Employee Perceptions of Quality at a selected company.

By

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This research project has been reviewed by the undersigned
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ABSTRACT

Quality improvement is a fundamental and important attribute of a company's business strategy and competitive positioning. The Durban-based paint factory of Dulux (Pty)Ltd, is the primary manufacturing and distribution site in South Africa. This site has to ensure that the consumers and customers in the target market, are satisfied with the quality of product and service received from the factory.

This research focuses on the determination of employee perceptions of quality during 2006 at the paint factory site. In particular, how could these perceptions be effectively used by management as a basis for improving the quality ethic on the site. An improved quality ethic ensures a value- added product and service offer to the target market. The research investigates employee perceptions for various site departments and job grades within the context of several quality themes.

Employee perceptions were determined by means of a quantitative survey conducted on the site population using a survey questionnaire. The study shows a primarily positive perception of quality by the employees. The subsequent descriptive and inferential statistical analysis quantifies these perceptions as statistically significant in relation to the research questions that were used in the research. There were some perceptions of quality that highlited potential areas for improvement within the site quality management system and the scope of application. These areas need to be considered by management in order to restore positive perception and support for the quality management system.

It is recommended that an annual survey of employee perceptions be conducted by the Quality Assurance department and feedback discussed at the annual quality management review forum. An effective quality improvement and communications strategy can then be determined for implementation. It is also proposed that future research consider conducting a similar study at the service oriented Dulux Alberton site and another survey for the management team at the Durban factory.

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LIST OF ABBREVIATIONS AND DEFINITIONS

CEO : Chief Executive Officer

df : degrees of freedom

EFQM : European quality model

GDP : Gross Domestic Product

HRM : Human Resource Management

ISO : International Organisation for Standardisation

QMS : Quality Management System

N/A : Not applicable

TQM : Total Quality Management

Broadband jobgrade	:	job grading system used at Dulux has jobgrades that are divided into several bands or categories
Core competency	:	activity or process that forms the basis for a company's competitive advantage
Critical success factor	:	product features valued by customers and where the company must excel to outperform competitors
Degrees of freedom	:	number of values in the final calculation of a statistic that are free to vary
Ethos	:	greek word that primarily refers to character
Greenroom	:	common meeting venue for employees to solve problems and generate ideas and improvements
Gross Domestic Product	:	total financial value of all products and services within a country's borders in a defined period
Quality Assurance	:	all the planned and systematic actions necessary to provide adequate confidence to management and customers that a product or service will satisfy given requirements for quality
Quality Circle	:	team based approach for quality improvement
Quality Control	:	operational techniques and activities that sustain the product or service quality to specified requirements
Quality Manual	:	documented version of the quality management system
Quality Policy	:	formal intent by top management on the quality strategy for an organisation
Lean Manufacturing	:	philosophy of waste reduction and removal of inefficiency within an organisation
Panacea	:	greek word that refers to a cure or solution
Shopfloor	:	older and popular term for operational employees
Six Sigma	:	statistical based quality improvement programme to reduce defects and variation in processes

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CHAPTER 1 - INTRODUCTION

1.1 INTRODUCTION

The decorative paint industry in South Africa is a significant industry in itself and also contributes to the overall growth of the country's chemical industry. The chemical industry forms part of the manufacturing industry. Manufacturing is the second biggest sector in the South African economy after financial services and accounts for approximately 17% of the country's Gross Domestic Product (GDP). The country's economy has grown year on year by approximately 5% of the GDP value for the past three years (Manufacturing slackens, 2007:16).

Research conducted by Govender (2007:3), indicates that the annual revenue and volume for the decorative paint industry amounts to over R4 billion and 200 million litres respectively with over 300 paint companies of various sizes operating in the market.

In such a competitive business environment, sustainable competitive advantage and sustainable profitable growth become critical business attributes. Various core competencies and critical success factors become important and amongst them resides that of quality. A proper, internal quality improvement ethic will ensure a more competitive and successful company and the internal development of its employees in order to better serve the customers and consumers with a quality product and service offer. This then affords a competitive differentiator in this competitive business environment.

Internal employee perceptions of quality have not been previously determined at the Dulux paint factory in Durban in order to assess employee commitment and their quality ethic with the current accredited onsite Quality Management system viz. ISO 9001: 2000. Quality improvement initiatives are primarily driven by the

functional quality departments with mostly reactive participation by site employees.

It remains in the interest of Dulux to provide a quality product and service offer to the market and it is therefore important to determine what the company's employees perceive of the quality management system and its implementation, with the primary aim to determine a strategy to improve the quality culture onsite. If the desired support is obtained from the site employees through their participation, there will be buy-in towards planned quality initiatives.

1.2 BACKGROUND TO THE STUDY

1.2.1 An overview of Dulux(Pty)Ltd and its paint factory

Dulux's strategy is to continue to provide quality innovative products to the top end of the South African decorative coatings market by enhancing the already well-established Dulux brand. The maximisation of brand strength at the upper end of the market is critical to gain market share. The product range offered by the company is exclusively for consumers who occupy the sophisticated decorative sector of the market where a specialist approach is required. In addition to the do-it-yourself (DIY) user, the company also caters for the professional painting contractor. All of these product offerings are handled via a comprehensive and expanding range of distribution outlets and specialist paint outlets (AECI Annual report, 2006:23-24).

The paint factory in Durban is concerned with the manufacture, filling and distribution of water based and solvent based decorative surface coatings. The manufacturing process involves the mixing of various raw materials under varying intensity in accordance with a prescribed recipe. The product is then assessed for various quality attributes at different stages of the process and

after conformance to specification, is filled into pre-determined packaging for despatch to customers.

The Company has established, documented, implemented and maintains a quality management system viz. ISO9001:2000 to continually improve its effectiveness in accordance with the requirements of this International standard (Dulux quality manual, 2006:7).

1.2.2 The importance of Quality to Dulux

The management of Dulux have committed themselves and their departments to the company Quality Policy, which is an integral component of its business strategy. This commitment to quality is to be understood and translated into action at all levels of the organisational structure. A Quality manual details the policy and outlines how the policy is implemented to ensure that the quality system at Dulux is compliant with the ISO 9001:2000 international standard. Refer to Appendix A for the full Quality policy statement (Dulux quality manual, 2006).

1.3 RATIONALE FOR THE STUDY

Quality initiatives at the Dulux Durban paint factory are primarily driven by the functional Quality departments. This is despite a comprehensive company quality policy and an internationally recognised quality management system. There is limited support for quality initiatives by the majority of site employees. The research is being conducted to determine employee perceptions of quality in order to provide insight into the reasons as to why the level of support shown by most employees is not ideal.

The research provides information on how to create support for quality initiatives from employees beyond the Quality Department. The information

that is obtained from the research provides insight into the current quality culture and direction on how to achieve a proactive and self-directed quality culture. It is an expectation that an understanding as to why the quality of product, service and process is not 100% right first time, is being provided. In particular, the reasons as to why quality problems do occur during manufacture/distribution, which is resulting in non-conformances, non-value added cost and the potential for customer complaints. The feedback on employee perceptions being obtained from the research is being utilised to determine a strategy to improve the quality culture on the site.

1.4 OBJECTIVE OF THE STUDY

The main research objective is to ascertain employee perceptions of quality at the Dulux factory site.

1.5 SUB-OBJECTIVES OF THE STUDY

The sub-objectives of the study are:

- To determine a quantitative measurement of employees' overall perceptions of quality,
- To determine employee perceptions in terms of awareness of the quality system and the company quality policy,
- To examine employee perceptions of management commitment to quality,
- To assess employee perceptions of reward and recognition for support of quality,
- To determine the perception of employees who are not part of management and their support towards quality initiatives,
- To determine constraints that hinder the success of quality initiatives.

1.6 DELIMITATIONS OF THE STUDY

This study is being conducted on the Durban–based, primary manufacturing and distribution factory for Dulux in South Africa. The corporate head office and regional distribution site in Alberton are not being included. The target population is specific to permanent employees of the site. Contractors and temporary employees are excluded.

1.7 LIMITATIONS OF THE STUDY

Some limitations which could have an influence on the outcomes of this study are :

- Data collection is by means of a self-completed, closed response questionnaire and there was no control over the response rate,
- The questionnaire has been translated into Zulu for respondents who do not understand English. This translation may not be entirely accurate and the essence of the question may be lost,
- Respondents may find it difficult to give honest feedback even though their anonymity is guaranteed,
- There is a busy period of production during the research period which may lead to poor responses and also impact on the content of any response,
- The buy-in that is indirectly obtained via the questionnaire submission could influence the statistical analysis in terms of positive skewness.

1.8 ASSUMPTIONS OF THE STUDY

This study assumes that the different employee grades on the site will have the same assumptions and this study does not measure management and non-management employee differences.

1.9 RESEARCH METHODOLOGY

The research being undertaken is quantitative in nature and involve responses that focused on employee perceptions of quality in their immediate work environment. Primary data was gathered using a self – administered, closed – response questionnaire that was designed around the core research objectives and involved twenty one questions.

A three point Likert scale was used to measure the attitudes of respondents. Each question consisted of a statement that consisted of three possible responses : Agree, Don't know and Disagree. The responses were then coded to facilitate analysis of this non-numerical category data between the ten different departments and five job grades that existed on the factory site.

The data analysis was quantitative in nature and involved the use of descriptive (frequency tables and bar graphs) as well as inferential statistical measures (Chi-square, Cronbach alpha, Probability coefficients and Analysis of variance). The questionnaire was subjected to validity and reliability assessments. The study was conducted by way of a census on the full permanent employee complement on the factory site, at the time of the research in March 2006, consisting of approximately two hundred and two employees.

Exclusions were restricted to those employees (nine of them) who had participated in the focus group interview (five functional quality employees) and face validity stages (four senior management employees) of the questionnaire design. The questionnaire was available in both English and Zulu to overcome any language barriers. A covering letter, in both languages was communicated to all employees who participated in this study to facilitate the research process.

1.10 STRUCTURE OF THE STUDY

Chapter 1 provides an introduction to the study. The rationale for the study is presented together with the research objectives and summary of the research methodology. An overview of the company where the study was conducted is also presented. The structure of the dissertation is also clarified in this chapter.

Chapter 2 is a critical review of related literature on the definitions, principles and practices with respect to Quality, Total Quality Management and ISO 9001 quality management systems. This chapter further reviews organisational behavioural concepts linked to this study. These include perception, leadership, culture, communication and motivation.

Chapter 3 describes the research methodology. This includes the research design, data collection, data analysis, validity, reliability, bias and ethical considerations.

Chapter 4 presents the research findings, analysis of the data and interpretations of these results in accordance with the theory discussed in the literature review.

Chapter 5 presents the overall conclusions obtained of the research, recommendations for Dulux and scope for further research.

Having introduced the study in Chapter 1, the next chapter presents a review of the literature gathered on the various topics related to the study and includes an examination of Quality management terminology, models, principles and practices as well as various Organisation behavioural concepts linked to the study.

CHAPTER 2 - LITERATURE REVIEW

2.1 INTRODUCTION

This chapter will review appropriate literature on quality management theories, principles, practices and systems and related organisational behavioural aspects on perception, leadership, culture, communication and motivation. In addition the definitions of quality and perception that were regarded as suitable for this study are discussed.

Ganachaud (2002:183) states that quality is necessary in a company which operates in a competitive environment that requires differentiation through quality. As was previously mentioned in Chapter 1, Dulux is a brand leader in a very competitive market and product quality is an important component of the company strategy. Hence this study was conducted to ascertain employee perceptions of quality for use in the determination of a quality strategy to support the company strategy.

Gryna (2001:3-4) believes that quality has become a "cardinal priority for most organizations" due to various changing business conditions. These conditions fully apply to Dulux and include the following :

- Market competition where product offers include high quality and low price,
- Customer-focussed organization which views quality as customer satisfaction and loyalty instead of conformance to specifications,
- Higher level of customer expectations,
- Performance improvement that includes quality, cost, cycle time and profitability in an interdependent process,
- Changing workforce and organizational structure,
- Information revolution (internet and electronic mail),
- Electronic commerce,

- Changing role of the quality department (integration and sharing of quality expertise with line departments).

2.2 QUALITY

Many different definitions and dimensions of quality are available in academic literature and books. Appropriate definitions of quality have been presented in the next section in order to provide insight relative to this study.

2.2.1 Definitions of quality

This section will present several definitions of quality that are relevant to this study. A definition that is also incorporated into the Dulux quality policy (Refer Appendix A) is offered by Suganthi and Samuel (2004:9), who believe that quality is about efficiency and effectiveness, which is "doing right things right".

A wide variety of approaches to the definition of quality are offered by Wilkinson, Redman, Snape and Marchington (1998:18) based on the philosophies of renowned quality experts referred to in parenthesis. These include the following :

- Quality is about value (Feigenbaum),
- Quality is conformance to standards, specifications or requirements (Crosby),
- Quality is fitness for use (Juran),
- Quality as excellence (Peters and Waterman),
- Quality is meeting or exceeding customer expectations (Parasuraman et al),
- Quality is about "delighting the customer" (Peters).

However these definitions also have weaknesses. Conformance to specification is unlikely to be as effective as quality as excellence in obtaining employee commitment to quality. However the latter definition is difficult to measure. The

former definition has more of an internal focus and customer views are excluded. Quality linked to customer expectations is plagued by complexity, difficulty and cost in measurement (Wilkinson, et al.; 1998:18). Ganachaud (2002:32) states that quality is conformity to specifications within the context of a global product and service offer by the company, but related to the customer requirements.

A more quantitative definition of quality is proposed by Besterfield, et al (2003:8). This is presented as follows : Q = P/E
where Q= quality; P= performance; E = expectations
If Q is greater than 1, then the customer feels good about the product or service. At the same time, determination of P and E will be influenced by perceptions that exist with the organisational and customer determination of performance and expectations respectively.

2.2.2 Dimensions and spiral of quality

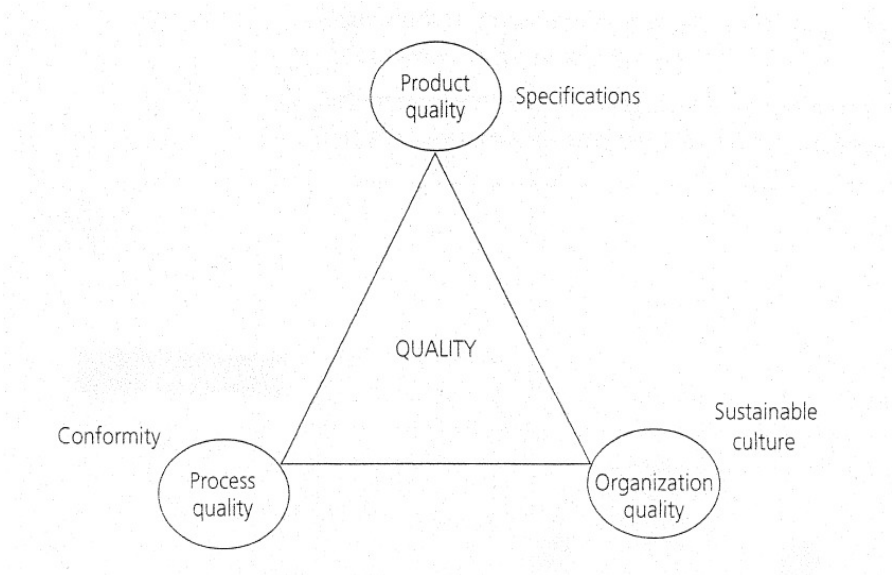
Additional definitions of quality are described in this subsection. Another approach is offered by Basu (2004:5), who lists eight quality dimensions that were developed by David Gravin of the Harvard Business School that relate to product quality. These include the following :

- Performance: efficiency with which the product achieves it s intended purpose,
- Features: attributes that supplement basic product performance,
- Reliability: capability of product to perform consistently throughout its life cycle,
- Conformance: meeting specifications of the product,
- Durability: degree to which a product can withstand stress without failure,
- Serviceability: denotes ease of repair,
- Aesthetics: sensory characteristics such as look , smell , sound and taste,
- Perceived quality: based on customer opinion.

Basu (2004:6-7) defines quality of a product or service and the degree to which it satisfies customers as influenced by design quality which is the degree to which the product/service specification satisfies customer requirements and process quality which is the degree to which the product/service, made for the customer, conforms to specification.

Basu (2004:7) further lists a three-dimensional model of quality which is shown in Figure 2.1.

