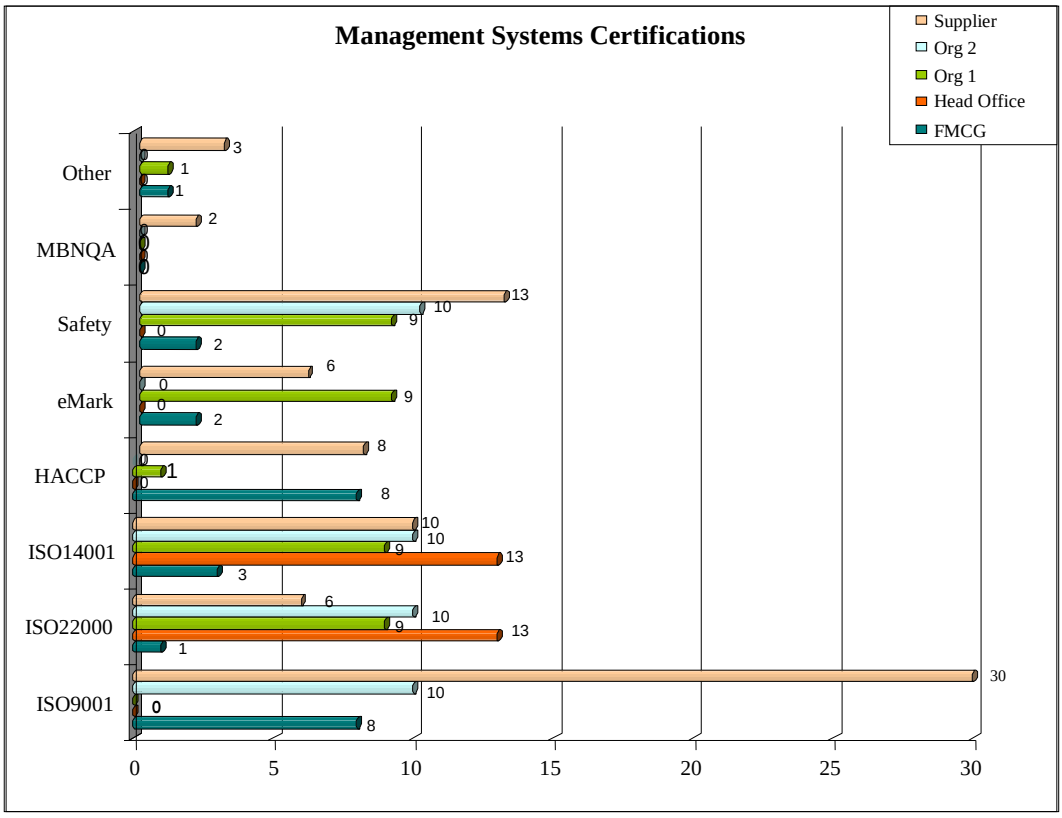


Figure 11: Management Systems in respondent organisations

Organisations One and Two implemented the most of the management systems listed above. The majority of FMCG industry type was accredited to ISO 9001 and HACCP. Accreditations to ISO 22000 and ISO 14001 showed similar numbers for Organisation One, Organisation Two and the Head Office organisation types. The analysis demonstrates that the suppliers have a low level of subscription to ISO 22000 and ISO 14001 accreditations in comparison to the other organisation types. However, it was evident that the most common management system implemented by supplier industry type was ISO 9001.

5.1.7 Validity of data empirical analysis

The responses obtained on all the demographic-related questions (A1.1, A1.2, A1.3, A1.4, A1.5 and A1.6) suggested that the survey returned an ideal sample of respondents from the population to undertake the proposed statistical analysis for this study.

5.2 Section B

Section B of the questionnaire adopted the seven categories of the 2009-2010 Malcolm Baldrige Quality Award (MBNQA) published by the National Institute of Standards and Technology (2009). According to Ogden, Wallin and Foster Jr. (2010:21-34), the use of the MBNQA was favoured for studies similar to the one undertaken for this thesis because its categories represent the philosophy of modern quality management. The categories of the MBNQA were also widely used by authors as they were thought to be important measures for understanding how participants from different disciplines approached quality management. These positive comments favouring the use of the MBNQA criteria and categories were also noted in the literature review in Chapter 2 and research design in Chapter 4. In this study, the last category, namely "results" from the MBNQA model, was renamed as "organisational performance and improvement" to add more clarity for the purpose of this section.

The questionnaire for Section B of this study comprised of the following categories: B1—Leadership Commitment of Senior Managers; B2—Strategy Development; B3—Customer Focus; B4—Measure, Analysis and Knowledge Management; B5—Workforce Focus; B6—Quality and Process Management; and B7—Organisational Performance and Improvement.

These seven categories consisted of sixty one questions. The questions developed for each category, although based on requirements of MBNQA criteria, were not identified as such. Similar to the Ogden, Wallin and Foster Jr. (2010:21-34) study, they were identified as core categories so that the participants in the survey did not feel that they were rating the importance of the MBNQA process. For each of the

questions, the following five-point Likert level was used, (5) very high; (4) high; (3) medium; (2) low and (1) very low.

5.2.1 Reliability tests of the categories for current practices in quality management

As discussed in Chapter 4, reliability is considered to be an assessment of the degree of consistency between multiple measurements of a variable. According to Hair, Black, Babin and Anderson (2010:125), the generally agreed-upon lower limit for the Cronbach Alpha is 0.70, although it may decrease to 0.60 in exploratory research. In terms of reliability analysis, one of the methods used to improve reliability is to increase the internal consistency of the measurement. Hence, the items that increase the Cronbach Alpha values after elimination should be deleted.

Table 15 provides an example of the reliability tests that were conducted across all categories in Section B (current practices in quality management) from the survey questionnaire.

Table 15: Cronbach Alpha values for Section B: B1- Leadership and Commitment of Senior Managers

B.1	Leadership and Commitment	For Item Deleted
B1.1	The extent to which senior leaders accept responsibility for setting the organisation's quality vision, objectives and goals	0.83
B1.2	The extent to which senior leaders accept responsibility and create a focus on achieving the organisation's quality vision, objectives and goals	0.77
B1.3	The extent to which senior leaders attach the importance of quality in relation to cost, production and delivery of KPIs.	0.79
B1.4	The extent to which senior leaders personally promote an organisational environment that fosters, requires, and results in legal and ethical behaviour	0.73
B1.5	The extent to which senior leaders personally promote an organisational environment that fosters, requires, and results in effective and credible governance system	0.72
B1.6	The extent to which senior leaders personally promote an organisational environment that fosters, requires and results in well-being of the social and economic systems to which your organisation does or may contribute to	0.76
B1.7	The extent to which senior leaders personally promote an organisational environment that fosters, requires and results in the well-being of the environmental systems to which your organisation does or may contribute to	0.75
B.1	**Overall Cronbach Alpha for category**	**0.79**

The example shown in Table 15 displays the Cronbach Alpha values for Category B1—Leadership and Commitment of Senior Managers. A complete list of the Cronbach Alpha values for all seven categories and variables for Section B of the questionnaire can be found in Appendix 5. The results shown in Appendix 5indicate that there were six items that increased the reliability within the various categories (variables B1.1, B1.3, B2.1, B2.5, B4.1 and B5.1) of Section B. It was decided not to delete these items because they would not significantly increase the reliability of the category in which they occurred.

In addition, reliability tests were conducted on the responses obtained for the seven categories, described above, of Section B of the survey questionnaire. The results shown in Table 16 reveal that the Cronbach Alpha values of all the categories within Section B of the survey questionnaire were greater than 0.70. Hence, it was assumed that the instruments and measurements were reliable and the results internally consistent. Thus, Leadership; Strategy Development; Customer Focus; Measure, Analysis and Knowledge Management; Workforce Focus; Quality and Process Management; and Organisational Performance and Improvement were accepted as the categories of current practices in quality management within selected manufacturing organisations.

Table 16: Cronbach Alpha values for Section B : Current Practices in Quality Management within Selected Manufacturing Organisations

B	Section B: Quality Management Practices	Cronbach Alpha Values
B1	Leadership and Commitment of Senior Managers	0.79
B2	Strategy Development	0.88
B3	Customer Focus	0.92
B4	Measurement, Analysis and Knowledge Management	0.72
B5	Work Focus	0.74
B6	Quality and Process Management	0.91
B7	Results	0.74
B	**Overall**	**0.94**

Based on the reliability obtained for Section B, descriptive tests and hypothesis testing using the chi-square test at ninety five percent confidences were undertaken to further understand current quality practices within selected manufacturing

organisations in South Africa. All p-values <0.05 will be highlighted, indicating a relationship between the chi-square value and the variable.

5.2.2 B1—Leadership and Commitment of Senior Management

The role of leadership as a driving force for implementing quality management has been confirmed by a number of empirical studies (Pannirselvam, Siferd and Ruch, 1998:529-550; Wilson and Collier, 2000:361-390; Pannirselvam and Ferguson, 2001:14-34; Flynn and Saladin, 2001:617-652; Collier, Goldstein and Wilson, 2002:97-104; Schniederjans, Parast, Nabavi, Rao and Raghu-Nathan, 2006:7-21). In this study, a Leadership and Commitment of Senior Management category examined the manner in which senior leaders' personal actions guided and sustained the organisation's quality management, corporate social responsibility and sustainable development outputs.

Table 17: Mean and Chi- square values for category Leadership and Commitment of Senior Management

B.1	Leadership and Commitment	Mean	p-value Pos. in Org.	p-value Exp. in Org.	p-value Org. Size	p-value Formal QMP.	p-value Org. Type
B1.1	The extent to which senior leaders accept responsibility for setting the organisation's quality vision, objectives and goals	3.99	.604	.404	.108	.189	.322
B1.2	The extent to which senior leaders accept responsibility and create a focus on achieving the organisation's quality vision, objectives and goals	4.22	.061	.621	**.030**	.342	.865
B1.3	The extent to which senior leaders attach the importance of quality in relation to cost, production and delivery of KPIs.	4.15	**.008**	.249	.349	.140	.752
B1.4	The extent to which senior leaders personally promote an organisational environment that fosters, requires, and results in legal and ethical behaviour	4.03	**.040**	.094	.606	.071	.000
B1.5	The extent to which senior leaders personally promote an organisational environment that fosters, requires, and results in effective and credible governance system	3.96	**.003**	.206	.692	.264	.009
B1.6	The extent to which senior leaders personally promote an organisational environment that fosters, requires and results in well-being of the social and economic systems to which your organisation does or may contribute to	3.84	.223	.909	.359	.710	.000
B1.7	The extent to which senior leaders personally promote an organisational environment that fosters, requires and results in the well-being of the environmental systems to which your organisation does or may contribute to	3.71	**.003**	.495	.255	.482	.009
B.1	**Overall Mean**	**3.98**					

Table 17 lists the results for the category Leadership and Commitment of Senior Management. Responses to these outputs were probed by designing questions within this category into three clusters or sub-categories: Questions B1.1 to B1.3 were related to quality vision, objectives and goals; B1.4 to B1.6 were related to internal ethical and governance systems; and B1.7 was related to external corporate social responsibility and sustainable development.

It can be noted from Table 17 that the overall mean score for this category was close to 4. This suggests that an overall high level of agreement to all questions as per the Likert level was obtained. An examination of the responses as per the three groups mentioned above demonstrates that the first cluster (B1.1 to B1.3, quality vision, objectives and goals) on average returned the highest scores. This was followed by the second group (B1.4 to B1.6 related to internal ethical and governance systems). The last group (B1.7, related to external corporate social responsibility and sustainable development) returned the lowest average mean for the category.

Table 17 also consisted of the chi-square p-values, which were determined to undertake the hypotheses tests for category B1 against the five variables that were described in Section A of this chapter. The results of the p-values followed a similar pattern to mean values and grouped discussed. Question B1.1 recorded all p-values >0.05 whilst questions B1.2 and B1.3 recorded only one p-value <0.05 across all variables for each question. These p-values confirmed a high level of Leadership and Commitment of Senior Management related to quality vision, objectives and goals by all participant organisations. Therefore, for all these questions and variables realising >0.05 p-values, the null hypothesis was accepted.

Questions B1.4 to B1.7 displayed the highest frequency of p-values <0.05 for the variables position in organisation and organisation type. The differing response for these questions implied varying degrees of awareness, implementation and adaptation of corporate social responsibility and environmental sustainability within the various organisations in this study. From the p-values for questions B1.4 to B1.7, it can be concluded that the null hypothesis for variables position in organisation and

organisation types in Category B1, which displayed significant relationships, can be rejected. A further analysis of these two variables will be undertaken below. The null hypothesis for all other variables with p-values >0.05 within these questions in Category B1 can be accepted.

Figure 12 provided a breakdown analysis of the scoring per question. Questions B1.1 to B1.3 revealed that greater than seventy percent of the responses were positive, either scoring "high" or "very high" on the Likert level. This again confirmed that the cluster representing quality vision, objectives and goals was well understood and practiced within the organisations that participated in the survey. The other two clusters, which consisted of questions B1.4 to B1.7, mostly returned responses closer to sixty percent for "high" or "very high" on the Likert level. For these questions, there were mostly a noticeably higher percentage of "medium" responses. A reason for these differences could perhaps be attributed to points raised by various authors such as Sampson, Foster Jr. and Dunn (2000:187-203), Carter and Jennings (2004:145-186) and Evans and Lindsay (2005:94). These authors infer that although issues related to social responsibility and sustainable development has become increasingly important in recent years, the focus within the various industry types was still at its infancy, especially with respect to aspects of community or external focus.

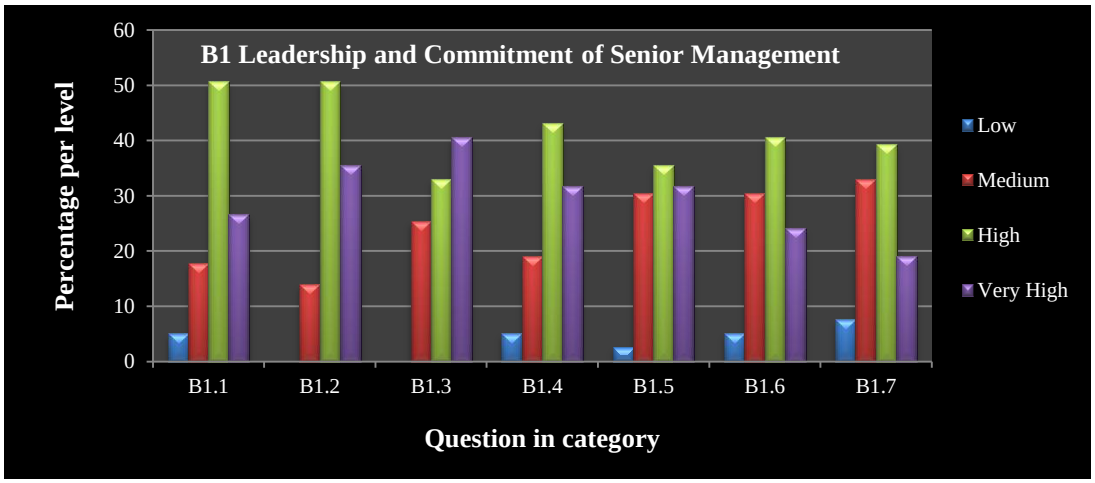


Figure 12: Percentage split of responses for category Leadership and Commitment of Senior Management

A further breakdown is provided in Appendix 7 on the variables "position in the organisations" and "organisation types", as they demonstrated the most impact in the hypothesis tests for questions in category B1. The variable "position in organisation", as per Appendix 7.1, generally noted lower responses to the last four questions in category B1. This pattern continued from all previous discussions above for this category. However, an observation from the analysis was that there was evidence that positions such as Technical Assistant and the QESH Specialist, which were in the lower ranks of the organisation, scored most of the last four questions much lower in comparison to senior management positions, such as Technical Director, Managing Director and General Manager. Perhaps, therefore, it can be perceived that the reasons for these significant differences in the variable designation of the organisation could be assigned to the exposure and scope of roles and responsibilities of the participants within an organisation to, specifically, social responsibility and sustainable development.

It was evident from the results in Appendix 7.2 that all organisation types, besides Organisation Two, achieved a mean value of around 4 for questions B1.4 and B1.5. Thus, it can be inferred that there was a high level of commitment for internal ethics and governance systems in all other organisation types besides Organisation Two. Organisation Two obtained a mean value of 3 for both questions (B1.4 and B1.5), which suggested a medium commitment for internal ethics and governance systems for this organisation type. A closer examination of these questions revealed that B1.4 included fifty percent responses between low and medium, the other fifty percent were responses at high; B1.5, on the other hand, recorded eighty percent between low and medium and twenty percent at high. A possible impact for the lower score in this organisation type could be that the franchisor, rather than Organisation Two, takes the leadership role for these outputs. The franchisor, as explained in Chapter 4, was the owner of the brands of products produced by Organisation Two. All products produced by Organisation Two were under the licence, known as franchise, from the brand owner.

Question B1.6 scored the lowest across all industry types besides Suppliers. However, B1.7 scored the lowest in the category. The reason for these lower scores can be supported by various authors such as Sampson, Foster Jr. and Dunn (2000:187-203); Carter and Jennings (2004:145-186) and Evans and Lindsay (2005:94), that issues such as social responsibility and sustainable development are at a level of infancy in many organisations.

It was evident from the review of Category B1 that the overall mean score on the Likert level to questions pertaining to Leadership and Commitment of Senior Management to quality vision, objectives and goals, was high. However, questions pertaining to social responsibility and sustainable development (B1.4 to B1.7), on an overall basis displayed slightly lower mean values. The lower scores for these questions (B1.4 to B1.7) translated to the variables designation in organisation and organisation type displaying most impact for Category B1.

In support, empirical studies related to quality management (Saraph, Benson and Schroeder, 1989:810-829; Ahire, Golhar and Waller, 1996:23-56; Kathuria and Davis, 2001:460-477; Sila and Ebrahimpour, 2003:235-268; Kaynak, 2003:1-31; Laohavichien, Fredendall, Stephen and Cantrell, 2009:7-24) noted Leadership and Commitment of Senior Management as fundamental to the success of any organisation. It can be perceived that a high level of Leadership and Commitment of Senior Management will provide a clear sense of direction to the proposed new scope of quality management. Also, it is hoped that the Leadership and Commitment of Senior Management, which is already established, will bode well in supporting areas such as social responsibility and sustainable development that were identified with lower scores in this category and as future opportunities for quality management.

Based on the results and above discussion, it can be inferred that the responses to the Leadership and Commitment of Senior Management category represents the current state of senior leaders' personal actions with regard to quality management, corporate social responsibility and sustainable development outputs across the FMCG-type organisations in South Africa.

5.2.3 B2—Strategy Development

Strategy is understood as a long term vision of an organisation and is achieved by a disciplined approach to setting direction and then executing that direction through the effective use of an organisation's resources, its processes, capital, and people (Watson 2005:4-9). The Strategy Development category (B2) examined the manner in which the respective organisations developed strategic objectives and action plans. This category also examined whether the strategic planning process included the right people (employees, suppliers, key partners, customers and other stakeholders) to adequately represent quality management.

Table 18: Mean and Chi- square values for category Strategy Development

B2	Strategy Development	Mean	p-value Pos. in Org.	p-value Exp. in Org.	p-value Org. Size	p-value Formal QM Prog.	p-value Org. Type
B2.1	The extent to which quality management is considered in your organisation's strategic plan	3.77	0.909	0.663	0.247	0.453	0.187
B2.2	The extent to which all relevant data and information pertaining to quality management is collected and analysed as part of the strategic planning process	3.77	0.072	0.506	0.210	**0.026**	0.131
B2.3	The extent to which the key strategic objectives for quality are identified and your time table for accomplishing them are captured in the strategy planning process	3.77	0.348	0.930	**0.036**	**0.006**	0.645
B2.4	The extent to which the key short and long term quality management goals are captured for the identified strategic objectives in the strategy planning process	3.62	0.156	0.818	0.121	0.245	0.464
B2.5	The extent to which the strategy development process includes the right people (employees, suppliers, key partners, customers and other stakeholders) to adequately represent quality management	3.22	**0.033**	0.806	0.969	0.409	0.242
B2.6	The extent to which the strategy deployment process includes the right people (employees, suppliers, key partners, customers and other stakeholders) to achieve the identified strategic objectives for quality management	3.62	0.057	0.877	0.217	0.294	0.607
B2	**Overall Mean**	**3.63**					

This category, according to Table 18, resulted in an overall mean value of 3.63, which implies a medium to high level of practice on the Likert level for Strategy Development. All questions, other than B2.5, returned scores that were uniformly above 3.6. The lower result returned in question B2.5, suggests that there is an opportunity to include other stakeholders in Strategy Development. This notion is also postulated by literature (ASQ, 2005:10-17; Kanji, 2007:1-10; and Campell,

2008:41-47) that advocates that a strategic plan could serve as a bridge between the organisation and its stakeholders. These authors campaign that stakeholders, as individuals or groups, are affected by or could affect the future of an organisation. These include customers, employees, suppliers, owners, governments and financial institutions, to name some of them.

An examination of the p-values for the hypothesis from Table 18 displayed four p-values below 0.05. Therefore, overall, the null hypothesis for this category can be accepted, except in the following case: Question B2.5, including the right people in Strategy Development, was scored differently by persons with different designations. An organisation can only succeed if it satisfies its key stakeholders (ASQ 2005:10-17). Thus, the assumption here is that some participants felt that there was adequate representation for Strategy Development whilst others did not agree. The importance of including all stakeholders cannot be over-emphasised, because their buy-in and commitment will augment the performance, growth and profit of organisations.

Variable organisation size in question B2.3 achieved a p-value below 0.05. This response can be interpreted to indicate that participants operating in organisations felt differently about the extent to which key strategic objectives for quality are identified and time allocated for accomplishing them is captured as part of the strategy process. A possible reason for this response could be poor integration of various functions within organisations or the apparent fact that planning and co-ordination is generally exaggerated by size and complexity within organisations. Question B2.3 was also answered differently for the variable formal QMP. This could be due to the drivers and fundamental approaches or requirements of the different QMP in the various organisations. The same response or rationale can be applied to question B2.2 and variable formal QMP.

The percentage scores per each Likert level are represented in Figure 13. It is evident from the graphs below that the responses to the first three questions (B2.1 to B2.3) were similar. All questions returned over sixty percent responses between “high” and “very high” and over ninety percent responses between “medium” and “very high”.

Therefore, it can be inferred that, besides slight differences, which were confirmed by random p-values <0.05, most organisations approached strategy planning similarly. It was confirmed that as there were no significant differences in questions B2.4 and B2.6, the p-values of >0.05 for these questions was valid. These questions returned approximately over sixty percent responses between "high" and "very high levels" and over eighty five percent responses between "medium" and "very high levels". Question 2.5, which returned the lowest mean value for the category, recorded the highest number (twenty five percent) of responses in the "low" levels. The reasons that can be perceived for these responses are similar to that mentioned above, that some participants most probably felt there was adequate representation for Strategy Development in their organisations and others did not agree.

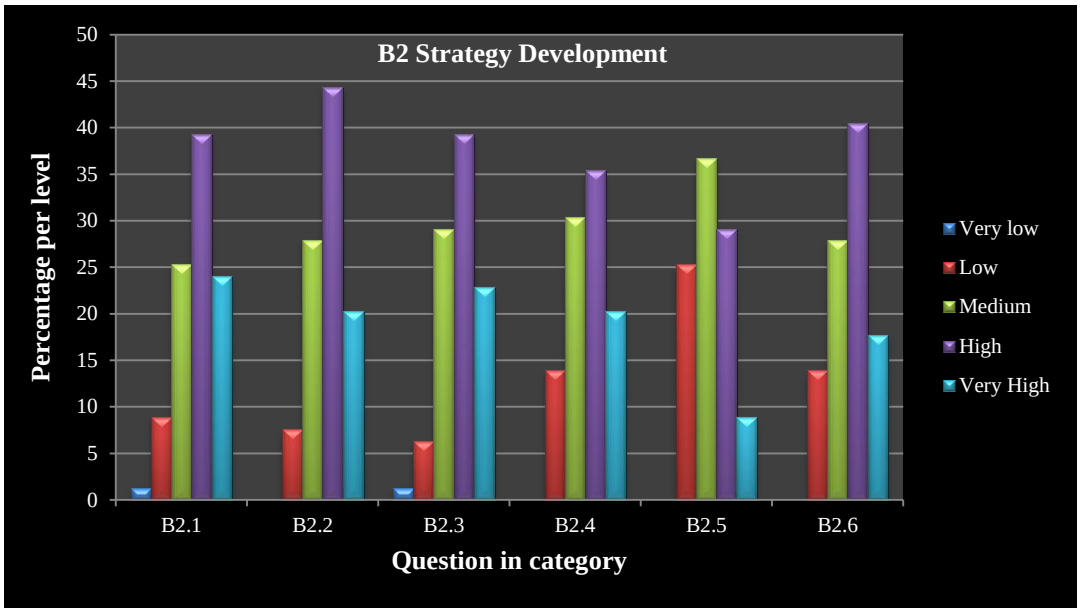


Figure 13: Percentage split of responses for category Strategy Development

Overall, this category suggests that quality management receives "medium level" to "high level" attention in Strategy Development in all participant organisations. The hypothesis tests showed very low impact by the different independent variables tested against the questions within the category. From this, it can be inferred that most organisations still accept the value of quality management. Considering the motivation for this study, acceptance can be viewed as positive. This hopefully can be further leveraged by ensuring that the proposed new scope for quality

management supports organisations in current business challenges and market demands.

The results from the Strategy Development category indicate that the question was successful in ascertaining the current strategic planning processes within the various organisations in this study. An opportunity noted for this category was the extent to which the Strategy Development process included the right people (employees, suppliers, key partners, customers and other stakeholders) to adequately represent quality management.

5.2.4 B3—Customer Focus

According to authors (Vouzas and Psychogios, 2007:62-75 and Sharma and Kodali, 2008:559-621), customer focus advocates customer satisfaction in a fundamentally different way from a traditional organisation, wherein cost and efficiency are the primary drivers. According to Zairi (2006:1-7), "customer centricity", as a new philosophy, requires an understanding of the behaviour of the entire organisation towards customers, not just in terms of the touch points and the decision points, but also the management and optimisation around the needs of the customer. Zairi (2006:1-7); Vouzas and Psychogios (2007:62-75); Sharma and Kodali (2008:559-621) agree that in a customer-oriented organisation, customer satisfaction drives designing new products, monitoring customer satisfaction levels, responding to customer complaints and evaluating its success at doing this. From this review, it is evident that at present the success of an organisation is closely dependent on its ability to understand and respond to its customers' wants and needs.

For this study, the Customer Focus (B3) category sought to evaluate the manner in which the organisations in this study listened to the voice of their current customers, suppliers, potential new customers and customers of their competition. In addition, it examined how each participant viewed their organisation's engagement with their current customers, suppliers, potential new customers and customers of their competition for long-term marketplace success. The questions within the category

also probed the mode in which this information was used to improve and identify opportunities for innovation and further customer satisfaction.

Table 19, below, indicates that this category returned the lowest overall mean values across all categories in this section.

Table 19: Mean and Chi- square values for category Customer Focus

B3	Customer Focus	Mean	p-value Pos. in Org.	p-value Exp. in Org.	p-value Org. Size	p-value Formal QM Prog.	p-value Org. Type
B3.1	Level and ability to capture your customers' satisfaction, experience and engagement	2.41	**0.030**	0.200	0.609	0.221	**0.007**
B3.2	The extent your organisation listens to suppliers to obtain actionable information	2.41	**0.000**	0.459	0.475	0.436	0.092
B3.3	The extent your organisation listens to former customers to obtain actionable information	2.06	**0.000**	**0.002**	0.119	0.147	**0.040**
B3.4	The extent your organisation listens to potential customers to obtain actionable information	2.13	**0.000**	**0.010**	0.179	0.270	**0.013**
B3.5	The extent your organisation listens to customers of competitors to obtain actionable information	2.18	**0.004**	0.294	0.125	0.486	**0.004**
B3.6	Level and ability to use voice-of-the-customer (CTQs) to identify and anticipate key customer requirements and changing expectations	2.97	**0.012**	0.473	**0.009**	0.069	**0.000**
B3.7	Level and ability to use the voice-of-the-customer to identify and innovate product offerings to exceed the expectations of your customers	3.09	**0.002**	0.542	**0.004**	**0.003**	**0.000**
B3.8	Level and ability to use the voice-of-the-customer to identify and innovate product offerings to attract new customers	2.82	**0.005**	0.228	**0.022**	**0.000**	**0.000**
B3.9	Extent of success in your customer complaint management process to enable you to recover your customers' confidence, and enhance their satisfaction and engagement	3.03	**0.046**	0.321	**0.034**	0.845	**0.000**
B3	**Overall Mean**	**2.57**					

From an examination of the questions in Table 19, it can be noticed that the questions within this category can be sub-divided into two sub-sections. Questions B3.1 to B3.5 can be considered as customer satisfaction through capturing or listening to the feedback from the customers and suppliers, and questions B3.6 to B3.9 can be viewed as using the customer feedback to improve customer satisfaction and offering. Using this categorisation, the results in Table 19 reflect that the organisations in the study were at a lower level in capturing or listening to their

customers than using the feedback to improve customer satisfaction and offering. However, even though the responses indicated a higher level in the ability to use the feedback to improve customer satisfaction and offering, the overall mean score for these responses reflected only "medium" level of practice.

The evaluation of the hypotheses and p-values for this category indicates that all questions for variables position in organisation and organisation type, besides question B2.3 for organisation type, exhibited p-values <0.05. This indicates that the practice of Customer Focus was scored differently by the participant in different designations and different organisation types. Questions B3.6 to B3.9 returned p-values <0.05. This indicates that there was a difference in responses based on size of organisations and the manner in which they used customer feedback to improve satisfaction and offering. A further analysis of these three variables will be undertaken below. As the majority of the p-values for these two variables were <0.05, the null hypothesis for them can be rejected. The other variables in this category that also displayed differences in responses to two questions each were experience in organisation, which realised p-values <0.05 for questions B3.3 and B3.4, and formal quality management programme for questions B3.7 and B3.8. Therefore, the null hypothesis for these questions can also be rejected.

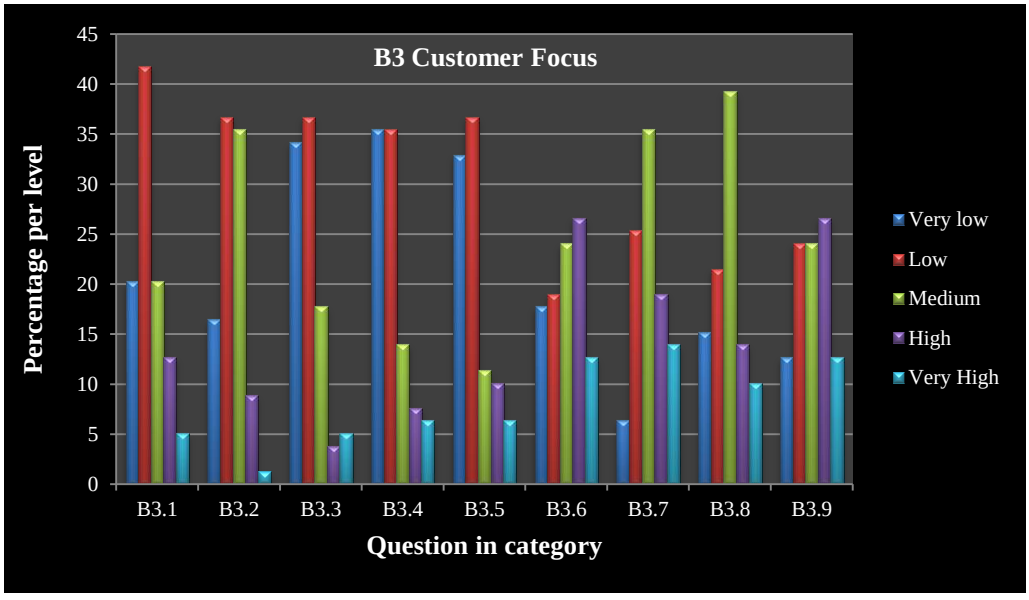


Figure 14: Percentage split of responses for category Customer Focus

From the graphs in Figure 14, above, it can be seen that the questions related to capturing or listening to customers and suppliers scored worse than the ability to use feedback to improve customer satisfaction and offering. Questions B3.1 to B3.5, which were categorised as capturing or listening to the feedback from the customers and suppliers, reflect between sixty to eighty percent responses between "very low" and "low levels". Questions B3.6 to B3.9, which were categorised as the ability to use feedback to improve customer satisfaction and offering, reflect between thirty and forty percent responses between "very low" and "low levels".

Appendix 8 provides a breakdown analysis of the position in the organisations, organisation size and organisation types, as they demonstrate the most impact in the hypothesis tests for questions in category B3. An examination of the responses provided by participants from different designations (Appendix 8.1) does not reveal much further information. The results indicate differences to individual questions even by the same participant. However, there were a small number of participants who consistently responded either "high" or "low levels" to all questions. From these responses, it can therefore be inferred that this category, on an overall basis, is an area of opportunity for all organisations.

From the examination of the responses by organisation size (Appendix 84.2), it is evident that organisations with >1000 employees display the lowest results. A reason for this difference could be that, based on the scale of operations and the focus on demand and supply, these organisations tend to focus less on customer feedback to improve satisfaction and offering. However, evidence from literature suggests that organisations that focus on the value of customer satisfaction (Sickel, 2005:43-48), tend to realise better customer satisfaction levels, which also can be extended to long-term loyalty. According to Chen, Chen, and Hsia (2005:21-33), the goal of product quality is to gain customer satisfaction. Therefore, high product quality will mean little or nothing if the customer is not satisfied. Hence, these organisations need to take heed of improving this area even though they may be currently enjoying growth in volumes and profit margins.