Figure 2.1 Three dimensions of quality



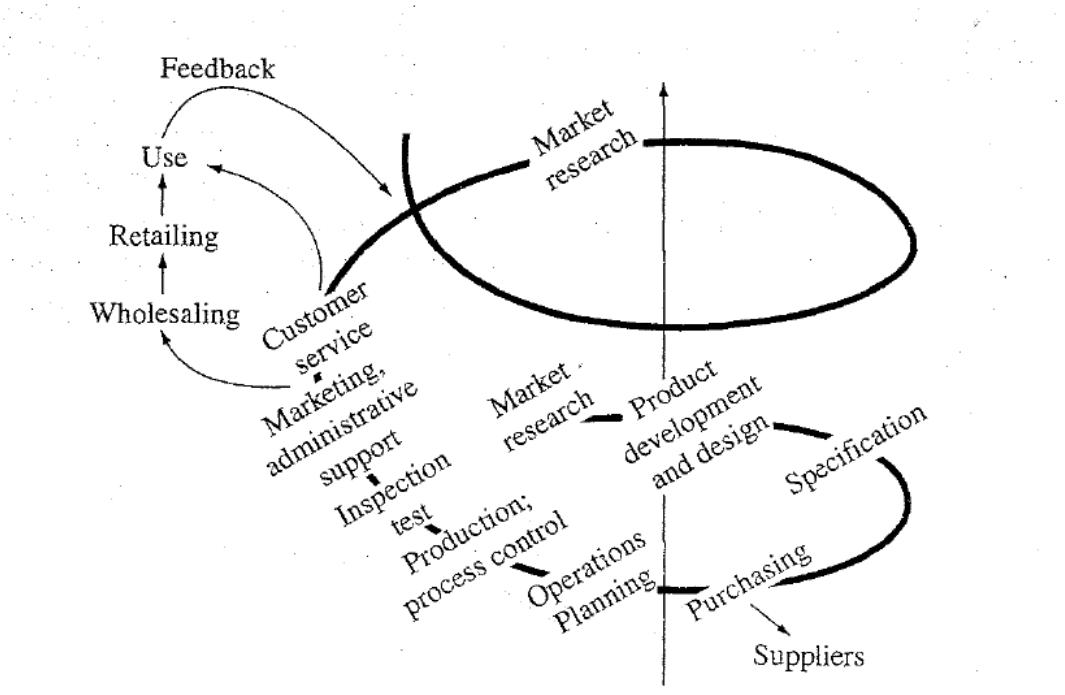
Source: Basu (2004:7)

From this model, product quality refers to defined attributes containing numeric specifications and perceived dimensions. The process quality dimension must also contain defined criteria for acceptable service so the conformity of output can be compared to this criteria. Sustainable quality culture is what organization quality refers to. This is further explained by related dimensions such as top management commitment, culture of teamwork, use of key performance indicators and self assessment of the organization performance to agreed objectives.

A dual definition of quality is presented by Gryna (2001:6), who states that quality means external and internal customer satisfaction and indicates that the main determinants of this satisfaction are product features (which refer to quality of design) and freedom from deficiencies (which refer to quality of conformance). This definition is similar to that of Basu's aforementioned definition for design and process quality.

Gryna (2001:7) further makes reference to the "spiral of progress in quality" also known as the quality function as presented in Figure 2.2 which shows the numerous activities and task that must be performed to achieve customer satisfaction and loyalty. Kelemen (2003:101) refers to this as "Juran's quality spiral" where quality is viewed "as a never-ending process unfolding systematically and continuously throughout the organization".

Figure 2.2 Spiral of progress in quality



Source : Gryna (2001:7)

2.2.3 The two views of quality

This subsection describes the two views of quality with the context of quality definitions and perspectives. "The traditional scope of quality activities is undergoing a radical and exciting change from historical emphasis on quality of physical products in manufacturing industries (little Q) to what is now emerging as the application of quality concepts to all products, all functional activities and all industries (big Q) " (Gryna 2001:8). This "little Q" and "big Q" terminology provides a new perspective on quality : the conventional internal view and the modern external view. Table 2.1 depicts these two views of quality.

Table 2.1 : Two views of quality

Internal view	**Customer-focused view**
Compare product to specification	Compare product to competition and to the best
Get product accepted at inspection	Provide satisfaction over product life
Prevent plant and field defects	Meet customer needs on goods and services
Concentrate on manufacturing	Cover all functions
Use internal quality measures	Use customer-based quality measures
View quality as a technical issue	View quality as a business issue
Efforts coordinated by quality manager	Efforts directed by upper management

Source : Gryna (2001:14)

2.2.4 Managerial and critical perspectives of quality

This section describes another perspective of quality: from a management and critical viewpoint. A more comprehensive and culturally sensitive analysis of quality that is focused on managerial and critical perspectives is proposed by Kelemen (2003). The managerial perspective views quality as a technical and operational achievement. The critical perspective views quality "as a complex and contested social and political phenomenon, which acquires its meaning via processes of intersubjective communication in which organizational and societal power of configurations plays a substantial role" (Kelemen, 2003:1).

The managerial perspectives of quality include the following :

- The product-based approach – views quality as a precise and measurable variable,
- The manufacturing-based approach – defines quality as the degree to which a specific product conforms to a design or specification,
- The value-based approach – considers quality as being the degree of excellence at an acceptable price or the control of variability at an acceptable cost,
- The user-based approach – focuses on the capacity of a good/service to satisfy or exceed the wants of a specific customer (Kelemen, 2003:1).

These managerial perspectives of quality have much similarity with the views of Wilkinson, Redman, Snape and Marchington (1998) and include the following:

- The transcendental approach – this regards quality as excellence.
- The socio constructivist approach – regards a good quality product as being validated or supported by feedback from reputable sources such as customers, top management or a quality standards certification institution.
- The discursive approach – this approach makes language central to the social construction of quality and emphasizes the interdependence between language, power and reality in society and organisations.

- The slogan approach – here quality is seen as a slogan which could be used by management to communicate the quality message to motivate employees.This would also motivate employees inherently as they can relate to the belief that quality is both a company and society-wide concern (Kelemen, 2003).

2.2.5 Quality Theories

Several theories on quality relevant to this study are discussed in this subsection. During the 20th century a significant body of knowledge originated with respect to the achievement of superior quality. Many individuals contributed to this knowledge and there are many theories postulated by quality experts. In this section, the theories of Shewhart, Juran, Deming, Feigenbaum, Ishikawa, Moller, Taguchi, Crosby and Peters are briefly discussed.

Shewhart developed the control chart theory with control limits and authored a book (Economic Control of Quality of Manufactured Product) which is regarded as a complete and thorough work of basic quality control principles. He also developed the PDSA cycle for learning and improvement (Kelemen, 2003:4).

Deming was a protégé of Shewhart and is regarded as the best known quality expert in the world and developed the now famous 14 points to provide a theory for management to improve quality, productivity and competitive positioning (Kelemen, 2003). These 14 points rest on a system of profound knowledge that has four parts: the systems approach, understanding of statistical variation, nature and scope of knowledge and psychology to understand human behaviour (Gryna, 2001:2).

Whilst Deming's approach to quality has been praised for its system logic , statistical approaches and leadership focus it has showed a limited

understanding of human motivation and also lacked a well-defined methodology as Deming only indicates “what to do but not how to do it” (Kelemen, 2003:27).

Juran emphasized the importance of a balanced approach that used managerial, statistical and technological concepts of quality (Gryna, 2001).
Besterfield, et al (2003:4) state that Juran emphasized the necessity for management at all levels in an organisation to be committed towards the quality effort with hands-on involvement and further recommended project improvements that were based on return on investment in order to achieve breakthrough results.

Feigenbaum emphasized the concept of total quality control throughout all functions of the organisation and urged that a quality system must be created to assure customer satisfaction and an economic cost of quality (Gryna, 2001:2).
Besterfield, et al (2003:4) based on the recommendations of Feigenbaum state that quality must begin by identifying the customer’s requirements and conclude with a product or service in the hands of a satisfied customer.

Ishikawa showed the Japanese how to integrate the various quality improvement tools such as analysis and problem solving tools (Gryna, 2001). Besterfield et al (2003) believe that Ishikawa is best known for the development of the cause and effect diagram (also known as the Ishikawa diagram) and the concept of the quality circle where groups of employees work together to solve quality problems.
Taguchi developed the loss function concept that combined cost, target and variation into one metric. The cornerstone of his philosophy is based on robust design of parameters and tolerances (Besterfield, et al.; 2003:5).

Suganthi and Samuel (2004:42) make reference to the theory of Claus Moller which speaks of the concept of “personal quality as the central element of total quality management (TQM)”. In this theory, Moller states that while everybody

will differ in their approaches to quality improvement, their similarities may be more important.

According to Kelemen (2003:37), Philip Crosby, an American consultant whose name is associated with “do it right first time” and “zero defects” lists motivational style, clarity of approach and the importance placed in employees involvement and responsibility as strengths of Crosby’s approach. Major weaknesses relate to the potential for zero defects to be interpreted as zero risks and his model’s ineffectiveness in highly coercive environments.
Crosby presented the four absolutes of quality management:

- Quality is conformance to requirements,
- Prevention of nonconformances is the objective and not appraisal,
- The performance standard is zero defects not “that’s close enough”,
- The measurement of quality is the cost of nonconformance
  (Besterfield, et al.; 2003:5).

The final theory is from Tom Peters, another American consultant, who has conducted research into the most successful companies in North America.
Peters identifies excellence as the universal icon that can guide a business and differentiate winners from losers and uses a transcendental approach to quality: “excellence is synonymous with quality yet it is indefinable through objective and rational methods of research” (Kelemen, 2003:38).

Peters also identified leadership as a central component to the success of quality improvement in terms of role models with employees, customers and suppliers. This approach is seen as a discursive approach to quality (Kelemen, 2003:38).

Peters further proposes a management revolution in the Western business environment that focuses on the end-user as the most important factor to judge quality efforts. Peters has been criticised for the sales-driven approach to quality and for setting and embracing new fashions rather than sticking to initial models

and has supporters who claim that the world is rapidly changing and management views and models must change (Kelemen, 2003:38).

Suganthi, et al (2004:42) summarise the common message from the quality gurus:

- There are no shortcuts to quality – prescribed procedures must be followed,
- There are no quick fixes – it takes time to establish quality,
- Improvement requires full comittment and support from top management,
- Extensive training is needed,
- Participation of each and every employee is a must.

2.2.6 Total Quality Management (TQM)

In this section various definitions of Total Quality Management (TQM) are explored and two models to explain TQM are presented.

The holistic view of TQM supports the idea that quality is the responsibility of all employees and not just quality managers and TQM encompasses all three dimensions of quality as shown in Figure 2.1 section 2.2.1, with particular emphasis on organizational quality (Basu, 2004:9).

According to Gryna (2001:14), TQM is the system of managerial, statistical and technological concepts and techniques to achieve quality objectives throughout an organization. Suganthi, et al (2004:54) is of the opinion that TQM is a management philosophy whose key factors include teamwork, continuous improvement and performance measurement. The system is perfected by going for International Organisation for Standardisation (ISO) certifications, the quality culture is inculcated in the organisation and team effort is encouraged among the workers. TQM has been accepted world wide as the best method for ensuring quality.

Hodgetts and Hegar (2005:195) refer to TQM as a people-focused management system which is aimed at continual increase in customer service at a lower cost. It is further defined as a structured system with an objective to meet and exceed customer demands while keeping low costs and improving quality, delivery and morale. The first principle of TQM is to do it right the first time.

Wilkinson, et al (1998:10 -11) believes that TQM includes application of quality assurance to all company activities which is characterised by the application of good practice quality management principles, practices and techniques. It is often observed as a general business philosophy, which is about the attainment of continuous improvement of customer satisfaction by quality-led, company-wide management.

Total Quality Management (TQM) is a philosophy and practice of management which aims to satisfy the customers by means of employee involvement, consistent leadership and continuous improvement. Top management commitment, continuous improvement through scientific knowledge and employee involvement make up the three fundamental pillars of TQM
(Kelemen, 2003:99).

Wilkinson, et al (1998:14 -15) refer to the “hard and soft aspects” of TQM. The former emphasized systems, data collection and measurement. The soft aspect is focused on the management of human resources and the need to change culture in an organisation. TQM has implications for employee involvement that range from employees taking greater responsibility for quality and having accountability for it’s achievement.

Kelemen (2003:100) states that there are two broad approaches to total quality management, viz. the hard approach that emphasizes continuous improvement by the use of statistical methods and is associated with the early quality theorists

aims of productivity and profit improvement. The other approach is known as the soft approach which focuses on leadership, employee involvement and cultural change. The soft approach has been made popular by the American quality theorists whose aim is to create a strong organisational culture that is aligned to the demands of the customer.

Besterfield, et al (2003:1) define TQM by analysing the three words that make it up:

- Total – made up of the whole,
- Quality – degree of excellence provided by a product or service,
- Management – act, art, or manner of handling, controlling, directing, etc.

Therefore TQM is the art of managing the whole to achieve excellence.
It is further stated that TQM integrates, under a disciplined approach, fundamental management techniques, existing improvement efforts and technical tools. It is also stated that there are six basic concepts required by TQM:

- Management who are involved and committed to provide long term top-to-bottom organisational support,
- An unwavering focus on the internal and external customer,
- The effective involvement and utilisation of the entire workforce,
- Continuous improvement of the business and production process,
- The treatment of suppliers as partners,
- Establishment of performance measures for the processes.

(Besterfield, et al.; 2003:2).

According to the American Society for Quality (2007:1), a TQM effort requires the participation of all members of an organisation in order to improve processes, products, services and the company culture. The methods for implementation of this approach come from the various early quality leaders who were referred to in section 2.2.2.

The European Organisation for Quality (2007:3) describes the following statements with respect to TQM:

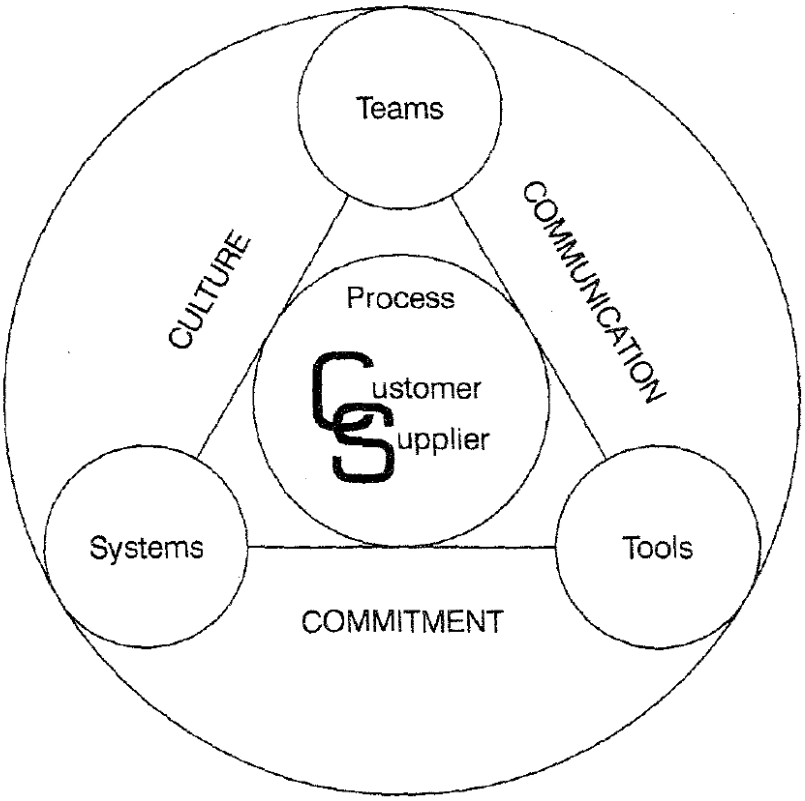
- The entire organisation must continually renew itself, its procedures, its key competencies and capabilities in order to ensure sustainability,
- Managers should use quality concepts and tool in daily activities to learn how to improve and renew the organisation,
- Quality concepts should be a part of the entire organisational system and its processes,
- Quality management is the best companion on the road to business excellence,
- The application of the Deming Plan, Do, Check, Act cycle is the first and most important move towards the integration of quality concepts into common, corporate business practices.

Pike and Barnes (1996:23-24) describe TQM as the Japanese trick, Western firms are still keen to copy. TQM is a corporate business management philosophy where it is recognised that customer needs and business goals are inseparable. TQM cannot be separated from corporate strategy and the quality policy is an important component of this strategy. TQM highlites the importance of quality in relation to other company aspects and must be communicated to employees, customers, suppliers and shareholders alike. Successful firms regard the following as important aspects of TQM:

- Clear mission and constancy of purpose,
- Clear policies towards customers, suppliers and employees,
- Clear critical success factors,
- Right culture and attitude towards quality,
- Clear responsibilities with ownership of processes.