From an organisation-type differentiation as per Appendix 4.3, it is evident that FMCG and Supplier organisation types scored slightly higher for questions B3.1 to B3.5. However, this is not significant and the overall mean for them is still below 3, suggesting low levels of practices across organisation types for capturing or listening to the feedback of the customers and suppliers. The trend of poor scores continued for questions B3.6 to B3.9, which relate to the ability to use feedback to improve customer satisfaction and offering, for all organisation types besides suppliers. The reason for the different scores from the Supplier organisation, counter to the Customer above, can be related to a deliberate supplier management strategy between the Supplier and the Customer organisations, which influenced their ability to listen to the voice of the customer and to translate this into critical quality parameters in their operations. It can also be used to explain better scores for the Supplier organisation in resolving customer complaints.

The above analyses for this category place Customer Focus as a major area of opportunity for all organisation types. Various quality management founders (Deming 1986) and theoreticians (Calhoun, 2002:45-53; Lummus, Vokurka, and Duclos, 2005:2687-2703; Knouse, Carson, Carson, and Heady, 2009:449-461) who highlight the criticality of Customer Focus, especially in the current environment where the landscape of business is continuously changing, have reinforced the importance of improving this performance. These authors advocate that Customer Focus must move beyond "satisfied" customers to "delighted customers" whose loyalty to the organisation is demonstrated by their willingness to be engaged in partnerships and their continual relationship with the organisation.

However, it is worthy to note that Customer Focus and satisfaction has always emerged as an area requiring focus by organisations in several other empirical studies (Black and Porter, 1996:1-21; Antony, Leung, Knowles and Gosh, 2002:551; Huarng and Chen, 2002:226-234; Eng and Yusof, 2003:63-77; Jabnoun and Sedrani, 2005:8-20; Paryani, Masoudi and Cudney, 2010:7-28).

It is apparent from the above review and data obtained in this study that Customer Focus is generally an area of weakness for many organisations. Therefore, it can be perceived that organisations that create the competency to perform well in Customer Focus will enjoy a better competitive advantage.

5.2.5 B4—Measurement Analysis and Knowledge Management

A systemic approach to quality and operations management requires the collection and analysis of data followed by its translation into information (Fisher, Barfield, and Mehta, 2005:401-412; Ogden, Wallin and Foster Jr., 2010:21-43). Information serves as an indicator that is able to establish a direct cause and effect relationship between the process variables (Jochem, Menrath, and Landgraf, 2010:410-422). Knowledge management is an extension to data and information. According to Lee and Choi (2003:179-228), successful knowledge management depends on the relevant technical infrastructure to capture, store, share, and use information common to a decision support system.

Research conducted mainly in manufacturing organisations by Belzowski, Flynn, Richardson, Sims, and Assche (2003:9-29) confirms the views of various authors (Alavi and Leidner, 2001:107-136; Darroch, 2003:41-54; Nickerson and Zenger, 2004:617-632 and Jasimuddin 2006:171-180) who claim knowledge management as an imperative to be positively associated with organisational success. Also, several empirical studies (De Long and Fahey, 2000:113-127; Gold, Malhotra, and Segars, 2001:185-214; Jarvenpaa and Staples, 2001:151-183; Janz and Prasarphanich, 2003:351-384; McCann and Buckner, 2004:47-63; Alavi, Kayworth, and Leider, 2006:191-224) conducted in this area reveal that knowledge management practices lead to superior organisational effectiveness. Furthermore, knowledge management was identified in Chapter 2 as a key role of quality management for the future (Gutner and Adams, 2009:12; Hopen, 2010:4-9).

Therefore, category B4, based on the review above, focused on how organisations selected, gathered, analysed or reviewed, managed, and improved their quality data,

information, and knowledge assets within the organisation. Table 20, below, provides the analysis for category B4.

Table 20: Mean and Chi- square values for category Measurement Analysis and Knowledge Management

B4	Data, Analysis and Knowledge Management	Mean	p-value Pos. in Org.	p-value Exp. in Org.	p-value Org. Size	p-value Formal QM Prog.	p-value Org. Type
B4.1	The extent to which analysis and review of the quality data assesses the progress relative to strategic objectives and action plans	4.23	**0.007**	0.777	0.226	0.122	0.511
B4.2	The extent that the analysis and review of the quality data translates into organisational priorities for continuous improvement and innovation	3.49	0.818	0.869	0.907	0.638	0.555
B4.3	The extent to which quality measurement system reflects the measurement integrity and validity (gauge R and R, Attribute MSA and audit)	3.24	0.961	0.736	0.788	0.774	0.069
B4.4	The extent that the analysis and review of the quality data supports how priorities and opportunities are deployed within your organisation	3.51	0.335	0.848	0.412	0.663	0.553
B4.5	The extent that the analysis and review of the quality data supports how projects, priorities and opportunities are deployed to your suppliers, partners, and collaborators to ensure organisational alignment	3.38	0.091	0.480	0.397	0.865	0.451
B4.6	The effectiveness of the knowledge transfer process within your organisation	3.15	0.224	0.734	0.497	0.879	0.223
B4.7	The extent to which your organisation is successful in the rapid identification, sharing, and implementation of best practices	3.28	0.575	0.448	0.157	0.478	0.585
B4	**Overall Mean**	**3.47**					

The questions in Category B4 can be split in two. Questions B4.1 to B4.4 were related to data analysis and review to assess progress and Questions B4.6 and B4.7 probed the effectiveness of knowledge management. However, the results display similar patterns across all questions in this category besides B4.1.The overall mean value for this category indicated between medium and high levels scores. Question B4.1 displayed a much higher mean value and compared well with the scores in category 2 that pertained to Strategy Development.

An examination of p-values for Category B4 confirmed the uniformity in responses for this category. Besides the variable position in organisation in Question B4.1, all

other variables across all questions achieved p-values >0.05. This means that the null hypothesis for these questions is true and therefore should be accepted, as all participants scored the questions similarly. Question B4.1 was related to the extent to which analysis and review of quality data assessed the progress relative to strategic objectives and action plans. The difference in responses for Question B4.1 is plausible, as not all participants in the survey would be directly involved in the analysis and review of data. Thus, their responses are likely to reflect this.

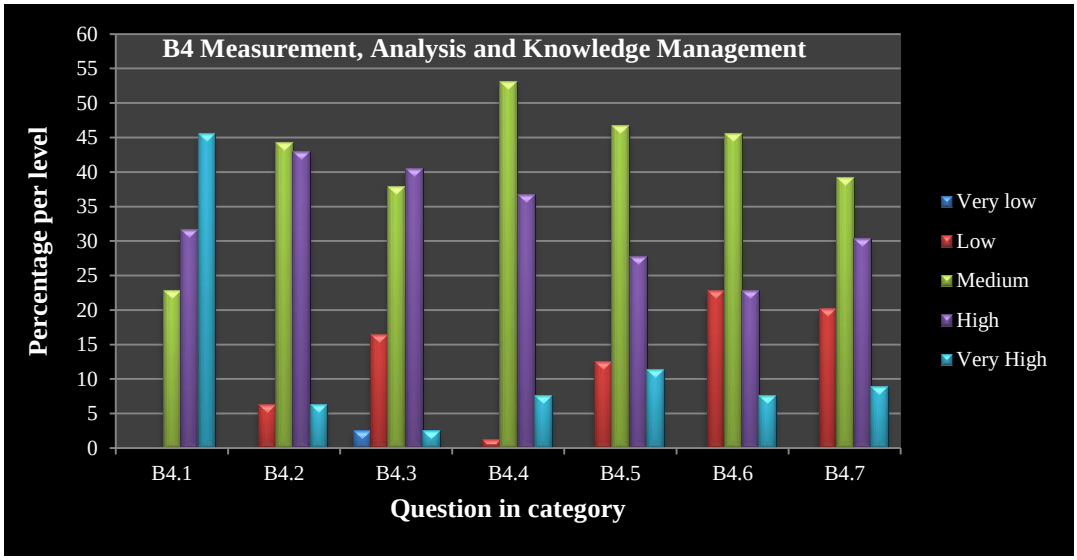


Figure 15: Percentage split of responses for category Measurement Analysis and Knowledge Management

Analysis of the percentage split for each question, as per Figure 15, Question B4.1, suggests that most participant organisations indicated a “high” to “very high” capacity to analyse data. From an examination of the results for Questions B4.2 to B4.5, it can be inferred that although the participating organisations demonstrated a high capacity to collect and analyse data, they displayed a lower capacity to translate this analysis to information. This may explain the lower mean and wider range of results for these participant organisations in setting continuous improvement goals, priorities, measurement system analysis and projects within the organisation and suppliers (B4.2 to B4.5).

Questions B4.6 to B4.7, which focused on knowledge management, also displayed a slightly lower mean and a wide distribution of scores on the Likert level. This suggests a higher level of opportunity in this area across all participant organisations. This opportunity is of principal importance in this study; as already mentioned, knowledge management was identified in Chapter 2 as a key role of quality management for the future (Gutner and Adams, 2009:12; Hopen, 2010:4-9). Furthermore, research on the topic of knowledge management has noted significant positive relationship between information sharing and organisation performance (Hult, Ketchen, and Slater, 2004:241-254).

In summary, the mean scores for this category indicate an opportunity for improvement across all industry types and questions, besides B4.1. The hypothesis tests show that the majority (ninety seven percent) of the independent variables tested against the questions within the category all returned similar responses. A good performance in this category is desirable, especially in an environment where there is a growing understanding that data, information and knowledge in an organised approach is fundamental to attaining superior performance and success in the competitive marketplace (Juran and De Feo, 2010:541). A common finding in literature about knowledge management is that an organisation that values trust, openness, and collaboration is more likely to be successful in sharing information. This is fundamental in the practice of knowledge acquisition and dissemination. Organisations that are successful in knowledge management are also known for high levels of innovation, which also has been associated with better knowledge acquisition and dissemination (Alavi, Kayworth, and Leider, 2006:191-224; Chang and Lee, 2007:295-301; Stock, McFadden and Gowen, 2010:7-26).

From the results and above review it can be surmised that the responses in this category reflect the current status on how organisations selected, gathered, analysed or reviewed, managed and improved their quality data, information and knowledge assets within the organisation. The results suggest that the organisations in this study were better at data capture; however, they displayed opportunities in analysis and conversion of this data to knowledge.

5.2.6 B5—Workforce

Powell (1995:15-37), in a study on quality management's competitive advantage, demonstrated that the success of quality programmes does not depend as much on aspects of technical rationality, such as improved measurement or policies, but depends on conditions related to employee behaviour, culture and leadership. Thus, essential in a quality management approach is a strong focus on employee involvement. According to Hoogervorst, Koopman and van der Flier (2005:92-106), the competence and contributions of an employee are viewed as a prerequisite and, as such, the possibilities for employee development are also created.

The Workforce Focus (B5) category in this research investigated the organisations" ability to assess employee capability and capacity needs. It also looked at how organisations provided training or development to build an employee environment conducive to performance of quality work. Thereafter, the category examined how employees participated in achieving required quality outputs, including undertaking the role of a change agent for new organisational priorities.

Table 21: Mean and Chi- square values for category Workforce Focus

B5	Workforce Focus	Mean	p-value Pos. in Org.	p-value Exp. in Org.	p-value Org. Size	p-value Formal QM Prog.	p-value Org. Type
B5.1	The extent to which your organisation manages workforce capability and capacity, including skills, competencies and staffing levels, to accomplish quality work	3.62	0.732	0.246	0.583	0.795	0.408
B5.2	The level at which your organisation and senior leaders develop and train members of your workforce, including leaders, to achieve high quality performance	3.86	0.819	0.183	0.418	0.166	0.704
B5.3	The extent to which employees/teams are held responsible for the output of their process	3.58	0.837	0.489	0.703	0.484	0.316
B5.4	The extent to which workforce/nonsupervisory employees participate in quality decisions through teams	3.58	0.958	**0.006**	0.425	0.865	0.079
B5.5	The extent to which business functions participate and collaborate in quality improvement and innovations decisions	3.62	0.982	0.235	0.838	0.435	0.052
B5.6	The extent to which the quality professional acts as a change catalyst and change facilitator for new organisational priorities	3.70	0.948	0.426	0.312	0.820	0.127
B5	**Overall Mean**	**3.66**					

It can be noted from Table 21 that all questions scored mean values closely and consistently, with a range between 3.58 and 3.86. The overall mean value for Category B5 indicates that the responses to all questions within this category were between medium and high levels.

The p-values in Table 21 indicates that the entire category, similarly to B4, achieved p-values >0.05, besides a single value for Question B5.4 relating to the variable experience in organisation. Overall, the null hypothesis for this category can be accepted. There is no possible explanation conceivable for the low p-value, or the differences in scoring for Question B5.4.

Figure 16 displays the breakdown per question in Category B5. The scores across all questions indicate performance levels for this category generally between medium to high on the Likert level. The hypothesis tests show that the majority (ninety seven percent) of the independent variables tested against the questions within the category all returned similar responses. Thus, these independent variables did not have any impact on Category B5.

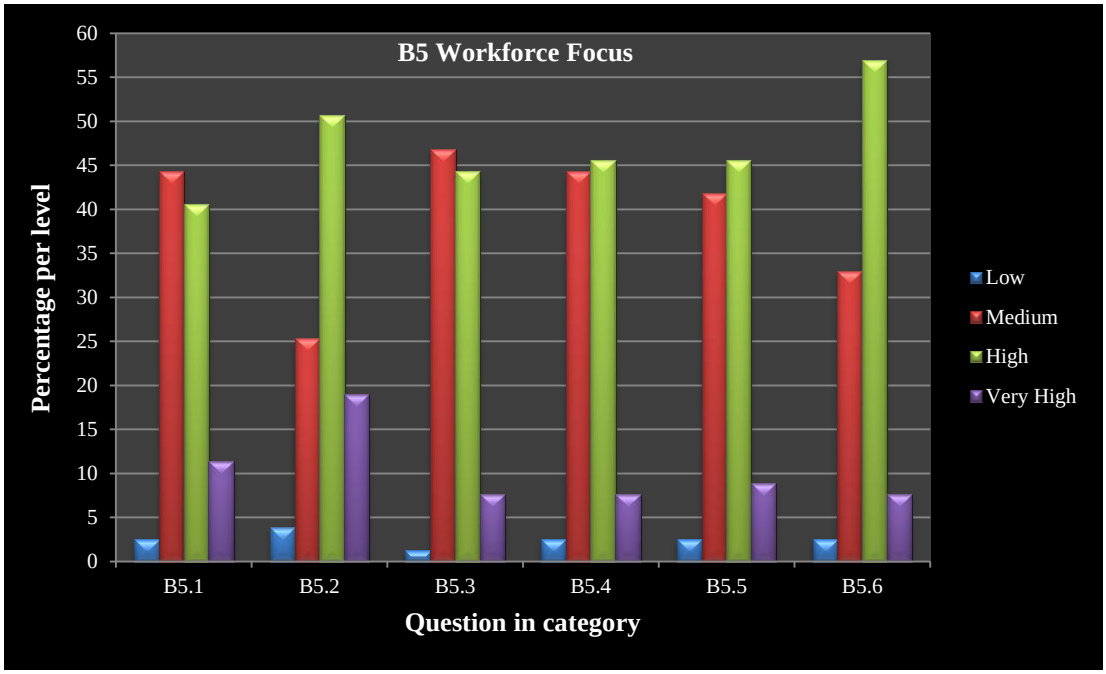


Figure 16: Percentage split of responses for category Workforce Focus

Insights from prior studies (Flynn, Schroeder and Sakakibara, 1995:659-691; Howard and Foster, 1999:5-22; Langbert, 2000:85-101; Bayo-Moriones and de Cerio, 2001:251-259; Kaynak, 2003:1-31; Bou and Beltrán, 2005:71-86) provide empirical evidence that practices such as employee involvement, employee training, and employee performance recognition have a particularly important impact on quality management implementation. In addition, research on quality approaches, tools and techniques by Sila and Ebrahimpour (2003:235-268); Nair (2006:948-975); Zu and Fredendall (2009:41-54) and Hagen (2010:54-67) further support the need for focus on employees in quality management. These researchers have shown employee focus practices assist organisations to develop a competent, committed work force for problem solving, continuous improvement, innovation, participation in decision-making processes and teamwork.

The studies mentioned above can be used as a reference to motivate that the participating organisations within this study have an opportunity to create further focus on their employees in order to leverage more impact on their quality management implementation. Hence, in summary, this category should be recognised as one of the important sources of competitive advantage (Schuler and MacMillan, 1984: 241-255) for all organisations. Yang (2006:162-173) maintains that employee focus supports an organisation's quality management effort by reinforcing employee relationships and group consciousness of the need for customer satisfaction, raising employee competence, and helping them to achieve a cultural change by involving members in quality decision making. Linking to the problem statement in this study, focus on employees involved in quality management practices can act as a reversal to the insecurity noted amongst quality professionals. It can also act as an enabler in attracting new professionals to the quality management discipline.

This category (B5) indicates similar responses for all questions and organisations. It is therefore reasonable to infer that all organisations in this study were at similar levels in their ability to assess employee capability and capacity needs, provide training or development to build an employee environment conducive to

performance of quality work and examine how employees participated in achieving required quality outputs, including undertaking the role of a change agent for new organisational priorities.

5.2.7 B6—Quality and Process Management

Sharma and Kodali (2008:599-621), in a study evaluating TQM implementation elements for manufacturing excellence, reported that sixty percent of authors who write on quality management or award frameworks claim process management as an element for total quality excellence. These authors affirm that process management encompasses the systems and procedures for establishing quality in the many shop floor activities involved in manufacturing. Furthermore, Sharma and Kodali (2008:599-621) and Calhoun (2002:45-53) claim that process management has been given a lot of attention from management. Specifically, this takes place through the use of various tools and techniques such as SPC, ISO 9001, Taguchi techniques, resources management, and Total Preventative Maintenance (TPM), which align to effective design, a prevention orientation, linkage to suppliers and partners, focus on supply chain integration, operational performance, cycle time and evaluation, continuous improvement and organisational learning.

Category B6, using the above definition, consisted of the most number of questions (eighteen) and covered a broad scope of quality measurement and management systems. The questions within this category attempted to classify quality practices as either infrastructure or core quality practices. According to Laohavichien, Fredendall, Stephen and Cantrell (2009:7-24) infrastructure consists of the organisation's internal practices that demonstrate management support in integrating not only its internal relationships, but also those with customers and suppliers. Aligned with this thinking is prior research by Flynn, Schroeder and Sakakibara (1995:659-691), which established that higher levels of the infrastructure and core quality management practices improved quality performance.

Table 22 provides the mean values and p-values for category B6.

Table 22: Mean and Chi- square values for category Quality and Process Management

B6	Quality and Process Management	Mean	p-value Pos. in Org.	p-value Exp. in Org.	p-value Org. Size	p-value Formal QM Prog.	p-value Org. Type
B6.1	The extent to which the quality management is guided by management systems certification systems, e.g. ISO9001	4.38	**0.043**	0.756	0.532	0.894	0.435
B6.2	The level at which the design and operation of your organisation's current quality management systems contribute to customer value, profitability or financial return, organisational success, and sustainability	3.94	0.412	0.964	0.767	**0.001**	0.325
B6.3	The level at which your current quality management system allows for revisions, including incorporation of input from customers, suppliers, partners and collaborators, as appropriate	3.82	0.780	0.887	0.668	**0.002**	0.357
B6.4	The level at which the design and operation of your organisation's current quality measurement system ensures that all key processes and product/service requirements are measured and managed	4.03	0.312	0.993	0.746	0.425	0.559
B6.5	The level at which the design and operation of your organisation's current quality measurement system ensures clarity of product/service specifications and procedures and new design is reviewed before the product/service is produced	3.91	**0.024**	0.427	0.382	0.234	0.165
B6.6	The level at which the quality-at-source philosophy, whereby the workforce is totally responsible for the measurement of and corrective action for quality, are successfully implemented throughout your organisation	3.45	**0.001**	0.473	0.135	0.175	**0.000**
B6.7	The level at which the quality professionals are responsible for production quality control	3.63	0.529	**0.033**	0.085	0.546	0.067
B6.8	The level at which the quality professionals are responsible for production quality assurance, e.g. coaching, teamwork, audit, training and support	3.61	0.989	0.125	0.097	0.668	0.062
B6.9	The level at which the quality professionals are responsible for improving operational excellence	3.56	0.877	0.352	0.932	0.284	**0.031**
B6.10	The level at which statistical tools and techniques (control charts, Pareto charts, histograms, cause-and-effect diagrams, etc.) are successfully implemented throughout your organisation	3.42	0.809	0.845	0.335	0.459	**0.002**
B6.11	The level at which six-sigma methodologies, tools and techniques are successfully implemented throughout your organisation, supporting the execution of strategic business unit objective through projects	2.97	0.159	0.014	0.250	0.760	**0.017**
B6.12	The level at which a formal supplier certification process is in place to ensure that suppliers have the required quality assurance systems in place to address all Critical to Quality (CTQ) requirements of your business, minimising need for receiving inspection	3.96	0.993	0.999	0.344	0.015	**0.074**
B6.13	The level at which the design and operation of your organisation's current quality measurement system allows for the incorporation of new technology, organisational knowledge, and the potential need for agility in the design of the quality measurement process	3.75	0.009	0.655	0.303	0.465	**0.178**

Table 22: Mean and Chi- square values for category Quality and Process Management (continued)

B6	Quality and Process Management	Mean	p-value Pos. in Org.	p-value Exp. in Org.	p-value Org. Size	P -value Formal QM Prog.	p-value Org. Type
B6.14	The level at which the design and operation of your organisation's current quality measurement system allows for the minimising of costs of inspections, tests, and process or performance audits, as appropriate	3.47	0.687	0.746	0.518	**0.002**	**0.037**
B6.15	The level of confidence that the day-to-day operations of your organisation's quality measurement system meets key process requirements and prevents defects, service errors and rework and minimises warranty costs or customers' productivity losses, as appropriate	3.67	0.403	0.790	0.400	0.637	**0.000**
B6.16	The extent to which the workforce's, customers', suppliers', partners' and collaborators' inputs are used in managing and problem solving for quality, as appropriate	3.65	**0.000**	0.384	0.714	0.539	**0.000**
B6.17	The level of confidence that your current quality measurement system supports improvements to achieve better performance, to reduce variability and non-conformances, to improve product quality, and to keep the processes current with business needs and directions	3.89	0.893	0.996	0.141	0.933	0.278
B6.18	The level of confidence that your current quality measurement system supports quality improvements and lessons learned are shared with other organisational units and processes to drive organisational learning and innovation	3.87	0.876	0.994	0.122	0.916	0.618
B6	**Overall Mean**	**3.72**					

The analysis of the results for category B6 highlights an overall mean value of 3.72. This indicates a "medium" to "high" level of practices for quality and process management across all questions. Question B6.1 realised the highest mean value for this category. This supports the analysis from Section A (A5 and A6) of the questionnaire, which indicates a high level of subscription to QMPs and management systems across all organisation types within this study.

The lowest-scoring question on average for this category was B6.11. This question related to the level at which Six-Sigma methodologies, tools and techniques were successfully implemented within these organisations. A lower score for this question was conceivable as Six-Sigma, as a business strategy, (Linderman, Schroeder, Zaheer, and Choo, 2003:193-203; Raisinghani, Ette, Pierce, Cannon and Daripaly,

2005:491-505; Kumar and Bauer, 2010:29-46) is relatively new and is not widely practiced.

The p-values from Table 22for this category indicate a total of twenty percent of all variables and questions fell below 0.05. Similar to other categories, the variables organisation position and organisation type display the highest number of p-values <0.05. All questions (B6.1, B6.5, B6.6, B6.13 and B6.16) with significant relationships for variable position in organisation were related to in-depth understanding of quality management systems and operations. Thus, based on the different designations occupied by participants in the survey, the differences could be a reflection of their familiarity with these systems and operations within their organisation. Hence, the null hypothesis for this variable and questions can be rejected.

It was noted that all questions that displayed significant relationships for organisation types were related to continuous improvement outputs using approaches such as quality-at-source, SPC, Six-Sigma, problem solving tools and other pro-active quality measurement systems to prevent defects, reduce costs or improve quality. The null hypothesis for this variable and questions with p-values<0.05 can be rejected. Again, a possible reason is that the different organisation types were at different stages in the implementation of their approaches, tools and techniques for quality management.

Furthermore, comments on continuous improvement can be supported by stating that they are dependent on the maturity and competence of the organisation in using quality tools and techniques. It has been extensively documented in literature (Miyagawa and Yoshida, 2005:526-553; Nguyen and Robinson, 2010:27-41) that continuous improvement practices were primarily used in the United States, Europe, and Japan. Organisations in emerging economies such as Singapore, Malaysia, India, and China only started adopting these practices as the benefits to organisations in developed countries became clear. South Africa can be grouped with other emerging countries in this regard. A further analysis of this variable will be undertaken below.

Variable experience in organisation resulted in two questions (B6.7 and B6.11) with p-values <0.05. The first question (B6.7) referred to the level at which quality professionals are responsible for production quality control. The difference in responses here could possibly be due to the understanding and knowledge of the participants on the role of the quality professional. It could also indicate participants' thoughts on what the quality professional could be responsible for in the future. Thus, the null hypothesis for this variable and these two questions can be rejected.

The reasons for Question B6.11 indicating different responses could be a combination of lack of depth of knowledge and organisational approach to Six-Sigma. Therefore, the impact of experience would not necessarily be based on tenure but more on competence and understanding of Six-Sigma tools. This assumption was premised on the literature that Six-Sigma represents a highly disciplined and statistically-based approach to quality (Snee, 2000:68-72; Antony and Fergusson, 2004:1025-1032; Furtherer and Elshennawy, 2005:1179-1191; Maguad, 2006:179-203). The rationale also aligns with the comments suggested in the mean score commentary. Hence, the null hypothesis for this variable and these two questions can be rejected.

All questions that realised p-values <0.05 for the variable formal QM programme could also be related to management system implementation, similar to the variable designation in organisation. The difference in responses to these questions is likely due to the level of implementation and depth of knowledge on management systems by the participants and their organisations. Hence, the null hypothesis for this variable and questions can be rejected.

The variable organisation size recorded all p-values greater than 0.05. This means that the organisation size had no relationship to the scores for this category. Therefore, the null hypothesis for this category can be accepted.

Figure 17 provides a detailed breakdown of the percentage scores achieved on the Likert level per question in this category. Questions B6.1 to B6.5 returned the

majority (greater than ninety five percent) of the scores in the "medium" to "very high" level range on the Likert level. The content of these questions was related to management systems implementation. Based on the p-values and comments made above on possible reasons for differences in responses to questions related to management systems, these scores were expected. The high level of practice is comprehensible when considering the number of management systems to which the participant organisation subscribed.

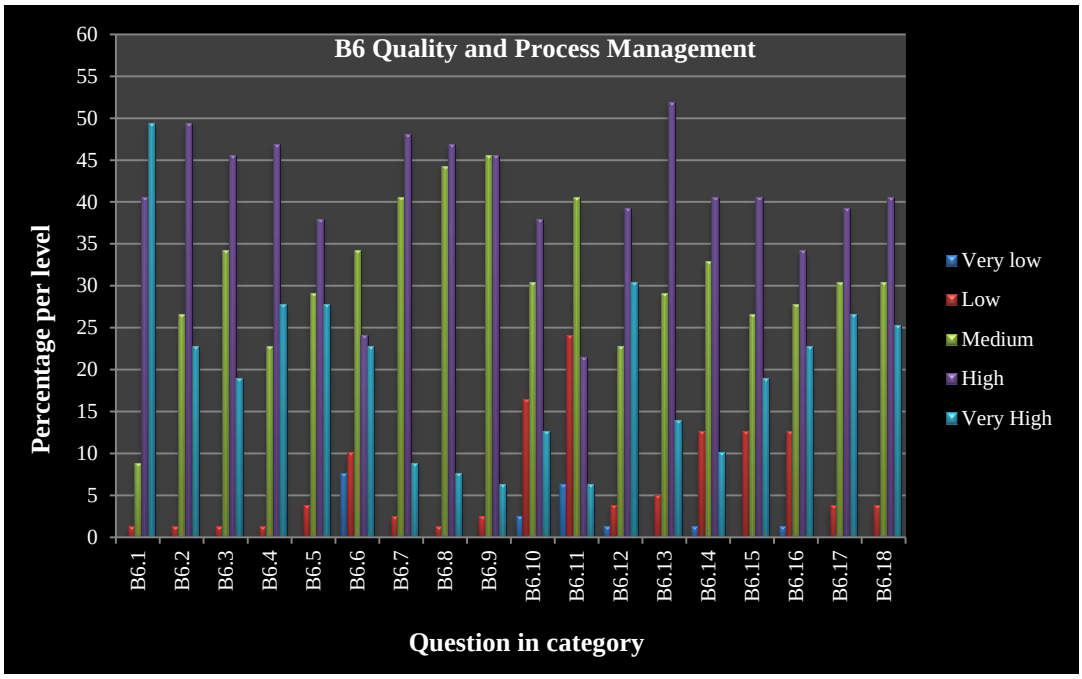


Figure 17: Percentage split of responses for category Quality and Process Management

The next question (B6.6) returned eighty one percent of all variable scores between "medium" and "very high" on the Likert levels. Even though this was a high score, this question also indicated eighteen percent of scores between "low" and "very low". From these results, it can be inferred that a fair percent of the participating organisations did not adopt a "quality at source" philosophy. This suggests that the organisations which scored this question on the "low" side either still adopted quality management practices through a Quality Department or advocated the philosophy of an "end of the line" inspection system.

Question B6.7 to B6.9 addressed the role of quality professionals in the participating organisations. These questions reflected greater than ninety five percent of scores between “medium” and “very high” levels on the Likert level. This was an indication that the quality professional still played an important role in the majority of the participating organisations. Questions B6.10 to B6.12 were related to quality approach, tools and techniques. These questions obtained a much wider range of results, implying either that these practices were varied, or that the participating organisations could be at different stages with the implementation of these practices.

The last six questions in this category (B6.13 to B6.18) probed the effectiveness of the management system to incorporate measurement, continuous improvement initiatives, corrective action and preventative actions and analysis. Although the majority of the results (greater than eighty percent) were between “medium” and “very high” levels, there was also a fair percentage that recorded scores on the “low” percentages. Similar to the previous section, these results suggest that the participating organisations could be at different stages with the implementation of these practices.

A further breakdown of designation in organisation and organisation type can be seen Appendix 9, as these variables demonstrated the most impact in the hypothesis tests for questions in Category B6. The analysis of designation in organisation did not reveal any major insights, besides Question B6.6, which scored a “very low” by two participants, and Question B6.16, which was scored “very low” by one participant. All other questions were scored across the range by most participants, with evidence that there were some participants who scored lowly or highly for all questions.

From Appendix 9.2, it is evident that Organisation One generally produced higher scores than all other organisation types in this category. These scores were significantly higher for Questions B6.6 and B6.12. The responses for B6.6 could be due to a very high degree of presence of quality at source and quality culture in this organisation. A high response for Question B6.12 can be attributed to the mature

supplier management system (as also suggested in Category B3) in this organisation. Organisation Two produced the lowest scores in a number of questions in this category. The low scoring questions (B6.6, B6.10, B6.11, B6.14 and B6.15) imply that quality at source practices were absent in Organisation Two and that this organisation type advocated very low usage of SPC tools and techniques, changes in inspections, audits and confidence in quality systems to act as a preventative assurance system. From the scores returned for these questions, it can be perceived that quality management in Organisation Two depended heavily on a quality control culture.

Overall, Quality and Process Management performed satisfactorily in comparison to other similar empirical studies (Spector and Beer 1994:63-70; Choi and Eboch 1998:59-75; Dowe, Samson and Ford 1999:1-27; Hendricks and Singhal 2001: 269-285; Angus 2005:87-107). Reports from similar studies demonstrate variations in levels of performance across a multitude of questions within respective organisations. Most of these studies motivate quality management as a means of achieving excellence by many organisations around the world. Key insights gained from all of these studies supporting this category and study were that there was no single component that resulted in an improvement and that an improvement can only take place through the collective presence of all or a number of components. Other studies (Saraph, Benson, and Schroeder, 1989:810-829; Ahire, Golhar and Waller, 1996:23-56; Sun, 1999:567-579; Hoegl and Gemuenden, 2001:435-449; Antony, Leung, Knowles, and Gosh, 2002:551; Huarng and Chen, 2002:226-234; Eng and Yusof, 2003:63-77; Kaynak, 2006:355-381; McAdam, Leonard, Henderson and Hazlett, 2008:825-837), which researched similar aspects of process and quality management, present similar conclusions.

In summary, the philosophy that quality and process management are drivers of efficiency and effectiveness within organisations is evidenced by numerous studies (Zairi, Letza and Oakland, 1994:38-43; Flynn, Schroeder and Sakakibara, 1995:659-691; Mohrman, Tenkasi, Lawler III and Ledford, 1995:26-41; Powell, 1995:15-37; Wilkinson, Redman and Snape, 1995:37-51; Escriba-Moreno, Canet-Giner and

Moreno-Luzon, 2008:41-59) carried out over the last decade. The implementation of quality, process management and manufacturing programmes such as total quality management (TQM), just-in-time (JIT), total productive maintenance (TPM), lean and Six-Sigma were introduced to manufacturing organisations (Kristy, Kathleen and Schroeder, 2006:45-60) similar to organisations who participated in this study.

In the current study, it is evident that the majority of the organisations who participated in the survey felt that their level of practice for this category was between "medium" and "very high" on the Likert level. The hypothesis tests displayed twenty percent of all p-values <0.05, with the major contribution resulting from organisation types. Therefore, it can be inferred that organisation types demonstrated the most impact on this category. These results compare well with the studies by Zairi, Letza and Oakland (1994:38-43); Flynn, Schroeder and Sakakibara (1995:659-691); Mohrman, Tenkasi, Lawler III and Ledford (1995:26-41); Powell (1995:15-37); Wilkinson, Redman, and Snape (1995:37-51); Escriba-Moreno, Canet-Giner and Moreno-Luzon (2008:41-59).

Based on the results and above discussion, it can be inferred that Category B6 represents the current state of quality measurement and management systems across FMCG-type organisations in South Africa. The responses from the participants in this study indicate that quality and process management practices vary between organisations. These findings are consistent with the various studies and related literature mentioned above in the discussion and review of this category.

5.2.8 B7—Organisational Performance and Improvement

An organisation's performance and improvement is presented through effective measurement and results. Measuring performance according to the key stakeholders' perceptions not only contributes to a more accurate and realistic picture of organisational results, but also gives important indications of the key areas where improvement is vital (Roethlein, Mangiameli and Ebrahimpour, 2002:48-66; Kanji, 2007:1-10).

Category B7 identified the organisational performance and improvement in key areas related to current and emerging practice; namely, organisational strategy, product quality performance, customer-satisfaction outcomes, corporate social responsibility and sustainable development outcomes that were deemed important to all stakeholders. Performance levels were also examined, relative to those of competitors and other organisations with similar product offerings.

Table 23 and Figure 18 demonstrate a mixed range of results. The outcomes of this category emulate scores already discussed above, from corresponding categories within this section; namely, Strategy Development, Leadership and Commitment by Senior Management and Customer Focus.

Table 23: Mean and Chi- square values for category Organisational Performance and Improvement

B7	Organisational Performance and Improvement	Mean	p-value Pos. in Org.	p-value Exp. in Org.	p-value Org. Size	p-value Formal QM Prog.	p-value Org. Type
B7.1	Performance levels or trends for your organisation in the accomplishment of organisational strategy and action plans	3.65	**0.009**	0.220	0.112	0.103	0.299
B7.2	Performance levels or trends for your organisation in product quality performance that are important to your customers	4.25	0.398	0.842	0.138	0.787	0.379
B7.3	Comparison of performance levels or trends for your organisation in the above (B7.2) with the performance of your competitors and other organisations with similar product offerings	2.92	0.505	0.342	**0.004**	0.336	**0.000**
B7.4	Performance levels or trends for your organisation in customer satisfaction	2.86	0.457	0.506	**0.013**	0.442	**0.001**
B7.5	Comparison of performance levels or trends for your organisation in the above (B7.4) with the performance of your competitors and other organisations providing similar products	2.97	**0.009**	0.775	**0.004**	**0.000**	**0.000**
B7.6	Performance levels or trends for key measures or indicators for your organisation in corporate governance, ethical behaviour and stakeholder trust in the senior leaders	3.94	**0.002**	0.356	0.573	0.219	**0.010**
B7.7	Performance levels or trends for key measures or indicators for your organisation‘s commitment and fulfilment of social accountability and support for communities with corporate social initiatives (CSI))	3.91	0.199	0.314	0.761	0.261	**0.000**
B7.8	Performance levels or trends for key measures or indicators for your organisation’s commitment and fulfilment of environmental responsibilities	3.87	**0.011**	0.207	0.883	0.163	**0.023**
B7	**Overall Mean**	**3.55**					

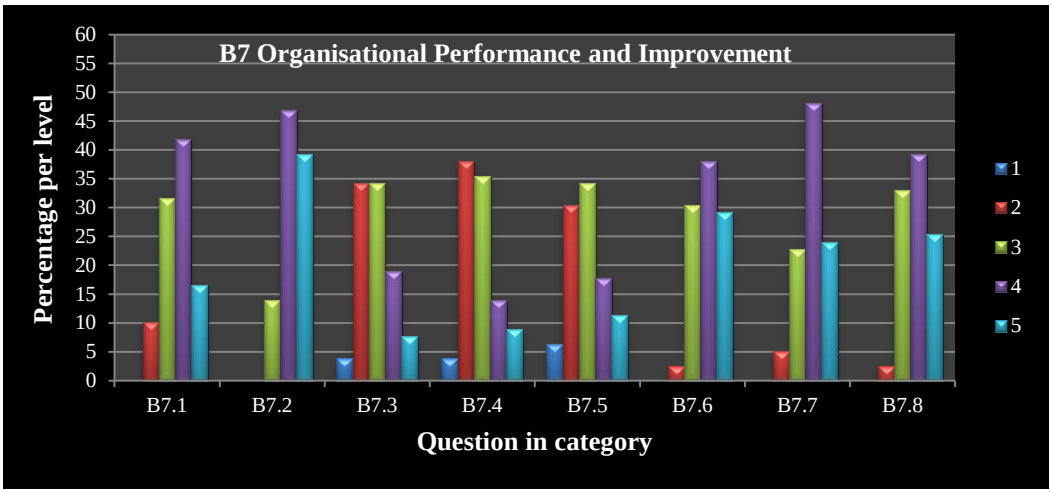


Figure 18: Percentage split of responses for category Organisational Performance and Improvement

Question B7.1 produced similar scores to Category 2 (Strategy Development). The explanation for this satisfactory result could be very similar to that given for Category 2. However, reviewing literature (Thompson and Strickland, 2003:365), other studies (Flood, Dromgoole, Carrol, and Gorman, 2000:2; Kaplan and Norton, 2000:1; Hrebiniak, 2005:17) and a study undertaken specifically in South Africa (Jooste and Fourie, 2009:52-68), there is a growing recognition that the most important problems in the field of strategic management are not related to Strategy Development, but rather to strategy implementation.

The question with the highest mean score for this category was related to product quality performance and trends that were important to the customer (B7.2). This question aligned well to the question in Category B1 relating to leadership and commitment by senior management on product quality performance. The result of this question can be regarded as excellent. It is hoped that the responses for this question encompasses customer satisfaction in context of the current emerging trends identified in this study.

Questions B7.3 to B7.5 produced the lowest mean scores in this category. The questions in this group were specifically directed to Customer Focus and competitor analysis. These scores were very similar across all organisation types and

corresponded with Category 3 (Customer Focus). The next questions, namely B7.6 to B7.7, focused on corporate social responsibility and environmental sustainability. The answers to these questions exhibit similar patterns to those for questions B1.4 to B1.7 from Category B1, thus similar comments apply, that corporate social responsibility and environmental sustainability is at a level of infancy in many organisations,.

The p-values in Table 23 for this category display thirty five percent of results with significant relationships or p-values below 0.05. The variable organisation type recorded the highest number of significant relationships, with only Questions B7.1 and B7.2 realising p-values >0.05. The possible explanation for Questions B7.1 and B7.2 having similar responses is that they have well-entrenched performance indicators. Evidence of this is seen in Categories B2 and B1, respectively. Also, there could be synergies between these questions and Category B4 on the ability to collect and analyse quality data. Therefore, the explanations for all other questions with p-values less than 0.05 can be assumed as previously discussed in the corresponding categories. Appendix 6.2 provides a detailed breakdown of organisation types that can be used to support this.

For variable position in organisation, Questions B7.1, B7.5, B7.6 and B7.8 displayed p-values <0.05. The different responses to these questions could be explained by the individual participants direct responsibility towards tracking and being updated on the different performance indicators. The difference in responses for Questions B7.3, B7.4 and B7.5 for the variable organisation size could likely be due to the type of organisation and its basis of competitive strategy. For example, an organisation that provides a niche product and has a huge market share may not be very concerned about competition when compared to an organisation that has a low market share and a number of other organisations offering similar products. These responses are aligned to Category B3. A further breakdown of responses per designation for this category can be viewed in Appendix 10.1. However, there are no further insights to be drawn from this breakdown. For the variables and questions discussed with p-values <0.05, the null hypothesis can be rejected.

Formal QM programme as a variable produced a single p-value <0.05 for Question B7.5. The significant difference in responses to this question could be linked to the management systems to which the organisations were affiliated and the specific requirement by these management systems to evaluate competitor performance and product offerings. Finally, the variable experience in organisations returned all p-values >0.05. For this variable, the null hypothesis can be accepted as all questions were answered similarly by all participants.

In summary, organisational performance and improvement feature as key ingredients of an organisation's quest for excellence. There are several literature studies claiming that the results of organisational performance and improvement can be viewed as a performance measurement system reflecting the corporate strategy and overall business objectives of an organisation (Jochem, Menrath, and Landgraf 2010:410-422). On the other hand, there are some reviews that argue that organisations achieve acceptable organisational performance and improvement just by instilling an appropriate quality culture without formally adopting quality management programmes (Kanji and Yui, 1997:417-428, Smith, Barnes and Townsend, 2002:855-861).

From the review of the results of Category B7, it can be inferred that organisations in South Africa who participated in this study ranged generally between "medium" and "high" levels on the Likert level. In comparing results of similar studies conducted by other authors such as Powell (1995:15-27); Dowe, Samson, and Ford (1999:1-27); Huarng and Chen (2002:226-234) and Jabnoun and Sedrani (2005:8-20) in different industries, it can be concluded that the success of similar KPIs may vary between organisations and possibly countries, based on their approach to quality management and their individual strategies. Therefore, this category represents the organisational performance and improvement in key areas related to current and emerging practices for organisations in this study. These key areas include organisational strategy, product quality performance, customer-satisfaction outcomes, corporate social responsibility and sustainable development outcomes that were deemed important to all stakeholders.

5.3 Section C

Section C of the questionnaire focused on current thinking on quality management, emerging trends and a proposed framework for quality management for the future. This section consisted of three categories (C1, C2 and C3) and a total of twenty seven questions that required either answers on a Likert level or were open-ended. The details on the number of questions, their types and Likert levels will be described under each category.

5.3.1 Reliability tests of the categories for current practices in quality management

A complete list of the Cronbach Alpha values for all categories and variables for Section C of the questionnaire can be found in Appendix 6. The results shown in Appendix 6 indicate that there were four items that increased the reliability within the various categories (variables C1.3, C1.4, C2.3 (d) and B3.4). It was decided not to delete these items because they would not significantly increase the reliability of the category in which they occurred.

Table 24: Cronbach Alpha values for Section C: Current Thinking in Quality Management within Selected Manufacturing Organisations

	Section C: Current Thinking in Quality Management Perceptions	**Cronbach Alpha Values**
C1	Current Views on Quality Management	0.80
C2.1	Awareness of Emerging Trends	0.83
C2.2	Impact of Emerging Trends on day-to-day operations	0.72
C2.3	Opportunity to Manage Emerging Trends in QM	0.81
C3	Views on Proposed Framework	0.87
C	**Overall**	**0.88**

The results shown in Table 24 reveal that the Cronbach Alpha values of all the categories within Section C of the survey questionnaire were greater than 0.70. Hence, it is assumed that the instruments and measurements were reliable and the results internally consistent. Thus, current views on quality management, emerging trends and a proposed framework for quality management for the future are accepted

as the categories of current thinking in quality management within selected manufacturing organisations.

Based on the reliability obtained for Section C, descriptive tests and hypothesis testing using the chi-square test at ninety five percent confidences were undertaken to further understand current quality practices within selected manufacturing organisations in South Africa. All p-values <0.05 will be highlighted, indicating a relationship between the chi-square value and the variable.

5.3.2 C1—Current Views on Quality Management

This category (C1) consisted of six questions that focused on the current and future views on quality. The first four questions (C1.1 to C1.4) in this category requested responses on a five-point Likert level. For the ease of statistical analysis, the scores on the Likert level were converted to numeric values as follows, "strongly agree" (5), "agree" (4), "unsure" (3), "disagree" (2), and, "strongly disagree" (1). The last two questions (C1.5 and C1.6) were open-ended questions.

Table 25: Mean and Chi- square values for category Current Views on Quality Management

C1	Current Views on Quality Management	Mean	p-value Pos. in Org.	p-value Exp. in Org.	p-value Org. Size	p-value Formal QM Prog.	p-value Org. Type
C1.1	Level of agreement that quality is currently at a crossroads and thus requires an evolution and re-positioning to be relevant to meet today's business demands.	3.95	**0.00**	**0.01**	**0.00**	0.66	**0.01**
C1.2	Level of agreement that the above (C.1.1) is due to quality still being "stuck" with the same thinking from the 70s and 80s and that the historic teachings of Deming/Juran and others from then is still providing the framework for its practice today.	3.62	**0.00**	0.16	**0.04**	**0.00**	**0.00**
C1.3	Level of agreement that Quality should evolve beyond the thinking from the 70s and 80s, which exclusively focused on production and processes.	4.14	**0.02**	0.25	**0.00**	0.34	0.46
C1.4	Level of agreement that that Quality should evolve to become more consumer, community and planet-focused.	4.46	**0.00**	0.41	**0.04**	0.63	**0.00**
C1	**Overall Mean**	**4.04**					

The overall mean value for questions C1.1 to C1.4, as illustrated in Table 25, on the Likert level, was 4.04. This score represents a high level of agreement that quality

management is currently at a crossroads and thus possibly requires an evolution. In addition, this score implies that the new evolution of quality management should move beyond the thinking of the 1970s and 1980s, which focused exclusively on production and processes and should become more consumer, community and planet-focused.

The following deductions were drawn on the hypotheses related to Category C1 based on p-values displayed in Table 25. Thirteen out of twenty instances (sixty five percent) display a significant relationship between the questions and variables. The variable position in organisation and organisation size returned p-values <0.05 for all questions. Variable organisation type each recorded four out of five (eighty percent) questions with p-values <0.05. This can be used to confirm that there was a relationship between designations in organisation, organisation size and organisation types with thinking about quality management. For all of these variables and question, the null hypothesis can be rejected. A further analysis of these three variables will be undertaken below.

Variables experience in organisation and formal QM programmes do not show significant relationships, except a single question in each variable returning a p-value below 0.05. Overall, it can therefore be assumed that these variables have no relationships with thinking about quality management within these organisations. Therefore, the null hypothesis for these variables and questions can be accepted.

Figure 19, below, provides a more detailed breakdown of the percentage scores achieved on the Likert level for questions in Category C1. A closer examination of the scoring of Figure 19 reveals that Questions C1.1 and C1.2 had agreement levels of seventy nine percent and seventy percent respectively; however, they also had a disagreement score of fifteen percent and twenty two percent, respectively. This demonstrates that a fair number of participants did not agree that their quality management was outdated. Questions C1.3 and C1.4 display eighty six percent and ninety six percent agreement, respectively, that quality management requires an evolution going forward that should be more consumer, community and planet-

focused. This thinking aligns with the new scope proposed for quality management in this study.

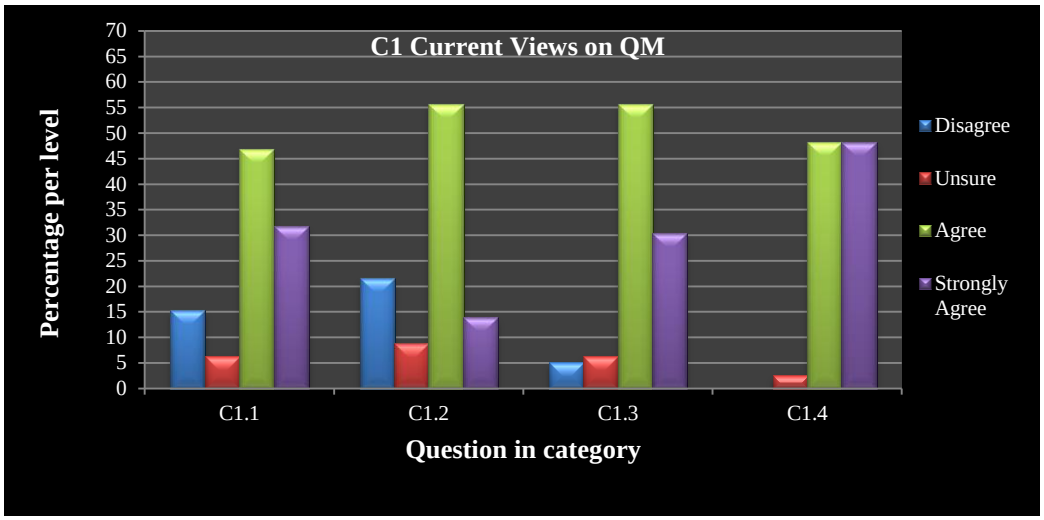


Figure 19: Percentage split of responses for category Current Views on Quality Management

As per the analysis in Section A of this chapter, it was evident that many of the participating organisations in this survey were Suppliers. Thus, the reason for the fifteen percent and twenty two percent "disagree" responses in questions C1.1 and C1.2 can be ascribed to the nature of their operations in which their line of sight will continue to be their immediate customers who utilise their products for packaging purposes. Customer satisfaction for the Supplier organisation will therefore continue to focus on their production and process aligned to current thinking, as raw material quality and consistency will continue being vitally important to the customer organisations.

Appendix 11 provides a breakdown analysis of the designation in the organisations, organisation size and organisation types, as they demonstrated the most impact in the hypothesis tests for questions in Category C1. From an evaluation of the first two variables (designation in the organisations, organisation size) there were no major differences other than some participants who responded with high levels of agreement, whilst there were some who responded consistently on the low side. An observation on the variable size of organisation was that organisations with >1000

employees displayed higher mean values for all questions within this category. Perhaps it can be inferred that large organisations are more aware of the current gaps and potential for quality management. This can be supported with discussions highlighted in Chapter 2, Section 2.1 of this study.

On the organisation type analysis, as can be seen in Appendix 11.3, all organisations, besides the Supplier, returned a mean value greater than 4. The Suppliers' organisation type rated this question lowest overall with an average mean value of 3.7. The Suppliers' responses could be due to the nature of their relationship with their customers, wherein there is a production-driven culture rather than a consumer or stakeholder-driven one.

The above responses and commentary are aligned to emerging debates and research (Sebastianelli and Tamimi, 2003:45-56) on the current and future status of quality management. Some of these debates and researches consider quality management outdated, whilst others suggest that organisations still pursue a competitive advantage through improved quality and satisfied customers. However, the main arguments of this category are supported by various studies: Robinson and Malhotra (2005:315-325); Foster and Ogen (2008:6945-6961); Gutner and Adams (2009:1-31); Ogden, Wallin and Foster Jr. (2010:21-34). These authors are of the opinion that quality management has been traditionally the domain of operations managers, who focused primarily on processes inside the organisation. To a large degree, many organisations still adhere to this mode. Therefore, these authors are of the opinion that at present, an evolution and externalisation of quality practices is required, which must advance even further from a traditional internal process and product-based mindset to an inter-organisational supply chain orientation involving customers, suppliers, and an external orientation including all other stakeholders. Thus, the new scope for quality management for the future, which is proposed by the current study, is aligned to the thinking of these authors. In doing so, quality management will address the current emerging trends, business challenges and market demands.

5.3.2.1 Question C1.5 and C1.6: Open-ended questions

The questionnaire consisted of four open-ended questions. The analysis of all the open-ended questions was conducted by counting the number of responses from the population of the participants making similar comments and was represented as percentages. The first two open-ended questions, namely C1.5 and C1.6, will be discussed in this sub-section.

Question C1.5: Describe briefly your views on the key outputs that quality needs to deliver?

Table 26: C1.5 Responses on the outputs for Quality Management

	Quality Outputs	Percent
1	Comply to quality standards and systems in place to guarantee customer satisfaction	27.8%
2	Supply the customer with what he wants at an economical cost and at the right time	21.5%
3	Quality department responsible for key programmes to get a functional product to the customer	20.3%
4	Constant repetitive predictability	16.5%
5	First time right at the best price	13.9%
6	Consistency	13.9%
7	Continuous improvement	12.7%
8	Training programmes, data collection and driving good quality practices	7.6%
9	Process streamline	5.1%
10	Holistic view from product, service and planning	3.8%
11	Customer safety	3.8%
12	Food safety	3.8%
13	Employee satisfaction	3.8%
14	Adhere to legislation	3.8%
15	CTQ customer parameters	2.5%
16	Suitable packaging for its purpose	2.5%
17	Hygienic and safe working environment	2.5%
18	No risks	2.5%
19	Customer complaints are treated with urgency	2.5%
20	Environmental practices must be adhered to - waste management	2.5%
21	Auditing to ensure compliance	2.5%
22	Profitability	2.5%
23	The entire organisation is responsible for quality	1.3%

Table 26, above, displays a list of the responses from all participants in the survey for Question C1.5, on key outputs that quality needs to deliver. The three most common outputs for quality management identified by participants in the survey were all in some form customer-focused. Other outputs, as shown in Table 26, identified more than once by the participants, were: consistency; constant repetitive predictability; first time right at the best price; continuous improvement; training programmes, data collection and driving good quality practice; process streamline; and customer safety.

The need for meeting and satisfying customer expectations was noted as the common theme as it has been synonymous with quality management throughout its history. This notion is further supported by a definition for quality in the 1980s, in which Deming expressed quality as meeting or exceeding customer expectations (Knouse et al, 2009:449-4610). However, in evaluating the other responses by the participants in this study, it can be inferred that the participants in this study still see quality management through the same lens as in the 1970s and 1980s and that the main thrust of the outputs offered for quality management is still very internally and process-focused.

Based on the above review, it is perceived that the outputs suggested by the participants in this study confirm that quality management at present still largely resembles practices from the 1980s and 1990s. These outputs only minimally take into account emerging trends that are influencing current business strategy when compared to the motivation and Chapter 2 of this study. Hence, in order for quality management to better support organisations in addressing current business challenges and market demands, perhaps the outputs of the discipline need to be extended to address all the identified emerging trends more comprehensively. It makes good business sense that quality management should adopt the outputs proposed for the new scope of quality management, as motivated in this study.

Question C1.6: Describe briefly your views on the key roles of quality professionals?

Table 27: C1.6 Responses on the outputs for Quality Professionals

	Quality Professional Outputs	**Percent**
1	Total quality management: Standards	22.8%
2	Training programmes	17.7%
3	Leadership, decision-making responsibility	12.7%
4	Key statistical information to make strategic decisions	11.4%
5	Work with suppliers and clients on material and product standards	10.1%
6	Continuous improvement	10.1%
7	Passion for the profession and knowledge of work requirements	8.9%
8	Good communication skills and teamwork	8.9%
9	Focus on and address problems	7.6%
10	Resource to the company and play a supporting role	7.6%
11	Continuous monitoring	7.6%
12	Innovation	7.6%
13	Proactive	6.3%
14	Reducing waste	5.1%
15	Good support base	5.1%
16	Maximising output	2.5%
17	Easily accessible	2.5%
18	Risk management	2.5%
19	Price improvement	1.3%
20	Protecting the brand	1.3%
21	Draft systems and procedures that guide the business	1.7%
22	Consulting with employees	1.3%
23	Problem solving skills	1.3%
24	Engage across various functional areas in production	1.3%
25	Adhere to legislation	1.3%
26	Implement SHEQ to ensure SHEQ first time in control	1.3%

Question C1.6 as displayed in Table 27 indicates the top three roles identified for the Quality professional as custodians of quality management standards, leaders of training programmes and leaders with decision making responsibility.

Other roles for quality professionals that featured, to a certain degree, in the responses of most participating organisations included that quality professionals should provide key statistical information and make key strategic decisions; lead continuous improvement; work with suppliers and customers on material and product

standards; be good communicators and team players; be passionate about quality and knowledge management; get involved in innovation; be proactive; focus on problem solving and play a supportive role to the value chain.

The insights drawn from the responses to the above two questions (C1.5 and C1.6) support the notion that perceived outputs and roles of quality management and the quality professional were largely dated in the definitions of quality control and quality assurance. Spichiger (2002:31-36) can be used to support the implied outdated notion mentioned. He reported a very different set of outputs provided by ASQ's membership and market research department's survey of Fellows in 2002 for quality professionals. This survey was aimed at gathering their insights and perspectives on the changing roles of the quality professional. The following five major roles were noted from their comments. In the future:

- The quality professional will have more of a business focus and will be more active within leadership than previously.
- Quality professionals will be the champions of ethical business practices.
- Quality will continue to shift from compliance toward assessment and education.
- Quality technologies will be applied in new fields and industries, including homeland defence, security and public transportation.
- The quality professional will provide an increasing amount of value to organisations, primarily by delivering solutions.

From Table 27, it is evident the there is a non-alignment between the responses of the participants in this study and the outputs provided by Spichiger (2002:31-36). However, it is worthy to note that the outputs provided by Spichiger (2002:31-36) are more aligned to the thinking of the new scope for quality management proposed by this study.

From the responses to all of the questions in Category C1, it is evident that quality management is ready for a new evolution.

5.3.3 C2—Views on Emerging Trends

The relevance of this category is to test the awareness and views on the identified key trends; namely, globalisation, customer power and sophistication, social responsibility and environmental sustainability consciousness, which two studies, (2008 ASQ Futures Study and The Conference Board's Quality Council report in 2008), declare as major opportunities for quality management going into the future (ASQ Futures Study, 2008:43-46; Gutner and Adams, 2009:6).

This section consisted of three sub-categories; namely, awareness of emerging trends (C2.1), the impact of these trends on the day to day operations of organisations (C2.2) and opportunity of managing these emerging trends using a quality approach, tools and techniques (C2.3). The responses for each sub-category will be discussed individually.

5.3.3.1 C2.1—Awareness of Emerging Trends

Sub-category C2.1 requested participants to rate their awareness of emerging trends on a five-point Likert level. For the ease of statistical analysis the scores on the Likert level were converted to numeric values as follows: "highly aware" (5), "aware" (4), "neither aware nor unaware" (3), "somewhat unaware" (2) and "totally unaware" (1).

Table 28: Mean and Chi- square values for sub-category Awareness of Emerging Trends

C2.1	Level of awareness of these identified emerging trends of your organisation	Mean	p-value Pos. in Org.	p-value Exp. in Org.	p-value Org. Size	p-value Formal QM Prog.	p-value Org. Type
C2.1 (a)	Globalisation	4.24	0.22	**0.02**	0.48	0.72	0.98
C2.1 (b)	Increasing customer power and sophistication	4.51	0.97	0.07	0.11	0.86	0.93
C2.1 (c)	Growing need for more innovation within organisations	4.46	0.94	0.35	**0.01**	0.20	0.54
C2.1 (d)	Increasing food safety requirements from organisations	3.80	**0.00**	**0.02**	**0.01**	0.12	**0.00**
C2.1 (e)	Increasing social responsibility commitments from organisations	4.03	0.10	0.12	0.13	0.12	0.16
C2.1 (f)	Increasing environmental sustainability consciousness and commitments from organisations	4.01	**0.01**	0.34	0.31	0.16	**0.04**
C2.1	**Overall Mean**	**4.17**					

Table 28 illustrates the results of Sub-category C2.1, which indicates ratings between "aware" and "highly aware" on the Likert level for all questions, besides Question C2.1.d. Food safety (C2.1.d) scored the lowest mean value on awareness amongst the emerging trends. This "low" mean value could be attributed to the recent focus on food contamination incidents, rather than the focus that was given in the past (Surak, 2007:21-27).

From Table 28, four of the five variables display two instances of p-values <0.05. Food safety management returned a p-value <0.05 across the four variables; namely, designation in organisation, experience in organisation, organisation size and organisation type. The differences in responses for the awareness of food safety management confirm the comment made above for the low mean value returned for this trend. Also, an analysis of Section A, Question 6 can perhaps be used to provide reasons for the significant differences in responses to this trend. Section A, Question 6 recorded a "low" percentage of organisations that subscribed to ISO 22000, the food safety management system introduced by the International Organisation for Standardisation (Surak and Lorca, 2007:1-7) and HACCP certifications. The lowest subscription to these management systems was from the suppliers, as most of these organisations produce a tertiary packaging raw material, which did not come in direct contact with food products. Based on the p-values, the null hypothesis for the four variables in this trend can be rejected. Thus, it can be inferred that participants from the Supplier organisation would have scored this trend much lower than other organisation types.

Other significant relationships in this sub-category are between the variables experience in organisation and globalisation; organisation size and innovation; designation in organisation; and organisation type and environmental sustainability. Although there is a significant relationship noted with experience in organisation and globalisation, there is no plausible explanation for this. On the other hand, an explanation for the relationship between innovation (C2.1.c) and organisation size could be due to differences in the portfolio of offerings and different structures between the various organisations. However, based on the significant relationships

between the variables and questions highlighted above, the null hypothesis for each of them can be rejected.

The significant result between environmental sustainability (C2.1.f) and variables position in organisation and organisation type can be explained similarly as for Section B Category B1, where the various participants and their organisations, based on their roles and their organisations" operations, could have varying exposure to this trend. Hence, the null hypothesis for these variables and questions can be rejected. Variable formal QM programme returned all p-values >0.05, thus implying that there is a relationship between formal QM programmes and on the awareness of emerging trends. The expectation was that organisations with ISO 22000 and HACCP certifications (food safety management programme) would have higher levels of awareness than those who did not. However, based on the p-values >0.05, the null hypothesis for this variable can be accepted. Figure 20, below, provides a more detailed breakdown of the percentages scores achieved on the Likert level per question in this sub-category.

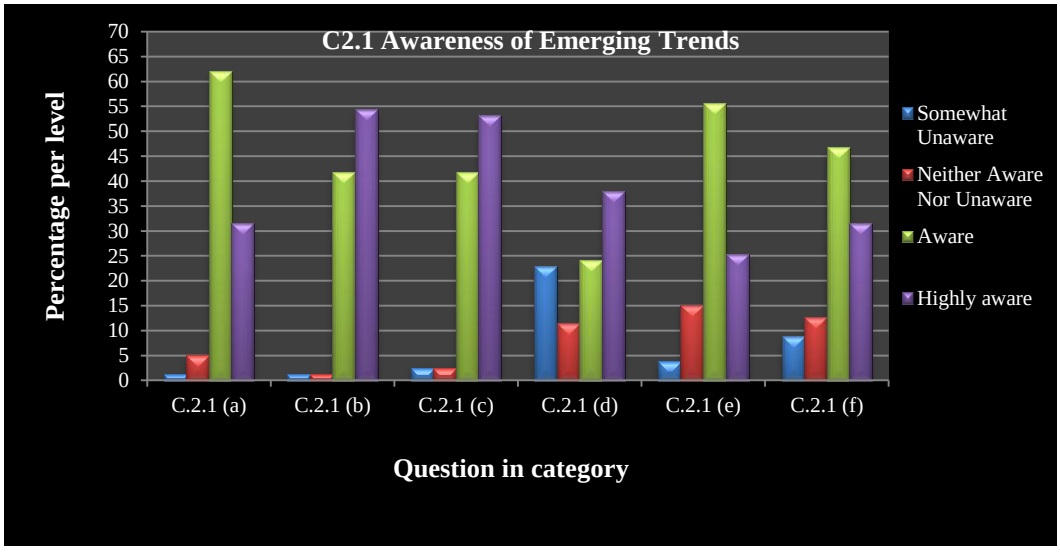


Figure 20: Percentage split of responses for category awareness of emerging trends

The graphs in Figure 20 demonstrate that questions relating to globalisation (C2.1.a), customer power and sophistication (C2.1.b) and innovation (C2.1.c), scored awareness levels of over eighty five percent, thus confirming a high level of

awareness for these trends. Question (C2.1.d), relating to food safety, returned a range of percentage scores spread across the Likert levels. This result supports the comments above, which imply that there was a mixed level of awareness from the participant organisations, based on the infancy of exposure and focus on this trend by individuals and organisations.

Although the last two questions, (C2.1.e and C2.1.f) in this sub-category, scored high on an overall basis on awareness of social responsibility and environmental sustainability, there were a fair number of responses on the lower side of the Likert level. Thus, the perceived reasons for these trends are similar to the comments made above under the discussion for the hypothesis tests. It is evident that most participants were aware of the first three trends (globalisation, customer power and sophistication and innovation) and had a lesser awareness of the last three trends (food safety management, social responsibility and environmental sustainability), probably due to their infancy.

5.3.3.2 C2.2—Awareness of impact of Emerging Trends on day to day operations

For Sub-category C2.2, participants were requested to rate their awareness of the impact of emerging trends on daily operations on a five-point Likert level. For ease of statistical analysis, the scores on the Likert level were converted to numeric values as follows: "highly aware" (5), "aware" (4), "neither aware nor unaware" (3), "somewhat unaware" (2) and "totally unaware" (1).

Table 29: Mean and Chi- square values for sub-category Awareness of impact of emerging trends on day to day operations

C2.2	Level of awareness of the impact these identified emerging trends has on the day to day operations of your organisation	Mean	p-value Pos. in Org.	p-value Exp. in Org.	p-value Org. Size	p-value Formal QMP	p-value Org. Type
C2.2 (a)	Globalisation	3.75	0.11	0.14	**0.01**	0.07	0.20
C2.2 (b)	Increasing customer power and sophistication	4.23	**0.05**	0.32	0.08	**0.00**	0.58
C2.2 (c)	Growing need for more innovation within organisations	4.10	0.44	0.91	0.50	**0.03**	0.70
C2.2 (d)	Increasing food safety requirements from organisations	3.80	**0.00**	0.64	0.05	0.93	**0.00**

C2.2	Level of awareness of the impact these identified emerging trends has on the day to day operations of your organisation	Mean	p-value Pos. in Org.	p-value Exp. in Org.	p-value Org. Size	p-value Formal QMP	p-value Org. Type
C2.2 (e)	Increasing social responsibility commitments from organisations	3.68	0.15	0.70	0.06	0.75	0.44
C2.2 (f)	Increasing environmental sustainability consciousness and commitments from organisations	3.82	**0.00**	0.53	0.44	0.89	0.08
C2.2	**Overall Mean**	**3.90**					

From Table 29 it is evident that C2.2 showed a little lower response on the mean scores in comparison to C2.1. Although the participants had a general awareness of the emerging trends identified in this study, they had a much lower awareness of the impact these emerging trends had on the day to day operations within their organisations.

The p-values <0.05 for Sub-category C2.2 reveal significant relationships with the variables designation in organisation and emerging trends, customer power and sophistication, food safety management and environmental sustainability. Food safety management also displays a lower than 0.05 p-value for variable organisation type. The reasons for the significant relationships between these emerging trends and variables can be assumed to be similar to those discussed in Sub-category C2.1. The significant relationship between the variable designation in the organisation and increasing customer power and sophistication (C2.2.b) aligns with the low and varying results obtained in the category Customer Focus (B3) in Section B.