Oakland (2000:30-31) refers to a model for TQM that provides a framework against which a company's progress towards TQM can be examined as presented in Figure 2.3.

Figure 2.3 Total quality management model



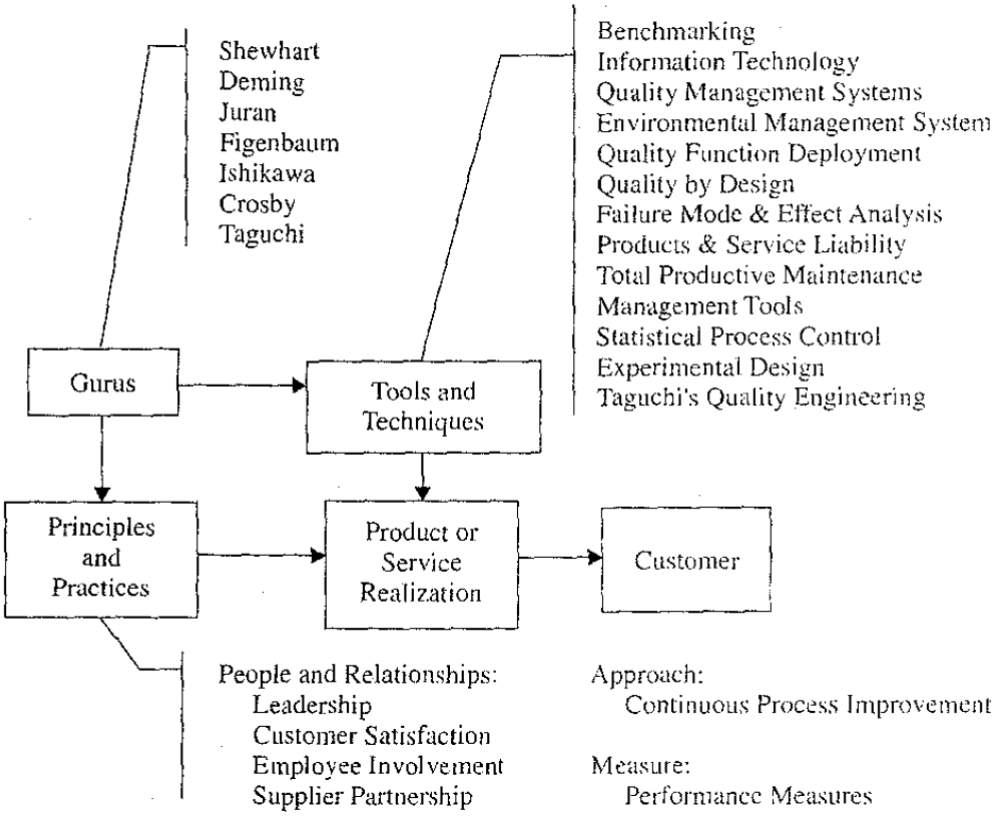
Source: Oakland (2000:31)

The core of TQM is the customer-supplier relationship where the process must be managed. The soft aspects of TQM are represented by culture, communication and commitment and which will be expanded in forthcoming sections 2.3.3, 2.3.4 and 2.3.5 respectively. The process core is then surrounded by the hard aspects of TQM – tools, teams and systems.

Systems generally are based on a good international standard (ISO 9001, to be discussed in section 2.2.9), tools refer to analysis, correlation and prediction tools and teams refer to quality councils, improvement teams, quality circles and corrective action teams (Oakland, 2000).

Besterfield, et al (2003:5-6) identifies a TQM framework as shown in Figure 2.4. The framework begins with the knowledge made available from the quality gurus, who have contributed to the development of principles and practices and/or tools and techniques. Some of the tools and techniques are used in the realisation of product and service activity. In order to continually improve the organisation's system, product and servide, feedback from internal and external customers provides the necessary information to enable this.

Figure 2.4 TQM Framework



Source: Besterfield, et al (2003:6)

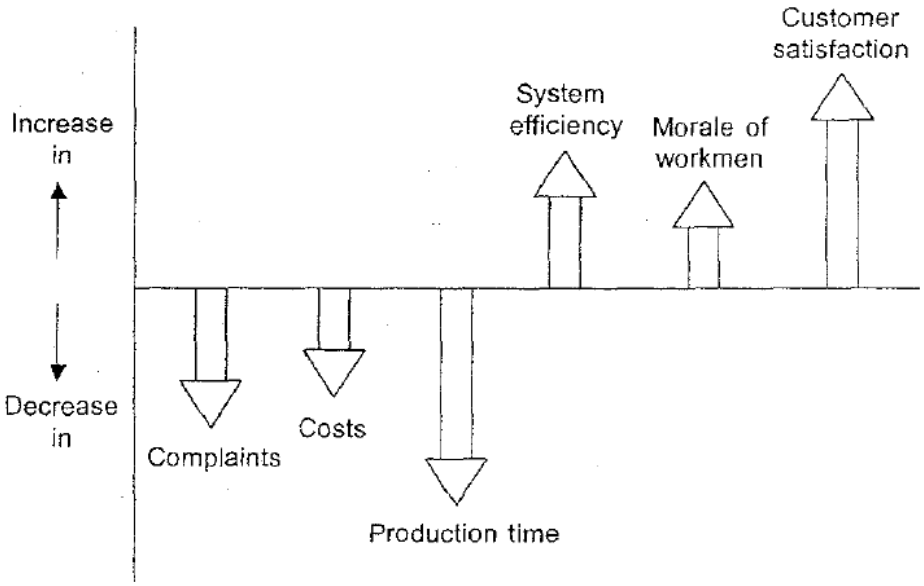
Finally, in research conducted by Dahlgaard and Dahlgaard-Park (2006), findings have shown that the six sigma steps and lean production philosophy are essentially the same and have been developed from Japanese TQM practices.

This research concluded that the lean production and six sigma roadmaps are examples of the new alternative TQM roadmaps.

2.2.7 The advantages of TQM

This section describes the various advantages for TQM. Literature is reviewed from various sources in this regard and discussed to highlite the benefits of TQM programmes to an organisation. Suganthi, et al (2004:8) state that quality management has many advantages. The important advantages are shown in Figure 2.5.

Figure 2.5 Benefits of Quality Management



Source: Suganthi, et al (2004:8)

These advantages can be summarised as follows:

- Reduction in internal and external customer complaints,
- Reduction in product costs,
- Reduction in production times,
- Increased efficiency within the system,

- Increased morale of workme,
- Increased customer satisfaction.

It is further stated that quality management systems that offer these advantages must improve the business (Suganthi, et al.; 2004).

Besterfield, et al (2003:13) refer to the benefits of TQM as an improvement in quality, employee participation, teamwork, working relationships, customer and employee satisfaction, productivity, communication, profitability and market share. Research that has shown over a ten year study of 600 organisations that TQM is a good investment due to the study revealing a strong link between TQM and financial performance.

This is further supported by Kelemen (2003:106) who is of the opinion that TQM has positive consequences on bottomline performance. Kelemen further suggests that the implementation of an effective TQM programme will increase revenues, improve profitability and reduce costs. Suganthi, et al (2004:372-373) believes that proper care must be taken when TQM strategies are formulated and during implementation to ensure that the TQM system will prove its worth. “Men may come and men may go; quality should go on forever”.

TQM unites routine management and managing for innovation in one set of organisational practices and arrangements. This is explained by the observation that TQM joins senior management strategy and innovation with efficiency in the work environment, the latter being an important improvement activity that occurs at operational level (Wilkinson, et al.; 1998:16).

Swift (1995:3,8) states that TQM begins and ends with training. This ensures all employees have appropriate knowledge to use TQM tools and techniques effectively. This in turn allows for uniformity and consistency of approach with respect to TQM which makes the goal of continuous improvement , a hallmark of TQM, attainable. This is further expanded to describe TQM as building and

sustaining a culture of continuous improvement and focused on satisfaction of service needs and expectations.

2.2.8 The disadvantages of TQM

The section concludes with a review of the disadvantages and reasons for failure of TQM programmes in an organisation. ASQ (2007) believe that the term TQM has lost favour in the United States of America in recent years, was considered a "fad" by most business leaders and that a common substitute is Quality Management. However, TQM is still extensively used in Europe. Many TQM programmes fail because management teams find it difficult to reconcile a more democratic team problem-solving style with the traditional ideas of management control (Edwards, 2007:4).

Stahl (1999:134,136) is of the opinion that TQM often fails to live up to the expectations of it proponents. Critics of TQM refer to reports of failed TQM initiatives and argue that it is nothing more than another management fad. Stahl refers to a survey of 500 companies where only 36% felt that TQM had contributed in anyway to their competitiveness. It has been reported that a lack of positive results has seen the end of approximately two-thirds of TQM programmes that were less than two years old. Stahl describes the lack of integration within a contemporary organisation with respect to it's culture, business processes and TQM as the main reason for TQM failure.

Suganthi, et al (2004:371-372) is of the opinion that TQM can never be taken as a panacea for all problems and TQM initiation will not automatically become successful. Suganthi, et al (2004:371-372) list some reasons for the failure of TQM as follows:

- Lack of top management commitment,
- Lack of teamwork among employees,
- Appropriate tools and methods are not used,

- Employees are not trained adequately nor are competent,
- Rules and regulations are followed rigidly without relaxation to allow for flexibility and creativity where necessary,
- Employees are not empowered,
- Internal processes are given attention whilst external processes are ignored,
- Quality guru's views/philosophies are overemphasized with little room for employees views and ideas,
- Quality goals are unrealistic,
- System becomes too bureaucratic,
- Ethics is not a core value of the business,
- Cross functional interaction between departments is non- existent,
- TQM is considered as a quick fix for the current problem,
- System component of TQM is given more priority than the human component during TQM implementation,
- Employees do not buyin to the change and resist the change,
- Initial expenditure to start TQM is seen as a cost and not an investment,
- Intended initiatives within the TQM programme are conducted without a proper understanding of quality.

Kelemen (2003:107-108) believe that most reasons for TQM failure refer to problems with implementation rather than inherent theoretical weaknesses of the TQM model. Some of the reasons are listed below:

- Lack of integration between total quality management and everyday business practices. TQM practices are viewed as inconvenience rather than seen to provide assistance in an organisation,
- Lack of management commitment has been cited as the most crucial reason for TQM failure. Managers make speak of their commitment but their behaviours do not reflect this. In demanding circumstances, managers will often forget the TQM principles and practices and focus on volume, outputs and production levels,

- Problems with adapting Human Resources Management (HRM) practices to support TQM. It remains important that HRM practices are aligned to the TQM ethos,
- The controversial relation between TQM and downsizing. TQM is often linked to job restructuring and job losses in an organisation,
- Numerous quality initiatives within an organisation with TQM being one of many in the business. Focus and attention is not solely on TQM and it's full impact maybe not appreciated nor understood.

This section is concluded with reference to Bank (2000:230-231) who has predicted problems for TQM due to three trends, listed below:

- Rhetoric is winning over substance – many so called TQM programmes are a pale reflection of the real thing as the difficult yet important and scientific parts of a genuine TQM programme are ignored and only the slogans are retained,
- TQM is a catchword for every intervention thought up by managers, academics or consultants and becomes an umbrella for virtually anything thus diluting it's essence and placing it at risk,
- Research is not providing the corrective function for TQM that it could and should. An appeal for proactive research is requested to highlite the mechanisms by which TQM practices realise their effects. It is felt that for only if the continuous improvement idea comes to apply to TQM itself will this provocative philosophy have a chance of sustaining itself over time.

2.2.9 ISO 9001 Quality Management System (QMS)

In this section various definitions of the ISO 9001 Quality Management System are presented and the system is further explained with a model.

Bank (2000:81) refers to the International Organization for Standardisation (ISO) based in Geneva, Switzerland that has developed the ISO 9000 series which

sets out methods for implementation of a quality system. This quality system is composed of organisational structure, responsibilities, procedures, processes and resources that are needed to deliver quality products and services within the scope of the activities that take place in the organisation. All of these activities need to be documented in a quality manual and the quality system must follow Deming's PDCA cycle ie. documentation, implementation, audit and review.

The South African Quality Institute (2007:2) refers to the old ISO 9001:1994 standard which had a fundamental weakness in that a specific clause with respect to continual improvement of formal systems was omitted. This was rectified with the introduction of the ISO 9001:2000 standard which focused on continual improvement of the quality management system to improve customer satisfaction in an attempt to align the standard to market requirements.

The International Organization for Standardization (2007:6) mentions that ISO 9000 is among ISO's most widely known standard ever and has become an international reference for quality requirements in business to business dealings.

Monnich (2001:12-13) describes eight quality management principles that are the framework for organisational improvements and which form the basis of the ISO 9001:2000 standard. These include the following:

- Customer focus – organisations must understand current and future needs of the customer and meet or exceed customer expectations,
- Leadership – Leaders must establish unity of purpose and direction for the organisation,
- Involvement of people – Full involvement will enable people to use their ability to the benefit of the organisations,
- Process approach – Manage activities and resources efficiently as processes,

- Systems approach to management – identify, understand and manage interrelated processes as a system to enable efficiency and effectiveness by the organisation to achieve its objectives,
- Continual improvement – this must be a permanent objective for the organisation,
- Factual approach to decision making – analysis of data and information to enable effective decision making,
- Mutually beneficial supplier relationships – The organisation and its suppliers are interdependent and a mutually beneficial relationship will result in value creation.

The Japan Quality Assurance Organization (2007:1) defines ISO 9001 as an international standard that establishes requirements for quality management systems to cover quality assurance and organizational management which extend to customer satisfaction and improvement activities.

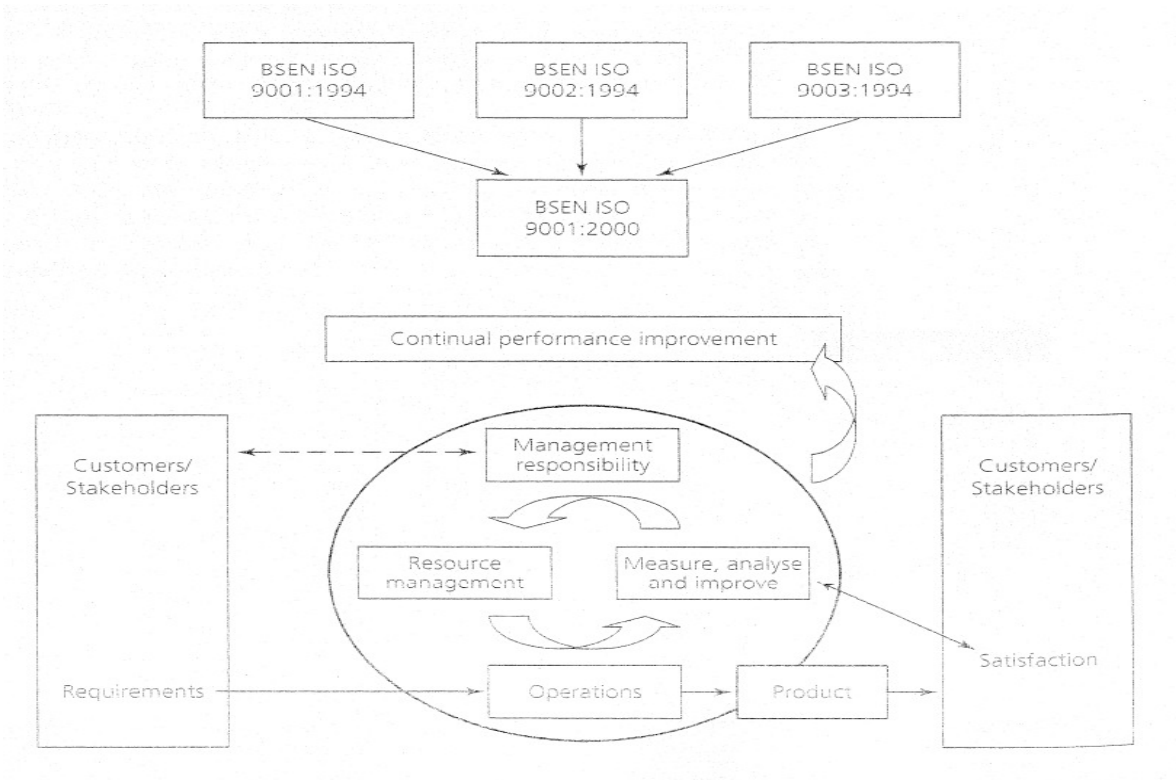
Ganachaud (2002:45-46) believes that the ISO 9000 standards provide a consistent universal measure of quality. The ISO 9000 standards are not supposed to impose a standardized bureaucratic system on companies. It is further stated by Ganachaud that achievement of the ISO 9000 certification is based on third party assessment and periodic audits to confirm that the system adheres to the ISO 9000 standard. While ISO 9000 certification does not regulate or control product quality, the comprehensive documentation that is required enables the identification of deficiencies in processes or quality controls that lead to implementation of improvements.