Customer power and sophistication also displayed a significant relationship (p-values <0.05) with the variable formal QMP, coupled with the trend for innovation. The significance of the relationship of these trends with the variable formal QMP can be attributed to requirements and focus of the management systems programmes such as ISO 9001, ISO 22000, and HACCP, to list a few, to which the organisation was affiliated. This could also explain why all the results in the awareness question (C2.1) were very similar.

The impact of Globalisation on organisational daily operations recorded a solitary result with a p-value <0.05 for the variable organisation size. A relationship or

difference in opinion on the impact of globalisation could be that many of the participant organisations are locally owned and therefore only operate in the local geographic region.

Figure 21 provides a percentage breakdown of the scores, according to the Likert level, for the awareness of the identified trends on the day to day operations of the participant organisations.

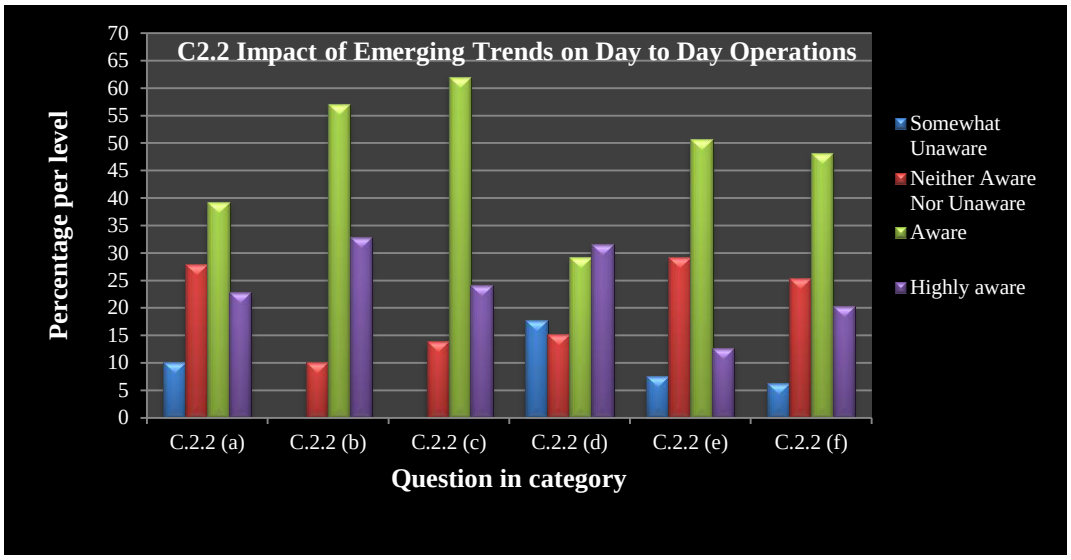


Figure 21: Percentage split of responses for category awareness of impact of emerging trends on day to day operations

The results in Figure 21 confirm a wide range of responses for globalisation. Questions relating to customer power and sophistication (C2.2.b) and innovation (C2.2.c) scored awareness levels of over eighty five percent. It can be inferred that these trends (C2.2.b and C2.2.c), form a core part of the outputs in most of the participant organisations.

The last three questions (C2.2.d, C2.2.e and C2.2.f) can be interpreted as returning very similar results to the awareness part (C2.1) of this section. Therefore, the reasons remain applicable, that these responses can be seen as an indication of the infancy of the awareness of these trends within participant organisations.

5.3.3.3 C2.3—Management of Emerging Trends using quality approaches, tools and techniques

The sub-category of this question requested responses for the opportunity of managing these trends using a quality approach, tools and techniques, respectively. The participants were requested to rate these trends on a level of strongly agree, agree, unsure, disagree or strongly disagree. For ease of statistical analysis, the scores on the Likert level were converted into numeric values as follows, strongly agree (5), agree (4), unsure (3), disagree (2) and strongly disagree (1).

Table 30: Mean and Chi- square values for sub-category Management of emerging trends using quality approaches, tools and techniques

C2.3	Level of agreement that these identified emerging trends can be better managed using Quality approaches, tools and techniques	Mean	p-value Pos. in Org.	p-value Exp. in Org.	p-value Org. Size	p-value Formal QMP	p-value Org. Type
C2.3 (a)	Globalisation	4.00	**0.00**	0.81	0.15	0.61	0.35
C2.3(b)	Increasing customer power and sophistication	4.34	0.91	0.70	0.47	**0.00**	0.05
C2.3 (c)	Growing need for more innovation within organisations	4.23	0.98	0.83	0.59	0.11	0.28
C2.3 (d)	Increasing food safety requirements from organisations	4.17	**0.00**	0.42	0.40	0.86	**0.01**
C2.3 (e)	Increasing social responsibility commitments from organisations	4.03	0.09	0.41	0.36	0.57	0.78
C2.3 (f)	Increasing environmental sustainability consciousness and commitments from organisations	4.29	0.23	0.51	0.34	0.82	0.84
C2.3	**Overall Mean**	**4.18**					

All questions for this sub-category returned mean values above 4 (Table 30), denoting high levels of agreement that these emerging trends can be better managed using quality approaches, tools and techniques. The mean scores for this section compare closely with that of the first part of this section (C2.1) on most questions. This could suggest a confirmation of the participants' awareness and thus express a desire by them to better manage the identified emerging trends using a quality management approach, tools and techniques.

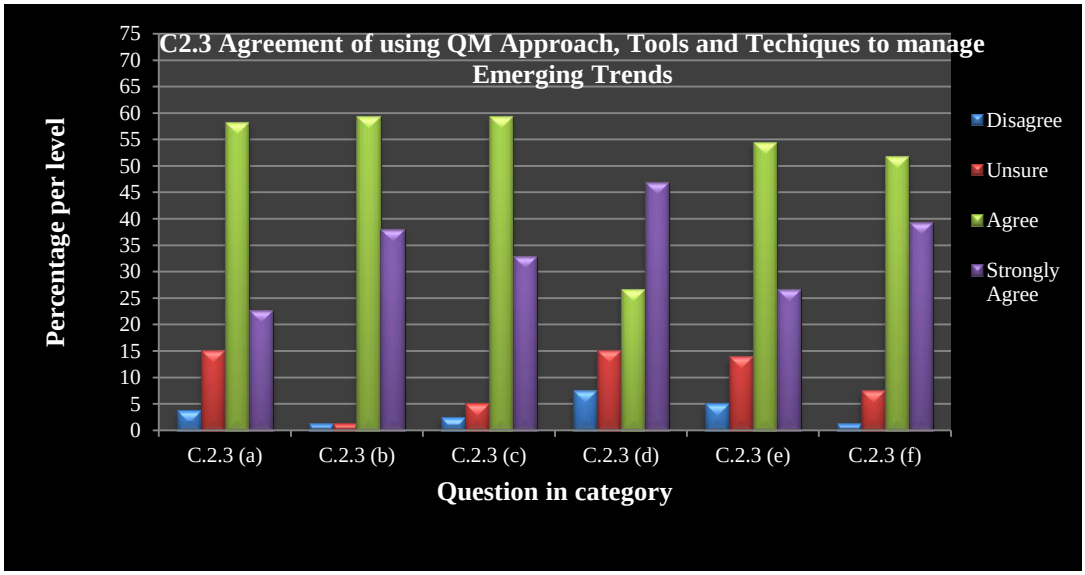
This sub-category (C2.3) returned the least number of p-values <0.05. A total of four p-values <0.05 were recorded. Two of the four values were under the variable designation in organisation, one under formal QMP and one under organisation type. The variables designation in organisation and organisation type displayed significant

relationship for food safety management. The reasons for this relationship can be attributed, as discussed previously in Section 5.3.2., to the recent focus on food contamination incidents, rather than on the focus that was given in the past.

Globalisation presented a single p-value <0.05 for this part. However, in this instance it is under the variable designation in organisation. The reasons for the difference in responses to this question may be due to the scope and understanding of globalisation by participants in various positions within the organisations. Lastly, variable formal QMP displays a p-value of <0.05 for customer power and sophistication. The reasons for this relationship can be assumed to be the same as previously stated in sub-category (C2.2); namely, that it can be attributed to requirements and focus of the management systems programmes such as ISO 9001, ISO 22000, and HACCP, to list a few, to which the organisation was affiliated.

Figure 22, below, provides a breakdown of the responses for sub-category C2.3.

Figure 22: Percentage split of responses for category management of emerging trends using quality approaches, tools and techniques



It is evident from Figure 22 that the percentage breakdown for this sub-category (C2.3) yields responses with a high degree of agreement, ranging between eighty one and ninety eight percent that management of all emerging trends, using quality

approaches, tools and techniques, besides food safety, was favoured. Although food safety received a much lower response of agreement, the score in sub-category C2.3 is higher than the previous two questions, achieving seventy three percent for the same trend. It can be inferred that there was a general consensus by all participants in this survey that the identified emerging trends could be better managed using quality management approaches, tools and techniques.

In summary, this sub-section (C2) looked at the emerging trends that have been identified in this study, which will have a major impact on quality management for the future. From related literature reviewed in Chapter 2, it was noted that these emerging trends provide several opportunities for quality management to regain its relevance and support in the business world and to address current business challenges and market demands. The responses in this study reveal that there is a high level of awareness of the emerging trends; however, there is a lower level of understanding of the impact of these trends on the daily operations within the organisations. In addition, the responses to the last question in this category (C2) confirm that there is a positive view that quality management could be utilised to manage the identified emerging trends. Thus, the responses from Sub-category C3 are aligned to the proposed new scope for quality management to encompass these emerging trends.

5.3.4 C3—Views on proposed framework to manage quality into the future

As quality management is an effective pillar of manufacturing operations, Sharma and Kodali (2008:599-621) claim that there are numerous frameworks based on quality management principles that have been adopted for the successful manifestation of quality management in an organisation.

Category C3 consisted of seven questions relating to the proposed model for the study; namely, the Quality Stewardship and Leadership (QSAL) Framework. This category of the survey attempted to seek the opinions of the participants on the proposed framework. The first five of the seven questions were based on Likert level responses and the last two questions were open-ended. For ease of statistical

analysis, the scores on the Likert level type questions were converted to numeric values as follows: “strongly agree” (5), “agree” (4), “unsure” (3), “disagree” (2) and “strongly disagree” (1).

Table 31 displays the mean responses for the Likert-type questions in this category, C3 the QSAL Framework. The overall mean score of 4.11 implies a high level of agreement for the questions within this category. An examination of the mean scores for the individual questions confirms a positive response with all results close to 4.

Table 31: Mean and Chi- square values for category Views on proposed framework to manage quality into the future

C3	Views on proposed framework to manage Quality into the future	Mean	p-value Pos. in Org.	p-value Exp. in Org.	p-value Org. Size	p-value Formal QM Prog.	p-value Org. Type
C3.1	The new evolution and proposed framework will better position Quality going into the future	4.24	0.13	0.64	**0.05**	**0.03**	0.06
C3.2	The new evolution proposed for Quality will be supported by your organisation	4.15	**0.04**	0.78	0.11	**0.00**	**0.01**
C3.3	The proposed framework will be beneficial to your organisation	4.27	0.07	0.92	**0.01**	**0.03**	**0.03**
C3.4	The proposed framework will position quality at a higher level within your organisation	3.88	**0.00**	0.54	0.23	**0.01**	0.12
C3.5	In your organisation there will be support for the motivation to include the proposed approach to quality to your existing practice	3.99	**0.04**	0.79	0.49	**0.00**	**0.01**
C3	**Overall Mean**	**4.11**					

The p-values for this category from Table 31 indicate an overall fifty two percent of all instances with p-values <0.05. The variable formal QM programme realised p-values <0.05 on all instances; designation in organisation and organisation type displayed three p-values <0.05; organisation size returned two p-values <0.05, and experience in organisation recorded all p-values >0.05. The null hypothesis for the variables and questions with p-values<0.05 can be rejected. A reason for the significant relationships between the mentioned variables and questions with p-values <0.05 may be due to specific requirements and approaches adopted in the implementation of existing quality management programmes within some organisations. It is also possible that some participants felt that their current quality management systems were already positioned with similar outputs as those proposed

by the QSAL framework. Another reason could be that the differences of opinions on the proposed QSAL framework was simply due to limited understanding of the detail of the proposed framework by participants in this study.

Figure 23, below, displays a breakdown of the responses per question for category C3.

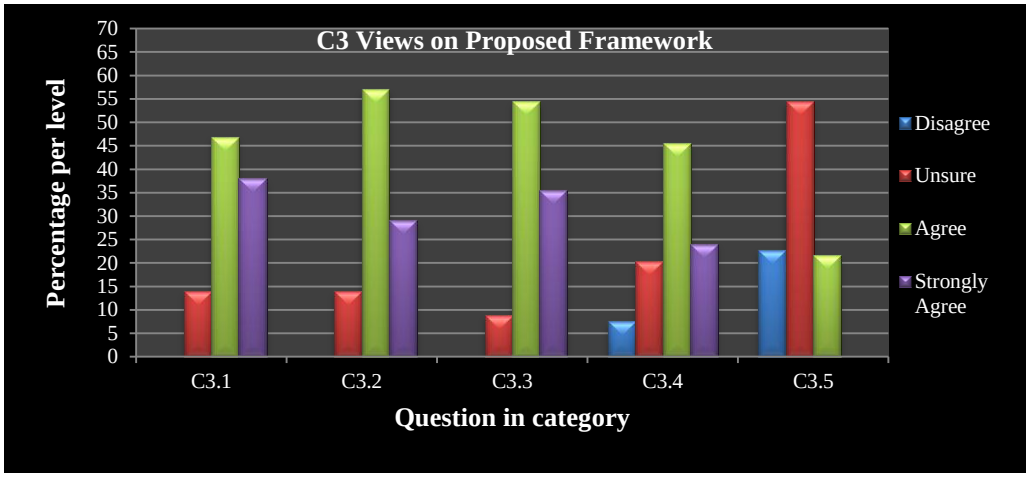


Figure 23: Percentage split of responses for category views on proposed framework to manage quality into the future

From Figure 23, the first three questions, C3.1, C3.2 and C3.3, show over eighty percent agreement on the Likert level for this sub-section. For question C3.1, eighty five percent of the participants in the survey "agreed" or "strongly agreed" that the new evolution and proposed framework will better position quality management for the future. Question C3.2 displays very similar results to C3.1; namely, that there was an eighty six percent overall agreement that the new evolution proposed by this study will be supported by their organisations. The third question (C3.3) records eighty nine percent "agree" or "strongly agree" scores suggesting that the proposed framework will be beneficial to the participant organisation. The breakdown per Questions C3.1 to C3.3, further confirms a positive response by the majority of the participants in this study to the proposed QSAL framework.

Questions C3.4 and C3.5 returned a lower percentage of agreement scores in comparison to the first three questions in this category. These questions also display

a wider distribution of responses on the Likert level. Question C3.4 produced seventy percent as “agree” or “strongly agree”. This question also returned twenty percent “unsure” and eight percent “disagree” responses. Based on the nature of Question C3.4, which requested the participants’ view on whether the proposed framework will position quality at a higher level within their organisation, it is plausible that the lower scores could be due to limited understanding of the detail of the proposed framework by the participants in this study.

Question 3.5, though returning a mean score of 3.99 on the Likert level, reflects the least percentage of agreement in responses. This question only received twenty two percent “agree” responses. The majority of the responses were “unsure” at fifty four percent. Also, there was a twenty three percent response on “disagree”. The reasons for these low levels of responses for Question C3.5 could be similar to Question C3.4,that the high percent of “unsure” responses could be due to limited understanding of the detail of the proposed framework. Other reasons could be that the low-level scores are due to specific requirements and approaches adopted in the implementation of existing quality management programmes within some organisations. It is possible that some participants felt that their current quality management systems were already positioned with similar outputs as proposed by the QSAL framework, whilst others could have strategies that deliberately do not encompass them.

Appendix 12 provides a breakdown analysis of the designations of participants in the organisations, formal QMP and organisation types, as they demonstrated the most impact in the hypothesis tests for questions in Category C3. From an evaluation of the variable position in the organisations (Appendix 12.1), there are no major differences noticeable. There was a single response at level 2 that expressed disagreement, whilst there were some participants who consistently responded with high levels of agreement and medium levels for all questions.

The variable formal QMP (Appendix 12.2) returned a higher average mean value for all responses that indicates an organisation-wide QMP in comparison to a QMP

implemented in some parts of the organisation. The assumption for this question was that if an organisation had a formal QMP, it would possess mature quality processes. Hence, there was a view that their responses would be an informed perspective.

Appendix 12.3 provides a breakdown of responses for the various organisation types. There is a high degree of agreement to the questions on the proposed framework by all organisation types; namely, Question C3.2, ninety one percent; Question C3.3 eighty six percent and Question C3.5, seventy three percent. The only differences are by the organisation types, where the responses for the Head Office, Organisation One and Organisation Two were slightly higher than those of the Supplier organisation and other FMCG organisations. Thus, the possible reasons for these differences are those already mentioned above, which may be due to specific requirements and approaches adopted in the implementation of existing quality management programmes within some organisations. It is also possible that some participants felt their current quality management systems were already positioned with similar outputs as those proposed by the QSAL framework.

One of the objectives of this study is to develop a framework with an integrative approach that will support organisations in implementing future quality management systems, under the new definition of Quality Stewardship. The majority of results in this category (C3) demonstrate excellent support towards achieving this. The significant differences noted in the hypothesis tests are largely contributed by the variable formal QMP. The differences reveal that organisations that implemented organisation-wide QMP are more in agreement with the proposed QSAL framework than those who did not implement QMP. It is hoped that the questions that did not achieve high levels of agreement were due to limited knowledge and understanding of the proposed QSAL framework. Therefore, with an improved understanding of the proposed QSAL framework, these levels of agreement can improve.

5.3.4.1 Questions C3.6 and C3.7: Open-ended questions

For Questions C3.6 and C3.7, responses were assessed by counting the number of responses from the population making similar comments.

Question C3.6: What in particular are the advantages/disadvantages of the proposed framework?

Advantages

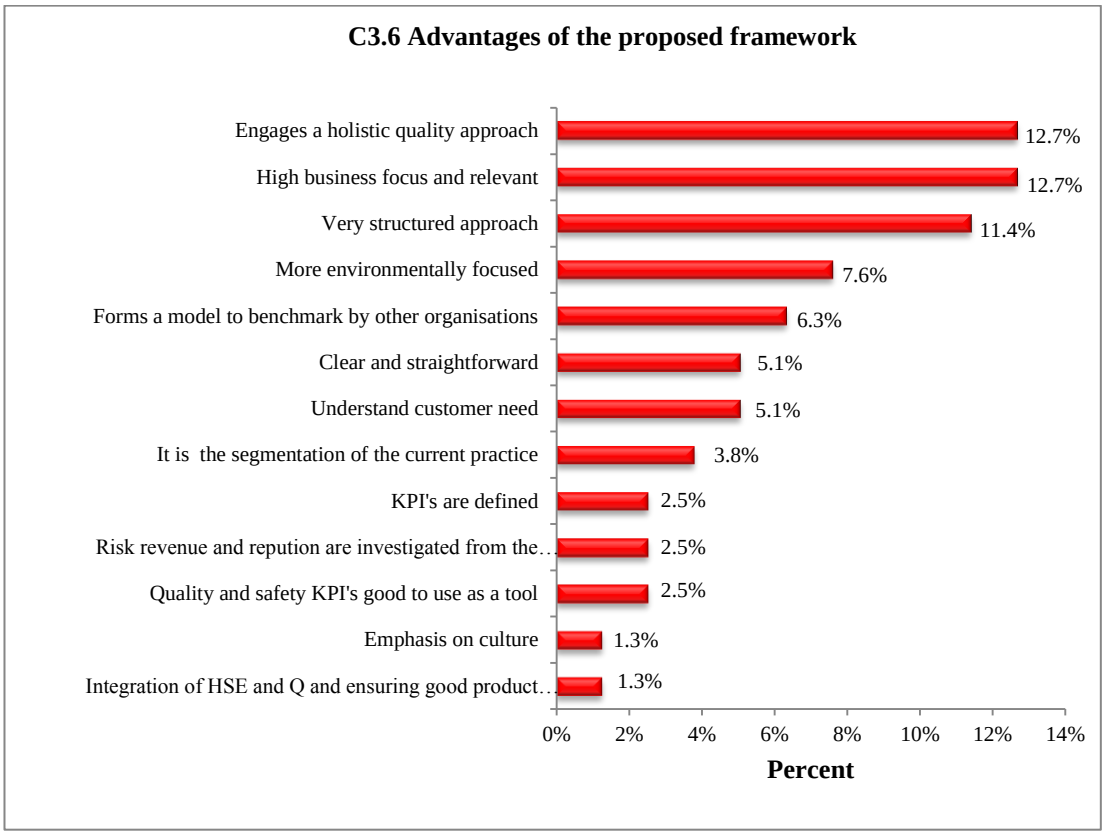


Figure 24: Responses on advantages of the proposed framework

In Question C3.6, the responses to advantages (Figure 24) of the proposed model consisted of the main themes: that the model provided a high business focus, holistic and structured approach. Other comments in favour of the model was its emphasis on culture, integrated approach, simplicity, focus on customer needs and environment, to list a few.

These responses align with the advantages provided in Chapter 4 on the proposed QSAL framework. The advantages envisaged were that the proposed QSAL framework will provide a "comprehensive", "holistic" system with excellent

"connective capability" pulling together the various disparate systems within FMCG type organisations in South Africa. In addition, the QSAL framework will address the non-alignment between quality management, current business challenges and market demands created by emerging trends and stakeholder requirements.

Disadvantages

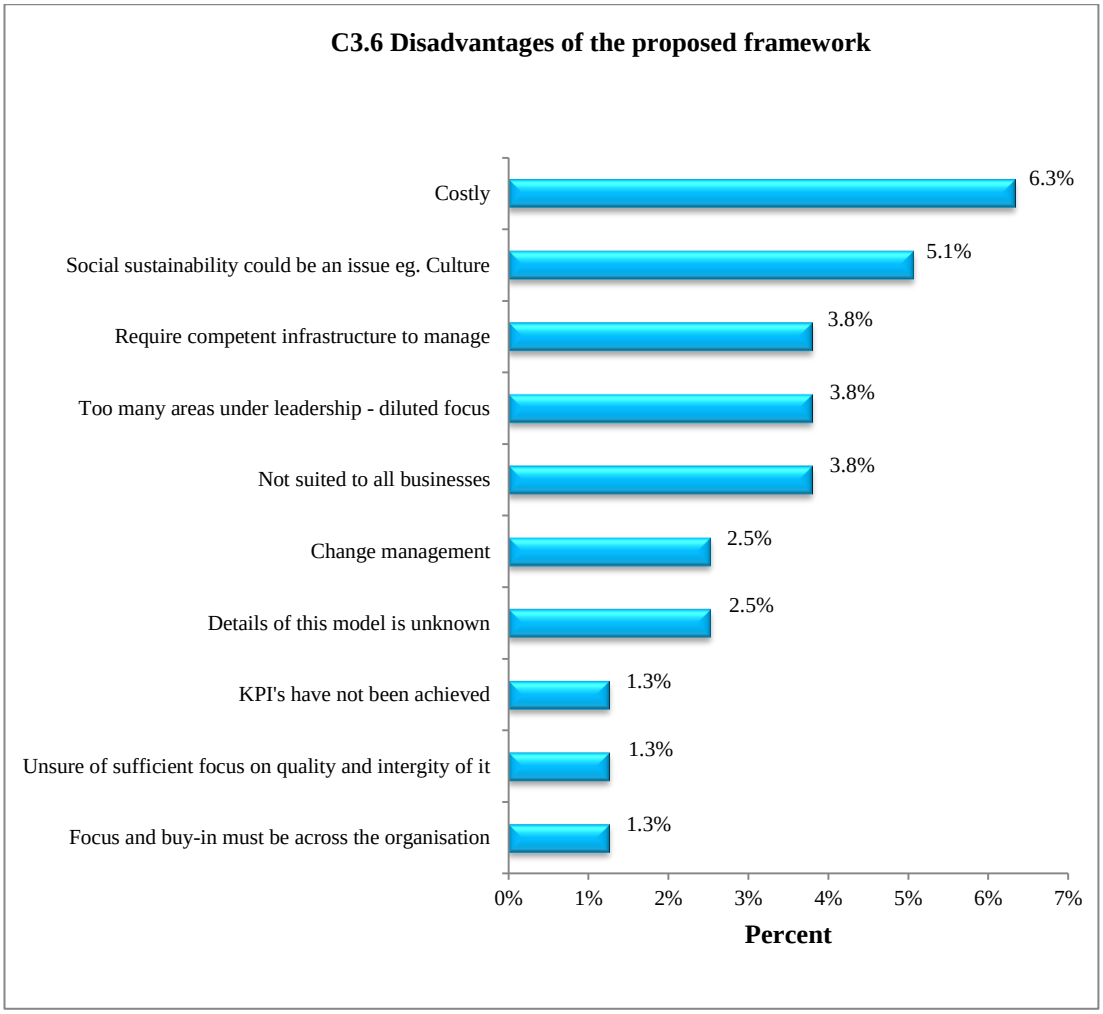


Figure 25: Responses on disadvantages the proposed QSAL framework

Key responses on the disadvantages of the model, listed in Figure 25 above, include economic viability, the impact of social responsibility, the complexity, which could be cumbersome to adopt and manage in the absence of competent people, too many areas under leadership and that the framework will not be suited to all businesses.

The views expressed by the participants on economic viability of the proposed framework and its complexity, which could make it cumbersome to adopt and manage in the absence of competent employees, are valid mainly in the development of new systems for the QSAL framework and the acquisition of additional resources. However, once the systems are developed and the QSAL framework and resources are in place, the economic viability and maintenance requirements will quickly change to positive as a result of an effectively designed and implemented framework. This will out-weigh the implementation costs. Support for this contention can be found in Stevenson (2002:420); Gitlow, Oppenheim, Oppenheim and Levine (2005:27) and Singh (2006:223).

Responses that there were too many areas under leadership suggest that the QSAL framework may seem wide in scope. It is hoped that this comment will be viewed more positively once the framework is implemented, as a key objective of this research is to focus on the change that quality management as a discipline should undertake and the development of leadership that should be adopted to achieve this.

The comments on the impact of social responsibility can perhaps be attributed to a lack of knowledge and infancy of this trend. This comment can be substantiated by the literature in Chapter 2, Section 2.2.5, which highlights the opportunities between this trend and quality management. Also, the various responses in Section B and Section C pertaining to social responsibility suggest that there is a lack of knowledge on this trend.

Responses that the QSAL framework will not be suited to all businesses can be attributed to participants' lack of knowledge that the QSAL should not be seen as prescriptive; it merely provides a guideline for the new scope proposed for quality management. In addition, the QSAL framework was designed specifically for the FMCG industry, for which this study is intended. However, the framework should not be seen as limited only to this type of industry but with the potential to be adapted for other industries, as its foundation is developed from generic international standards.

Question C3.7: What aspects would you recommend for change in this framework?

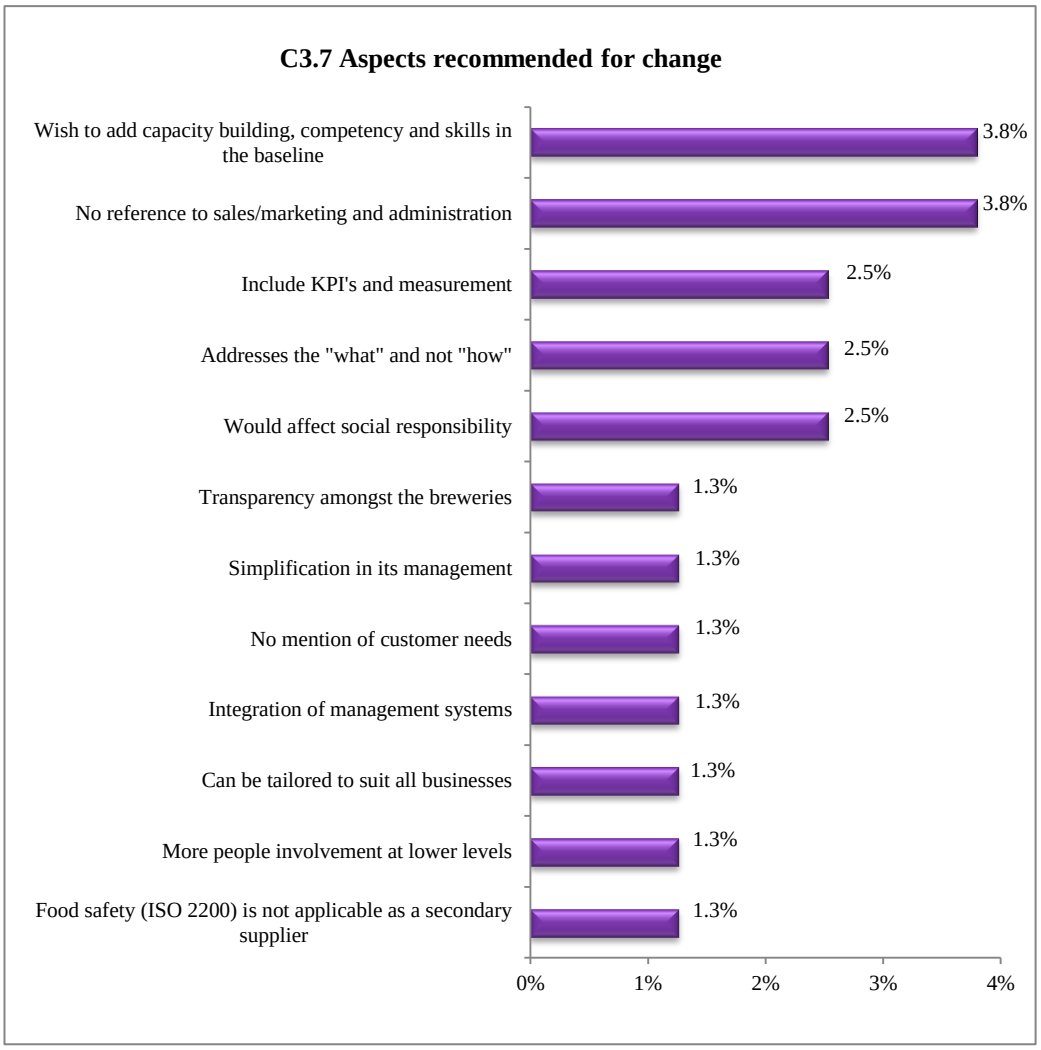


Figure 26: Responses on recommended changes to QSAL framework

Question C3.7 elicited changes that the participants felt were necessary to the model. It is evident from Figure 26 that there was very little response to this question. The top two responses were provided by three participants each, the next three responses comprised two participants each and the last seven responses by a single participant. The first response suggested the inclusion of capacity building, competency and skills in the baseline of the framework. This view, although not made explicit in the QSAL framework, is implicit in the foundation that the framework will operate on; namely, in business strategies, philosophies, plans that exist to meet prevailing

business challenges and market demands. Also, capacity building, competency and skills will be addressed as they are core requirements of the various listed management systems within the QSAL framework, such as ISO 9001, ISO 14001.

The second response mentioned that references to sales, marketing and administration were absent, thus implying that these outputs needed to be included in the framework. It can be perceived that this response was due to no visible references to the terms sales, marketing and administration in the framework. However, Chapter 4, Section 4.3, which provides a detailed review of the design, underlying philosophies and operations of the QSAL framework, illustrates the relationship with these outputs in a more comprehensive manner.

The points made on KPIs and measurement, the "what" versus the "how", and social responsibility are issues that will hopefully become apparent as part of implementation. This could perhaps provide an opportunity for future research.

All of the other responses mentioned are single comments and can be inferred as been made because of a lack of knowledge and understanding of the intended operations of the framework. For example, regarding the points mentioned above on making the framework suitable for all business types, the QSAL framework was designed specifically for the FMCG industry, for which this study is intended. However, the framework should not be seen as limited only to this type of industry but with the potential to be adapted for other industries.

5.3.4.2 Summary of Category C3

In developing the proposed QSAL framework, an evaluation of the Sharma and Kodali (2008:599-621) study of 36 identified frameworks was undertaken. Using this as a reference and in conjunction with the identified emerging trends, as discussed in C2 of the previous sub-section, the proposed QSAL framework was developed to provide a current and relevant perspective for FMCG organisations in South Africa. The main premise of the proposed framework is to encompass the evolution intended for quality management in the future, based on the changes in business, markets,

technology and customers. Thus, the QSAL framework, though still focusing on the existing fundamentals of quality management, takes a much broader business outlook that encompasses elements such as social corporate responsibility, environmental sustainability and globalisation, amongst other emerging trends.

From the comments above, it can be inferred that the proposed QSAL framework has a high degree of acceptance from the participants. In reviewing the responses and taking into consideration the current state of quality, it can be assumed that by providing further clarity on the objectives, strategy and operation of the proposed framework, the level of its acceptance should increase further.

5.4 Factor Analysis

Factor analysis in this study was utilised to explore the existence of groups of large correlation coefficients (factors) in the different sections of the survey questionnaire between various categories of practice (Section A) and thinking (Section B) for quality management. The intention of this study is to use the extracted factors to summarise the important dimensions for quality practices and thinking for selected manufacturing organisations in South Africa. The roadmap for this analysis includes data screening using the correlation matrices, extraction of principal components by analysis of eigen values and Scree plots, analysis of principal factors using extraction of communalities, and, finally, of factor structures using varimax rotation to assess the existence of groups of large correlation coefficients.

5.4.1 Correlation (R) Matrix

In order to obtain good results, factor analysis requires uncorrelated data that do not cluster together. A correlation matrix is normally used to initially screen for clustering between sets of variables. A correlation coefficient of <0.90 suggests there is no clustering present. In the event of a presence of redundant (highly correlated) variables, they must be removed and replaced with a smaller number of uncorrelated variables (Kakkar and Narag, 2007:328-353).

The correlation (R) matrix for this study was obtained and analysed. An example of Section B, Categories B1 and B2 questions of the correlation (R) matrix can be seen in Table 32, below. A comprehensive presentation of the correlation matrix for this study can be found in Appendix 13 and Appendix 14. From the data, it is evident that there are no correlations present with any of the variables. This essentially indicates the absence of singularity and multi-co-linearity in the data; hence, no variable needs to be removed for factor analysis to be undertaken on the current data.

Table 32: Correlation Matrix

	B1.1	B1.2	B1.3	B1.4	B1.5	B1.6	B1.7	B2.1	B2.2	B2.3	B2.4	B2.5	B2.6
B2.1	.200	.276	.372	.307	.292	.263	.324	1.000					
B2.2	.208	.320	.363	.252	.271	.216	.288	.652	1.000				
B2.3	.298	.441	.403	.411	.476	.329	.395	.630	.546	1.000			
B2.4	.075	.328	.407	.402	.426	.283	.429	.474	.571	.746	1.000		
B2.5	.040	.220	.119	.272	.279	.162	.286	.261	.379	.337	.386	1.000	
B2.6	.000	.277	.365	.377	.397	.247	.431	.417	.561	.656	.885	.386	1.000

5.4.2 Extraction of Principal Components

For this study, principal component analysis (PCA) was used to reduce the dimensionality and to aid the interpretation of the results of the survey. Principal component analysis uses an optimal linear dimension reducing technique as it extracts the maximum of the variability of the original variables, and (as per correlation analysis 5.4.1) they are uncorrelated (Kakkar and Narag, 2007:328-353). Eigen value variance and Scree plots were used to extract the number of principal components for this study.

Appendices 15 and 16 display the eigen values obtained for Sections B and C, respectively. An eigen value illustrates the variance on the new factors that are successively extracted by principal component analysis. The analysis also provides the proportion of total variance in all the variables accounted for by each factor. For Sections B and C, based on the total number of questions using the Likert level across all categories and sub-sections, under the heading “initial eigen values”, there are sixty one and twenty seven factors, respectively.

It is evident from the data that the eigen values descend rapidly from the first value. In Section C, for example, (see Appendix 15), the first component accounts for approximately twenty seven percent of the variance of the original twenty seven factors, but subsequent components account for much less. According to Kaiser (1960) as only factors with eigen values greater than one (1) are retained, it eliminates all factors that extract less than the equivalent of one (1). Thus, using the eigen value selection for this study, it can be assumed that Section B will only retain twelve factors and Section C will retain seven factors as principal components. These principal components will cumulatively account for approximately seventy seven percent and seventy three percent of the total variance, respectively.

However, although the eigen values are widely used for determining total variance and for a decision of how many factors to retain, the Cattell Scree test proposed by Cattell (1966) is an alternative criterion. The decision in the Cattell Scree test is made on the basis of the number of components that are above noise level. The decision on the number of factors to be retained is made when the curve makes an elbow and stabilises. For this study, the twelve factors as identified by the eigen values for Section B and seven factors for Section C appear to correspond with the Scree plot for the Catell Scree test (Appendix 17 and 18).

5.4.3 Communalities

The communality (see Table 33 below) for a given variable can be interpreted as the amount of variation in the variable that can be explained by the factors that constitute the model. Communalities can be used to assess how well a model based on the variables is performing. The ideal value for communalities is to be close to 1.00 (Hill and Lewicki, 2006:593)

Table 33: Communalities: Section B1

	B.1 LEADERSHIP AND COMMITMENT OF SENIOR MANAGEMENT	Extraction
B1.1	The extent to which senior leaders accept responsibility for setting the organisation's quality vision, objectives and goals	0.676
B1.2	The extent to which senior leaders accept responsibility and create a focus on achieving the organisation's quality vision, objectives and goals	0.778
B1.3	The extent to which senior leaders attach the importance of quality in relation to cost, production and delivery of KPIs.	0.658
B1.4	The extent to which senior leaders personally promote an organisational environment that fosters, requires, and results in legal and ethical behaviour	0.891
B1.5	The extent to which senior leaders personally promote an organisational environment that fosters, requires, and results in an effective and credible governance system	0.926
B1.6	The extent to which senior leaders personally promote an organisational environment that fosters, requires and results in well-being of the social and economic systems to which your organisation does or may contribute to	0.599
B1.7	The extent to which senior leaders personally promote an organisational environment that fosters, requires and results in the well-being of the environmental systems to which your organisation does or may contribute to	0.713

The analysis involved in calculating communalities is similar to that for multiple regressions; namely, signage against the two common factors (Hill and Lewicki 2006:593). For example, as per Table 33 for the category leadership, the second variable on senior leaders accepting responsibility for setting the organisation's quality vision, objectives and goals, yields an $R^2 = 0.778$. This value indicates that about seventy eight percent of the variation in terms of senior leaders' responsibility for setting the organisation's quality vision, objectives and goals is explained by the factor model. This essentially indicates that there is a very high degree of communality for this variable.

The individual communalities discussed above inform how well the model is working for the individual variables. The total communality gives an overall assessment of the performance of the model.

Table 34: Overall Communality Extraction

Component	Mean Communality Score
Section B	0.767
Section C	0.727
Overall	0.747

From Table 34 it is evident that the model explains approximately seventy five percent of the variation for all of the variables based on the average scores of the components in Section B and Section C in this study.

Hence, communalities measure the percent of variance in a given variable explained by all the factors jointly and may be interpreted as the consistency of the variable. In the example offered above on variable B1.1, the extracted factors for this variable explain that seventy eight percent of leaders accepted responsibility for setting the organisation's quality vision, objectives and goals. This argument can then be extended to the rest of the model. In general, communalities show for which measured variables the factor analysis is working best and least well. When a variable has a low communality, it implies that the factor model is not working well for that variable and possibly it should be removed from the model. If the communality exceeds 1.0 it means the solution is spurious, which may reflect too small a sample or the researcher has too many or too few factors (Kakkar and Narag, 2007:328-353).

The individual communalities extraction for each variable (question) will be incorporated in the next analysis; namely, rotated component analysis (Appendices 19 and 20). For this study, the communalities ranged between 0.538 and 0.926. If communalities are high or the mean level of communality is at least 0.7, recovery of population factors in sample data is normally very good (MacCallum, Widaman, Preacher and Hong, 2001:611-637; Preacher and MacCallum, 2002:153-161; Costello and Osborne, 2005:5). Zhao (2009:1-4) concluded that in these instances, minimum sample size is not valid and useful. For this study, the communalities were neither too low nor too high and the overall mean of 0.747 indicates that the principal factor analysis should yield good results.

5.4.4 Rotated Component Matrix

The rotated component matrix extraction analysis can be seen as an extension to the communalities extraction analysis, above. Communalities extraction analysis is associated with the regression line that can be fitted to represent the "best" summary

of the linear relationship between the variables. The example of using the regression line, which combines two correlated variables into one factor, illustrates the basic idea of factor analysis or of principal components analysis. For multiple variables, the computations become more involved, but this basic principle of expressing two or more variables by a single factor remains the same (Hill and Lewicki, 2006:231-240).

Rotated component matrix extraction analysis uses the same principle of extracting principal components, which amounts to a variance maximising (varimax) rotation of the original variable space. For this study, the varimax method for the analysis was used. The primary objective of the varimax method is to maximise the variance (variability) of the "new" variable (factor), while reducing the number of variables by detecting structure in the relationship between them (Jabnoun and Sedraani, 2005:8-20; Kakkar and Narag, 2007:328-353). By this process of rotation, a clear pattern of loadings is found, clearly marked by high loadings for some variables and low loadings for others. The intention of this analysis is to illustrate the common loading of factors, where they did not load together, and to understand the reasons for it. Appendices 21 and 22 illustrate the loading of all the variables against the various factors for Sections B and C, respectively. This is the central output for factor analysis.

The factor loadings, also called component loadings in PCA, are the correlation coefficients between the variables (rows) and factors (columns). Factor loadings are the basis for inputting a label to the different factors. Loadings above 0.6 are usually considered “high” and those below 0.4 are “low” (Kakkar and Narag, 2007:328-353).

Section B (Appendix 21) extracted twelve factors using the rotated component matrix. On examination of these factors, the following analysis and commentary was drawn: The first factor consists of four high loadings from the Consumer Focus category and two from the Organisational Performance and Improvement category; three moderate loadings from the Consumer Focus category; one moderate loading from the Organisational Performance and Improvement category and one moderate

loading from the Quality and Process Management category. The Customer Focus category loaded on seven of nine variables on this factor, with moderate loadings overlapping with Factor Six, which had five of nine variables with high loadings.

An examination of the various loadings on Factor One illustrates implicit association with Customer Focus by all variables. However, although these variables revealed that they were associated with Customer Focus in some way, their focus was explicit on using the data as the voice of the customer, and translating it into process information, standards and problem solving to exceed customer expectations, innovation needs, attract new customers, regain customer confidence and compare performance with competitor offering. Based on the underlying themes between these variables, they were clustered together to be titled "Customer Satisfaction through Operational Excellence and Speed to Market".

The next factor, namely Factor Two, was formed from the splitting of Categories 1, 6 and 7. This factor comprised of all high loadings and carried the theme of corporate social responsibility and environmental sustainability. Thus, this factor was labelled "Sustainable Development".

Factor Three is a combination of two categories (Category 5, Workforce Focus and Category 6, Quality and Process Management). This factor consisted of three and four variables from Categories 5 and 6 respectively. All variables, besides one, had high loadings and the exception was a moderate loading. Based on the underlying themes between the variables loaded on this factor, it was labelled "Workforce Accountability for Quality Performance and Improvement".

Factor Four consists of eleven variables that were loaded from Category 6. Some of these variables also overlapped with other factors from the same category, namely Quality and Process Management. This factor consisted of five high and six moderate loadings; an analysis of the variables making up this factor resulted in naming it "Quality Management Tools and Techniques".

Factor Five loaded exclusively with variables from Category 2, which focused on Strategy Development. There was also a single variable that loaded on this factor from the Organisational Performance and Improvement category. This single variable, although from the Organisational Performance and Improvement category, was related to Strategy Development. On this basis, this factor retained its current title of "Strategy Development".

Factor Six consists of five high loadings that overlap with Factor One from the Customer Focus category. However, the underlying themes for this factor were more focused on the extent that organisations were able to capture information and listen to the customer. This included new and former customers and customers of competitors. This factor was therefore labelled as the ability to "Strengthen and Build Customer Intelligence".

Factor Seven is an outcome of three variables with high loadings from Category 1, Leadership and Commitment of Senior Management; a single high-loading variable from Category 4, Data Measurement and Knowledge Management; a single variable from Category 5, Workforce Focus; and a single high loading from Category 7, Organisational Performance and Improvement. Based on the variables that loaded on this factor, it was labelled "Leadership Commitment to Quality Implementation and Performance", as this includes development and review of quality vision, mission, goals, KPIs, workforce training and development support by senior management.

The next two factors, namely Factors Eight and Nine, which were also a split from Category 6, consist of four variables each, with three high and one moderate loadings for Factor Eight and two high and two moderate loadings for Factor Nine. Based on the themes of the questions from which these factors were derived, Factor Eight was labelled as "QA Systems for Delivering Predictable Quality and Continuous Improvement" and Factor Nine, "Management Systems Implementation".

Factor Ten consists of four variables with high loadings from the category Measure, Analysis and Knowledge Management. All variables that loaded on this factor

focused on quality data collection and analysis into information. This factor was thus labelled “Data Collection and Analysis”.

The next factor, Factor Eleven, consists of two variables from the category Workforce Focus, with one high and one moderate loading. Of the two variables, the one with moderate loading also overlapped with a variable with moderate loading from Factor Seven. The two variables that were loaded on this factor can be stated as focus on competence development or training and development. The factor, therefore, was titled “Competence Development”.

Finally, Factor Twelve, also loaded from the category Measure, Analysis and Knowledge Management, consists of two variables, one high and one moderate loading. Both these variables consist of the knowledge management component for this category. This demonstrates that knowledge management was viewed differently to data and information management. This factor was thus labelled “Knowledge Management”.

In summary, it can be stated that the sixty one constructed questions using the seven categories of the MBNQA criteria extracted into twelve factors. These twelve factors can be regarded as the principle components or most significant factors for the organisations in the study and, typically, for FMCG organisations in South Africa.

Table 35 provides a summary of the emergent factors (non-weighted order) for Section B. It is evident that these factors have a strong alignment with the new scope for quality management proposed in this study. In addition, these factors provide a fresh set of principles for quality management that is aligned to the opportunities identified for the future of this discipline in Chapter 2.

Table 35: Section B-Extracted Factors

EXTRACTED FACTORS
1. Customer Satisfaction through Operational Excellence and Speed To Market
2. Sustainable Development
3. Workforce Accountability for Quality and Improvement
4. Quality Management Tools and Techniques
5. Strategy Development
6. Customer Insights and Intelligence
7. Leadership Commitment to Quality Strategy and Performance
8. Quality Assurance and Improvement Systems
9. Management Systems Effectiveness
10. Data Collection and Analysis
11. Competence Development
12. Knowledge Management

The rotated component analysis for Section C consisted of twenty seven questions from three categories loaded into seven factors (Appendix 22). On examination of the loading, all sections loaded well with most questions within their respective sections. Categories C1 and C3 loaded perfectly on a single factor, respectively. These two categories (C1 and C3) requested results on current views of quality management and thoughts on the proposed QSAL framework. The response implies that the questions specifically measured what it set out to measure under these factors. Therefore, the titles for these categories were retained.

Category C2 consisted of three questions, C2.1, C2.2 and C2.3. Questions C2.1 and C2.3 loaded well on a single factor for all emerging trends, besides the trend related to food safety (C2.1.d and C2.3.d). Question C2.2 split onto three factors. The question related to food safety (C2.2.d), loaded on the same factor as the other sub-categories; namely, variables C2.1.d and C2.3.d. These loadings imply that the questions that loaded on the same factor what they set out to measure.. An explanation for this split pattern on the same variable (food safety) across the three sub-categories could be due to the lack of understanding of this subject by participants and organisations. It could also be, as discussed in Section 5.3.2.1, attributed to the recent focus on food contamination incidents, rather than the focus that was given in the past. The explanation for the split in Questions C2.2.e and C2.2.f in Sub-category C2.2 can be stated as similar to the comments provided in Section 5.2.1, which inferred a lack of awareness of the impact of social

responsibility and sustainable development by the many participants of this study and their organisations due to the infancy of these trends.

Based on the above, the factors displayed by Section C can be listed and labelled as indicated in Table 36, below.

Table 36: Section C- Extracted Factors

EXTRACTED FACTORS
1. Proposed Framework to manage Quality in the Future
2. Awareness of Emerging Trends
3. Opportunity to manage Emerging Trends using Quality Management Approach, Tools and Techniques
4. Current Views On Quality Management
5. Food Safety Management
6. Awareness of Impact of Sustainable Development Management on Operations within Organisations
7. Awareness of Impact of Globalisation, Customer Power, Sophistication And Innovation on Operations within Organisations

5.5 Summary of the chapter

This chapter commenced with an analysis of demographic data from Section A of the survey questionnaire. This analysis provides the independent variables for the research hypothesis that was tested against the various categories and questions in Section B and Section C of the survey questionnaire. The analysis of Section A concludes by accepting all data for the independent variables as being adequate for hypothesis testing in Section B and Section C.

Responses in Section B of this study reveal that quality management practices across the FMCG industry in South Africa are between medium and high levels. The following percentages of p-values<0.05 in the hypothesis testing were obtained and noted in Section B; namely, organisation type forty one percent; designation in organisation, thirty nine percent; size of organisation and formal QMP, fourteen percent; and experience in organisation, seven percent. These results indicate the levels of impact that the respective independent variables had on the various questions and categories in current practices (Section B) in quality management.

Section C consists of three categories. The first category probed the current views on quality management and illustrated that the majority (over eighty five percent) of participants believe that quality management in the current state and focus on process should evolve to become more consumer, community and planet-focused. The second category of Section C evaluated the awareness of the emerging trends identified in this study. Responses in this category clearly demonstrated that even though there is an awareness of the identified emerging trends, the impact of all these trends on the organisations' daily operations is not well known. However, there is a high level of agreement that these emerging trends could be better managed using a quality approach, tools and techniques. The third category of Section C explored views on the proposed new evolution and QSAL framework. There is a high level of acceptance for the proposed new evolution and QSAL framework. The following percentages of p-values<0.05 in the hypothesis testing were realised and noted in Section C; namely, designation in organisation, fifty two percent; organisation type, thirty seven percent; size of organisation,: thirty three percent; formal QMP, thirty percent; and experience in organisation, eleven percent. These results show the levels of impact the respective independent variables had on the various questions and categories in current thinking (Section C) in quality management.

The factor analysis of sixty one variables (questions) from Section B and the twenty seven variables (questions) from Section C show the existence of groups of large correlation coefficients between subsets of the variables in Section B and Section C. This suggests that the variables within Section B and Section C were measuring aspects of the same underlying dimensions. These underlying dimensions, or extracted factors, are twelve in number for section B and seven for section C, respectively. This shows that all of the sixty one variables from Section B can be summarised into twelve dimensions and the twenty seven variables from Section C can be summarised into seven dimensions. Furthermore, these twelve dimensions extracted in Section B display excellent promise to be used as principles for the new scope of quality management proposed by this study. The seven dimensions extracted in Section C provide good insights to current thinking and knowledge in

quality management. Thus, these dimensions can be further leveraged in the implementation of the new scope of quality management proposed by this study.

Based on the analysis and presentation of the results obtained, the following chapter will present the conclusion and recommendations for this study.

CHAPTER 6: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

6.1 Preamble

This chapter will focus on the summary, conclusions and recommendations of this study. The chapter will begin with a summary of the theoretical and empirical studies. Thereafter, the achievement of the objectives of the study will be discussed. This will include a summary of the study, achievements of the research objectives, limitations of the study, original contribution to the body of knowledge, recommendations for future research and concluding remarks to close this chapter.

6.2 Summary of study

This study was based on the argument that quality management at present has become non-aligned with current business challenges and market demands. Therefore, the motivation for this study was that quality management is ready for a new evolution. Based on the current business challenges and market demands, this study proposed that the new evolution for quality management should become known as "quality stewardship".

To support the above motivation, the first part of this study took the form of a literature review. From the literature review, it is evident that quality management has undergone several changes or evolutions during the course of history since the 1900s. Some of these changes were major changes in the approach and philosophy of quality management, whilst others were minor additions and enhancements to the prevailing philosophy. Therefore, based on this review, it can be concluded that the main evolutions that quality underwent were known as the "four eras"; namely Inspection, Statistical Quality Control (SQC), Quality Assurance (QA) and Strategic Quality Management (SQM). A key insight from the review of the various changes in quality management was that this discipline possesses an incredible ability to re-create itself through continuous evolution in order to meet the changing business challenges and market demands.

The second part of the literature review presented a very clear representation of the challenges that are going to keep the business world occupied for the next few years. It confirmed that, increasingly, globalisation implications will require the ongoing consideration of organisations. Customer and public interest in food safety, regulatory, environmental and social issues will become heightened to the extent that any stumble on any of these issues has the potential to become instant national or international headline news. Regulations will continue to evolve rapidly. Over and above this, it confirmed that sustainable development will require major focus by all. All organisations globally will have a vital role to play in protecting our environment and resources for the future.

The conclusions drawn from this part of the literature review were that all the identified emerging trends, together with discussed current business challenges and market demands, are essentially the missing links in current quality management. Hence, from the point of view of the future of quality management, it becomes important that the emerging trends, business challenges and market demands are incorporated to define the relevance that quality can bring back to the business world. As an enabler to the proposed new evolution of quality management, the literature review was extended to evaluate the relevance of the term "stewardship" to this study. The thoughts that were provoked in review of the term "stewardship" are concomitant with leadership, change management and strategy. Hence a literature review on leadership, change management and strategy was carried forward as elements of this research and to draw linkages between them and the term "stewardship", pertinent to this study.

The literature review was thereafter used as a basis to develop the Quality Stewardship and Leadership (QSAL) framework. This framework is designed to act as a set of principles and practices for the proposed "quality stewardship" strategy that will guide an organisation in business excellence and interact with stakeholders on organisational outcomes and achievements.

In addition to the literature review and the development of the QSAL framework, an empirical principal study was undertaken to support the motivation stated for this study. The empirical analysis focused on obtaining responses on quality management practices and thinking across FMCG-type organisations in South Africa. A structured survey questionnaire was developed as a tool for the collection of data in the empirical study. The questionnaire consisted of three sections; namely, Demographic Information, Current Quality Practices and Current Thinking in Quality Management. Survey questionnaires were emailed to targeted participants. Completed surveys were returned via e-mail.

The analysis of the empirical study noted that the organisations that participated in the principal study, representing selected manufacturing organisations in South Africa, demonstrate variable levels in quality management practices; and demonstrate a high level of agreement or awareness to the questions posed on current thinking in quality management. These findings are aligned to the motivation for the study, that quality management has become outdated in its thinking and needs to re-align itself with current business challenges and market demands created by emerging trends and stakeholder needs.

6.3 Achievements of the research objectives

The aim and primary objective of this study was to propose an integrated quality stewardship framework to support the change that quality management as a discipline needs to undertake and the development of leadership that should be adopted to achieve this. To accomplish the aim and objective of this study, four sub-objectives were developed. The discussion below on the details, conclusions and the recommendations for each of the sub-objectives will demonstrate the manner in which the primary objective for this study was achieved.

6.3.1 Objective 1

The first objective was to conduct a comprehensive literature review, to determine the current perceptions and status in the discipline of quality and emerging trends

that are creating current business challenges, and to identify the various elements to be considered for the development of the quality stewardship framework.

6.3.1.1 Conclusion

It can be concluded that the changes which quality management underwent during the various evolutionary stages up until the 1990s, although linked to demand and supply, customer focus, competitive advantage and profitable growth, indirectly strengthened or refreshed the discipline's thinking and strategy on an ongoing basis. Furthermore, it is apparent that all these changes advanced quality management as a discipline on a continuum from quality through pride, to quality by inspection, quality assurance, quality by prevention, and ultimately, quality of management.

However, in the last two decades (since the 1990s), quality management has become non-aligned to business challenges and market demands created by emerging trends and stakeholder needs. A key reason, according to Gutner and Adams (2009:1-22), for this non-alignment is the lack of proper appreciation and understanding by corporate leaders on how quality management can deliver competitive advantage, customer focus and profitable growth to organisations as it did previously. In addition, according to Hoyle (2009: vii), due to a poor understanding of TQM by organisations, this philosophy was unable to achieve intended changes in the thinking of quality management beyond the focus of the product or process (Hoyle (2009: vii).

6.3.1.2 Recommendation

It is evident from the review of related literature that quality management in the future has to move into areas it has not been in the past, in order to support businesses to manage emerging trends such as globalisation, customer power and sophistication, social responsibility and environmental sustainability. Essentially, going back to the continuum mentioned above, quality management will need to extend from quality of management to quality of the entire enterprise and quality of creation or existence. Therefore, organisations should prepare to benefit from what

quality is becoming or else they will be overtaken by competitors who pursue this new direction, which is ultimately dictated by the customer and stakeholders.

6.3.2 Objective 2

The second objective of this study was to conduct a literature review on the topics of stewardship and leadership and to demonstrate the appropriateness of the term for the new definition of quality management to support the framework.

6.3.2.1 Conclusion

The literature supported the notion that the term "stewardship" could be adopted for the leadership of quality management. Based on a definition of the term distilled from the literature review, it is felt that "stewardship" will support the proposed new evolution for quality management by providing a governance framework and leadership strategy in which organisations and their employees can engage, for the sake of their continued existence. The leadership association to the term "stewardship" was carried through as a willingness to be accountable for the wellbeing of a larger cause by operating in serving, rather than in controlling. Hence, the leadership theory that was chosen to closely match "stewardship" thinking was "servant leadership".

6.3.2.2 Recommendation

The idea of "stewardship", although it has been prevalent for a long time, is very new for quality management. Furthermore, related literature indicates that any change to quality management in the past always created major challenges for organisations, employees and leaders. Therefore, although "stewardship" provides a viable alternative to re-position quality management to support organisations in addressing current business challenges and market trends, implementation of this new thinking requires careful consideration.

Thus, the various change management models discussed in Chapter 3 offer considerations and options that could be leveraged at the development and implementation stages of the strategy and framework for this study. Furthermore, the

literature focusing on strategy demonstrated that key to the execution of any strategy was careful thought and leadership to assess and implement the changes desired to reach the targeted objectives for an organisation. This included making assumptions about the business environment, assessing the organisation's capabilities, connecting strategy to operations and the employees who were going to implement the strategy. Also, it is emphasised that the role of employees, their engagement and their motivation could result in either their success or failure of execution of a strategy.

6.3.3 Objective 3

The third objective of this study was to conduct a principal study using the survey approach based on the Malcolm Baldrige National Quality Award (MBNQA) criteria to evaluate the current practice and thinking in quality management.

6.3.3.1 Conclusion

The responses obtained to all the demographic-related questions indicate that the survey returned an ideal sample of respondents from the population to undertake the proposed statistical analysis for this study. In addition, the high overall Cronbach Alpha values for both Sections B and C provided the reliability for the hypothesis testing, using the chi-square test, which was undertaken to further understand current quality practices within selected manufacturing organisations in South Africa.

Based on the variable levels of responses in quality management practices and a high level of agreement or awareness to the questions on the current thinking of quality management, it can be concluded that the organisations in this study manage quality using either quality control or quality assurance philosophies. Other definitions that can be referred to the analysis provided by Cameron and Cine (1999:9-25) are "error detection culture" or "error prevention culture".

The hypothesis tests in the principal study tested the independent variables (industry type, designation in organisation, experience in quality management, organisation size and whether or not the organisation has implemented a formal QMP) against all questions on current quality practices and current quality thinking. From the

hypothesis tests in the principal study, it can be concluded that the variable "organisation type" followed by the "position in organisation" returned the most significant differences in responses by the participants in this study.

In addition, the principal study also consisted of a detailed Factor Analysis on sections B and C, in order to determine common themes in the form of principle components or most significant factors for quality management in the participating organisations. The factor analysis displays the existence of clusters of large correlation coefficients between subsets of these variables. This suggests that these variables could be measuring aspects of the same underlying dimensions. It shows that all of the sixty one variables from current quality management practices can be summarised into twelve dimensions and that twenty seven variables from current quality management thinking can be summarised into seven dimensions.

6.3.3.2 Recommendation

As the study indicates a high level of agreement or awareness to the questions posed on current thinking of quality management, the recommendation is that quality management should evolve to be known as "quality stewardship". The new evolution of quality management should thus incorporate the identified emerging trends.

However, from an integration perspective, the incorporation of the identified emerging trends implies a profound adjustment rather than a small modification to the current philosophy of quality management. The profundity required follows the views of Saco (2008:1-3). This author builds on Hoyle's (2009:vii) viewpoints (as discussed in Chapter 2 of this study) that the two conversations; namely, little "q" and big "Q", are indeed complementary and both are needed for quality management to prevail; however, at present, a further distinction is required. This should be known as the third conversation and termed really big "Q".

Saco (2008:1-3) explains that really big "Q" is about going beyond quality control, quality assurance and quality improvement. Hence, really big "Q" should be a more coherent conversation around sustainability and responsibility, and what is required

at a higher level than just the organisation. This implies that quality management should operate at the level of the entire social systems, where issues like climate change, business ethics, sustainable economies, ecology and reciprocity are addressed. This is in alignment with emerging forces, as identified and discussed as part of this study. Most importantly, the proposed third conversation essentially centres on the existence of the world, and a need to address not only the issues of the present day, but the very pressing concerns of tomorrow. Thus, from the above discussion, the recommendation for this study is that it should introduce a third conversation for quality management in the form of really big "Q". This really big "Q" must then be incorporated into the Quality Stewardship strategy.

Hence, building on the thinking of really big "Q", the final recommendation for this study is to develop a "quality stewardship" strategy that is precise in representing, protecting and advancing an organisation. The "quality stewardship" strategy also needs to be responsive to rising stakeholder expectations related to the organisation's public image on a range of issues. In addition, the strategy needs to demonstrate a strong sense of governance, ownership and responsibility for outcomes that support the organisation, the society that it operates in and the planet.

Appendix 23 provides a suggested Quality Stewardship strategy that an organisation can adopt.

6.3.4 Objective 4

The fourth objective was, through the principal study, to inquire about the acceptability of the framework as a new approach in quality management.

6.3.4.1 Conclusion

The thinking of the use of frameworks is supported widely in literature (Okumus 2001:327, Olsen and Haslett 2002:452) as a means to simplify complex processes, entities or systems. Thus, the Quality Stewardship and Leadership (QSAL) framework was developed and introduced in Chapter 4 of this study. As per the objective of this study, the QSAL framework incorporates TQM, systems thinking

and business excellence as the underlying theoretical grounding. Connecting to the underlying theoretical grounds, the framework illustrates the manner in which the new dynamic strategy and definition for quality management was developed as a holistic system made up of individual parts.

The applicability of the QSAL framework to current practice in the selected manufacturing organisations was assessed as part of the principal study. From the responses by the participants in this study it is evident that there is a high level of acceptance for the proposed QSAL framework.

6.3.4.2 Recommendation

Based on the number of "unsure" responses to the questions above, it is recommended that the implementation of the proposed QSAL framework requires a robust change management plan. The change management models offered in Chapter 3 could provide the necessary support required. This, hopefully, will improve awareness on the operation of the framework in organisations that opt to implement it.

Furthermore, organisations that decide to implement the QSAL framework will be able to drive a culture of organisational excellence (OE) within their businesses. Thus, the recommendation emanating from this study is to develop and evaluate a performance measurement dashboard based on the comprehensive criteria, systems and key performance indicators (KPI's) incorporated in the QSAL framework.

The above recommendation is supported by Kanji (2007:1-10), who is of the view that due to the complexity existing within organisations today, managers must ideally be able to view performance in several areas simultaneously. He further states that the first condition necessary to improve and ultimately to achieve OE, is to develop and implement a system of performance measurement criteria that goes beyond the presentation of financial figures and incorporates other non-financial success factors.

6.4 Limitations of the study

The following can be noted as limitations for this study:

- The body of literature on the concept of "quality stewardship" is limited, hence, various associated topics on the term were reviewed and the distillation of a definition pertinent to this study was compiled.
- Survey responses from organisations labelled "non-beverage FMCG" were poor, even with a number of iterations of trying. These organisation types resulted in the lowest number of responses for the empirical study.

6.5 Original contribution to the body of knowledge

The aim of this study was to identify the various elements used to develop the Quality Stewardship and Leadership framework, using quality stewardship as a recommendation for more alignment with current business challenges and leadership. This framework was developed using supporting literature and was checked for preference through a survey study of selected manufacturing organisations. The empirical study displayed a high degree of preference for the framework of repositioning quality management to support organisations in addressing current business challenges, market demands and new stakeholder requirements created by identified emerging trends.

South Africa was considered as a location for the data collection, because it is believed that emerging economies are known to lead new concepts and theories based on the specific needs and challenges they have to overcome.

This framework, by addressing "stewardship" as the new governance and leadership approach for quality management, makes an original contribution to the body of knowledge in quality management.

6.6 Recommendations for further research

It is hoped that future research will be undertaken to implement and evaluate the effectiveness of this stewardship framework for quality management.

6.7 Concluding remarks

The motivation for this study was based on the argument that the heritage of many top organisations was built upon a solid quality and safety foundation. Although quality remains or continues to be one of the top ranking strategic issues in all major organisations, organisations are currently faced with increasingly sophisticated and informed stakeholder expectations. Standards by which organisations are judged are continuously evolving, as are consumer's expectations, needs and preferences, as their awareness of food safety, health and wellness, social and environmental issues increases. In this environment, the consumer needs have become skewed from personal needs to societal and planet needs.

A top emerging issue as a result of these changes is growing societal expectations on the business community. The business community, and particularly multi-national organisations, are now expected to play a leading role in ensuring that the critical issues facing society are addressed successfully. This is an outcome of a strong growing interface between the Non-Governmental Organisations (NGOs) and the public, resulting from the actuality that the role of government in many societies across the world is becoming diminished in importance. In South Africa, evidence of this can be seen in sustainable development areas like waste management, recycling and environmental protection; in social areas such as education and leadership in response to the AIDS crisis. This applies also to emerging areas such as food safety and genetically modified organisms (GMO) debates, to list a few.

As organisations are pre-occupied with issues as listed above, the role of quality management and its alignment with today's business challenges is widely criticised. This study tries to address this misalignment through proposing the evolution of quality management to Quality Stewardship. The choice of the word "stewardship" was made as it is aligned to the role that quality management and quality professionals could fulfil at present and in future. This role must evolve beyond quality control and quality management. It must enable more coherent conversations around sustainability and responsibility and what is required at a higher level than merely the organisation.

The study detailed a strategy and framework for the implementation of the Quality Stewardship evolution. However, the importance of ongoing review of this strategy and framework cannot be overemphasised, as changes in the external environment and requirements from the increasingly sophisticated and informed stakeholder expectations will continue. Therefore, in order for the strategy to be relevant and to continue to support organisations in addressing business challenges and market demands, it needs to be regularly renewed.

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Appendix 1: Cover Letter for Principal Study

Dear Sir/Madam,

Doctorate Research Project

Researcher: Gonasagren Vimlan Moonsamy (Cell-phone 082 924 2149)

I, Gonasagren Vimlan Moonsamy, a Doctorate student, invite you to participate in my research project entitled **Quality Stewardship: A 21st century quality framework for manufacturing organisations in South Africa.**

My research will focus on quality management and the challenges they impose on organisations. Through your participation I am hoping to collect data which will assist me in understanding current quality practices and frameworks better. The results of the survey are intended to contribute to the development of an updated more relevant quality framework that can be used by business today.