Gryna (2001:42) refers to the purchasers of products who could require potential suppliers to have certified ISO criteria as a prerequisite to receipt of a contract and this ISO 9000 certification allows for competitive advantage on the domestic and international stage. The American Society for Quality (2007:1) state that ISO 9000 will assist a company to satisfy customers, meet regulatory requirements

and achieve continual improvement but is not a complete guarantee of quality. The South African Quality Institute (2007:1) lists a primary function of a Quality Assurance department to ensure that the organisation will adhere to a formal, documented quality system as prescribed within the ISO 9001:2000 quality standard.

Basu (2004:216) offers by far the most comprehensive definition of the ISO 9001:2000 standard and provides a model (Figure 2.6) to illustrate the definition. The ISO 9001:2000 standard is the updated quality management system which specifies the requirements for a company to demonstrate its ability to provide products and services that fulfil customer satisfaction.

Figure 2.6 ISO 9001:2000 quality model



Source: Basu (2004:216)

As shown in Figure 2.6, ISO 9001:2000 reflects the integration of six main areas:

- Management responsibility: more emphasis on senior management involvement,
- Resource Management: less emphasis on paperwork and more on resources and business processes,
- Product realization: production and service under controlled conditions,
- Measurement, analysis and improvement: requires measurement of processes,
- Customer focus: requires measurement of customer satisfaction,
- Continuous improvement: focuses on continuous improvement of both the processes and quality management system (Basu, 2004).

2.2.10 The advantages of ISO 9001

This section presents a summary of the important advantages relevant to this study. The International Organization for Standardization (2007:3) states that for businesses, adoption of International Standards implies that suppliers can base the development of product and services on specifications which have wide acceptance in their sectors. This in turn means that business who use ISO standards are then able to compete on many more global markets.

The revised version of ISO 9001 (ISO9001:2000) attempts to align the ISO standard to suit market requirements and focuses on continual improvement of the quality management system to improve customer satisfaction (South African Quality Institute, 2007:2).

Aldowaisan and Youssef (2004:1) describe the purpose of the ISO 9001:2000 QMS as to provide a business with a model to systematically grow whilst assuring it's products and services and further mention that the validity of ISO 9001:2000 QMS is due to the fact that the world's best minds have contributed to

it's development and maintenance and that many companies have reported real business gains due to implementation of the ISO 9001:2000 QMS.

Growing a culture of quality (2007:10) lists the following advantages of ISO 9001:2000 certification:

- Improvement of product and service quality,
- Decrease in products that do not adhere to standards,
- Improvement of esteem in the market place,
- Establishment of a competitive edge,
- Improvement of internal communication,
- Improvement of quality awareness,
- Cultivation of a quality culture,
- Improvement of record keeping,
- Improvement of management efficiency,
- Improvement of customer service/customer care,
- Decrease in faulty product returns,
- Better tendering and market activities in order to improve market development and market penetration.

Swift (1995:322) refers to the following as benefits of implementing ISO 9000:

- Reduced scrap and rework, which reduces overall costs,
- Reduced customer complaints,
- Improved work flow,
- Standardized training methods,
- Improved document control, which improves internal and external communication,
- Improved productivity.

According to Besterfield, et al (2003:254), various reasons exist for implementation of a quality system that conforms to an ISO standard. These include the following:

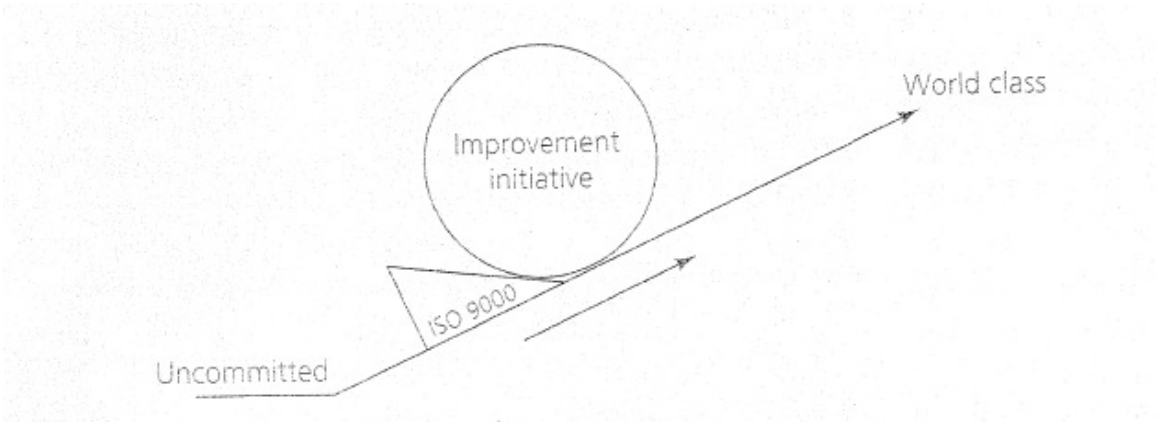
- Primary reason is that customers or marketing are demanding compliance to a quality system,
- Improvement in processes and systems is required,
- A desire for global deployment of products and services,
- In order to maintain or increase market share, many companies realise that they must be in conformance with an ISO standard.

Ganachaud (2002:47-50) is of the opinion that both large and small service companies appreciate that ISO 9001 is a management tool that can maintain their market focus and improve their competitive position and defines benefits that can be obtained from ISO 9000 certification to include:

- Improvement of performance, coordination and productivity,
- Greater focus on business objectives and customer expectations,
- Achievement and maintenance of product quality to meet customer stated or implied needs,
- Management confidence that the intended quality is being achieved and maintained,
- Evidence to customers and potential customers of the company capability,
- The opening up of new market opportunities or to maintain market share.

Basu (2004:29,217) believes that ISO 9000 primarily exists to give the customer confidence that the product or service being provided will meet certain specified standards of performance and that the product or service will always be consistent with those standards and that ISO 9000 can act as a stopper that prevents the quality standard going in reverse. This is illustrated in Figure 2.7. which depicts that any quality improvement initiative has an important dependence on ISO 9001 to counter any adverse lack of commitment and propel the initiative towards world class.

Figure 2.7: Quality improvement and ISO 9000



Source: Basu (2004:217)

In research conducted by Murray (2007:31) of Small and Medium sized Enterprises (SME's), realised benefits of an ISO type QMS implementation included increased awareness of waste and poor quality on the operational work area (shopfloor), major reduction in customer complaints, employees mindset change (more quality conscious and proactive) and willingness from employees to get involved with improvement processes that had a positive impact on quality and productivity.

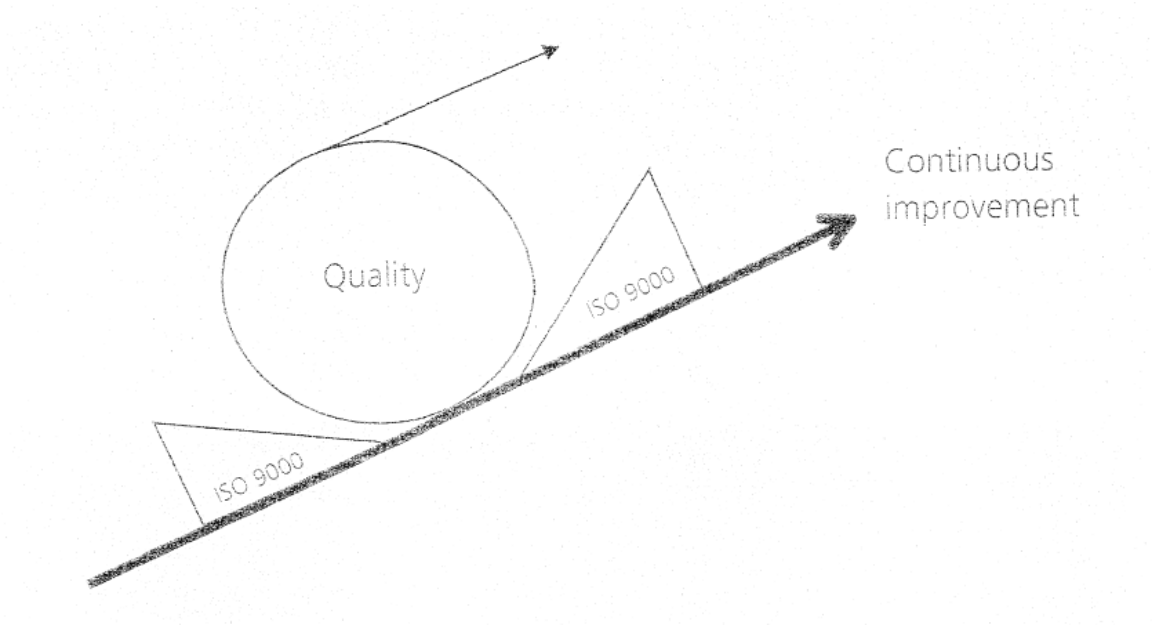
Basu (2004:219-220) lists several benefits of the ISO 9001:2000 QMS:

- Addresses company wide quality issues and ensured that specific customer requirements are met,
- Provides a framework for assessment of a TQM or Six Sigma programme towards the achievement of operational excellence,
- It has an international status that covers all types of organisations across geographical and regional boundaries,
- A discipline of improved controls and standard procedures is established which then prevents the duplication and compromising of activities,
- When applied as a company wide programme, it provides an objective platform to enhance teamwork.

2.2.11 The disadvantages of ISO 9001

The final part of this section examines disadvantages of an ISO 9000 QMS. Basu (2004:30) also refers to ISO 9000, as shown in Figure 2.8, as the “wedge” that will prevent quality “slipping backwards, but the danger is it can also be the wedge that impedes progress”.

Figure 2.8: The ISO 9000 wedge



Source: Basu (2004:30)

Basu (2004:30) states that it should be queried as to why a true quality company will need ISO 9000. If customers or potential customers do not require that the company obtain ISO accreditation, then the time and effort will the make the value of ISO to the company highly questionable. Some “pitfalls” in this regard are that ISO 9000:2000 is still viewed as a bureaucratic process, it is still not a people process leading to self-assessments with methodology “guarded by qualified assessors” and that the external assessors have often oversold the ISO 9000 expectations and the certification has failed to deliver all of the benefits.

The South African Quality Institute (2007) believes that the emphasis on the words 'Quality Management System' leads to senior management detracting from their involvement in the realization process because they view ISO 9000 as addressing activities carried out by the Quality Assurance function. The South African Quality Institute is of the opinion that ISO 9000 accreditation does not lead to better quality, in the same way a safety audit does not necessarily lead to better safety.

This is explained by the fact that despite the availability of systems, documents and manuals, these do not guarantee that quality is happening in the operational work area because in the event of a quality audit, there is quick preparation of documentation to comply with the audit and some "window dressing" on the shopfloor (South African Quality Institute, 2007).

Ganachaud (2002) indicates that ISO 9000 is not completely understood as a total quality tool by some of the certified companies who were the respondents in a study related to the link between ISO 9000 and customer service levels. This was attributed to the partial implementation of the ISO 9000 standard in these companies. The study found no positive link between an ISO 9000 QMS and customer service and suggested that the manner in which ISO 9000 QMS is implemented and understood can adversely impact on the quality of customer service.

Kelemen (2003:72-73) compares ISO 9001:2000 to the European quality model (EFQM) and concludes that the EFQM model is wider in scope that the ISO 9001:2000 model. Salient aspects in this regard are :

- Leadership: Although top management importance is set out in ISO 9001:2000, the scope of leadership under the EFQM model is wider and extends to the company executive, all other managers and those in team leadership positions,

- Policy and Strategy: While ISO requires a quality policy with objectives and plans, the EFQM model is concerned with wider company policy and strategy and seeks information from a wider range of sources in this regard,
- People: While the ISO standard requires identification, provision and maintenance of training, it does not address wider aspects of human resource planning, team working, people development (other than training), involvement, empowerment and reward and recognition which are main items of the EFQM agenda,
- Processes: Although the ISO standard requires process improvement, it does not require the levels of innovation and involvement of employees, customers and partners expected by the EFQM model,
- Customer results: While ISO 9001:2000 stipulates collation and analysis of data related to customer satisfaction, it leaves the company to determine research methodologies to be used to measure customer satisfaction (or dissatisfaction). EFQM has wider requirements and includes concerns for market share and loyalty,
- Key performance: ISO requires measurement of product, process and supplier performance but does not address any requirements with respect to financial performance. The EFQM model views financial performance as an important indicator.

Ganachaud (2002) lists some common criticisms of ISO 9000 as ISO 9000 is regarded as fundamentally incompatible with quality management and offers short term quality improvement and no competitive advantage, the high cost of certification is seen as the most common criticism for ISO 9000, some critics state that the achievement of ISO 9000 is a paper exercise which is another non-valued bureaucratic activity and the ISO 9000 standards are not easily interpreted as they are written in very general terms that are applicable to any industry and do not specify how to adapt the standards to a specific industry.

2.2.12 TQM versus ISO 9001

This section compares and contrasts TQM and ISO 9000 as quality management approaches within an organisation. Besterfield, et al (2003:290) states that the ISO 9000 quality system is an excellent first step towards Total quality management. According to Swift (1995:322), implementation of TQM or registration for ISO 9000 are not independent goals. These approaches complement each other and are interconnected. TQM is a philosophy. ISO 9000 can be utilised as the structural framework for the implementation of a company TQM philosophy. In essence ISO 9000 requires TQM. ISO 9000 does not necessarily guarantee good quality product or services, rather integration with TQM does. The primary benefit of ISO 9000 as an international standard is that to compete in the global market place, top management must now be committed to quality.

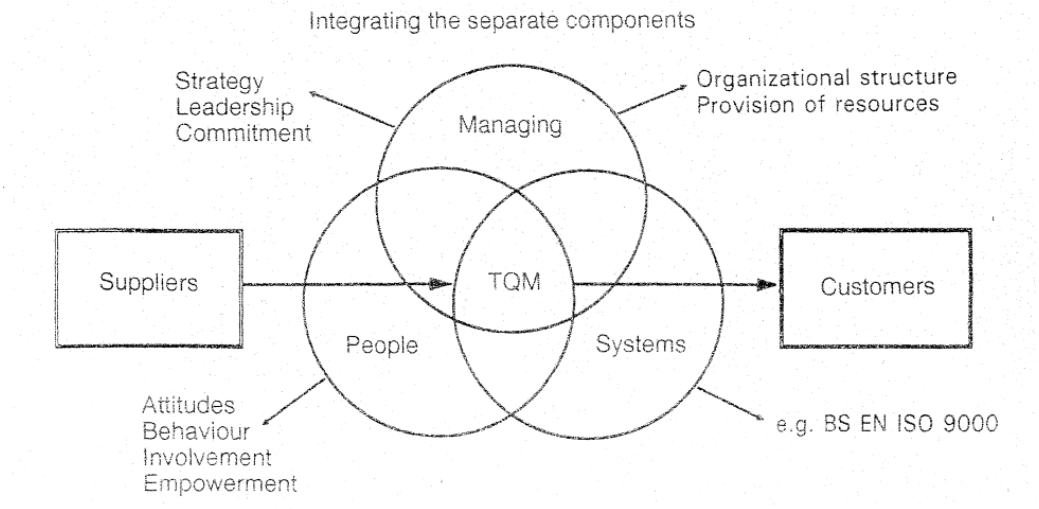
The South African Quality Institute (2007) believes that many organisation's have implemented a standardised quality management system to suit the ISO 9001:2000 quality standard requirements. Pike, et al (1996:27) mention that it is possible for a company to have ISO 9000 certification without TQM or to have TQM without ISO 9000. An alternative scenario is for a company to be certified to the ISO 9000 standard and then pursue a TQM approach. Pike, et al (1996) refer to ISO 9000 as a technical system (based on procedures, audits and corrective action). At the same an organisation is also seen to be a social system (based on people, their behaviours and interaction with each other in groups).