The survey should take between twenty and thirty minutes to complete. Your participation in this project is voluntary. You may refuse to participate or withdraw from the project at any time with no negative consequence. There will be no monetary gain from participating in this survey. Confidentiality and anonymity of records identifying you as a participant will be maintained at all times.

I hope you will take the time to participate in this project. If you have any questions or concerns about participating in this project, please contact me on the cell-phone number listed above.

Sincerely,

Gonasagren Vimlan Moonsamy

Date : 6/05/2010

Appendix 2: Principal Study Survey Questionnaire

Section A: Demographical Information

By:
Cell:
Email:

Use a 'fill colour' to mark the cell you wish to select. To deselect use the "no fill" option

A.1. Please indicate your industry type

1 Organisation 1: Beer
2 Organisation 2: Soft Drinks
3 Head Office : Beer & Soft Drinks
4 Supplier: Beer & Softdrinks
5 FMCG: External
7 Other, please specify: _____

Use a 'fill colour' to mark the cell you wish to select. To deselect use the "no fill" option

A.2. Please indicate your position in your organisation

1 General Manager
2 Quality Assurance Manager
3 Functional Manager (finance, marketing, operations, etc.)
4 Area/business sector/product Manager
5 Consultant
6 Other, please specify: _____

Use a 'fill colour' to mark the cell you wish to select. To deselect use the "no fill" option

A. 3. Please indicate your experience in Quality Management.

1 < 1 years
2 1-2 years
3 3-5 years
4 6-10 years
5 > 10 years

Use a 'fill colour' to mark the cell you wish to select. To deselect use the "no fill" option

A 4.Please indicate the size of your organisation (i.e. part or business unit) by number of employees

1 < 50 employees
2 50-100 employees
3 101-250 employees
4 251-1000 employees
5 > 1000 employees

Use a 'fill colour' to mark the cell you wish to select. To deselect use the "no fill" option

A. 5.Please indicate whether your Organisation has a formal Quality Management Program ?

1 Yes, organisation wide
2 Yes, in some parts of the organisation
3 No

Use a 'fill colour' to mark the cell you wish to select. To deselect use the "no fill" option

A. 6 .If (A.5) is yes, which of the following to subscribe to ?

1 ISO 9001
2 ISO 22000
3 ISO 14000
4 HACCP
5 e-MARK
6 Safety (OHAS 18000, NOSA)
7 MBQNA
8 Other, please specify: _____

Use a 'fill colour' to mark the cell you wish to select. To deselect use the "no fill" option

Appendix 2: Principal Study Survey Questionnaire… Continued

Section B: Current Quality Practices within Organisations

Below are the list of questions that need to be answered. Please cross (x) in the number box that you feel most appropriately representing the strength or degree of your assessemnt, agreeement, perception or opinon.

Scale: [5] Very High; [4] High; [3] Medium; [2] Low; [1] Very Low

	B.1 LEADERSHIP AND COMMITMENT OF SENIOR MANAGEMENT (Manner in which senior lead, govern and fullfill societal responsibilities)	**5**	**4**	**3**	**2**	**1**
B1.1	The extent to which senior leaders accept responsibility for setting the organisation's quality vision, objectives and goals					
B1.2	The extent to which senior leaders accept responsibility and create a focus on achieving the organisation's quality vision, objectives and goals					
B1.3	The extent to which senior leaders attach the importance of quality in realtion to cost, production and delivery of KPI's.					
B1.4	The extent to which senior leaders personally promote an organizational environment that fosters, requires, and results in legal and ethical behavior					
B1.5	The extent to which senior leaders personally promote an organizational environment that fosters, requires, and results in effective and credible goverance system					
B1.6	The extent to which senior leaders personally promote an organizational environment that fosters, requires and results in well-being of the social and economic systems to which your organization does or may contribute to					
B1.7	The extent to which senior leaders personally promote an organizational environment that fosters, requires and results in the well-being of the environmental systems to which your organization does or may contribute to					
	B.2 STRATEGY DEVELOPMENT (How your organization plans, develops and deploys its strategy)	**5**	**4**	**3**	**2**	**1**
B2.1	Extent to which quality management is considered in your organisation's strategic plan					
B2.2	The extent to which all relevant data and information pertaining to quality management is collected and analysed as part of the strategic planning process					
B2.3	The extent to which the key strategic objectives for quality are identified and your timetable for accomplishing them are captured in the strategy planning process					
B2.4	The extent to which the key short and long term quality management goals are captured for the identified strategic objectives in the strategy planning process					
B2.5	The extent to which the strategy development process includes the right people (employees,suppliers,key partners, customers and other stakeholders) to adequately represent quality management					
B2.6	The extent to which the strategy deployment process includes the right people (employees, suppliers, key partners, customers and other stakeholders) to achieve the identified strategic objectives for quality management					
	B.3 CUSTOMER FOCUS: (How the organisation engages customers to obtain information to serve their needs and build relationships?)	**5**	**4**	**3**	**2**	**1**
B3.1	Level and ability to capture your customers' satisfaction,experience and engagement					
B3.2	The extent your organsiation listens to suppliers to obtain actionable information					
B3.3	The extent your organsiation listens to former customers to obtain actionable information					
B3.4	The extent your organsiation listens to potential customers to obtain actionable information					
B3.5	The extent your organsiation listens to customers of competitors to obtain actionable information					
B3.6	Level and ability to use voice-of-the-customer (CTQ's) to identify and anticipate key customer requirements and changing expectations					
B3.7	Level and ability to use the voice-of-the-customer to identify and innovate product offerings to exceed the expectations of your customer					
B3.8	Level and ability to use the voice-of-the-customer to identify and innovate product offerings to attract new customers					
B3.9	Extent of success in your customer complaint management process to enable you to recover your customers' confidence, and enhance their satisfaction and engagement					
	B.4 MEASUREMENT, ANALYSIS, and KNOWLEDGE MANGEMENT: (How the organization measure, analyze, and then improve organizational performance and knowledge transfer?)	**5**	**4**	**3**	**2**	**1**
B4.1	The extent to which analysis and review of the quality data assesses the progress relative to strategic objectives and action plans					
B4.2	The extent that the analysis and review of the quality data translates into organizational priorities for continuous improvement and innovation					
B4.3	The extent to which quality measurement system reflect the measurement intergrity and validity (guage R&R, Attribute MSA and audit)					
B4.4	The extent that the analysis and review of the quality data supports how priorities and opportunities are deployed within your organisation					
B4.5	The extent that the analysis and review of the quality data supports how projects, priorities and opportunities are deployed to your suppliers, partners, and collaborators to ensure organizational alignment					
B4.6	The effectiveness of the knownledge transfer process within your organisation					
B4.7	The extent to which your organisation is successful in the rapid identification, sharing, and implementation of best practices					

Appendix 2: Principal Study Survey Questionnaire… Continued

Section B: Current Quality Practices within Organisations

Below are the list of questions that need to be answered. Please cross (x) in the number box that you feel most appropriately representing the strength or degree of your assessemnt, agreeement, perception or opinon.

Scale: [5] Very High; [4] High; [3] Medium; [2] Low; [1] Very Low

	B.5 WORKFORCRE FOCUS:(How your organization engages your workforce to achieve organizational and personal success?)	**5**	**4**	**3**	**2**	**1**
B5.1	The extent to which your organization manages workforce capability and capacity, including skills, competencies, and staffing levels, to accomplish quality work					
B5.2	The level at which your organisation and senior leaders develop and train members of your workforce, including leaders, to achieve high quality performance					
B5.3	The extent to which employees/teams are held responsible for the output of their process					
B5.4	The extent to which workforce/nonsupervisory employees participate in quality decisions through teams					
B5.5	The extent to which business functions participate and collabrate in quality improvement, innovations decisions					
B5.6	The extent to which the quality professional acts as a change catalyst and change facilitator for new organisational priorities					
	B.6 QUALITY AND PROCESS MANAGEMENT - (How does the organization design, manage, and improve your key organizational work processes for quality?)	**5**	**4**	**3**	**2**	**1**
B6.1	The extent to which the quality management is guided by management systems certification system, e.g. ISO9001					
B6.2	The level at which the design and operation of your organisation's current quality management systems contributes to customer value, profitability or financial return, organizational success, and sustainability					
B6.3	The level at which your current quality management system allows for revisions, including incorporation of input from customers, suppliers, partners, and collaborators, as appropriate					
B6.4	The level at which the design and operation of your organisation's current quality measurement system ensures that all key processes and product/service requirements are measured and managed					
B6.5	The level at which the design and operation of your organisation's current quality measurement system ensures clarity of product/service specifications and procedures and new product/service design is reviewed					
B6.6	The level at which the Quality-at-source philosophy, whereby the workforce is totally resposible for the measurement and corrective action for quality, are sucessfully implemented throughout your organisation					
B6.7	The level at which the Quality professionals are responsible for production quality control					
B6.8	The level at which the Quality professionals are responsible for production quality assurance, e.g. coaching, teamwork, audit, training support					
B6.9	The level at which the Quality professionals are responsible for improving operational excellence					
B6.10	The level at which statistical tools and techniques (control charts, Pareto chatrs,histograms, cause-and-effect diagrams, ect) are sucessfully implemented throughout your organisation					
B6.11	The level at which six sigma methodologies,tools and techniques are sucessfully implemented throughout your organisation supporting the execution of strategic businees unit objective through projects					
B6.12	The level at which a formal supplier certification process is in place to ensure that suppliers have the required quality assurance systems in place to adress all Critical to Quality (CTQ) requirements of your business, mimimising need for receiving inspection					
B6.13	The level at which the design and operation of your organisation's current quality measurement system allows for the incorporation of new technology, organizational knowledge, and the potential need for agility into the design of the quality measurement process					
B6.14	The level at which the design and operation of your organisation's current quality measurement system allows for the minimising of costs of inspections, tests, and process or performance audits, as appropriate					
B6.15	The level of confidence that the day-to-day operations of your organisations quality measurement system, meets key process requirements and prevent defects, service errors, and rework and minimises warranty costs or customers' productivity losses, as appropriate					
B6.16	The extent to which the workforce, customers, suppliers, partners, and collaborators inputs are used in managing and problem solving for quality, as appropriate					
B6.17	The level of confidence that your current quality measurement system supports improvements to achieve better performance, to reduce variability and non conformances, to improve product quality, and to keep the					
B6.18	The level of confidence that your current quality measurement system supports quality improvements and lessons learned shared with other organizational units and processes to drive organizational learning and innovation					
	B.7 Results- (What are your performance results for the various categories?)	**5**	**4**	**3**	**2**	**1**
B7.1	Performance levels or trends for your organisation in the accomplishment of organisational strategy and action plans					
B7.2	Performance levels or trends for your organisation in product quality performance that are important to your customers					
B7.3	Comprasion of performance levels or trends for your organisation in the above (B7.2) with the performance of your competitors and other organisations with similar product offerings					
B7.4	Performance levels or trends for your organisation in customer satisfaction					
B7.5	Comparsion of performance levels or trends for your organisation in the above (B7.4) with the performance of your competitors and other organisations providing similar products					
B7.6	Performance levels or trends for key measures or indicators for your organization in corporate governance, ethical behavior and stakeholder trust in the senior leaders					
B7.7	Performance levels or trends for key measures or indicators for your organisation's commitment and fullfillment of social accountability and support for communities with corporate social initiatives (CSI))					
B7.8	Performance levels or trends for key measures or indicators for your organization's commitment and fullfillment of environmental responsibilities					

Section C: Current Thinking on Quality

Below are the list of questions that need to be answered by highlighting the box that you feel most appropriately representing the strength or degree of your assessemnt, agreeement, perception or opinon or for open ended questions providing brief notes.

C.1 **Views on Quality**

The current belief is that quality in its old role and the value add held over the last two decades has been out grown. Quality today is fully embedded into the process and is managed as a routine output. Using this as a thought trigger, please answer the following five questions (C1.1 -

C.1.1 **Level of agreement that quality is currently at crossroads and thus requires an evolution and re-positioning to be relevant to meet today's business demands.**

Strongly Disagree	Disagree	Unsure	Agree	Strongly Agree

C.1.2 **Level of agreement that the above (C.1.1) is due to quality still being "stuck" with the same thinking from the 70's and 80's and the historic teachingsof Deming/Juran and others from then is still providing the framework for its practice today.**

Strongly Disagree	Disagree	Unsure	Agree	Strongly Agree

C.1.3 **Level of agreement that Quality should evolve beyond the thinking from the 70's and 80's which exclusively focussed on production and processes.**

Strongly Disagree	Disagree	Unsure	Agree	Strongly Agree

C.1.4 **Level of agreement that that Quality should evolve to become more consumer, community and planet focussed.**

Strongly Disagree	Disagree	Unsure	Agree	Strongly Agree

C.1.5 **Please briefly describe your views on the key outputs that quality needs to deliver going into the future?**

C.1.6 **Please briefly decribe your views on the key roles of quality professionals going into the future?**

C.2 **EMERGING TRENDS IDENTIFED AS CURRENT BUSSINESS CHALLENGES AND OPPORTUNITY FOR QUALITY IN THE FUTURE**

The common new business challenges faced by organizations today identified by this study and supported by the 2008 ASQ Futures Study and the Conference Board's Quality Council report in 2009 , that could have a major impact on Quality going into the future, includes globalization, customer power and sophistication, innovation, food security, social responsibility and environmental sustainability consciousness.

C2.1 **Level of awareness of these identified emerging trends your organisation:**

		Totally Unaware	Somewhat Unaware	Unsure	Aware	Highly Aware
C.2.1 (a)	Globalisation					
C.2.1 (b)	Increasing customer power and sophistication					
C.2.1 (c)	Growing need for more innovation within organisations					
C.2.1 (d)	Increasing food safety requirements from organisations					
C.2.1 (e)	Increasing social responsibility commitments from organisations					
C.2.1 (f)	Increasing environmental sustainability consciousness and commitments from organisations					

Section C: Current Thinking on Quality

Below are the list of questions that need to be answered by highlighting the box that you feel most appropriately representing the strength or degree of your assessemnt, agreeement, perception or opinon or for open ended questions providing brief notes.

C2.2 **Level of awareness of the impact these identified emerging trends has on the day to day operations of your organisation:**

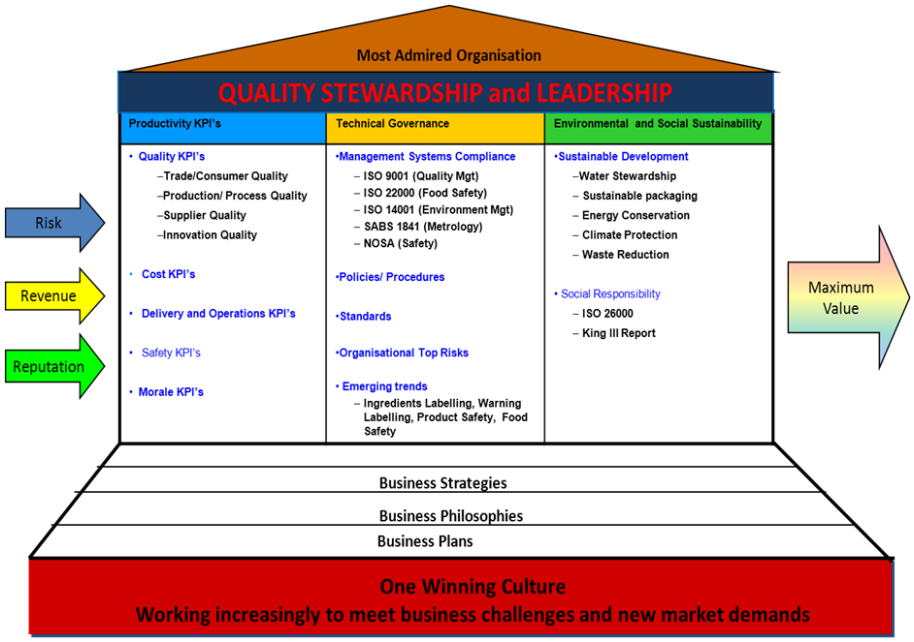
		Totally Unaware	Somewhat Unaware	Unsure	Aware	Highly Aware
C.2.2 (a)	Globalisation					
C.2.2 (b)	Increasing customer power and sophistication					
C.2.2 (c)	Growing need for more innovation within organisations					
C.2.2 (d)	Increasing food safety requirements from organisations					
C.2.2 (e)	Increasing social responsibility commitments from organisations					
C.2.2 (f)	Increasing environmental sustainability consciousness and commitments from organisations					

C2.3 **Level of agreement that these identified emerging trends can be better managed using Quality approaches, tools and techniques:**

		Strongly Disagree	Disagree	Unsure	Agree	Strongly Agree
C.2.3 (a)	Globalisation					
C.2.3 (b)	Increasing customer power and sophistication					
C.2.3 (c)	Growing need for more innovation within organisations					
C.2.3 (d)	Increasing food safety requirements from organisations					
C.2.3 (e)	Increasing social responsibility commitments from organisations					
C.2.3 (f)	Increasing environmental sustainability consciousness and commitments from organisations					

C.3 **VIEWS ON PROPOSED FRAMEWORK TO MANAGE QUALITY IN THE FUTURE**

Based on the above context (C.1 and C.2) the study undertaken proposes that Quality going into the future should evolve to be called Quality Stewardship. The definition for Quality Stewardship must begin with the understanding of the consumer and all stakeholders' expectations, which includes addressing the new business challenges and deliver a proactive technical leadership that ensures the integrity of production and processes, whilst protecting the reputation of the organization. The integrated framework below which will be known as the Quality Stewardship and Leadership (QSAL) framework, outlines the main components and operation of the Quality Stewardship strategy.



Appendix 2: Principal Study Survey Questionnaire… Continued

Section C: Current Thinking on Quality

C.3.1 **The new evolution and proposed framework will better position Quality going into the future**

Strongly Disagree	Disagree	Unsure	Agree	Strongly Agree

C.3.2 **The new evolution proposed for Quality will be supported by your organisation**

Strongly Disagree	Disagree	Unsure	Agree	Strongly Agree

C.3.3 **The proposed framework will be benefical to your organisation**

Strongly Disagree	Disagree	Unsure	Agree	Strongly Agree

C.3.4 **The proposed framework will position quality at a higher level within your organisation**

Strongly Disagree	Disagree	Unsure	Agree	Strongly Agree

C.3.5 **In your organisation there will be support for the the motivation to include the poposed approach to quality to your existing**

Strongly Disagree	Disagree	Unsure	Agree	Strongly Agree

C.3.6 **What in particular do you believe is the advantages & disadvantages of the proposed evolution and framework for Quality?**

Advantages: Disadvantages:

C.3.7 **What aspects of the framework would to suggest any changes to?**

THE END :

Thank you for taking the time to complete this survey. Your input is highly appreciated and valued.

Appendix 3: Hypothesis for Section B

Current Quality Practices within Selected Manufacturing Organisations

H1	Ho	Ho Position in the organisation has no relationship with B1; B2; B3; B4; B5; B6; B7……
	Ha	Ha Position in the organisation does have a relationship with B1; B2; B3; B4; B5; B6; B7……
H2	Ho	The Experience in Quality Management, by indicating the number of years involvement in these activities has no relationship with B1; B2; B3; B4; B5; B6; B7……
	Ha	The Experience in Quality Management, by indicating the number of years involvement in these activities has a relationship within B1; B2; B3; B4; B5; B6; B7……
H3	Ho	The size of your organisation (i.e. part or business unit) - by number of employees has no relationship with B1; B2; B3; B4; B5; B6; B7……
	Ha	The size of your organisation (i.e. part or business unit) - by number of employees has a relationship with B1; B2; B3; B4; B5; B6; B7……
H4	Ho	There is no relationship with organisations who have a formal Quality Management Program and organisations with no program with their thinking on B1; B2; B3; B4; B5; B6; B7……
	Ha	There is a relationship with organisations who have a formal Quality Management Program and organisations with no program with their thinking on B1; B2; B3; B4; B5; B6; B7……
H5	Ho	Ho Organisation type has no relationship with B1; B2; B3; B4; B5; B6; B7……
	Ha	Ha Organisation type does have a relationship with B1; B2; B3; B4; B5; B6; B7……

CATEGORIES FOR B1; B2; B3; B4; B5; B6; B7……
B1 Leadership and commitment of senior management
B2 Strategy development
B3 Customer focus
B4 Measurement, analysis, and knowledge management
B5 Workforce focus
B6 Quality and process management
B7 Organisational Performance and Improvement

Appendix 4: Hypothesis for Section C

Current Quality Thinking within Selected Manufacturing Organisations

H6	Ho	Ho Position in the organisation has no relationship to C.1; C.2; C.3; …
	Ha	Ha Position in the organisation has a relationship with C1; C2; C3; …
H7	Ho	The Experience in Quality Management, by indicating the number of years involvement in these activities has no relationship with C1; C2; C3; …
	Ha	The Experience in Quality Management, by indicating the number of years involvement in these activities has relationship with C1; C2; C3; …
H8	Ho	The size of your organisation (i.e. part or business unit) - by number of employees has no relationship with C1; C2; C3;…
	Ha	The size of your organisation (i.e. part or business unit) - by number of employees has relationship with C1; C2; C3; …
H9	Ho	There is no relationship with organisations who have a formal Quality Management Program and organisations with no program with their thinking on C1; C2; C3; …
	Ha	There is a relationship with organisations who have a formal Quality Management Program and organisations with no program with their thinking on C1; C2; C3;…
H10	Ho	Ho Organisation type has no relationship with C1; C2; C3; …
	Ha	Ha Organisation type has a relationship with C1; C2; C3; …

CATEGORIES FOR C1; C2; C3 …
C.1 Current Thinking on Quality
C.2 Emerging Trends Identified as Current Business Challenges and opportunity for Quality in the future
C.2.1 Level of awareness of identified emerging trends
C.2.2 Level of impact these identified emerging trends has on the day to day operations
C.2.3. Level of agreement that these identified emerging trends can be better managed using quality approaches, tools and techniques
C.3 Proposed Framework to Manage Quality in the Future

Appendix 5: Reliability Analysis for Section B

		For Category	For Item Deleted
B.1	**Leadership and Commitment**	**0.79**	
B1.1	The extent to which senior leaders accept responsibility for setting the organisation's quality vision, objectives and goals		**0.83**
B1.2	The extent to which senior leaders accept responsibility and create a focus on achieving the organisation's quality vision, objectives and goals		0.77
B1.3	The extent to which senior leaders attach the importance of quality in relation to cost, production and delivery of KPI's.		**0.79**
B1.4	The extent to which senior leaders personally promote an organisational environment that fosters, requires, and results in legal and ethical behaviour		0.73
B1.5	The extent to which senior leaders personally promote an organisational environment that fosters, requires, and results in effective and credible governance system		0.72
B1.6	The extent to which senior leaders personally promote an organisational environment that fosters, requires and results in well-being of the social and economic systems to which your organisation does or may contribute to		0.76
B1.7	The extent to which senior leaders personally promote an organisational environment that fosters, requires and results in the well-being of the environmental systems to which your organisation does or may contribute to		0.75
B2	**Strategy Development**	**0.88**	
B2.1	Extent to which quality management is considered in your organisation's strategic plan		**0.87**
B2.2	The extent to which all relevant data and information pertaining to quality management is collected and analysed as part of the strategic planning process		0.85
B2.3	The extent to which the key strategic objectives for quality are identified and your time table for accomplishing them are captured in the strategy planning process		0.84
B2.4	The extent to which the key short and long term quality management goals are captured for the identified strategic objectives in the strategy planning process		0.83
B2.5	The extent to which the strategy development process includes the right people (employees, suppliers, key partners, customers and other stakeholders) to adequately represent quality management		**0.90**
B2.6	The extent to which the strategy deployment process includes the right people (employees, suppliers, key partners, customers and other stakeholders) to achieve the identified strategic objectives for quality management		0.84
B3	**Customer Focus**	**0.92**	
B3.1	Level and ability to capture your customers' satisfaction, experience and engagement		0.92
B3.2	The extent your organisation listens to suppliers to obtain actionable information		0.91
B3.3	The extent your organisation listens to former customers to obtain actionable information		0.90
B3.4	The extent your organisation listens to potential customers to obtain actionable information		0.90
B3.5	The extent your organisation listens to customers of competitors to obtain actionable information		0.91
B3.6	Level and ability to use voice-of-the-customer (CTQ's) to identify and anticipate key customer requirements and changing expectations		0.91
B3.7	Level and ability to use the voice-of-the-customer to identify and innovate product offerings to exceed the expectations of your customer		0.91
B3.8	Level and ability to use the voice-of-the-customer to identify and innovate product offerings to attract new customers		0.91
B3.9	Extent of success in your customer complaint management process to enable you to recover your customers' confidence, and enhance their satisfaction and engagement		0.91

Appendix 5: Reliability Analysis for Section B….continued

		For Category	For Item Deleted
B4	**Data, Analysis and Knowledge Management**	**0.72**	
B4.1	The extent to which analysis and review of the quality data assesses the progress relative to strategic objectives and action plans		**0.74**
B4.2	The extent that the analysis and review of the quality data translates into organisational priorities for continuous improvement and innovation		0.68
B4.3	The extent to which quality measurement system reflect the measurement integrity and validity (gauge R and R, Attribute MSA and audit)		0.69
B4.4	The extent that the analysis and review of the quality data supports how priorities and opportunities are deployed within your organisation		0.70
B4.5	The extent that the analysis and review of the quality data supports how projects, priorities and opportunities are deployed to your suppliers, partners, and collaborators to ensure organisational alignment		0.68
B4.6	The effectiveness of the knowledge transfer process within your organisation		0.71
B4.7	The extent to which your organisation is successful in the rapid identification, sharing, and implementation of best practices		0.70
B5	**Workforce Focus**	**0.74**	
B5.1	The extent to which your organisation manages workforce capability and capacity, including skills, competencies, and staffing levels, to accomplish quality work		**0.77**
B5.2	The level at which your organisation and senior leaders develop and train members of your workforce, including leaders, to achieve high quality performance		0.73
B5.3	The extent to which employees/teams are held responsible for the output of their process		0.71
B5.4	The extent to which workforce/nonsupervisory employees participate in quality decisions through teams		0.67
B5.5	The extent to which business functions participate and collaborate in quality improvement, innovations decisions		0.68
B5.6	The extent to which the quality professional acts as a change catalyst and change facilitator for new organisational priorities		0.71
B6	**Quality and Process Management**	**0.91**	
B6.1	The extent to which the quality management is guided by management systems certification system, e.g. ISO9001		0.91
B6.2	The level at which the design and operation of your organisation's current quality management systems contributes to customer value, profitability or financial return, organisational success, and sustainability		0.91
B6.3	The level at which your current quality management system allows for revisions, including incorporation of input from customers, suppliers, partners, and collaborators, as appropriate		0.91
B6.4	The level at which the design and operation of your organisation's current quality measurement system ensures that all key processes and product/service requirements are measured and managed		0.90
B6.5	The level at which the design and operation of your organisation's current quality measurement system ensures clarity of product/service specifications , procedures and new design is reviewed before the product/service is produced		0.90
B6.6	The level at which the Quality-at-source philosophy, whereby the workforce is totally responsible for the measurement and corrective action for quality, are successfully implemented throughout your organisation		0.91
B6.7	The level at which the Quality professionals are responsible for production quality control		0.91
B6.8	The level at which the Quality professionals are responsible for production quality assurance, e.g. coaching, teamwork, audit, training support		0.91
B6.9	The level at which the Quality professionals are responsible for improving operational excellence		0.91
B6.10	The level at which statistical tools and techniques (control charts, Pareto charts, histograms, cause-and-effect diagrams, etc.) are successfully implemented throughout your organisation		0.90

Appendix 5 –Reliability Analysis for Section B ……Continued

B6	Quality and Process Management…continued	For Category	For Item Deleted
B6.11	The level at which six sigma methodologies, tools and techniques are successfully implemented throughout your organisation supporting the execution of strategic business unit objective through projects		0.91
B6.12	The level at which a formal supplier certification process is in place to ensure that suppliers have the required quality assurance systems in place to address all Critical to Quality (CTQ) requirements of your business, minimising need for receiving inspection		0.90
B6.13	The level at which the design and operation of your organisation's current quality measurement system allows for the incorporation of new technology, organisational knowledge, and the potential need for agility into the design of the quality measurement process		0.91
B6.14	The level at which the design and operation of your organisation's current quality measurement system allows for the minimising of costs of inspections, tests, and process or performance audits, as appropriate		0.90
B6.15	The level of confidence that the day-to-day operations of your organisations quality measurement system, meets key process requirements and prevent defects, service errors, and rework and minimises warranty costs or customers' productivity losses, as appropriate		0.91
B6.16	The extent to which the workforce, customers, suppliers, partners, and collaborators inputs are used in managing and problem solving for quality, as appropriate		0.91
B6.17	The level of confidence that your current quality measurement system supports improvements to achieve better performance, to reduce variability and non conformances, to improve product quality, and to keep the processes current with business needs and directions		0.90
B6.18	The level of confidence that your current quality measurement system supports quality improvements and lessons learned shared with other organisational units and processes to drive organisational learning and innovation		0.90
B7	**Organisational Performance and Improvement**	**0.74**	
B7.1	Performance levels or trends for your organisation in the accomplishment of organisational strategy and action plans		0.73
B7.2	Performance levels or trends for your organisation in product quality performance that are important to your customers		0.75
B7.3	Comparison of performance levels or trends for your organisation in the above (B7.2) with the performance of your competitors and other organisations with similar product offerings		0.70
B7.4	Performance levels or trends for your organisation in customer satisfaction		0.72
B7.5	Comparison of performance levels or trends for your organisation in the above (B7.4) with the performance of your competitors and other organisations providing similar products		0.72
B7.6	Performance levels or trends for key measures or indicators for your organisation in corporate governance, ethical behaviour and stakeholder trust in the senior leaders		0.69
B7.7	Performance levels or trends for key measures or indicators for your organisation's commitment and fulfilment of social accountability and support for communities with corporate social initiatives (CSI))		0.71
B7.8	Performance levels or trends for key measures or indicators for your organisation's commitment and fulfilment of environmental responsibilities		0.68

Appendix 6: Reliability Analysis for Section C

		For Category	For Item Deleted
C1	**Current Views on Quality Management**	**0.80**	
C1.1	Level of agreement that quality is currently at crossroads and thus requires an evolution and re-positioning to be relevant to meet today's business demands.		0.68
C1.2	Level of agreement that the above (C.1.1) is due to quality still being "stuck" with the same thinking from the 70's and 80's and the historic teachings of Deming/Juran and others from then is still providing the framework for its practice today.		0.67
C1.3	Level of agreement that Quality should evolve beyond the thinking from the 70's and 80's which exclusively focussed on production and processes.		0.75
C1.4	Level of agreement that that Quality should evolve to become more consumer, community and planet focussed.		0.84
C2.1	**Level of awareness of these identified emerging trends your organisation**	**0.83**	
C2.1 (a)	Globalisation		0.81
C2.1 (b)	Increasing customer power and sophistication		0.79
C2.1 (c)	Growing need for more innovation within organisations		0.80
C2.1 (d)	Increasing food safety requirements from organisations		0.84
C2.1 (e)	Increasing social responsibility commitments from organisations		0.77
C2.1 (f)	Increasing environmental sustainability consciousness and commitments from organisations		0.77
C2.2	**Level of awareness of the impact these identified emerging trends has on the day to day operations of your organisation**	**0.72**	
C2.2 (a)	Globalisation		0.68
C2.2 (b)	Increasing customer power and sophistication		0.69
C2.2 (c)	Growing need for more innovation within organisations		0.72
C2.2 (d)	Increasing food safety requirements from organisations		0.70
C2.2 (e)	Increasing social responsibility commitments from organisations		0.68
C2.2 (f)	Increasing environmental sustainability consciousness and commitments from organisations		0.69
C2.3	**Level of agreement that these identified emerging trends can be better managed using Quality approaches, tools and techniques**	**0.81**	
C2.3 (a)	Globalisation		0.76
C2.3(b)	Increasing customer power and sophistication		0.78
C2.3 (c)	Growing need for more innovation within organisations		0.79
C2.3 (d)	Increasing food safety requirements from organisations		0.85
C2.3 (e)	Increasing social responsibility commitments from organisations		0.74
C2.3 (f)	Increasing environmental sustainability consciousness and commitments from organisations		0.77
C3	**Views on proposed framework to manage Quality into the future**	**0.87**	
C3.1	The new evolution and proposed framework will better position Quality going into the future		0.84
C3.2	The new evolution proposed for Quality will be supported by your organisation		0.82
C3.3	The proposed framework will be beneficial to your organisation		0.83
C3.4	The proposed framework will position quality at a higher level within your organisation		0.88
C3.5	In your organisation there will be support for the motivation to include the proposed approach to quality to your existing practice		0.83

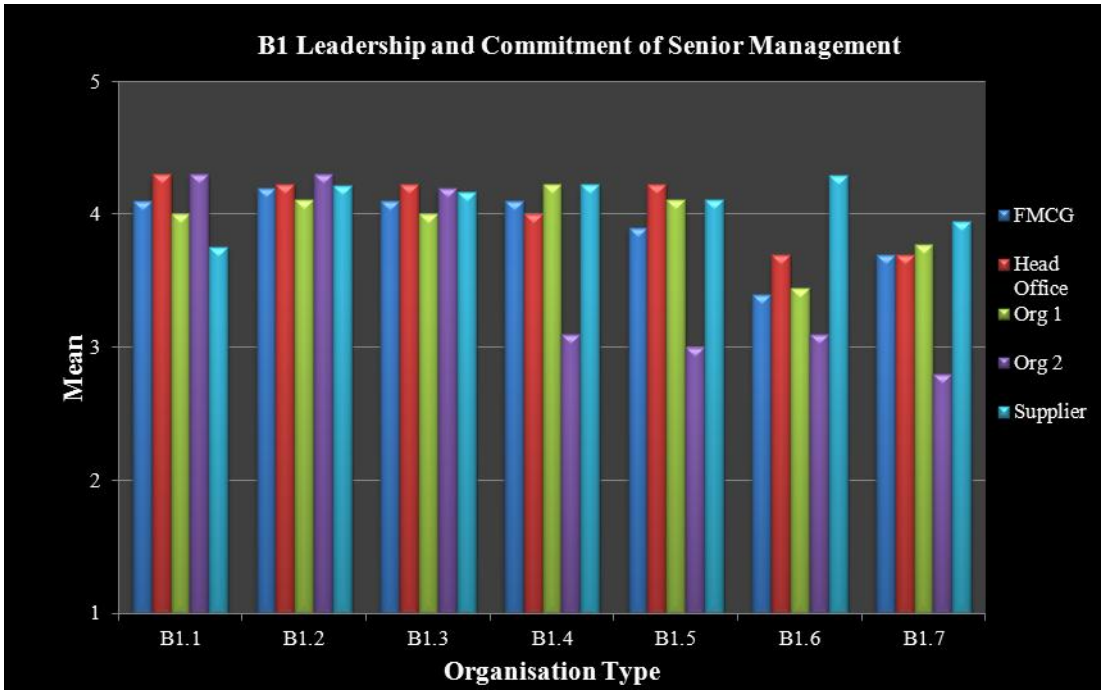
Appendix 7: Section B

Category B1: Leadership and Commitment of Senior Management

Appendix 7.1: B1—Position in Organisation

Position in Organisation	Freq	B1.1	B1.2	B1.3	B1.4	B1.5	B1.6	B1.7
Account Manager	1	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Area / Business Sector / Product	5	3.60	4.00	3.00	4.20	4.20	4.40	4.00
Consultant	11	4.27	4.36	4.45	3.91	4.09	3.64	3.64
Functional Manager	15	4.07	4.13	4.21	4.21	4.20	4.00	4.00
General Manager	5	4.00	4.60	5.00	5.00	4.60	5.00	5.00
Lab Manager	2	4.00	5.00	5.00	4.00	4.00	4.00	3.00
Managing Director	3	4.33	4.67	4.33	4.67	4.67	4.33	4.33
QESH Specialist	1	5.00	3.00	3.00	2.00	2.00	3.00	2.00
Quality Assurance Manager	31	3.87	4.06	3.97	3.87	3.74	3.55	3.45
Quality Assurance Supervisor	1	4.00	5.00	5.00	3.00	3.00	3.00	3.00
SHERQ Controller	1	3.00	4.00	4.00	4.00	3.00	4.00	4.00
SHERQ Manager	1	5.00	5.00	5.00	4.00	4.00	4.00	3.00
Technical Assistant	1	3.00	5.00	5.00	3.00	3.00	3.00	3.00
Technical Director	1	5.00	5.00	5.00	5.00	5.00	5.00	4.00
Total/Overall Mean	79	3.99	4.22	4.15	4.03	3.96	3.84	3.71

Appendix 7.2: B1—Organisation Type



Appendix 8: Section B

Category 3: Customer Focus

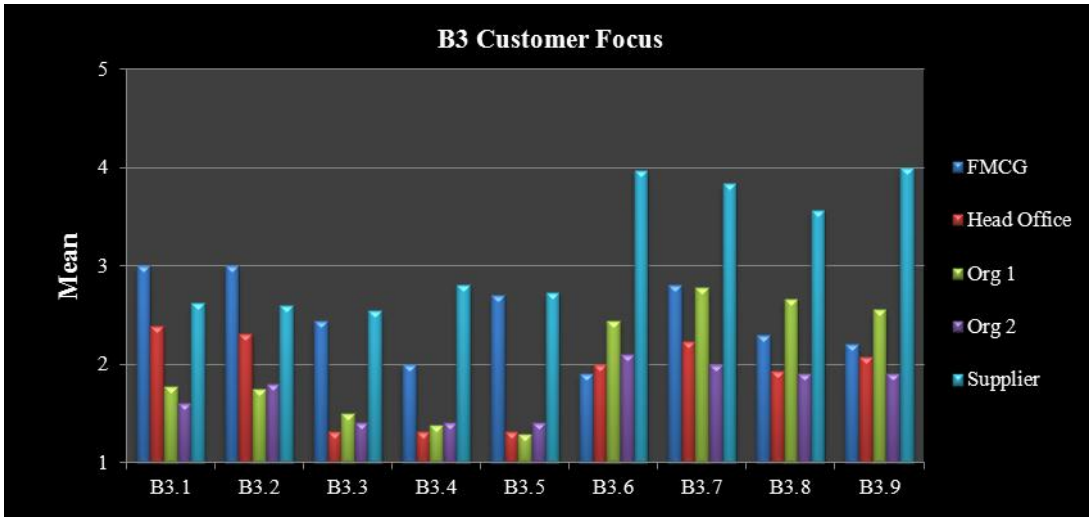
Appendix 8.1: B3—Position in Organisation

Position Organisation	Freq	B3.1	B3.2	B3.3	B3.4	B3.5	B3.6	B3.7	B3.8	B3.9
Account Manager	1	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	4.00
Area / Business Sector / Product	5	2.40	2.60	2.60	2.60	2.80	3.20	3.40	3.00	3.40
Consultant	11	2.36	2.27	1.36	1.36	1.36	2.18	2.18	2.00	2.00
Functional Manager	15	2.60	2.47	2.07	2.00	2.13	2.93	3.00	2.80	3.20
General Manager	5	3.20	2.60	2.40	2.80	3.00	3.80	3.80	3.20	3.60
Lab Manager	2	3.00	3.00	2.00	2.00	2.00	2.50	2.50	2.50	2.50
Managing Director	3	2.00	2.67	2.00	2.67	2.33	2.67	2.67	2.00	3.00
QESH Specialist	1	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Quality Assurance Manager	31	2.16	2.13	1.97	2.03	2.10	3.16	3.35	3.06	3.13
Quality Assurance Supervisor	1	4.00	4.00	2.00	2.00	4.00	2.00	3.00	3.00	4.00
SHERQ Controller	1	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
SHERQ Manager	1	3.00	5.00	5.00	5.00	5.00	4.00	4.00	4.00	4.00
Technical Assistant	1	2.00	4.00	4.00	4.00	1.00	5.00	5.00	5.00	4.00
Technical Director	1	4.00	4.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
Total	79	2.41	2.41	2.06	2.13	2.18	2.97	3.09	2.82	3.03

Appendix 8.2: B3—Organisation Size

Organisation Size	B3.1	B3.2	B3.3	B3.4	B3.5	B3.6	B3.7	B3.8	B3.9
> 1000	2.26	2.24	1.67	1.73	1.75	2.50	2.68	2.39	2.55
101 - 250	2.55	2.65	2.50	2.65	2.70	3.55	3.75	3.45	3.55
251 - 1000	2.43	2.29	2.21	2.43	2.50	3.29	3.07	3.00	3.50
50 - 100	2.71	2.86	2.57	2.14	2.29	3.29	3.43	3.00	3.14
Total	2.41	2.41	2.06	2.13	2.18	2.97	3.09	2.82	3.03

Appendix 8.3: B3—Organisation Type



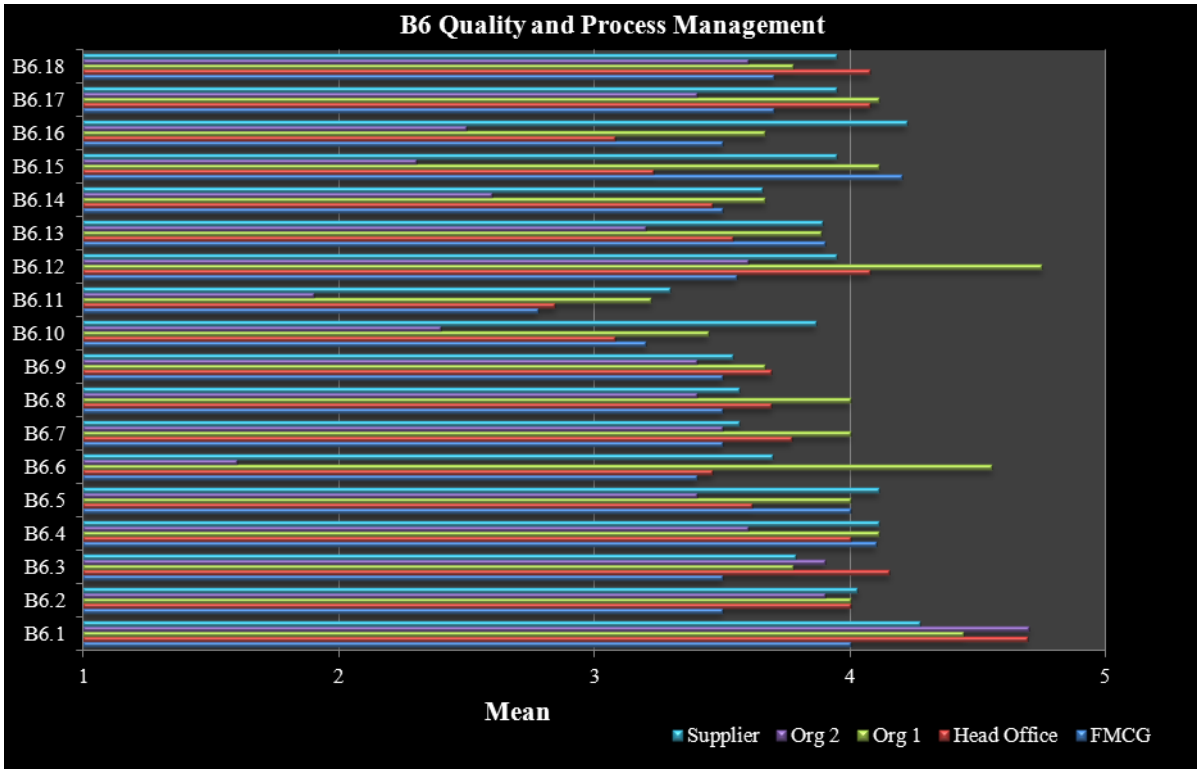
Appendix 9: Section B

Category 6: Quality and Process Management

Appendix 9.1: B6—Position in Organisation

Position in Org	Freq	B 6.1	B 6.2	B 6.3	B 6.4	B 6.5	B 6.6	B 6.7	B 6.8	B 6.9	B 6.10	B 6.11	B 6.12	B 6.13	B 6.14	B 6.15	B 6.16	B 6.17	B 6.18
Account Manager	1	4.0	3.0	3.0	4.0	4.0	3.0	3.0	3.0	4.0	5.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Area / Business Sector / Product	5	3.8	3.8	3.8	3.8	3.6	3.0	3.8	3.8	3.8	3.6	3.2	3.8	4.0	4.0	4.0	4.6	3.8	3.8
Consultant	11	4.7	3.8	3.9	3.9	3.6	3.3	3.8	3.6	3.7	3.0	2.5	4.2	3.5	3.1	3.3	3.0	4.2	4.2
Functional Manager	15	4.6	4.2	4.1	4.4	4.3	3.9	3.7	3.6	3.3	3.5	3.3	4.1	4.0	3.9	3.8	3.7	4.0	4.0
General Manager	5	3.0	3.0	3.0	3.2	3.4	3.2	3.4	3.4	3.6	2.8	2.8	3.4	3.4	3.0	3.6	3.8	3.4	3.4
Lab Manager	2	4.0	4.0	4.0	4.0	4.0	2.0	4.0	4.0	4.0	2.5	2.0	3.5	3.0	3.0	2.5	3.0	3.5	3.5
Managing Director	3	4.3	3.7	3.7	4.3	4.3	4.3	4.3	4.0	4.0	4.3	4.5	4.3	4.0	4.0	4.7	4.3	4.3	4.3
QESH Specialist	1	5.0	5.0	5.0	4.0	2.0	1.0	3.0	3.0	3.0	3.0	1.0	5.0	5.0	3.0	2.0	2.0	3.0	5.0
Quality Assurance Manager	31	4.4	3.9	3.7	4.0	3.9	3.6	3.5	3.6	3.5	3.4	3.0	3.9	3.7	3.4	3.6	3.7	3.8	3.7
Quality Assurance Supervisor	1	5.0	4.0	4.0	5.0	5.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0	5.0	5.0	5.0	4.0	4.0
SHERQ Controller	1	5.0	5.0	5.0	3.0	3.0	1.0	4.0	4.0	4.0	3.0	2.0	3.0	2.0	2.0	3.0	1.0	3.0	3.0
SHERQ Manager	1	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0	2.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Technical Assistant	1	5.0	5.0	4.0	4.0	4.0	2.0	3.0	3.0	3.0	4.0	3.0	5.0	5.0	3.0	4.0	5.0	5.0	5.0
Technical Director	1	5.0	5.0	4.0	5.0	5.0	3.0	3.0	3.0	4.0	4.0	4.0	4.0	3.0	4.0	5.0	5.0	4.0	4.0
Total	79	4.4	3.9	3.8	4.0	3.9	3.4	3.6	3.6	3.6	3.4	3.0	4.0	3.7	3.5	3.7	3.7	3.9	3.9

Appendix 9.2: B6—Organisation Type



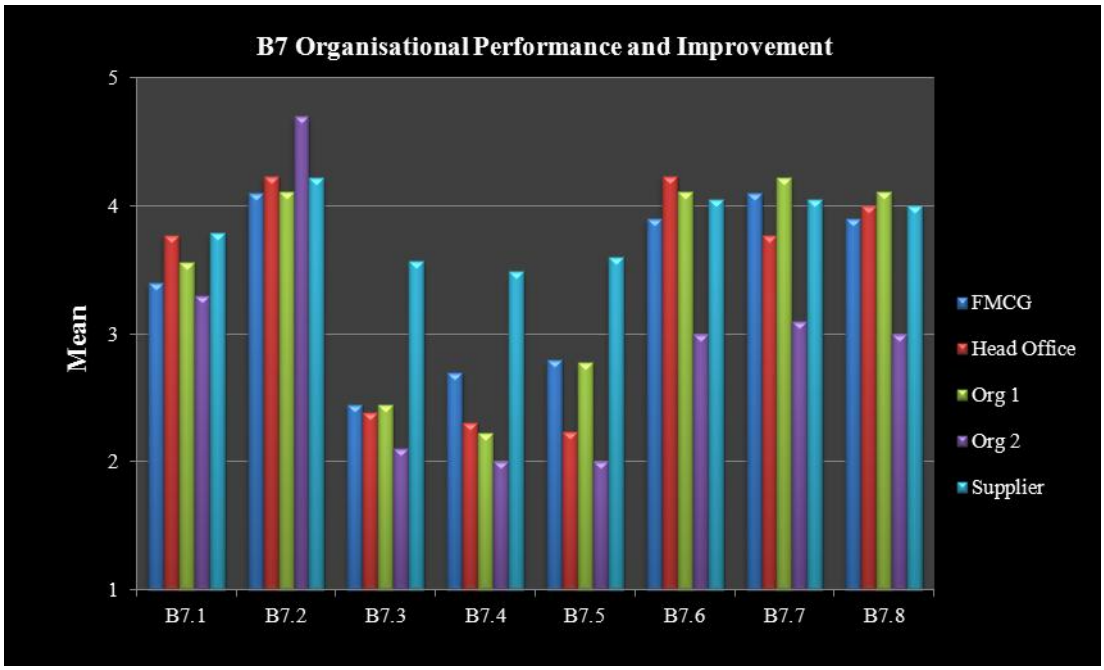
Appendix 10: Section B

Category 7: Organisational Performance and Improvement

Appendix 10.1: B7—Position Organisation

Position Organisation	B7.1	B7.2	B7.3	B7.4	B7.5	B7.6	B7.7
Account Manager	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Area / Business Sector / Product	3.80	3.80	3.40	3.00	3.20	4.20	4.20
Consultant	3.73	4.36	2.36	2.18	2.18	4.09	3.64
Functional Manager	3.53	4.07	2.93	3.00	2.87	4.20	4.07
General Manager	5.00	4.40	3.60	3.20	3.20	4.60	4.40
Lab Manager	3.00	5.00	2.00	2.00	2.50	4.00	4.00
Managing Director	3.67	4.67	3.00	2.67	3.33	4.33	4.33
QESH Specialist	2.00	5.00	3.00	2.00	1.00	2.00	2.00
Quality Assurance Manager	3.48	4.19	2.97	2.94	3.26	3.71	3.87
Quality Assurance Supervisor	4.00	5.00	2.00	4.00	3.00	3.00	3.00
SHERQ Controller	4.00	4.00	2.00	2.00	1.00	3.00	4.00
SHERQ Manager	4.00	5.00	2.00	5.00	5.00	4.00	4.00
Technical Assistant	3.00	5.00	4.00	4.00	5.00	3.00	3.00
Technical Director	5.00	5.00	5.00	3.00	2.00	5.00	5.00
Total	3.65	4.25	2.92	2.86	2.97	3.94	3.91

Appendix 10.2: B7—Organisation Type



Appendix 11: Section C

Category 1: Current Views on Quality Management

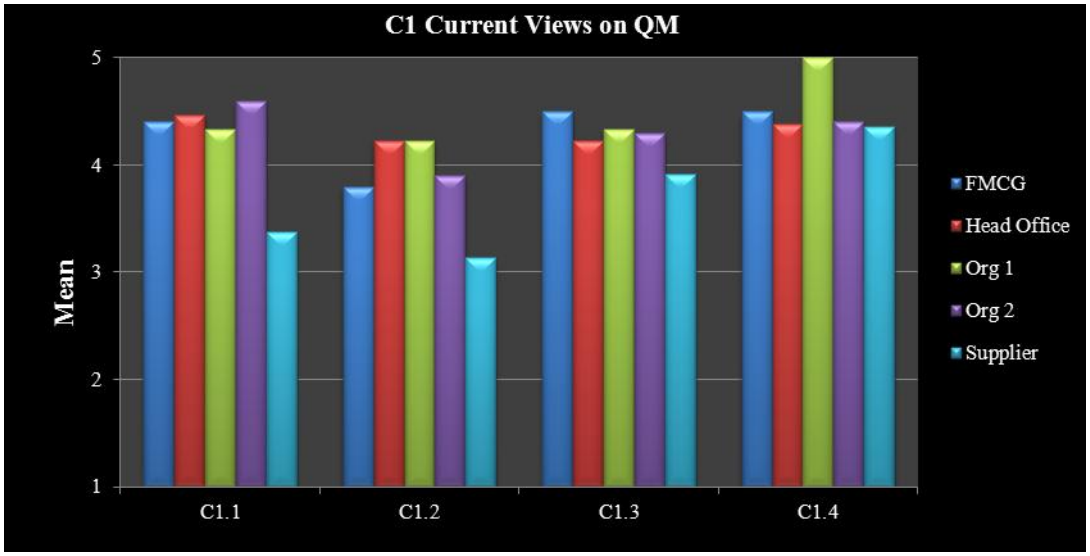
Appendix 11.1: C1—Position in Organisation

Position in Organisation	Freq	C1.1	C1.2	C1.3	C1.4
Account Manager	1	3.00	3.00	4.00	4.00
Area / Business Sector / Product	5	2.20	2.20	3.80	4.20
Consultant	11	4.55	4.27	4.36	4.55
Functional Manager	15	3.53	3.27	4.00	4.20
General Manager	5	4.00	4.20	4.75	4.75
Lab Manager	2	4.50	4.00	4.00	3.00
Managing Director	3	4.00	2.67	4.33	4.33
QESH Specialist	1	4.00	4.00	4.00	4.00
Quality Assurance Manager	31	4.23	3.84	4.19	4.71
Quality Assurance Supervisor	1	5.00	4.00	5.00	5.00
SHERQ Controller	1	4.00	3.00	4.00	4.00
SHERQ Manager	1	2.00	2.00	2.00	5.00
Technical Assistant	1	4.00	3.00	3.00	4.00
Technical Director	1	4.00	4.00	4.00	4.00
Total	79	3.95	3.62	4.14	4.46

Appendix 11.2: C1—Organisation Size

Organisation Size	C1.1	C1.2	C1.3	C1.4
> 1000	4.34	3.92	4.43	4.65
251 - 1000	3.21	3.07	3.69	4.29
101 - 250	3.70	3.60	4.05	4.30
50 - 100	4.00	3.14	3.71	4.29
Total	3.95	3.62	4.14	4.46

Appendix 11.3: C1—Organisation Type



Appendix 12: Section C

Category 3: Views on Proposed QSAL Framework

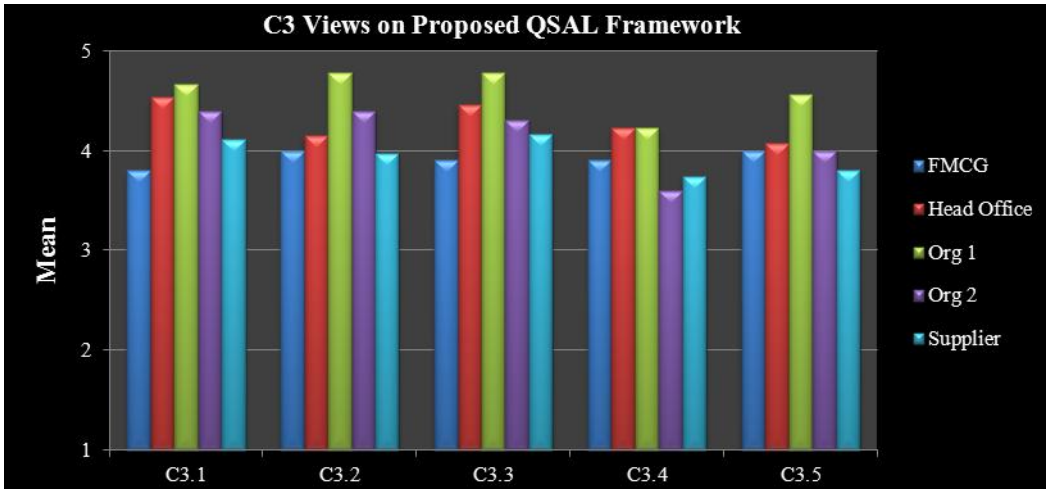
Appendix 12.1: C3—Position in Organisation

Position in Organisation	C.3.1	C.3.2	C.3.3	C.3.4	C.3.5
Account Manager	4.00	4.00	4.00	4.00	4.00
Area / Business Sector / Product	3.60	3.60	3.75	3.50	3.80
Consultant	4.36	4.09	4.45	4.27	4.09
Functional Manager	4.27	4.07	4.07	3.80	3.80
General Manager	3.60	3.60	4.00	3.20	3.60
Lab Manager	4.00	4.00	4.00	2.00	3.00
Managing Director	4.33	4.33	4.33	4.33	4.33
QESH Specialist	5.00	5.00	4.00	3.00	4.00
Quality Assurance Manager	4.40	4.35	4.45	3.97	4.13
Quality Assurance Supervisor	4.00	4.00	4.00	4.00	5.00
SHERQ Controller	5.00	5.00	5.00	5.00	5.00
SHERQ Manager	5.00	5.00	5.00	5.00	4.00
Technical Assistant	3.00	3.00	3.00		3.00
Technical Director	4.00	4.00	4.00	4.00	4.00
Total	4.24	4.15	4.27	3.88	3.99

Appendix 12.2: C3—Formal QMP

Formal QMP	C.3.1	C.3.2	C.3.3	C.3.4	C.3.5
Yes, in some parts	3.67	3.33	3.67	3.20	3.17
Yes, org wide	4.29	4.22	4.32	3.93	4.06
Total	4.24	4.15	4.27	3.88	3.99

Appendix 12.3: C3—Organisation Type



Appendix 13: Section B

Appendix 13.1: Lower triangle of the Correlation Matrix Section B (B1 – B2)

	B1.1	B1.2	B1.3	B1.4	B1.5	B1.6	B1.7	B2.1	B2.2	B2.3	B2.4	B2.5	B2.6
B1.1	1.000												
B1.2	.418	1.000											
B1.3	.247	.664	1.000										
B1.4	-.021	.302	.237	1.000									
B1.5	.170	.414	.303	.804	1.000								
B1.6	-.021	.214	.188	.675	.628	1.000							
B1.7	.060	.329	.195	.677	.621	.574	1.000						
B2.1	.200	.276	.372	.307	.292	.263	.324	1.000					
B2.2	.208	.320	.363	.252	.271	.216	.288	.652	1.000				
B2.3	.298	.441	.403	.411	.476	.329	.395	.630	.546	1.000			
B2.4	.075	.328	.407	.402	.426	.283	.429	.474	.571	.746	1.000		
B2.5	.040	.220	.119	.272	.279	.162	.286	.261	.379	.337	.386	1.000	
B2.6	.000	.277	.365	.377	.397	.247	.431	.417	.561	.656	.885	.386	1.000
B3.1	-.050	.012	.226	.276	.336	.374	.195	.259	.222	.155	.210	.170	.153
B3.2	.078	.045	.026	.043	.159	.240	.002	.018	.082	-.040	-.003	.204	-.009
B3.3	-.035	-.073	.043	.199	.183	.362	.098	.064	.072	-.074	.013	.236	-.019
B3.4	-.080	-.045	-.020	.272	.236	.453	.111	.072	.007	-.052	-.031	.306	-.087
B3.5	-.060	-.068	.013	.187	.191	.349	.070	.015	.048	-.068	-.002	.201	-.038
B3.6	-.236	-.001	.104	.169	.161	.399	.110	.134	-.034	.073	.093	.165	.129
B3.7	-.346	-.057	-.016	.239	.199	.350	.217	.092	.030	.057	.149	.117	.167
B3.8	-.172	.070	.170	.204	.242	.344	.238	.097	.001	.139	.175	.064	.172
B3.9	-.186	.021	.027	.189	.171	.423	.182	.041	-.023	.099	.078	.068	.040
B4.1	.407	.454	.572	.176	.316	.168	.187	.376	.326	.468	.428	-.002	.388
B4.2	-.128	-.056	-.050	.207	.085	.194	.146	.113	.043	.042	.124	.111	.127
B4.3	-.122	-.105	-.032	.274	.185	.309	.206	-.019	-.038	.050	.035	-.097	.061
B4.4	.137	.072	.173	.013	.064	.101	-.096	.258	.230	.120	.062	.068	.063
B4.5	.043	-.066	-.023	.109	.118	.110	.118	.173	.084	.123	.164	.134	.164
B4.6	.000	.179	.227	.213	.273	.347	.051	.218	.272	.383	.423	.290	.387
B4.7	-.076	-.077	-.005	.186	.167	.349	.120	.163	.136	.243	.251	.105	.251
B5.1	.144	.185	.197	-.122	-.013	-.073	-.082	.130	.232	.150	.133	.179	.121
B5.2	.362	.374	.308	.083	.176	.064	.164	.223	.295	.329	.218	.202	.178
B5.3	.216	.176	.194	.170	.248	.231	.205	.192	.132	.243	.313	.202	.328
B5.4	.186	.100	.066	.166	.260	.259	.148	.058	.030	.195	.388	.265	.356
B5.5	.158	.134	.158	.216	.219	.205	.183	.169	.109	.265	.426	.314	.399
B5.6	.214	.151	.151	.119	.126	.147	.135	.053	.027	.114	.275	.134	.198
B6.1	.127	.018	.002	-.256	-.159	-.217	-.286	.032	-.051	.119	-.010	-.166	-.083
B6.2	-.025	.121	.018	.186	.106	.138	.003	.097	.038	.266	.143	.068	.056
B6.3	.073	.067	-.012	.135	.063	.031	-.045	.146	.045	.230	.106	.093	.079
B6.4	.072	.162	.093	.228	.238	.172	.102	.109	-.012	.337	.242	-.007	.166
B6.5	-.042	.213	.129	.238	.230	.272	.184	.145	.023	.353	.307	-.033	.200
B6.6	.030	.163	.166	.462	.438	.360	.423	.078	-.020	.353	.255	.062	.220
B6.7	.184	.165	.131	.166	.270	.230	.183	.125	.009	.169	.313	.314	.306
B6.8	.139	.192	.091	.148	.277	.226	.144	.094	.070	.214	.398	.267	.366
B6.9	.111	.164	.123	.278	.273	.247	.212	.204	.143	.208	.364	.348	.428
B6.10	-.054	-.035	-.039	.334	.348	.340	.134	.011	-.067	.172	.093	.098	.076
B6.11	-.019	.145	.096	.213	.280	.317	.252	.193	.237	.247	.243	.058	.246
B6.12	.097	.040	.029	.146	.163	.060	.103	.213	.094	.304	.242	.084	.247
B6.13	-.024	-.091	-.186	.177	.207	.176	.183	.125	.066	.188	.054	-.055	.106
B6.14	-.135	.012	-.053	.173	.172	.212	.134	.126	.079	.182	.163	.018	.183
B6.15	-.133	.131	.062	.354	.264	.339	.291	.048	.066	.198	.142	.024	.133
B6.16	.053	.152	.044	.314	.365	.328	.344	.098	-.014	.212	.137	-.005	.096
B6.17	.021	.112	.086	.198	.250	.129	.204	.216	.123	.314	.271	.143	.275
B6.18	.063	.070	.048	.077	.123	.081	.076	.209	.074	.231	.149	.071	.148
B7.1	.100	.327	.291	.393	.280	.284	.368	.625	.765	.525	.588	.283	.574
B7.2	.508	.774	.558	.126	.237	.076	.085	.198	.232	.397	.279	.155	.229
B7.3	-.037	.074	.126	.245	.212	.385	.291	.236	.213	.142	.129	.036	.176
B7.4	-.072	.122	.236	.081	.095	.311	.088	.085	.077	.211	.097	.074	.045
B7.5	-.100	-.028	.001	.125	.197	.294	.172	.084	-.082	.079	.094	.085	.182
B7.6	.131	.382	.272	.784	.980	.593	.585	.255	.269	.481	.461	.313	.392
B7.7	-.109	.225	.114	.887	.703	.530	.605	.219	.185	.301	.311	.293	.296
B7.8	.067	.336	.224	.699	.911	.524	.550	.243	.230	.372	.360	.277	.343

Appendix 13.2: Lower triangle of the Correlation Matrix Section B (B3 –B5)

	B3.1	B3.2	B3.3	B3.4	B3.5	B3.6	B3.7	B3.8	B3.9	B4.1	B4.2	B4.3	B4.4	B4.5	B4.6	B4.7	B5.1	B5.2	B5.3	B5.4	B5.5	B5.6
B3.1	1.000																					
B3.2	.683	1.000																				
B3.3	.580	.738	1.000																			
B3.4	.468	.618	.834	1.000																		
B3.5	.581	.681	.876	.831	1.000																	
B3.6	.288	.270	.542	.672	.542	1.000																
B3.7	.363	.352	.557	.598	.510	.741	1.000															
B3.8	.346	.311	.544	.557	.499	.715	.861	1.000														
B3.9	.259	.338	.503	.640	.504	.783	.703	.761	1.000													
B4.1	.108	-.069	-.099	-.122	-.092	.131	.000	.147	.050	1.000												
B4.2	.195	.180	.216	.301	.144	.366	.148	.096	.395	-.035	1.000											
B4.3	.316	.266	.321	.337	.310	.300	.235	.162	.299	-.053	.473	1.000										
B4.4	.187	.094	.231	.321	.211	.303	.099	.142	.223	.248	.388	.300	1.000									
B4.5	.187	.118	.037	.144	.032	.165	-.092	-.092	.051	.133	.487	.419	.412	1.000								
B4.6	.289	.306	.282	.246	.273	.339	.233	.258	.396	.299	.300	.269	.244	.247	1.000							
B4.7	.220	.215	.213	.132	.108	.220	.207	.150	.263	.087	.288	.364	.115	.331	.679	1.000						
B5.1	.077	-.098	-.137	-.127	-.105	-.123	-.243	-.203	-.151	.144	.117	-.095	.246	.224	.096	.210	1.000					
B5.2	.047	-.073	-.117	-.061	-.055	-.153	-.278	-.164	-.105	.304	-.084	-.087	.252	.284	.111	.016	.507	1.000				
B5.3	.232	.253	.281	.173	.236	.275	.215	.317	.327	.162	.291	.171	.141	.279	.432	.213	.054	.234	1.000			
B5.4	.177	.258	.123	.134	.134	.107	.019	.058	.140	.126	.317	.063	.002	.393	.415	.283	.098	.131	.640	1.000		
B5.5	.198	.215	.210	.148	.173	.236	.076	.163	.216	.207	.423	.162	.154	.467	.417	.247	.092	.204	.821	.733	1.000	
B5.6	.220	.314	.281	.324	.296	.248	.154	.202	.278	.167	.195	.200	.107	.262	.365	.091	.008	.136	.440	.492	.503	1.000
B6.1	-.257	-.215	-.325	-.310	-.362	-.209	-.330	-.224	-.074	.085	.086	-.113	.060	.259	.063	.156	.369	.150	.006	.083	.086	-.133
B6.2	-.091	-.155	-.125	-.105	-.173	.000	-.018	-.033	.120	.107	.173	.050	.091	.249	.293	.297	.158	.132	.086	.165	.206	-.117
B6.3	-.154	-.144	-.149	-.172	-.220	-.048	-.088	-.071	.059	.215	.153	-.012	.132	.238	.219	.228	.087	.180	.128	.163	.248	-.090
B6.4	.060	.007	.021	.034	.012	.127	.104	.200	.318	.190	.312	.215	.122	.263	.393	.451	.178	.206	.379	.377	.367	.048
B6.5	.161	.127	.113	.096	.104	.211	.228	.281	.390	.121	.320	.267	-.003	.187	.468	.485	.094	.106	.394	.325	.335	.143
B6.6	.135	.007	.027	.079	.071	.206	.130	.180	.256	.166	.167	.346	-.144	.210	.254	.345	.005	.205	.322	.275	.270	.012
B6.7	.097	.191	.083	.090	.082	.069	-.057	.011	.078	.098	.206	-.035	-.045	.313	.344	.247	.092	.122	.528	.893	.619	.470
B6.8	.105	.177	.063	.077	.095	.047	-.060	-.007	.077	.149	.331	.030	.004	.334	.425	.257	.186	.145	.554	.934	.619	.363
B6.9	.240	.259	.217	.118	.155	.132	.040	.067	.075	.183	.378	.190	.160	.425	.401	.287	.113	.140	.676	.645	.872	.351
B6.10	.243	.215	.294	.401	.328	.465	.275	.314	.509	.076	.415	.442	.123	.374	.378	.378	-.129	.072	.351	.358	.376	.134
B6.11	.260	.164	.207	.155	.211	.261	.232	.238	.362	.109	.242	.239	-.003	.223	.315	.285	.084	.154	.376	.175	.232	.012
B6.12	-.127	-.133	-.112	-.112	-.126	.004	-.042	-.017	.046	.197	.090	.141	.047	.314	.171	.257	.183	.311	.398	.316	.342	.018
B6.13	.132	.118	.098	.083	.071	.007	.070	.074	.203	.056	.163	.323	.051	.200	.178	.387	.132	.221	.208	.137	.095	.006
B6.14	.157	.164	.161	.072	.112	.196	.125	.077	.293	.081	.294	.361	.047	.304	.336	.495	.051	.031	.248	.217	.184	-.081
B6.15	.203	.224	.227	.206	.249	.213	.261	.228	.265	-.036	.159	.376	-.093	.229	.221	.276	-.124	.139	.308	.221	.194	.109
B6.16	.214	.220	.369	.389	.372	.457	.437	.501	.632	.047	.359	.475	.203	.193	.228	.252	-.092	.051	.339	.145	.231	.176
B6.17	.015	-.006	-.023	-.027	.017	.050	.076	.145	.099	.143	.097	.089	-.056	.207	.157	.189	.117	.237	.394	.299	.335	.040
B6.18	-.005	.007	.010	-.026	.051	.100	.046	.105	.125	.240	.121	.137	.129	.224	.124	.201	.148	.232	.324	.175	.268	-.028
B7.1	.194	.068	.159	.158	.164	.227	.246	.188	.215	.437	.275	.018	.268	.097	.305	.145	.120	.254	.136	.096	.165	.122
B7.2	-.069	-.070	-.130	-.083	-.074	.039	-.037	.103	.009	.532	-.128	-.187	.183	.031	.141	-.071	.239	.402	.237	.106	.224	.176
B7.3	.183	.191	.472	.428	.359	.629	.607	.591	.560	.203	.227	.375	.336	.164	.219	.158	-.181	-.076	.283	-.012	.189	.183
B7.4	.269	.339	.510	.504	.547	.475	.402	.509	.524	.091	.196	.149	.119	-.057	.215	.050	-.069	.089	.189	.035	.167	.052
B7.5	.287	.315	.466	.505	.431	.613	.761	.677	.518	.030	.145	.183	-.034	-.091	.049	.008	-.209	-.197	.264	.126	.118	.169
B7.6	.357	.177	.186	.243	.200	.133	.189	.223	.144	.288	.087	.178	.065	.137	.286	.182	.017	.151	.181	.271	.206	.140
B7.7	.290	.099	.239	.291	.215	.174	.268	.239	.230	.062	.292	.300	.065	.180	.266	.201	-.104	.106	.235	.191	.285	.166
B7.8	.348	.216	.206	.253	.202	.182	.244	.286	.215	.249	.154	.203	.136	.183	.329	.195	-.004	.162	.303	.303	.273	.184