The technical and social systems need to be integrated in order to develop a Quality Culture. TQM revolves around the integration of these two systems via the implementation of management processes that provide a focus on customer needs, employee needs and those of the organisation's stakeholders. ISO 9000 certified companies may not be focused primarily on customer need identification

and satisfaction nor on empowerment of employees in search of continuous improvement (Pike, et al.; 1996:27-28).

TQM requires managerial leadership to create appropriate characteristics for a TQM culture. These include the provision of appropriate structures to management the improvement process and resources for improvement to occur. The relationship between these three systems – technical, social and managerial system is shown in Figure 2.9.

Figure 2.9 : The relationship between TQM and ISO 9000



Source: Pike, et al (1996:28)

Basu (2004:26) believes that with TQM, ISO accreditation might be sought, but an organisation that has truly embraced TQM does not need the ISO stamp of approval. ISO 9000 can be seen to be contrary to TQM as it relies on a top-down management approach with focus on documentation checks and audits in a bureaucratic approach whilst TQM relies on bottom-up initiatives for employees to be responsible for completing their work right first time. However ISO 9000 results in a stable and standard system and in this regard will prove to be a useful platform for any organisation to implement TQM.

At best ISO 9000 can be seen as a step on the way to TQM. At worst it might actually inhibit TQM. truly TQM organisation does not need ISO but it can be made to fit into the overall TQM plan if it is required by a customer. ISO 9000 can be used to provide the pillar in an organisation's approach towards TQM.
ISO 9000 registration is not a pre-requisite for TQM as many Japanese companies achieve excellent quality standards without an ISO 9000 system
Basu (2004:32,217).

2.2.13 Concluding remarks on quality

In this section various viewpoints of quality are presented that highlite the importance of this subject and the challenges that face organisations into the future. The South African Quality Institute (2007:1) states that quality is never an accident; it is always the result of high intention, sincere effort, intelligent direction and skilful execution and it represents the wise choice of many alternatives. It is further mentioned that many companies across the world have realised that the only true measure of quality levels in the company is the price of non-conformance.

Lamprecht (2000:201-202) states that next challenge for the quality profession and organisations in general is to integrate various methodologies (ISO 9000, Six Sigma, Lean Manufacturing). In this regard, the ISO 9001:2000 standard now has more requirements for data collection, monitoring of processes and data analysis which bring this standard closer to the Six Sigma methodology.

Quality professionals will have to reinvent themselves or face eventual elimination as a profession. This is as a result of quality practices and responsibility becoming part of the daily activities of each and every employee within a TQM philosophy (Lamprecht, 2000:201).

Finally two simple recommendations are presented by Lamprecht (2000:205-206) :

- Develop better ways to measure and optimise costs systems to assist to reduce and eliminate waste (possible sources are non-conformance reports and corrective actions),
- Whenever possible, recognize symptoms of complexity and try to simplify processes (ISO 9000 QMS can be a bureaucratic nightmare with it's documentation that ranges from procedures, forms, checklists and approval stages). Look to simplify this and during development of procedures, do not focus on meeting auditor requirements but rather enquire if they are needed, useful and will help you improve a process.

2.3 ORGANISATIONAL BEHAVIOUR

This section reviews organisational behavioural concepts linked to this study. These include perception, leadership, culture, communication and motivation.

2.3.1 Definition of Perception

This section examines the concept of perception which is an important component of this study. The study is entitled 'employee perceptions of quality' and a proper understanding of perception is pivotal to a broader interpretation of the respondents (employees) perception that is discussed in the forthcoming chapters.

Hodgetts and Hegar (2005:78) define perception as a person's view of reality which is influenced by the person's values. Schermerhorn, et al (2004:71) offer a different definition of perception as "the process by which people select, organise, interpret, retrieve and respond to information from the world around them". This information is obtained from the five senses (sight, hearing, touch,

taste and smell). It is further mentioned that the perceptions or responses of any two persons are not necessarily identical even if they are both describing the same occurrence or event.

It is through perception that people process information inputs into responses that involve feeling and action. Perception is another way to form impressions about yourself, other people and life's daily experiences. Perception can also act as a filter or screen through which information will pass before it affects other people. The quality or accuracy of a person's perception has a major impact on his or her responses in a given situation (Schermerhorn, et al.; 2004:71).

In summary, "employee perceptions about their work environment colour their motivation, attitude and overall contribution in the workplace, all of which have considerable impact on the company's performance" (Management Today, 2007:9).

2.3.2 Leadership and Commitment

This section will initially examine some viewpoints of leadership and will then conclude with a review of commitment. Suganthi, et al (2004:220) defines leadership as "influencing the people so that all of them do the right things, the right way at the right time willingly, on their own, so that the organisation grows and the purpose is fulfilled". Gryna (2001:190) states that "of all the ingredients for successfully achieving quality superiority, one stands out: active leadership by upper management".

Ganachaud (2002:179,184) believes that leadership is essential in the implementation of ISO 9000 and that the complete involvement of the management level in their capacity of leadership is essential for the success of a quality project. However leadership must be supported by training as managers

must have a good understanding of the ISO 9000 standards and also view it as a tool for total quality if they want to obtain maximum benefit from it.

Besterfield, et al (2003:18-19) lists some characteristics of successful quality leaders as: leaders continually demonstrate their commitment to quality by actions rather than words, leaders choose suppliers on the basis of quality and not price, leaders encourage and recognise team effort and provide rewards and recognition to individuals and teams and leaders continually improve communication into a two way process as communication is the “glue” that holds TQM together.

Kelemen (2003:128) is of the opinion that successful quality programmes must begin with a leader who understands and is committed to quality. The leader’s manner of thinking and behaviour can then be adopted by the rest of the organisation by way of a process of cultural change. Kelemen (2003:130) further outlines the most popular leadership approaches (trait, style, contingency, charismatic, transformational and interpretative approaches). These are briefly presented within the context of this study.

Kelemen (2003:130-131) refers to the trait approach which stresses personal qualities of leaders and suggests that “leaders are born rather than made”. Kreitner, Kinicki & Buelens (2002:452) identify the concept of a leadership trait: personal characteristic that differentiates a leader from a follower and which in turn views certain people with inherent traits that made them successful leaders. The style approach emphasises what effective leaders do and that individuals can be trained to exhibit the behaviours of effective leaders. Both approaches (trait and style) have links to TQM in that TQM leadership requires skills and behaviours such as empowering, coaching, listening and willingness to take risks (Kelemen, 2003:130-131).

The contingency approach is based on the premise that there is no universal style of leadership but rather dependent on the situation at hand. This implies that if leadership is contingent, then different TQM programmes require different leadership styles or traits for their success. Charismatic leadership looks at the personal trait of charisma and how the leaders followers perceive this. The charismatic leader is often portrayed as pivotal to ensure the successful implementation of TQM (Kelemen, 2003:131).

Kreitner, Kinicki & Buelens (2002:463-466) refer to charismatic leadership as leadership that transforms employees to pursue organisational goals over self-interests. These leaders set high performance expectations and standards because they are aware that challenging, attainable goals lead to greater productivity. In the context of TQM, this style of leadership is important to the success of any TQM initiative within an organisation.

Transformational leadership refers to the process of influencing major changes in the attitudes and assumptions of employees in an organisation. TQM literature has stressed the importance of transformational leadership in the creation and maintenance of a quality culture. Finally the interpretative approach asserts that leadership concepts and theories are subjective efforts by social scientists to interpret ambiguous events in a more meaningful way. Thus, sometimes it is convenient to blame TQM failure on leadership and when TQM is a success, leadership is seen to be most important contributor (Kelemen, 2003:132).

This section concludes with a brief discussion on Commitment. Pike, et al (1996:112) express that “all experts on TQM implementation talk about the need for top management commitment”. Besterfield, et al (2003:10) states that the lack of management commitment is the primary reason for failure for TQM. Kelemen (2003:101) views top management’s commitment to TQM as the most important factor to ensure it’s successful implementation. Gryna (2001:184)

refers to upper management as being committed but the lack of evidence of this commitment can have a damaging result on the organisation.

Edwards (2007:1) states that during a problem solving seminar at the 2006 World Quality Congress, 50 quality managers from around the world listed the question: "How do I get my senior management team to commit to ISO 9001" as their problem to resolve. Suganthi, et al (2004:219-220) refer to some ways in which top management can reflect their commitment towards TQM and ISO 9000:

- The Chief Executive Officer (CEO) must initiate quality related activities in the company,
- Training on quality management principles must be imparted to everyone,
- The CEO's must follow quality activities in all of their activities,
- In all meetings , the CEO must make quality a regular discussion item,
- Ensuring that all employees follow quality management principles.

"Commitment is from the heart and and it will be exhibited by action. Everyone will be able to see or feel the effect of top management commitment in the organisation" (Suganthi, et al.; 2004:220).

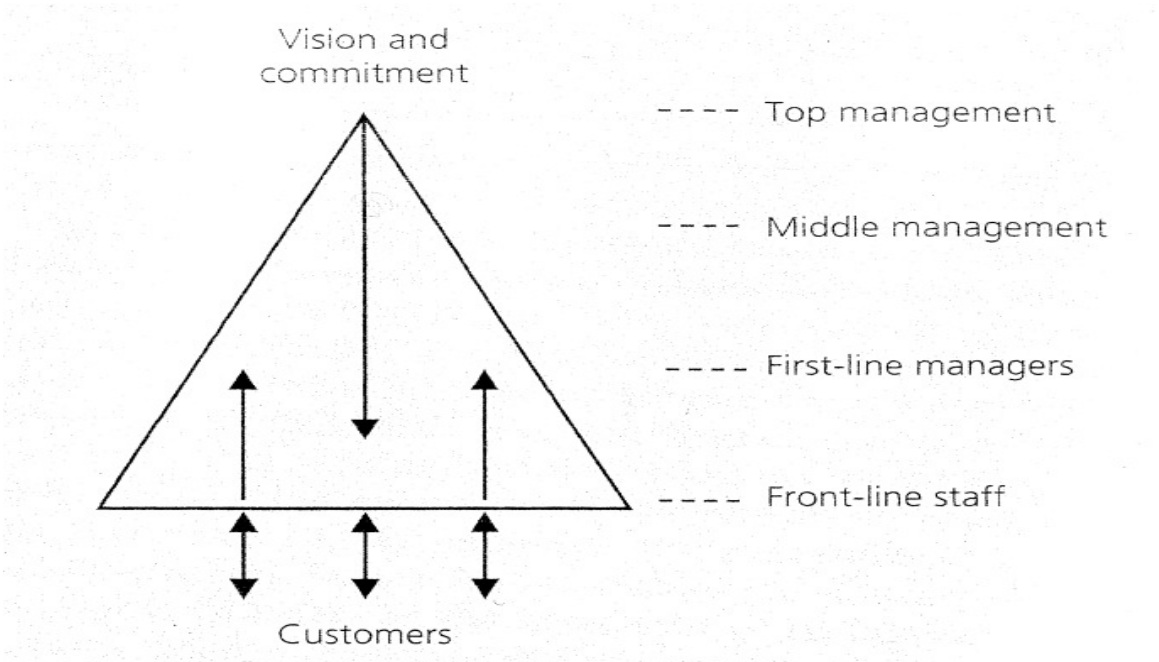
2.3.3 Culture

This section reviews culture and the various definitions and approaches with respect to TQM and ISO 9000. Bank (2000:140) believes that the biggest challenge of a TQM programme is to create a total quality company culture and defines organisational culture as those ideologies, beliefs and deep set values which occur in an organisation and which prescribe the way employees should work in the organisation. Bank (2000:142) further refers to a study on successful American companies and a list of seven basic values that comprise the corporate culture in these companies whereby superior quality and service formed some of these values.

Bank (2000:143) further explains that when quality becomes the central shared value such as in a TQM programme, all other things originate from it – systems, strategy, structure, style, skills and staff. The latter items form part of the now famous McKinsey 7S framework (Bank, 2000:142). Gryna (2001:35-36,220-221) refers to company quality culture as the employee opinions, beliefs, traditions and practices concerning quality and believes that it is important to understand this quality culture as it has a big impact on quality results and can also identify barriers to change and enable an action plan to be developed based on this assessment of the quality culture. This assessment of quality culture can be done by survey questionnaires administered to employees.

Basu (2004:26-27) describes a TQM culture where management have the vision which is communicated throughout the company. Once the quality culture has been ingrained, quality will be driven from the bottom up from the factory operator rather than be directed or controlled by the top : management. This model of culture is illustrated in Figure 2.10.

Figure 2.10: Quality and the driving force



Source : Basu (2004:27)

Gryna (2001:220) refers to a positive quality culture which can best be described as to 'climb the ladders to delight the customer' situation and states that some critical success factors to achieve this type of quality culture include goals and measurement, top management leadership, participation and empowerment of employees and recognition and rewards.

Besterfield, et al (2003:3,11) state that TQM will require a culture change. In this regard an organisation that allocates time to plan for the cultural aspects of TQM implementation have a greater chance of success. Lack of effective communication and emphasis on short-term results are seen as obstacles to cultural change. The basic concepts of change that management must understand to bring about cultural change include that people will change to meet their own needs and when they want to, people will engage in behaviours that subscribe to the company values so long as they are provided with adequate reasons for this and to ensure change is accepted, people must be moved from a state of fear to a state of trust.

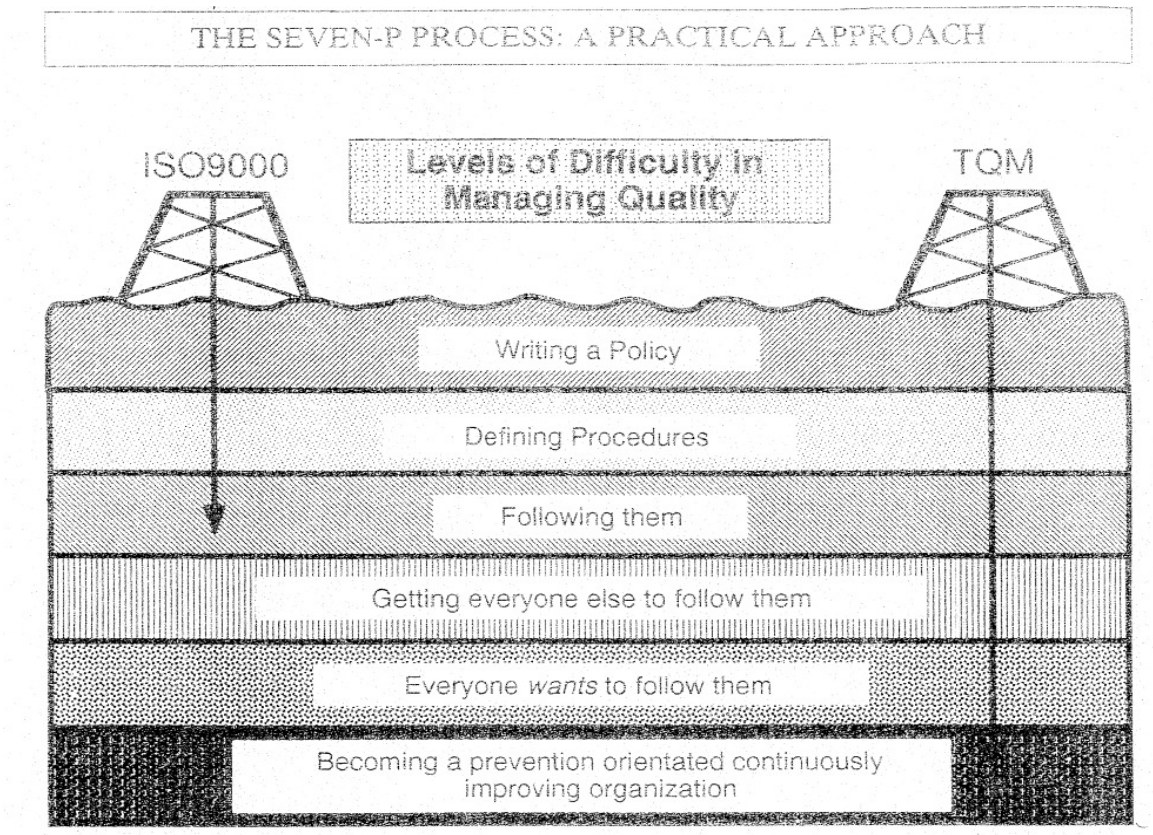
Futter (2007:55) refers to the concept of "habitual behaviour", where people perform an activity consistently to predetermined standards and lists a relevant benefit as managers are able to guarantee product and service quality because it is easier to design and implement quality control and quality assurance systems.
Stahl (1999:139) states that organisations who have succeeded in their TQM initiatives rely on "concertive control" which is value based – behaviours will arise from shared meaning or consensus as to which behaviours are appropriate and which need to be reinforced.

Kelemen (2003:129,133) believes that to have a strong, integrated culture is the key to the effective management of quality. Quality culture is associated with effective teamwork. TQM proponents also argue that teamwork leads to improved levels of quality. Teamwork can exist as quality circles, project teams

and quality improvement teams. Dahlgaard, et al (2006) refer to the human factor – how to build the right company culture, as being important to the success of quality management programmes.

Pike, et al (1996:107-108) are of the opinion that culture represents one of the most fundamental differences between TQM and ISO 9000 type approaches to quality. ISO 9000 can be installed in terms of a sequence of actions whilst TQM needs to be absorbed – implemented gradually over time as a result of a whole range of influences. These differences referred to, are shown in Figure 2.11. The organisation needs to be visualised as consisting of a number of layers with the organisational or system layers (ISO9000) at the top and the deeper layers representing the culture (TQM).

Figure 2.11: Levels of difficulty in managing quality



Source: Pike, et al (1996:108)

Suganthi, et al (2004:81-82,85) refer to some steps that management can take to inculcate a quality culture. Amongst these steps are those relevant and important to this study which include the promotion of a proactive culture – foresee problems and plan for it rather than react to a problem as TQM culture requires proactive planning, consistently measure customer satisfaction and keep it at high levels of satisfaction and to have a no blame culture- in the event of a problem, focus on solving the problem rather than who caused it.

This section is concluded with a statement from world-renowned quality expert: Philip Crosby, who defines quality as the result of a carefully constructed culture which has to be the very fabric of the organization (Ross, 1993:47).

2.3.4 Communication

This section offers a brief review of communication and it's importance to this study. Schermerhorn, et al (2004:285) define organisational communication as the specific process through which information moves and is exchanged throughout a company. This information can flow through formal and informal structures and upward, downward or laterally in an organisation.

Besterfield, et al (2003:47) state that communication delivers "the organization's values, expectations and directions". Effective communication requires feedback. In this regard barriers to communication must be removed. Some barriers include hierarchical aspects such as managers prohibiting employees from communicating to upper management and not allowing feedback to occur in the workplace. Besterfield, et al (2003:47) states that improving quality will be hampered if poor communication impedes the flow of information to and from the employees. Periodic surveys can be done to assess if communication is effective and whether the communication message was understood and if behaviours and attitudes were changed.

Ross (1993:48) refers to communication as “the mortar that binds TQM processes together”. As top management communicate the vision of quality into the organisation, each recipient’s perception of the quality message can lead to misunderstanding and even misdirection of their effort. It is further mentioned that a person can only communicate in terms of the recipient’s language and perception and therefore the message must be in terms of their own experience.
If the employee’s perception of quality is to perform a better job or retain the customer, the message of TQM is unlikely to be understood. A suggestion for TQM is to ensure that measures of quality should be set and agreed upon.

The South African Quality Institute (2007:2) in reference to the extras needed to make ISO 9001 work, highlite the role of communication by the following statement: “if the introduction of standardisation and setting a common goal is to improve performance results then the content of these standards and the focused goal must be communicated to the entire workforce”.

The South African Quality Institute (2007) state that the Japanese view the role of communication as important and have created various forums to discuss and display results and to communicate improvement activities to the workforce. These communications forums occur at shopfloor level in “green areas” all the way to operations meetings at senior executive level in an organisation and further emphasise that management should establish policies and create an environment conducive to good communication, especially internally. This includes a user friendly communication culture which can be done via formulation of an internal communication strategy which indicates vision, mission and business philosophy.

2.3.5 Importance of surveys

This section describes the relevance and importance of surveys to assess employee views of the workplace environment and in the context of this study which was conducted with a survey. Gyrna (2001:36,38) states that the assessment of the quality culture can be done by questionnaires to survey employees. Since the quality culture can have a major impact on quality results, it remains essential to collect employee perceptions on the quality culture to ensure a successful action plan for quality improvement.

Pike, et al (1996:169-170) consider attitude surveys as useful for front end TQM implementation. These surveys can offer some benefits such as to demonstrate an interest in staff opinions and provide a useful "safety valve" for release of employee feelings about the company, to uncover grievances or concerns that were previously unknown, provide support for policy or changes to employment systems and provide a "valuable barometer" of the organisational climate.

Besterfield, et al (2003:93-94) believe that employee surveys assist managers to assess the current state of employee relations, identify needs, measure the effectiveness of program implementation, identify needed improvements and increase communication effectiveness.

Management Today (2007:9) state that companies and employees have derived huge benefit from the annual Deloitte Best Company to Work For survey.
In this regard and in the context of this study, it remains important to obtain employee perceptions objectively from surveys, not to disregard negative employee feedback generated in the survey and to share the survey results with employees in an open and transparent manner. This includes the communication of action plans to address identified areas for improvement. This in turn leads to improved levels of motivation and commitment which are integral to the success of any quality improvement programme.

Connolly, et al (2005:73-74) refer to the employee opinion survey on quality practices that measures perceptions of quality orientation among coworkers, managers and the general workforce. The questionnaire used in this type of survey can address low performance standards, with production quality not up to standards or expectations and lack of pride in products manufactured by the organisation. Some questions that can be used in a survey:

- People here are committed to producing high-quality work,
- People in my department take pride in doing a good job,
- Our work group has clear quality standards,
- Our work group has clear measures to support the quality standards,
- My work group is effective in producing high-quality work,
- My work group maintains high standards of performance,
- The examples set by fellow employees encourages me to produce high-quality work,
- People appropriately balance concern for productivity with concern for quality,
- Employees in this organization have a strong commitment to producing high-quality work,
- My manager clearly communicates both short and long term quality goals,
- Senior management is committed to producing high-quality work output.

In conclusion, Ndlovu (2006:8) believes that organisational climate surveys are a good way to determine employee satisfaction levels. These climate surveys can be done via a questionnaire and if conducted by the organisation itself, anonymity is critical to avoid victimisation of employees. The questionnaire responses enable employers to identify trends and problem areas in the working environment and allows for corrective action to be taken. These surveys can provide a detailed, accurate and unbiased insight into employee perceptions and perspectives relating to a wide range of topics. However there is no point in conducting a climate survey if management are not prepared to actively address

issues that were raised as this then disengages employees from participating in organisational activities.

2.3.6 Motivation: reward and recognition

This section describes the impact of motivation on employees support towards quality improvement initiatives within an organisation. Bank (2000:71) believes that an appropriate system of recognition and reward is critical to an organisation's TQM programme. Recognition is defined to be a means of encouraging individuals and groups by acknowledging their achievements. Reward is defined as the giving of financial benefits linked to performance, further reinforcing the day-to-day recognition processes. It is further mentioned that both recognition and reward can have a strong motivational effect on employees at work.

Gryna (2001:234-235) refers to forms of recognition ranging from a verbal message for a job well done to token awards – tangible (time off, dinner) and intangible (letter of praise, sending employee to seminar or conference). Forms of reward include changes to base pay, merit increases, incentives, skill-based wages or a bonus. Bank (2000:71-72) lists some recognition and reward guidelines for managers:recognise and reward positive behaviour rather than criticise negative conduct, give recognition and reward in a public manner to maximise impact and effectiveness and have a wide range of recognition and reward options to suit the individual or group performance.

Besterfield, et al (2003:115) refer to a survey conducted on 100 organisations which indicated that reward practices were effective in supporting TQM practices in these organisations. It is stated that effective recognition and reward systems serve as a continual reminder that the company regards quality as important.

The South African Quality Institute (2007:1) refer to some useful information for the annual National Quality Week event that is promoted by them each year in South Africa to include: honour quality champions – staff or suppliers, reward staff that go the extra mile and have an inhouse competition.
Finally Gryna (2001:235-236) believes that rewards for quality-related activities are increasingly becoming part of the annual performance evaluation of upper managers, middle managers, specialists and first line supervisors and refers to an important observation that survey after survey indicates that employees' primary concerns are lack of recognition and lack of involvement in decision making on the job. Both these statements have significant relation to this study and will be discussed further in Chapter 5.

2.3.7 Concluding remarks on organisational behaviour

This section concludes the section on organisational behaviour with a relevant perspective from the South African Quality Institute (2007:4) which has commented on the extras needed to make ISO 9001 work in terms of an integrated approach to improve quality, productivity, profit and customer satisfaction. This integrated approach must cover the human resource issues (otherwise known as soft issues) prior to the introduction of an improvement philosophy. It will rely on a motivated and knowledgeable workforce supported by lower management and foremen who will assume a leadership role.

This role is to ensure that senior management targets are achieved while ensuring that the workforce are willingly working towards improvement goals. However the downside of this integrated approach is "that it relies heavily on the self-discipline of each function to work to a standardised and harmonious method which comes naturally to the Japanese but not so to the average South African" (South African Quality Institute, 2007:4).

2.4 CONCLUSION

This chapter presented a review of the literature gathered on the various topics related to the study and included an examination of Quality management terminology, models, principles and practices as well as various organisational behaviour concepts linked to the study.

The section discussed several definitions and models of quality, described various theoretical viewpoints on quality and then compared and contrasted two the primary quality management programmes: TQM and ISO 9000. Various models were reviewed for these two programmes and apart from the advantages and disadvantages that were presented, the relationship between these two programmes was discussed.

In the context of this study, various aspects of organisational behaviour were examined and included perception, leadership, commitment, communication, surveys, motivation and culture. The concept of culture involved discussion on several models to illustrate the importance of this concept to this study.

Having reviewed the appropriate literature on quality and organisational behaviour related to this study, the following chapter presents a detailed explanation of the research methodology, which has included the design of the survey instrument.

CHAPTER 3 - RESEARCH METHODOLOGY

3.1 INTRODUCTION

This chapter addresses the research objectives and aspects such as sample selection, sample size, questionnaire design, data analysis, validity, reliability, elimination of bias and ethical considerations.

3.2 THE RESEARCH DESIGN

This section will be subdivided into various sections that include the type of research, target population, data collection and the research instrument. These sections are discussed as follows:

3.2.1 Type of research

The main research objective was to ascertain employee perceptions of quality at the Dulux factory site. The study thus looked at an understanding of employee attitudes and how it influenced their perceptions by way of a precise measurement of statistics. Welman and Kruger (2001:174,191) describes quantitative research as concerned with the methods and techniques to obtain appropriate data for investigating the research problem. Saunders, Lewis and Thornhill (2003:486,488) refer to quantitative research as the systematic collection of data whose values can be numerically measured and the subsequent interpretation of information generated by this data with a clear purpose to find things out. This study is a quantitative research study that involved the collection, statistical analysis and interpretation of data based on employee perceptions of quality.

Naidoo (2004:59) refers to research that requires information that is clearly defined and with a formal and structured research process as conclusive

research. This study involves a census of Dulux employees with quantitative data analysis. The findings are conclusive and will provide insight into future decision making for quality strategies at Dulux.

Welman and Kruger (2001:18) regard descriptive research as a description of how things are and in doing so define the nature of the study object. Saunders, et al (2003:97) refers to the objective of descriptive research as the portrayal of an accurate profile of persons, events or situations. This research design can also be regarded as descriptive as the primary objective was to determine employee perceptions and in doing so describe to an extent employee attitudes and behaviours and a present a portrayal thereof.

The study can also be categorised as exploratory. Welman and Kruger (2001:18) are of the opinion that the purpose of exploratory studies is to determine whether or not a phenomenon exists and to gain familiarity with such a phenomenon. Such studies are also undertaken to better understand the nature of the problem as limited studies may have been done in the affected area. Saunders, et al (2003:96) identifies exploratory studies as a valuable means of finding out what is happening, to seek new insights, to ask questions and to assess phenomena in a new light. Employee surveys involving perceptions of quality have not been conducted at Dulux previously.

The study can also be classified as action research which implies that a dual objective is sought : action and research. The research seeking an improved understanding of the subject by the researcher and action being taken to bring about change in some aspect or organisation (Govender, 2007:41). Welman and Kruger (2001:21) believe that the purpose of action research is not to test or develop a theory, but rather to find a solution to a practical problem. Saunders, et al (2003:94) is of the opinion that the person undertaking action research is involved in this action for change and subsequent application of the knowledge gained elsewhere.

In this regard, the research is being conducted to determine employee perceptions of quality in order to provide insight into the reasons as to why the level of support shown by most employees is not ideal. The research is providing information on how to create support for quality initiatives from employees beyond the Quality Department.

3.2.2 Target Population

Welman & Kruger (2001:19) note that a census is a form of descriptive research where the purpose is to count and the describe the characteristics of an entire population. Saunders, et al (2003:150) refer to the collection and analysis of data from every possible case or group member as a census. In this regard, a census was carried out at the Dulux factory site where 202 permanent employees made up the site population at the time of the research (during March-June 2006). Two hundred and two questionnaires (202) were distributed to all permanent employees. The total site population formally reflected on the Human Resources database was two hundred and twenty-four employees during this time.

However at the time of the research, some employees were unavailable due to a wide range of reasons (various forms of leave, at other site/s, on training offsite). This then reduced the population to 202 personnel as determined by a review of the site access control records for an average period preceding the research duration. This population was further categorised into ten different work departments and five different job grades within the framework of the questionnaire. Appendix B contains details on the departments and grades.

3.2.3 Data collection

Wegner (1993:13) states that "data which is captured at the point where it is generated is called primary data. Such data is captured for the first time and with a specific purpose in mind". Wisniewski and Stead (1996:7) refer to primary data as data that has been collected directly for the purpose for which it is to be used. Employee perceptions of quality are therefore regarded as primary data in this study as it has not been previously captured and is required for a purpose : improvement of the quality ethic on the site.

Saunders, et al (2003:282) make reference to self-administered questionnaires that are usually handed to each respondent and collected later as delivery and collection questionnaires that are completed by the respondents. In this reseach, a delivery and collection type survey questionnaire was used (Refer Appendix B), that was self-administered and internally distributed on the site.

Welman and Kruger (2001:146) are of the opinion that survey questionnaires may be used to obtain attitudinal information about respondents. In the context of the study, attitudes can be related to perceptions. Connolly and Connolly (2005:73) also state that employee opinion surveys on quality practices will measure perceptions of co-workers, managers and the workforce in general. Saunders, et al (2003:281) are of the opinion that questionnaires can be used for descriptive research such as that undertaken using attitude and opinion questionnaires. This study is a form of descriptive research on perceptions of employees.

Low cost, ease of application and respondent anonymity are cited as the main advantages of using a mail survey (Welman and Kruger, 2001:147). As the factory site is physically large with at least ten functional departments and approximately 200 respondents occupying various jobs, these advantages were the main reason as to the use of a mail survey for this study.

There are also disadvantages that range from low response rates, longer duration for data collection, lack of control as to who actually answered the question, no opportunity for checkbacks to check the validity of the responses and the respondent cannot obtain further clarity if they so require (Wegner, 1993:16). Some of these disadvantages are discussed further in Chapter 4. More details on data collection aligned to data analysis are presented in sections 3.3.2 and 3.3.3.

3.2.4 The Research Instrument

Wegner (1993:17) believes that "the questionnaire is the data collection instrument used to gather data in all interview situations". Saunders, et al (2003:280) refer to a questionnaire as a general term to include all techniques of data collection in which each person (respondent) is asked to respond to the same set of questions in a predetermined order The research instrument that was used in this study is a mail survey questionnaire that gathered primary data from the target population. This data involved employee perceptions of quality using a self-administered, closed-response questionnaire that was designed around the core research objectives.

3.2.4.1 The questionnaire

"The design of a questionnaire is critical to ensure that the correct research questions are addressed and that accurate and appropriate data for statistical analysis is collected" (Wegner, 1993:17). The self-administered, closed-response questionnaire (Refer Appendix B for full questionnaire) was used to secure information as to how the different levels of employees perceive quality on the factory site.

In particular, there were twenty one questions that were developed and pre-tested on five employees from the quality functional department who were

excluded from the study. These employee's have the appropriate qualifications and experience in the field of quality which qualified them to develop the questions. The questions focused on the following areas, which were in keeping with the research objectives:

- Overall employee perception of quality (questions 1,2,13,17),
- Employee awareness of the quality policy and ISO 9001 (questions 3,4,14,15),
- Commitment by management (questions 5,6,19),
- Reward and recognition for quality contributions (questions 7,8,21),
- Employee support of quality and impact on the bottomline financials of the company (questions 9,10,16),
- Obstacles that slow the quality initiatives (questions 11,12,18,20).