Appendix 13.3: Lower triangle of the Correlation Matrix Section B (B6 – B7)

	B6.1	B6.2	B6.3	B6.4	B6.5	B6.6	B6.7	B6.8	B6.9	B6.10	B6.11	B6.12	B6.13	B6.14	B6.15	B6.16	B6.17	B6.18	B7.1	B7.2	B7.3	B7.4	B7.5	B7.6	B7.7	B7.8
B6.1	1.000																									
B6.2	.612	1.000																								
B6.3	.534	.802	1.000																							
B6.4	.398	.605	.467	1.000																						
B6.5	.293	.439	.247	.840	1.000																					
B6.6	.082	.213	.040	.598	.615	1.000																				
B6.7	.117	.146	.130	.338	.284	.270	1.000																			
B6.8	.127	.177	.119	.421	.371	.289	.853	1.000																		
B6.9	.074	.205	.175	.329	.286	.239	.605	.595	1.000																	
B6.10	.157	.399	.284	.584	.528	.617	.311	.331	.293	1.000																
B6.11	.065	.200	.095	.462	.586	.512	.118	.212	.185	.442	1.000															
B6.12	.373	.390	.375	.665	.555	.504	.342	.357	.354	.413	.379	1.000														
B6.13	.172	.223	.212	.552	.503	.437	.124	.163	.183	.393	.409	.535	1.000													
B6.14	.193	.322	.257	.594	.645	.521	.231	.277	.239	.483	.578	.511	.559	1.000												
B6.15	-.046	.186	.082	.435	.530	.631	.171	.201	.166	.481	.525	.380	.387	.559	1.000											
B6.16	.014	.151	.069	.487	.527	.503	.167	.125	.160	.581	.442	.370	.330	.538	.443	1.000										
B6.17	.293	.271	.247	.631	.633	.513	.335	.344	.340	.405	.403	.855	.456	.440	.420	.407	1.000									
B6.18	.313	.316	.382	.589	.509	.352	.217	.217	.266	.385	.327	.820	.444	.459	.296	.394	.878	1.000								
B7.1	-.127	.062	.136	.105	.135	.051	.044	.145	.186	.049	.208	.134	.058	.175	.170	.163	.154	.140	1.000							
B7.2	.133	.241	.253	.211	.166	.032	.101	.128	.135	.027	.083	.156	-.089	-.041	-.023	.050	.142	.203	.205	1.000						
B7.3	-.157	.103	.074	.193	.135	.172	-.036	-.051	.181	.280	.283	.137	.121	.180	.258	.450	.171	.238	.379	.084	1.000					
B7.4	-.156	.034	-.038	.167	.230	.250	-.028	.070	.064	.295	.346	-.094	.083	.124	.267	.288	.021	.049	.153	.111	.386	1.000				
B7.5	-.267	-.091	-.089	.023	.096	.147	.057	.073	.070	.313	.202	-.053	.039	.075	.181	.413	.064	.027	.132	.000	.477	.482	1.000			
B7.6	-.170	.104	.056	.222	.210	.402	.258	.290	.257	.317	.226	.126	.172	.137	.236	.324	.210	.078	.272	.203	.155	.090	.148	1.000		
B7.7	-.221	.228	.129	.318	.294	.477	.180	.179	.340	.372	.169	.145	.245	.175	.313	.306	.189	.057	.313	.076	.211	.108	.097	.694	1.000	
B7.8	-.127	.122	.059	.282	.247	.415	.300	.328	.321	.344	.202	.144	.237	.147	.205	.331	.225	.086	.221	.160	.199	.128	.192	.903	.768	1.000

Appendix 14: Section C: Lower triangle of the Correlation Matrix Section C: C1 – C2

	C1.1	C1.2	C1.3	C1.4	C.2.1 (a)	C.2.1 (b)	C.2.1 (c)	C.2.1 (d)	C.2.1 (e)	C.2.1 (f)	C.2.2 (a)	C.2.2 (b)	C.2.2 (c)	C.2.2 (d)	C.2.2 (e)	C.2.2 (f)	C.2.3 (a)	C.2.3(b)	C.2.3 (c)	C.2.3 (d)	C.2.3 (e)	C.2.3 (f)	C.3.1	C.3.2	C.3.3	C.3.4	C.3.5
C1.1	1.000																										
C1.2	.790	1.000																									
C1.3	.560	.516	1.000																								
C1.4	.270	.354	.487	1.000																							
C.2.1 (a)	.174	.298	.470	.267	1.000																						
C.2.1 (b)	.191	.219	.196	.120	.534	1.000																					
C.2.1 (c)	.195	.277	.250	.250	.536	.736	1.000																				
C.2.1 (d)	.491	.429	.327	.338	.363	.397	.322	1.000																			
C.2.1 (e)	.355	.415	.258	.167	.397	.533	.481	.563	1.000																		
C.2.1 (f)	.289	.449	.234	.326	.381	.578	.492	.576	.734	1.000																	
C.2.2 (a)	.251	.250	.277	.080	.134	.271	.215	.383	.229	.242	1.000																
C.2.2 (b)	.117	.031	.089	.008	.210	.485	.461	.059	.276	.224	.421	1.000															
C.2.2 (c)	.062	.005	.054	-.031	.202	.276	.327	.037	.038	.089	.307	.582	1.000														
C.2.2 (d)	.321	.200	.179	.207	.054	.221	.124	.662	.280	.339	.459	.233	.113	1.000													
C.2.2 (e)	-.013	-.005	.008	-.075	.054	.146	-.013	.163	.319	.328	.332	.288	.070	.336	1.000												
C.2.2 (f)	.031	.102	-.035	-.026	.064	.045	-.024	.193	.312	.359	.200	.099	-.028	.345	.700	1.000											
C.2.3 (a)	.165	.059	.096	.058	.009	.147	-.010	.190	.226	.160	.227	.200	.186	.189	.126	.200	1.000										
C.2.3(b)	-.025	-.143	-.057	.109	.014	.294	.136	.098	.104	.114	.069	.341	.237	.065	-.018	-.014	.527	1.000									
C.2.3 (c)	-.096	-.199	-.148	.062	-.085	.133	.148	.085	.028	-.027	.143	.275	.205	.126	-.139	.059	.491	.665	1.000								
C.2.3 (d)	.391	.261	.114	.250	.008	.213	.161	.526	.280	.339	.191	.147	-.070	.689	-.018	.128	.217	.184	.134	1.000							
C.2.3 (e)	.013	.066	-.150	-.011	.054	.380	.233	.148	.176	.322	.240	.351	.319	.147	.058	.192	.650	.621	.523	.252	1.000						
C.2.3 (f)	.214	.189	.030	.129	.084	.332	.269	.297	.331	.321	.176	.270	.048	.321	.009	.207	.559	.289	.310	.500	.556	1.000					
C.3.1	.060	-.077	.073	.051	.106	.236	.083	.231	.220	.070	.220	.266	.170	.310	.142	-.034	.311	.332	.373	.224	.271	.134	1.000				
C.3.2	.024	.003	.150	.136	.219	.384	.402	.283	.341	.187	.308	.399	.298	.365	.167	.058	.181	.255	.394	.228	.217	.220	.707	1.000			
C.3.3	.090	-.006	.113	.143	.155	.215	.230	.208	.201	.164	.160	.326	.345	.378	.249	.109	.235	.195	.193	.268	.200	.252	.701	.721	1.000		
C.3.4	.096	-.020	.064	.180	.113	.142	.118	.167	.190	.134	.146	.310	.296	.241	.245	.010	.214	.332	.271	.142	.115	.211	.377	.374	.435	1.000	
C.3.5	.111	.026	.223	.325	.185	.181	.357	.213	.215	.121	.164	.285	.386	.294	.090	-.039	.266	.313	.348	.190	.216	.317	.472	.682	.546	.630	1.000

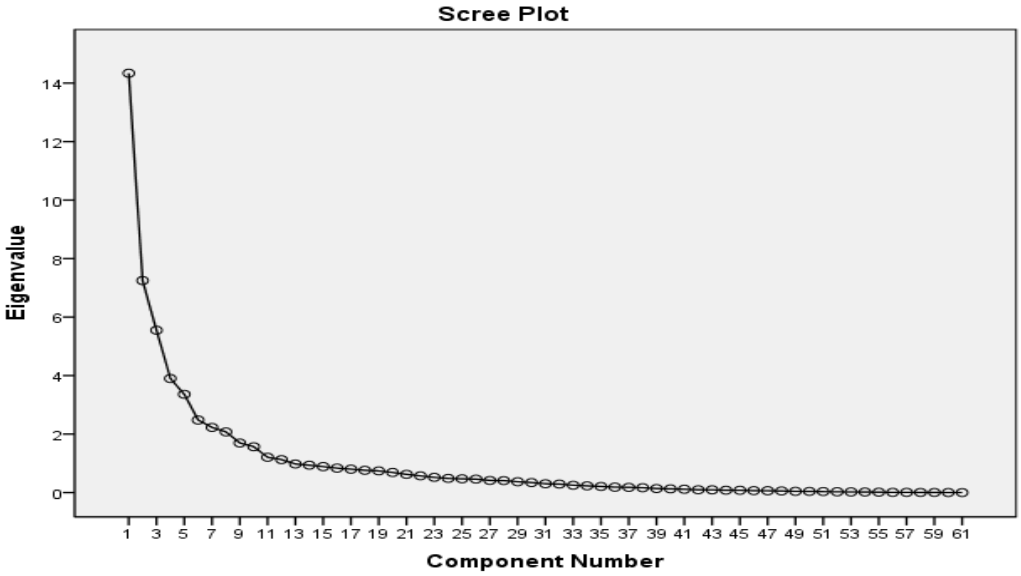
Appendix 15: Section B—Eigen Values

Component	Initial Eigen values			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	14.338	23.505	23.505	14.338	23.505	23.505	6.142	10.069	10.069
2	7.249	11.884	35.389	7.249	11.884	35.389	5.866	9.617	19.686
3	5.549	9.097	44.486	5.549	9.097	44.486	5.811	9.526	29.213
4	3.899	6.391	50.877	3.899	6.391	50.877	5.360	8.787	38.000
5	3.360	5.509	56.386	3.360	5.509	56.386	4.567	7.486	45.486
6	2.480	4.066	60.451	2.480	4.066	60.451	3.705	6.073	51.559
7	2.226	3.650	64.101	2.226	3.650	64.101	3.634	5.957	57.517
8	2.074	3.400	67.501	2.074	3.400	67.501	2.943	4.825	62.342
9	1.696	2.780	70.281	1.696	2.780	70.281	2.909	4.768	67.110
10	1.567	2.568	72.849	1.567	2.568	72.849	2.632	4.314	71.424
11	1.206	1.977	74.826	1.206	1.977	74.826	1.615	2.648	74.073
12	1.127	1.847	76.673	1.127	1.847	76.673	1.587	2.601	76.673
13	0.977	1.601	78.274						
14	0.936	1.535	79.810						
15	0.888	1.455	81.265						
16	0.837	1.372	82.637						
17	0.800	1.311	83.948						
18	0.761	1.247	85.195						
19	0.740	1.213	86.408						
20	0.688	1.128	87.536						
21	0.623	1.022	88.558						
22	0.571	0.936	89.494						
23	0.520	0.852	90.346						
24	0.484	0.793	91.139						
25	0.469	0.768	91.908						
26	0.460	0.755	92.662						
27	0.414	0.679	93.341						
28	0.409	0.670	94.011						
29	0.370	0.607	94.619						
30	0.342	0.561	95.180						
31	0.303	0.496	95.676						
32	0.289	0.475	96.150						
33	0.251	0.412	96.562						
34	0.230	0.377	96.939						
35	0.208	0.342	97.281						
36	0.186	0.305	97.586						
37	0.179	0.293	97.879						
38	0.166	0.272	98.151						
39	0.138	0.226	98.377						
40	0.126	0.207	98.583						
41	0.114	0.187	98.771						
42	0.096	0.157	98.928						
43	0.094	0.154	99.082						
44	0.081	0.132	99.214						
45	0.078	0.129	99.343						
46	0.066	0.108	99.451						
47	0.064	0.104	99.555						
48	0.054	0.088	99.644						
49	0.042	0.069	99.713						
50	0.039	0.064	99.777						
51	0.034	0.055	99.832						
52	0.026	0.043	99.875						
53	0.023	0.037	99.912						
54	0.018	0.029	99.942						
55	0.014	0.023	99.964						
56	0.007	0.012	99.976						
57	0.006	0.009	99.986						
58	0.004	0.007	99.993						
59	0.003	0.005	99.998						
60	0.001	0.001	99.999						
61	0.001	0.001	100.000						

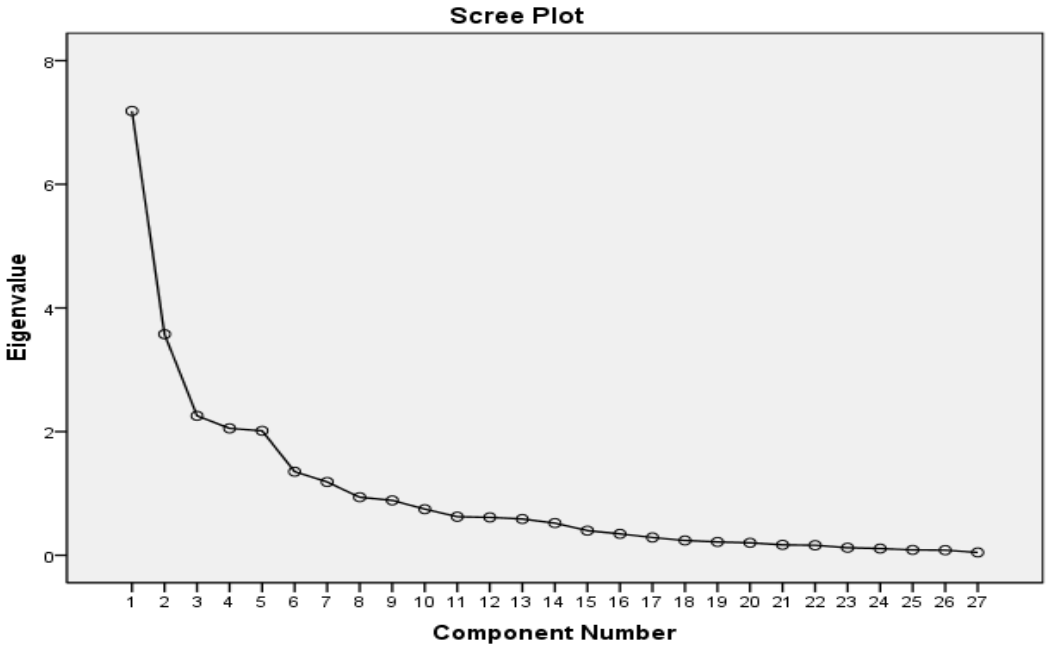
Appendix 16: Section C—Eigen Values

Component	Initial Eigen values			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	7.185	26.612	26.612	7.185	26.612	26.612	3.588	13.290	13.290
2	3.576	13.243	39.855	3.576	13.243	39.855	3.327	12.320	25.611
3	2.256	8.354	48.208	2.256	8.354	48.208	3.201	11.857	37.468
4	2.052	7.601	55.809	2.052	7.601	55.809	2.841	10.523	47.991
5	2.013	7.457	63.266	2.013	7.457	63.266	2.554	9.461	57.452
6	1.352	5.009	68.274	1.352	5.009	68.274	2.165	8.019	65.471
7	1.185	4.390	72.665	1.185	4.390	72.665	1.942	7.194	72.665
8	0.938	3.476	76.140						
9	0.888	3.288	79.429						
10	0.746	2.763	82.191						
11	0.624	2.309	84.501						
12	0.613	2.270	86.771						
13	0.586	2.172	88.943						
14	0.520	1.927	90.870						
15	0.399	1.477	92.347						
16	0.346	1.281	93.628						
17	0.288	1.066	94.693						
18	0.239	0.886	95.579						
19	0.216	0.800	96.379						
20	0.202	0.749	97.128						
21	0.169	0.625	97.752						
22	0.162	0.600	98.352						
23	0.122	0.450	98.802						
24	0.108	0.400	99.202						
25	0.087	0.324	99.526						
26	0.082	0.305	99.831						
27	0.046	0.169	100.000						

Appendix 17: Section B—Scree Plot



Appendix 18: Section C—Scree Plot



Appendix 19: Section B—Rotated Component Matrix and Communalities

	Rotated Component Matrix												Communalities
	1	2	3	4	5	6	7	8	9	10	11	12	Extraction
B1.1	-.282	-.003	.154	-.120	.009	.160	.697	.175	-.011	.058	-.099	-.053	0.676
B1.2	-.008	.267	.083	.120	.201	-.049	.760	-.135	.053	-.125	.116	-.123	0.778
B1.3	.085	.122	.054	.069	.308	-.024	.693	-.149	-.076	-.042	.133	.071	0.658
B1.4	.081	.872	.056	.171	.232	.032	.022	-.035	.077	.073	-.119	-.098	0.891
B1.5	.081	.893	.118	.089	.137	.099	.216	.114	-.017	-.025	.023	.099	0.926
B1.6	.276	.605	.094	.221	.161	.213	.052	-.100	.035	.078	-.058	.065	0.599
B1.7	.100	.674	.083	.209	.314	-.111	.051	.011	-.202	.041	-.091	-.183	0.713
B2.1	.021	.144	-.003	-.009	.724	.091	.188	.184	.067	.117	-.005	.015	0.641
B2.2	-.103	.105	-.044	.015	.849	.170	.170	.018	-.002	.057	.097	-.030	0.817
B2.3	.037	.300	.105	.201	.630	-.095	.343	.090	.136	-.069	.074	.141	0.723
B2.4	.085	.262	.355	.113	.714	-.149	.143	-.012	-.031	-.092	.075	.197	0.821
B2.5	.061	.259	.324	-.136	.410	.232	-.118	-.032	.128	-.132	.362	-.271	0.669
B2.6	.105	.238	.356	.083	.730	-.203	.051	.030	-.108	-.063	.051	.167	0.826
B3.1	.155	.239	.080	.108	.171	.654	.006	-.039	-.176	.108	.068	.226	0.657
B3.2	.168	.024	.212	.086	-.018	.846	.008	-.037	-.093	.003	-.079	.114	0.827
B3.3	.474	.091	.098	.056	.023	.781	-.076	-.024	-.061	.097	-.060	-.044	0.881
B3.4	.580	.202	.073	.006	-.072	.640	-.092	-.059	-.034	.195	.102	-.119	0.872
B3.5	.461	.098	.088	.086	-.032	.760	-.043	-.017	-.132	.061	.035	-.083	0.848
B3.6	.856	.059	.094	.087	.049	.133	-.026	-.057	.001	.234	.039	.039	0.834
B3.7	.864	.153	-.032	.054	.121	.178	-.163	.030	-.053	-.063	-.105	.099	0.876
B3.8	.884	.142	.022	.067	.044	.143	.080	.073	-.058	-.083	-.056	.116	0.867
B3.9	.808	.080	.071	.260	-.036	.166	-.001	-.052	.114	.159	.006	.085	0.809
B4.1	.080	.105	.066	-.048	.345	-.131	.652	.153	.038	.103	-.057	.285	0.706
B4.2	.208	.065	.313	.229	.080	.002	-.210	-.162	.151	.626	.079	-.024	0.696
B4.3	.141	.201	.005	.379	-.066	.169	-.124	.001	-.116	.630	-.210	.159	0.733
B4.4	.188	-.026	-.044	-.201	.150	.167	.207	.100	.123	.708	.229	.082	0.757
B4.5	-.110	.071	.363	.147	.065	.023	-.056	.111	.123	.686	.146	.027	0.699
B4.6	.188	.097	.378	.244	.282	.225	.092	-.156	.252	.117	.068	.508	0.750
B4.7	.051	.096	.177	.372	.178	.150	-.172	-.001	.226	.183	.078	.604	0.721
B5.1	-.193	-.103	.055	.005	.131	-.026	.157	.103	.050	.160	.800	.143	0.792
B5.2	-.230	.078	.076	.144	.169	.032	.442	.192	.008	.162	.524	-.217	0.694
B5.3	.227	.033	.705	.220	.104	.103	.195	.201	-.025	.113	-.057	-.071	0.719
B5.4	-.005	.123	.917	.116	.011	.068	.018	.042	.058	-.009	.045	.109	0.894
B5.5	.118	.066	.839	.106	.148	.044	.105	.071	.128	.220	-.027	-.097	0.849
B5.6	.175	.039	.580	-.080	-.009	.170	.233	-.057	-.209	.203	-.093	.099	0.564
B6.1	-.202	-.244	.053	.118	-.103	-.223	.114	.234	.595	.075	.212	.189	0.686
B6.2	-.008	.106	.069	.231	.036	-.125	.043	.067	.883	.052	.044	.054	0.879
B6.3	-.055	.031	.087	.045	.104	-.106	.073	.184	.863	.093	-.077	-.003	0.835
B6.4	.121	.126	.244	.583	-.037	-.080	.121	.360	.436	.064	.109	.199	0.828
B6.5	.185	.092	.224	.727	.032	-.019	.092	.222	.243	-.028	.061	.255	0.810
B6.6	.097	.402	.159	.734	-.052	-.128	.074	.167	-.041	.005	.051	.023	0.793
B6.7	-.050	.153	.856	.081	-.013	.043	.036	.111	.052	-.086	.065	.074	0.800
B6.8	-.049	.127	.842	.177	.047	.017	.026	.048	.062	-.053	.159	.114	0.808
B6.9	-.010	.154	.757	.072	.195	.118	.008	.127	.116	.205	-.041	-.047	0.729
B6.10	.320	.266	.250	.489	-.164	.130	-.048	.167	.298	.226	-.016	.039	0.691
B6.11	.179	.057	.073	.717	.197	.112	.056	.098	.014	.030	.075	-.018	0.626
B6.12	-.047	.034	.258	.409	.118	-.173	.025	.746	.208	.056	.072	-.019	0.890
B6.13	-.054	.152	-.011	.499	.014	.128	-.135	.484	.074	.129	.072	.197	0.610
B6.14	.036	.030	.088	.718	.116	.089	-.131	.238	.178	.133	-.034	.190	0.707
B6.15	.106	.183	.100	.764	.051	.137	-.024	.067	-.014	.026	-.128	-.151	0.705
B6.16	.473	.245	.058	.473	-.080	.080	.102	.286	-.010	.255	-.074	.007	0.686
B6.17	.065	.100	.253	.422	.135	-.089	.017	.746	.110	-.102	.085	-.066	0.873
B6.18	.089	-.037	.126	.316	.107	-.023	.081	.796	.225	.055	.048	-.050	0.836
B7.1	.167	.144	.008	.052	.813	.064	.134	.010	.042	.157	-.001	-.072	0.766
B7.2	.073	.065	.110	-.037	.127	-.096	.810	.037	.220	-.073	.131	-.091	0.785
B7.3	.641	.093	-.039	.084	.237	.104	.094	.166	.037	.332	-.274	-.092	0.726
B7.4	.545	-.034	-.013	.335	.064	.322	.180	-.222	.043	-.054	.128	-.192	0.658
B7.5	.761	.089	.099	.035	.017	.136	-.038	.055	-.135	-.120	-.110	-.051	0.668
B7.6	.054	.894	.123	.052	.141	.119	.168	.070	-.009	-.036	.070	.140	0.913
B7.7	.100	.835	.122	.166	.126	.061	-.073	-.037	.125	.134	-.030	-.098	0.820
B7.8	.119	.857	.188	.034	.064	.111	.128	.104	.011	.033	.088	.149	0.860

Appendix 20: Section C—Rotated Component Matrix and Communalities

	Component							Communalities Extraction
	1	2	3	4	5	6	7	
C.1.1	-.070	.059	.025	.763	.377	-.021	.176	0.765
C.1.2	-.195	.240	-.026	.760	.257	.054	.086	0.751
C.1.3	.143	.162	-.128	.817	-.024	-.017	.095	0.740
C.1.4	.257	.178	.076	.616	.032	-.078	-.263	0.559
C.2.1(a)	.144	.679	-.088	.338	-.161	.024	.063	0.634
C.2.1(b)	.095	.828	.182	.008	.147	-.011	.260	0.817
C.2.1(c)	.154	.823	.057	.111	.048	-.169	.249	0.810
C.2.1(d)	.152	.366	.056	.376	.616	.162	-.037	0.709
C.2.1(e)	.123	.656	.109	.235	.241	.366	-.062	0.709
C.2.1(f)	-.012	.688	.148	.244	.273	.385	-.061	0.782
C.2.2 (a)	.094	.040	.063	.224	.317	.252	.643	0.642
C.2.2 (b)	.238	.320	.226	-.054	.020	.083	.714	0.730
C.2.2 (c)	.268	.139	.160	.028	-.174	-.061	.742	0.703
C.2.2 (d)	.304	.014	.017	.136	.779	.271	.174	0.822
C.2.2 (e)	.182	.063	-.090	-.059	.016	.900	.189	0.895
C.2.2 (f)	-.050	.064	.123	-.029	.140	.863	-.012	0.787
C.2.3 (a)	.130	-.083	.807	.173	.076	.206	.077	0.759
C.2.3(b)	.255	.089	.779	-.060	-.068	-.081	.070	0.700
C.2.3 (c)	.321	-.027	.714	-.156	.029	-.139	.078	0.664
C.2.3 (d)	.128	.087	.212	.139	.839	-.053	-.069	0.799
C.2.3 (e)	.010	.206	.824	-.106	.126	.074	.220	0.802
C.2.3 (f)	.061	.216	.613	.086	.401	.060	-.019	0.597
C.3.1	.754	.037	.168	-.082	.215	-.005	.080	0.658
C.3.2	.799	.279	.075	-.068	.200	-.008	.181	0.799
C.3.3	.791	.099	.049	-.022	.204	.099	.141	0.709
C.3.4	.662	-.005	.202	.156	-.077	.147	.085	0.538
C.3.5	.791	.110	.222	.206	-.011	-.055	.084	0.740

Appendix 21: Quality Stewardship Strategy

The Quality Stewardship Strategy will include a vision, mission, guiding principles, strategic aims and core priorities. Details of each building block will be discussed below.

21.1 Vision:

To evolve quality management to a 'stewardship' role, which delivers a strategic proactive consumer, market and stakeholder-facing approach that also incorporates corporate social responsibility and sustainable development in similar weighting.

21.2 Mission

Quality Stewardship will build the confidence of the consumer and stakeholder in the organisation's products, performance on social corporate responsibility and sustainable development by demonstrating best operating practises in the scientific, regulatory, environmental and quality landscape through the application of leading science-based standards, policies and processes that are beyond reproach in the court of public opinion.

21.3 Guiding Principles

A number of guiding principles are suggested for the Quality Stewardship strategy implementation.

The strategy will consist of a framework with policy and guidelines in support of an organisation's vision and mission. It will also provide an integrated framework that displays the manner in which the focus on business process excellence (productivity), technical governance, and environmental and social sustainability can be maintained. The strategy must also consist of a common approach to measures, standards and policies that enables meaningful and credible benchmarking, collaboration and learning. Another important feature of the strategy is that it must clarify the roles and accountabilities of issues that matter, globally, regionally and nationally.

As per the vision and mission, the Quality Stewardship strategy must ensure that technical integrity and corporate governance are maintained, whilst driving consumer benefit through a quality focus. The strategy must also create a mindset for the business to be proactive, rather than reactive, in its area of operation. It must increase the speed of communication and add value through provision of a focused approach. Finally, the Quality Stewardship strategy must eliminate barriers or silos between departments, such as Corporate Affairs, Risk Management, and Quality, by creating an integrated approach between them.

21.4 Strategic Aims:

The strategic aims must include focusing on the basics; namely, risk mitigation through strong governance; revenue growth through productivity; and, as the strategy becomes entrenched, building reputational equity by growing into new environmental and social spaces.

21.5 Core Priorities

The core priorities for the Quality Stewardship strategy must be that it is dynamic and can be modified based on organisational priorities; namely, leadership and people; product safety and integrity; management systems; sustainability issues such as water issues; energy conservation; climate protection; waste reduction; health and nutrition; sustainable packaging; ingredients labelling; sustainable agricultural practices; occupational health and safety and sustainable supply streams.

Adopting this as the Quality Stewardship strategy, the changing landscape in the external environment can be converted to an opportunity rather than a threat for any organisation. It can be used as a competitive advantage to effectively respond to society's and consumers' expectations. For example, in an environment where public concern about food safety or chemical exposure is growing, organisations that take up this challenge and demonstrate the safety of their product may well emerge strengthened. Likewise, rising interest in environmental conditions and lifestyle issues create a space for new products that can contribute significantly to meeting sustainable growth plans.

21.6 Strengths and weaknesses of the Quality Stewardship Strategy

The following strengths and weaknesses have been identified for this strategy.

Strengths

The Quality Stewardship strategy is built on a proactive approach and demonstrates thought leadership in a discipline that currently requires this. It is consumer, market, society and sustainability-focused. The strategy deals with the current business challenges adequately and suggests the required energy that is needed for them. It clarifies the roles and accountabilities of issues that matter globally, regionally and nationally and reinforces strategic leadership and direction for them. Implementation of the strategy will lead to an increased speed in communication and add value through provision of a focused approach. The strategy will pull together disparate approaches, behaviours and lack of cohesion across an entire organisation. It will create a sense of ownership amongst all and will assist in directing individual efforts towards the achievement of shared organisational goals and initiatives. The strategy will be cost effective to implement, based on the numbers of people and various departments that will naturally integrate to deliver the outputs of Quality Stewardship.

Weaknesses

The new strategy requires a considerable mindset shift from the traditional thinking of quality management. Thus, the change management and leadership role is going to be fundamental to its success. Failure to successfully secure this upfront can result in the strategy being stillborn. Part of this process must include a wide education and awareness program. The consequences of not doing so, as presented in literature review in chapter 3, can result in a poor success rate even with the best strategy.

The strategy in its entirety is complex and the magnitude and scope of the outputs will make the strategy resource intensive, irrespective of how they are designed. The various outputs that have been identified within the strategy will require the support and leadership of numerous subject matter experts. It cannot be overemphasised that the strategy is dynamic and thus continuous scanning of the landscape and updating

of the strategy is required in order to guarantee relevance and add ongoing value. Finally, the lifespan of this strategy cannot be predicted and as a limitation,, if there is no further research and strategy development, the discipline of quality management is at risk of very little thought leadership in the future.