Table 3.1 illustrates the structure of the site in terms of work departments and job grades. This site structure was included into the mail survey questionnaire to ensure that data collected was representative of the different departments and grades and is discussed further in this chapter with results presented in Chapter 4. Furthermore the questionnaires were available in both English and Zulu to overcome any language barriers. Zulu is the majority ethnic language spoken at the factory and is aligned to the Kwa-Zulu Natal provincial language composition. The language translation was done by an independent language academic from a tertiary institution to ensure reliability and validity for the study.

Table 3.1 : Departments and broadband job grades in factory

Departments (10)	Broadband Job grades (5)
Research & Development	P:Primary
Sales	O:Operator
Finance/Administration	AO:Advanced Operator
Human Resources	SP:Supervisory/Practitioner
Raw Material/Packaging Store	MP:Middle Management/Professional
Engineering	
Compliance (SHEQ)	
Distribution	
Production	
Purchasing/Planning	

3.2.4.2 Rating scale

There are four different types of attitude scales, which measure different degrees of attitude towards an attitudinal object : Summated or Likert scale, Semantic differential, Guttman scale and Thurstone scale. The Likert Scale consists of statements whereby respondents have to indicate the degree to which they agree or disagree with its content. Some statements will represent positive or negative attitudes towards the attitudinal object under study (Welman and Kruger, 2001:150-152).

For employee surveys "a Likert-type response scale usually provides usable results" (Besterfield, et al.; 2003:94). The Likert Rating scale asks respondents to indicate their preference or a perception on a scale which can range from 1 to 7. These preferences or perceptions are then assumed to be measured on a continuum from one extreme position to the opposite extreme position (Wegner, 1993).

In this study a Likert scale was used in the questionnaire, with a simplified three - point scale ranging from Agree, Don't know to Disagree (Refer to Appendix B). A five-point scale was considered but due to limitations of literacy and numeracy levels with the majority of the workforce, it was not used.
Edwards, Thomas, Rosenfeld and Booth-Kewley (1997:121) make reference to the "excluding of no opinions approach" where the analysis is focused on those respondents who actually expressed an attitude.

Furthermore, the aforementioned authors are of the opinion that this approach can be useful if there are many "no opinion" responses, which are difficult for the researcher to interpret, and if the goal of the research is action-oriented : that is something must be done with the research findings. This approach was considered in this study.

3.2.4.3 The covering letter

Pike and Barnes (1996:173) state that for an employee- based attitude survey, a detailed communication briefing must be done with employees and this should include survey objectives, timescales, benefits of results, feedback, confidentiality and the process for administration of the questionnaire. Furthermore it is recommended that a guidance and/or briefing sheet accompany the questionnaire to explain the purpose of the survey.

In this regard, the questionnaire that was administered in this study was accompanied by a covering letter (Refer Appendix C for full details) that explained the purpose of the research and the importance of the participant's involvement and benefit to the company. The covering letter was also translated into Zulu in addition to the English version under similar conditions and reasoning.

3.2.4.4 The pre-test

"A pilot of the survey should be tried on a small sample of respondents before the final structure is agreed". This allows for ambiguity and misconceptions to be corrected before the survey is conducted. It also allows for opportunity to discover how people feel about the survey and their reaction to the user-friendly nature of the questionnaire (Pike and Barnes, 1996:172).

It is also stated that the survey is pre-tested and revised as needed (Besterfield, et al.; 2003:94). In this regard a focus group interview was conducted with five employees who occupy various positions within the Quality department in order to pre-test the questionnaire. Valuable insight was obtained as a result, which was used to make necessary changes to the questionnaire prior to the survey being formally conducted. These insights included ambiguity, vagueness and items of sensitivity amongst the initial questions that may have presented problems for the respondents.

3.3 THE RESEARCH PROCESS

This section explains the administrative aspects of the study and includes topics such as distribution and collection of the questionnaires, statistical data analysis as well as validity and reliability of the study.

3.3.1 Distribution of the questionnaires

The questionnaires were printed and distributed by an administrative assistant on behalf of the researcher under explicit instructions to each of the ten departments on the site. This was done during the period March to June 2006. Each printed copy was both in English and Zulu to ensure that the respondents were able to select their language of choice. Line management in each department were tasked with facilitation of the circulation of the printed copies. The researcher

visited each department to ensure that the circulation process was effective. Ethical considerations during distribution of the questionnaires will be presented in section 3.5.

3.3.2 Collection of questionnaires

The completed questionnaires were returned by department managers to the administrative assistant who recorded and collated responses per department against what was originally issued. Of the 202 questionnaires that were sent out to the site, 104 were returned. The researcher intervened to improve the response rate by requesting relevant line management to proactively champion the returns but there was no significant improvement. At the time, no incentives were used in the study to encourage response rates. The response rate will be discussed in Chapter 4.

3.3.3 Data analysis

Data analysis was performed by a qualified statistician and included appropriate descriptive and inferential statistical measures. Welman and Kruger (2001:208) define descriptive statistics as concerned with description and summary of data in the form of frequency tables, graphs and measures of central tendency. Furthermore the authors regard inferential statistics to be concerned with inferences that one can make about the general population under study based on the sample drawn randomly from the population. Wisniewski and Stead (1996:10) refer to inferential statistics as concerned with reaching conclusions about the population based on the descriptive statistics of the sample. In this regard the Chi-square test and Analysis of variance (ANOVA) were used to make inferences when data can be divided into different categories.

A significance test be used to test whether the results are statistically significant

(and even of practical significance) or whether the difference could be due to chance. Typically the 0.05 level of probability is chosen and results that attain a probability level of 0.05 or less are statistically significant because such a result would be expected 5 times in 100 or less if only due to chance (Edwards, et al.; 1997:123-124).

"A chi-square is often used to determine if obtained percentages differ across subgroups…but a chi-square test would be needed to determine if the difference was due to something more than chance" (Edwards, et al.; 1997:125).
One-sample chi-square compares observed and expected results. The expected number of responses is the sample divided by 3 ie.104/3 = 34.6. One-sample chi-square assumes that the number of responses in each category (Agree, Don't know, Disagree) will be the same. If the actual number of responses differs from the expected value for each category, then the chi-square result is significant ie. the p-value is less than 0.05 (Edwards, et al.; 1997:123-124).

A type of reliability analysis that is appropriate for most survey data is the "internal consistency reliability" also known as Cronbach's alpha. This analysis estimates how consistently items within a dimension (for example organisational climate) measure the same characteristic. Typical internal consistency reliability values can range from 0.00 to 1.00. Survey teams should try for dimensions that have internal consistency reliability values of 0.70 or more (Edwards, et al.; 1997:125).

Welman & Kruger (2001:207) comment that analysis of variance (ANOVA) is used to measure any statistical significant difference between means and distributions of samples. Stamatis (2003:119-120) refers to the Kruskal-Wallis test which determines whether a difference is present by finding out if the sums of the ranks for each of its distribution groups differ significantly from each other. In this regard the Kruskal-Wallis ANOVA was used to compare perception of quality between the various departments and job grades on the site.

The primary data from each questionnaire was captured by the researcher onto a Microsoft excel spreadsheet that was developed by the statistician. During the capture, three missing responses were observed from three different respondents. These included two missing responses for question 18 and one response omitted for question 3. For these questions, the remaining responses were adjusted to 101 respondents (104 less 3) during subsequent statistical computations. Furthermore this value was also taken into account during the ANOVA calculations.

Each response per question as per the rating scale, for all 104 responses, was assigned a code, to enable some quantitative analysis to be conducted for the non-numeric category data, which was primarily the employee perception results. Wegner (1993:7) are of the opinion that qualitative random variables yield category or non-numeric responses which are assigned arbitrary codes. The spreadsheet was forwarded to the statistician to perform the necessary analysis.

Frequency tables were conducted for department, job grade and for each question and bar graphs were also presented where appropriate. In addition cross tabulation per question with related responses were done separately for departments and jobgrades. A variable called perceptions of quality was created by totalling all of the responses.

Test statistics were computed per question and included Chi-square, degrees of freedom, probability co-efficients and analysis of variance. A Kruskal-Wallis test was used for the comparison of quality perceptions between departments and jobgrades. In addition Cronbach's alpha was computed for each question and for the overall number of questions as a statistical indication of reliability.

Where the reliability co-efficient is greater than 0.70, this is an indication that there is a high degree of internal consistency and stability amongst the respondents for the specific question. Where the p-value is less than or equal to

the level of statistical significance at the 5% level (α ≤0.05), with the appropriate Chi-square value, then the response is statistically significant and did not happen by chance.

At the 95% confidence interval applying the Kruskal-Wallis ANOVA, with the various Chi-square values, degrees of freedom and p values, the overall perception of quality is concluded as being different (or not different) between the different departments and job grades.

3.3.4 Validity and Reliability

Govender (2007:47-48) indicates that the research instrument must have validity to ensure it measures what it is supposed to measure. In this research, the pre-test study presented in section 3.2.4.4 attempted to ensure that this has been given due consideration. In addition a pre-test of the questionnaire was also conducted with four senior management employees, who were excluded from the study. These employees critically assessed the questionnaire in terms of face validity without any shortcomings. The restriction of the sample to only permanent employees of Dulux has also assisted with ensuring validity as temporary employees and contractors on the factory site were excluded from the research.

3.4 ELIMINATION OF BIAS

In all stages of a research process, bias can occur. These include the questionnaire design, data collection and data analysis. In this research study, the pilot study, face validity session, use of an independent statistician and the nature of the questionnaire design and distribution were used in an attempt to eliminate bias. The researcher, as Quality Manager at Dulux and site executive committee management member, has personally ensured that the data capturing and collection were done with the highest standards of impartiality and integrity.

3.5 ETHICAL CONSIDERATIONS

Ethical issues were identified and addressed appropriately in this study.
The researcher was present across the site in the various departments and by observation and interaction with potential respondents, ensured that the research survey was conducted in an ethical and morally sensitive manner. In addition there was no coercion by managers to employees to submit the questionnaires.

An attempt was made to ensure anonymity, confidentiality, voluntary participation and that no potential harm occurred to any respondent who participated in the study. Feedback to all respondents will be provided once the study is completed.

3.6 CONCLUSION

This chapter presented a review of the research methodology in terms of appropriate and relevant application of the various techniques in accordance with fundamental principles and practices associated with research methodology. The number of questionnaires (104) that were returned against the number that were administered (202), resulted in a satisfactory response rate that will be reviewed in the following chapter. Having discussed the the questionnaire and the overall research methodology used in this study, the following chapter presents the research findings and interpretation of the results.

CHAPTER 4 - PRESENTATION OF RESULTS

4.1 INTRODUCTION

The overall objective of the research undertaken in this study was to identify employee perceptions of quality at the Dulux Durban-based paint factory.
The responses obtained from the respondents for each of the 21 questions is presented. Refer to Appendix B for the full questionnaire. The analysis has been conducted as outlined in Chapter 3 and is presented in tabular and graphical format with explanations. Detailed statistical analyses are exhibited in Appendices D to G.

4.2 RESPONSE RATE

Two hundred and two questionnaires were distributed to all permanent employees, who were available at the time of the research in March 2006 , at the Dulux paint factory site. The total site population formally reflected on the Human Resources database was two hundred and twenty-four employees at this time. However at the time of the research, some employees were unavailable due to a wide range of reasons (various forms of leave, at other site/s, on training offsite). This then reduced the population to two hundred and two personnel as determined by a review of the site access control records for an average period preceding the research duration. One hundred and four questionnaires were received which resulted in a response rate of 51.5%.

Welman and Kruger (2001:147) believe that if a group who has responded in a mail survey, represents a minority (a response rate of less than 50%), this can lead to an “incorrect picture of the population”. It is further stated that a high response rate may not be of the appropriate value, if the population where the response was obtained from, is not representative of the target population. In research conducted on employee perceptions of activity based costing, done by

Taba (2005:34), a response rate of 38% (121 responses from a target population of 319) was achieved and was considered to be representative of the target population. Sekaran (1992:253) refers to a sample size of 132 as representative for a population of 200. Saunders, et al (2003:284) is of the opinion that the likely response rate for a delivery and collection questionnaire (as used in this study) is at a reasonable range of 30-50%.

Naidoo (2004:78), refers to research conducted by way of a questionnaire survey in 1998 that resulted in a response rate of 44%. "Unless the survey is being conducted under supervised or interview conditions, a response rate of 50 to 75% is reasonable for an attitude survey" (Pike and Barnes, 1996:173). Response rates can be improved by incentives but the risk of breaking anonymity and confidentiality rules exists. No incentives were used to increase response rate for this study.

As this research at Dulux involved responses from the main operational departments (factory and warehouse) and also represented the majority of the broadband job grades on site (operator and advanced operator), to be discussed in section 4.3.1, the responses were considered as representative of the target population.

4.3 RESEARCH FINDINGS AND ANALYSIS

The findings and analysis are presented as frequency tables (by department and job grade) for all of the respondents (refer to Tables 4.1 and 4.2). The responses per research objective and related questions are shown graphically (refer to Figures 4.1 to 4.6) and in tabular format (refer to Tables 4.3 and 4.4). Thereafter cross-tabulation of responses by department and jobgrade are presented (Refer detailed cross-tabulation data in Appendix F). In addition computed Cronbach's alpha reliability co-efficients, Chi-square values and significance probability (p-value) for each question are presented.

Furthermore Kruskal-Wallis ANOVA values (Refer to Appendix G for further details) were computed to compare the perception of quality between departments and jobgrades. It must be noted that a variable (perception of quality), has been developed from the total of all responses received in this study.

4.3.1 Analysis of frequency tables by department and broadband job grades

Table 4.1 lists the responses per department for this study as summarised from Appendix E.

Table 4.1 : Frequencies per department

Departments	**Frequency**	**Percent**
Research & Development	12	11.5
Sales	4	3.8
Finance/Administration	1	1.0
Human Resources	3	2.9
Raw Material/Packaging Store	11	**10.6**
Engineering	14	13.5
Compliance (SHEQ)	6	5.8
Distribution	20	**19.2**
Production	25	**24.0**
Purchasing/Planning	8	7.7
Total	104	100.0

The paint factory is primarily composed of the following departments:

- Raw material/packaging store (10.6%)
- Production (24%)
- Distribution (19.2%)

From the results in Table 4.1, it is determined that these primary departments represent 53.8 % of the respondents and therefore reflect the majority of

responses towards perceptions of quality. The remaining departments are considered support and service departments.

Table 4.2 lists the responses per job grade for this study as summarised from Appendix E.

Table 4.2 : Frequencies per broadband jobgrade

Broadband Job grades	**Frequency**	**Percent**
P:Primary	6	5.8
O:Operator	32	**30.8**
AO:Advanced Operator	47	**45.2**
SP:Supervisory/Practitioner	10	9.6
MP:Middle Management/Professional	9	8.7
Total	104	100.0

The Operator (30.8%) and Advanced Operator (45.2%) represent the core employee base at the factory. They occupy positions in both the primary factory departments and the support/service departments. From Table 4.2, this is evident by the summation of the responses from these job grades expressed as a percentage (76%).

4.3.2 Analysis of questions related per research objective

Table 4.3 lists the research questions that were used in this study and was obtained from Appendix B. These 21 questions address all the research objectives and sub-objectives for this study.

Table 4.3: Summary of research questions

No:	Nature of question:
1	Quality is the responsibility of all employees on the site
2	I have an understanding of when I produce a quality product or service
3	I am aware of the contents of the company quality policy
4	I understand the contents and requirements of the ISO9001 quality system with respect to my daily job
5	My manager/supervisor/foreman leads by example in adhering to the quality standards established in my workplace
6	My manager/supervisor/foreman ensures that quality is discussed regularly at meetings within my section/department
7	I am paid to provide a good quality product or service
8	I am recognised for my suggestions to improve quality when these are implemented in my workplace
9	I believe that quality is more important to me than daily work schedules
10	I give as much time to quality as I do with safety and transformation issues
11	I have adequate work instructions and procedures to ensure I do my job correctly
12	I am given sufficient time to resolve quality problems
13	I am aware of the customer requirements for product quality
14	I am aware of the company quality performance and strive to improve it
15	I am aware of the quality objectives for my work area
16	I contribute towards a good quality product by ensuring that my equipment , methods and procedures are calibrated and updated
17	I believe that quality is the responsibility of the quality department
18	The quality system is simple and practical to adhere to
19	The company awards business to suppliers based on quality and not price
20	I believe quality is built into each design and process – it is not created by inspection
21	I am held accountable when my work is not 100% right first time

Table 4.4 is a percentage summary of the responses for each of the research objectives and related questions and was obtained from Appendix E.

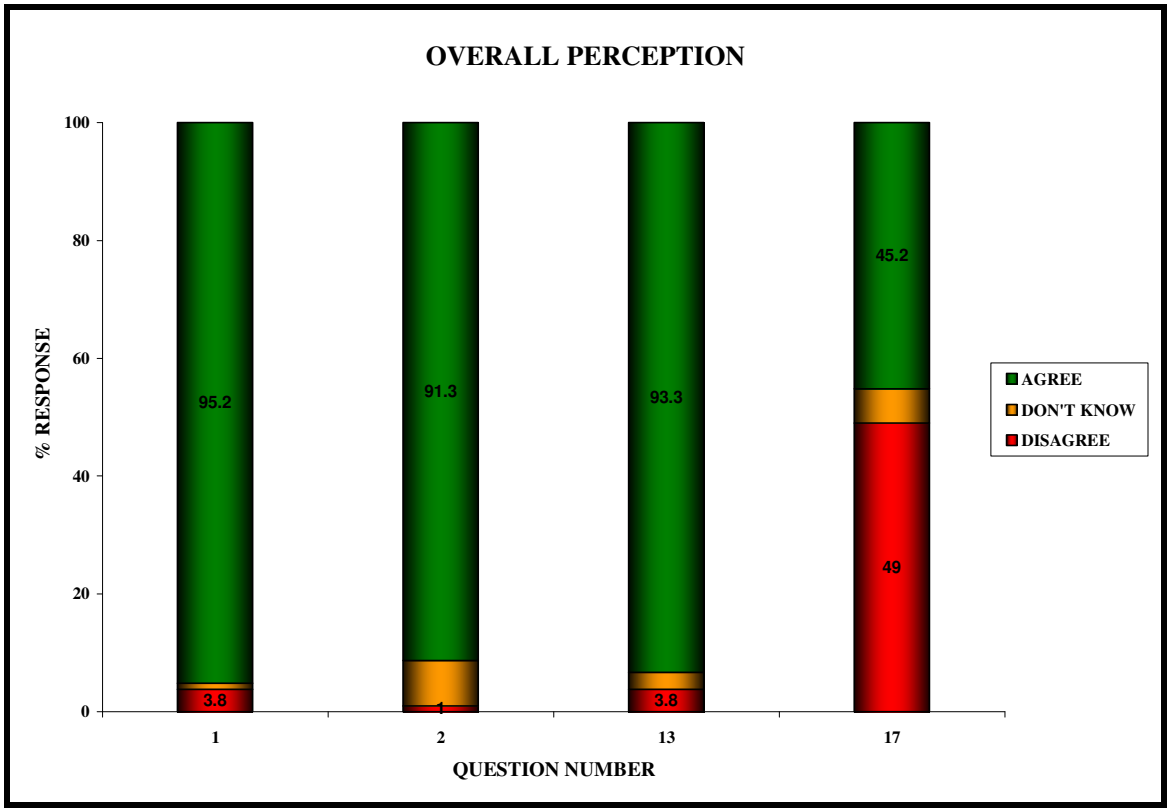
Table 4.4 : Summary of responses per research objective & related questions

Summary of Research Objectives:	Question Number:	% Disagree	% Don't know	% Agree
Overall perception of quality	1	3.8	1.0	**95.2**
	2	1.0	7.7	**91.3**
	13	3.8	2.9	**93.3**
	17	**49.0**	5.8	**45.2**
Awareness of quality	3	4.9	8.7	**86.4**
	4	1.0	7.7	**91.3**
	14	3.8	3.8	**92.3**
	15	1.0	9.6	**89.4**
Management commitment	5	8.7	12.5	**78.8**
	6	**13.5**	10.6	**76.0**
	19	**21.2**	**33.7**	**45.2**
Reward and recognition	7	**11.5**	6.7	**81.7**
	8	**13.5**	16.3	**70.2**
	21	5.8	9.6	**84.6**
Support for quality	9	8.7	11.5	**79.8**
	10	**10.6**	9.6	**79.8**
	16	2.9	11.5	**85.6**
Obstacles to quality improvement	11	2.9	7.7	**89.4**
	12	**14.4**	**19.2**	**66.3**
	18	9.8	20.6	**69.6**
	20	8.7	22.1	**69.2**

4.3.2.1 Overall perception of quality

Figure 4.1 is a graphical illustration of the respondents overall perception of quality.

Fig. 4.1 : Overall perception of quality



With reference to Figure 4.1, responses to three questions (1,2,13) summarised in Table 4.3 to assess overall perceptions of quality, have indicated majority percentage responses (greater than 90%) of 95.2, 91.3 and 93.3 respectively. This indicates a consistent and positive view towards perceptions of quality by these respondents. These results are statistically significant since the results of the chi-square tests (with df=2, $p<0.05$) for these questions (refer Appendix E) indicates a significant relationship between proportion of responses between categories at the 95% level. Chi-square values for questions 1, 2 ,13 are 179.212, 158.212 and 168.135 respectively.

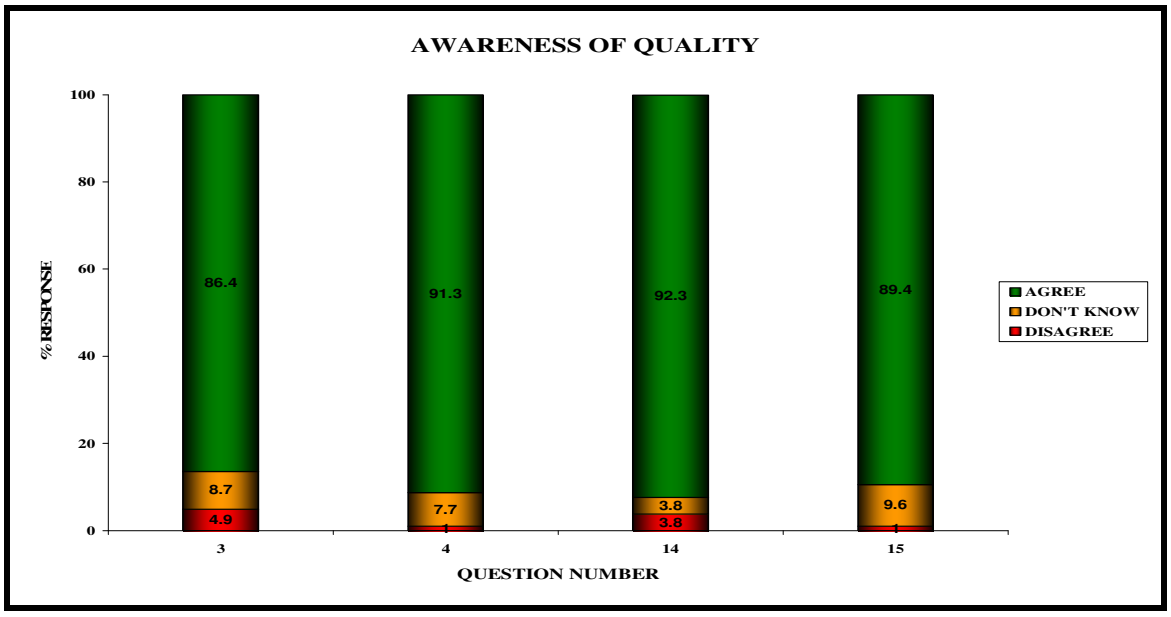
However, question 17 (I believe that quality is the responsibility of the quality department) showed that 49% of the respondents disagreed with this question. In comparison to question 1 (quality is everyone's responsibility), 95.2% of the respondents agreed with this question. This difference on perceptions as to whether quality is each employee or a quality department responsibility is important.

The former responses are strongly aligned to most total quality management principles that support the view that quality is the responsibility of everyone in the organisation. "All members of an organization need to work together on company-wide quality improvement" (Oakland, 2000:17). Furthermore "TQM is an organization-wide challenge that is everyone's responsibility" (Besterfield , et al.; 2003:2).

4.3.2.2 Awareness of quality

Figure 4.2 is a graphical representation of the respondents awareness of quality for the related research questions.

Fig. 4.2: Awareness of quality



With reference to Figure 4.2, responses for the four survey questions (3, 4, 14 and 14) that related to awareness of quality, as summarised in Table 4.3, indicated that most respondents agreed with the questions as all percentage responses were greater than 85% (86.4%, 91.3%, 92.3% and 89.4% respectively). The percentage of respondents who disagreed with these questions was less than 5% and provided important insight that the majority of the respondents were unanimous in their awareness of quality.

These results are statistically significant since the results of the chi-square tests (with df=2, $p<0.05$) for these questions (refer Appendix E) indicates a significant relationship between proportion of responses between categories at the 95% level. Chi-square values for questions 3, 4, 4 and 15 are 130.796, 158.212, 162.769 and 148.404 respectively. These results reflect favourably for any quality initiatives that seek to bring improvements at the factory site. One of the roles of the workforce is to become knowledgeable about the needs of the internal and external customer (Gryna ,2001:197). Increased awareness of quality simply supports this notion, as an employee is now more aware of the quality expectation from their customers.

Question 3 (awareness of quality policy) yielded an important set of positive responses (86.4%) as any quality management system fundamentally depends on the quality policy to give direction and focus for quality improvements.
Pike & Barnes (1996:115-116) are of the opinion that the quality policy is a formal commitment to quality by management who must used it as a “constant source of guidance” and it must be communicated to all affected stakeholders such as employees, customers, suppliers and shareholders. In this regard most respondents, who were employees, appeared to be aware of the quality policy.

4.3.2.3 Management commitment

Figure 4.3 is a graphical representation of the respondents perceptions of management commitment towards quality.

Fig. 4.3 : Management commitment

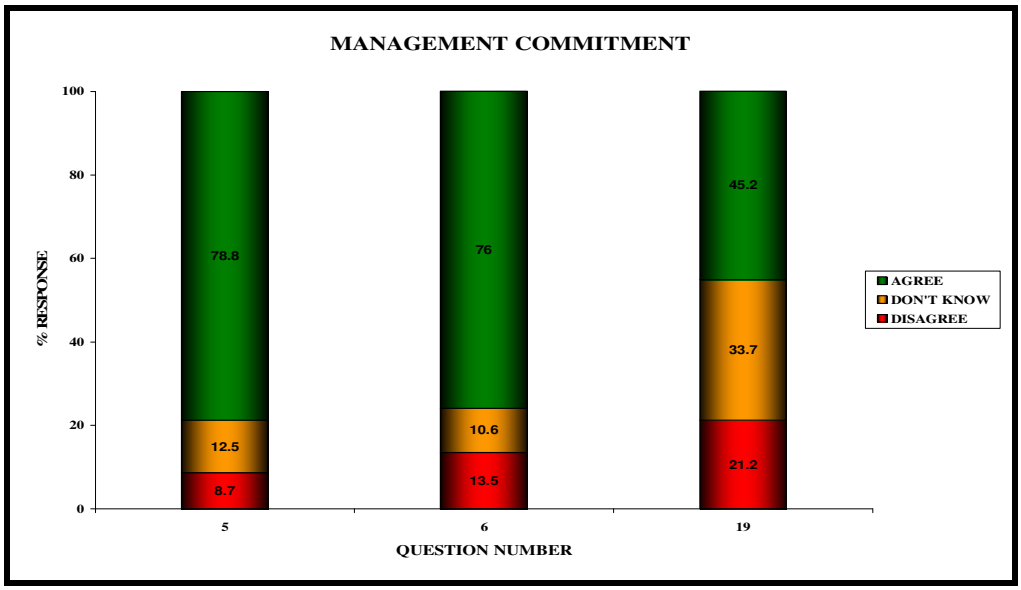


Figure 4.3 refers to a large percentage of respondents who expressed positive perceptions ('agree' responses greater than 70%) for questions 5 and 6 with respect to management commitment of 78.8% and 76% respectively. There were some respondents who had negative perceptions ('disagree' responses varying from 8.7% to 13.5%) for these two questions. This indicated that there was a view that some managers were not committed to quality in terms of the 'lead by example' behaviour (question 5) and communication of quality in the workplace (question 6).

These results are statistically significant since the results of the chi-square tests (with df=2, $p<0.05$) for these questions (refer Appendix E) indicates a significant relationship between proportion of responses between categories at the 95%

level. Chi-square values for questions 5, 6 and19 are 97.173, 85.173 and 9.019 respectively.

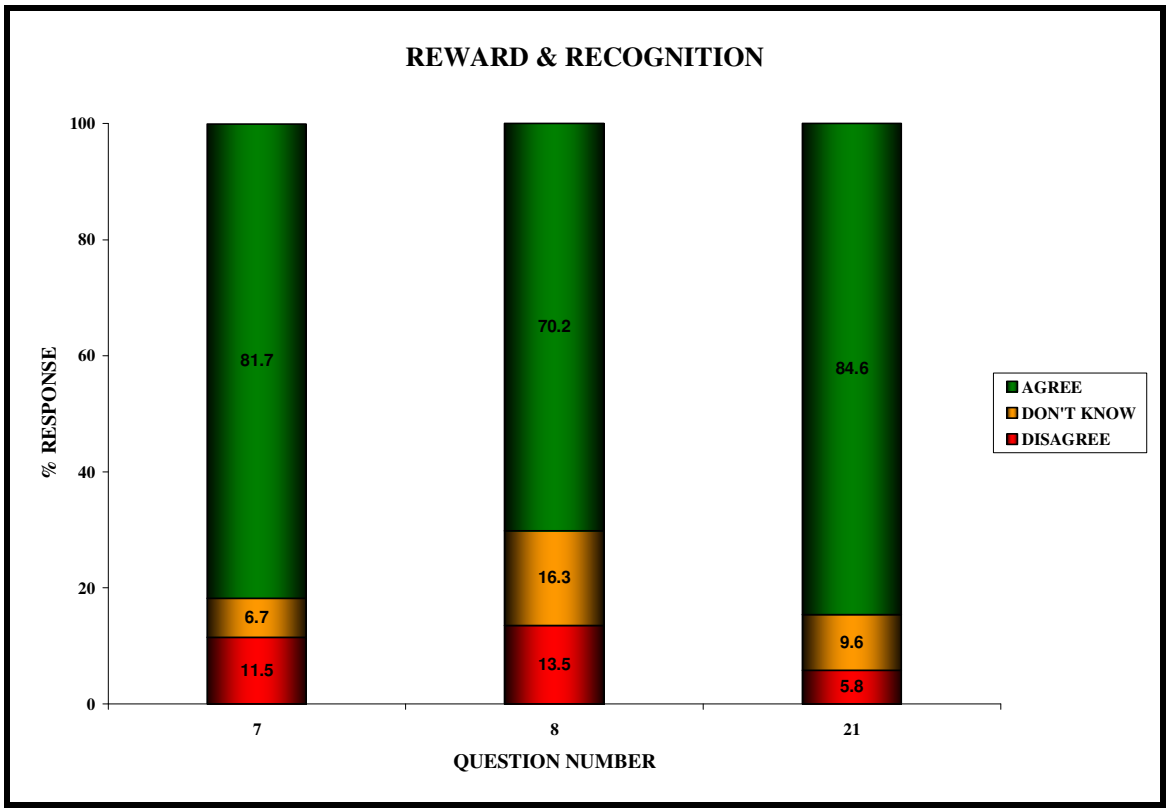
Besterfield, et al (2003:18) is of the opinion that “senior leaders should serve as role models through their ethical behaviour and their personal involvement in planning,communication … recognition”. According to Gryna (2001:196), “the role of middle managers,supervisors and specialists include leading quality activities within their own area by demonstrating a personal commitment and encouraging their employees”.

Question 19 on how the company selects suppliers indicated that some employees (21.2%) were of the view that some suppliers were selected on the basis of cheaper products and not necessarily on quality of product. These responses could be due to the fact that most respondents (91.3%) who are not in management job grades (MP: middle management/professional), as listed in Table 4.2, who participated in this study are not directly involved in supplier relationships and may simply not know the established business criteria for supplier selection which is based on quality and price.

4.3.2.4 Reward and recogition

Figure 4.4 is a graphical representation of respondents perceptions of reward and recognition for their quality contributions.

Fig. 4.4 : Reward and recognition



With reference to Figure 4.4, there were employees who felt that they were not paid for their services nor recognised for their contributions to quality (questions 7 and 8: 'disagree' =11.5% and 13.5% respectively). These results are statistically significant since the results of the chi-square tests (with df=2, $p<0.05$) for these questions (refer Appendix E) indicates a significant relationship between proportion of responses between categories at the 95% level. In this regard, Chi-square values for questions 7, 8 and 21 were 109.981, 63.712 and 123.30 respectively.

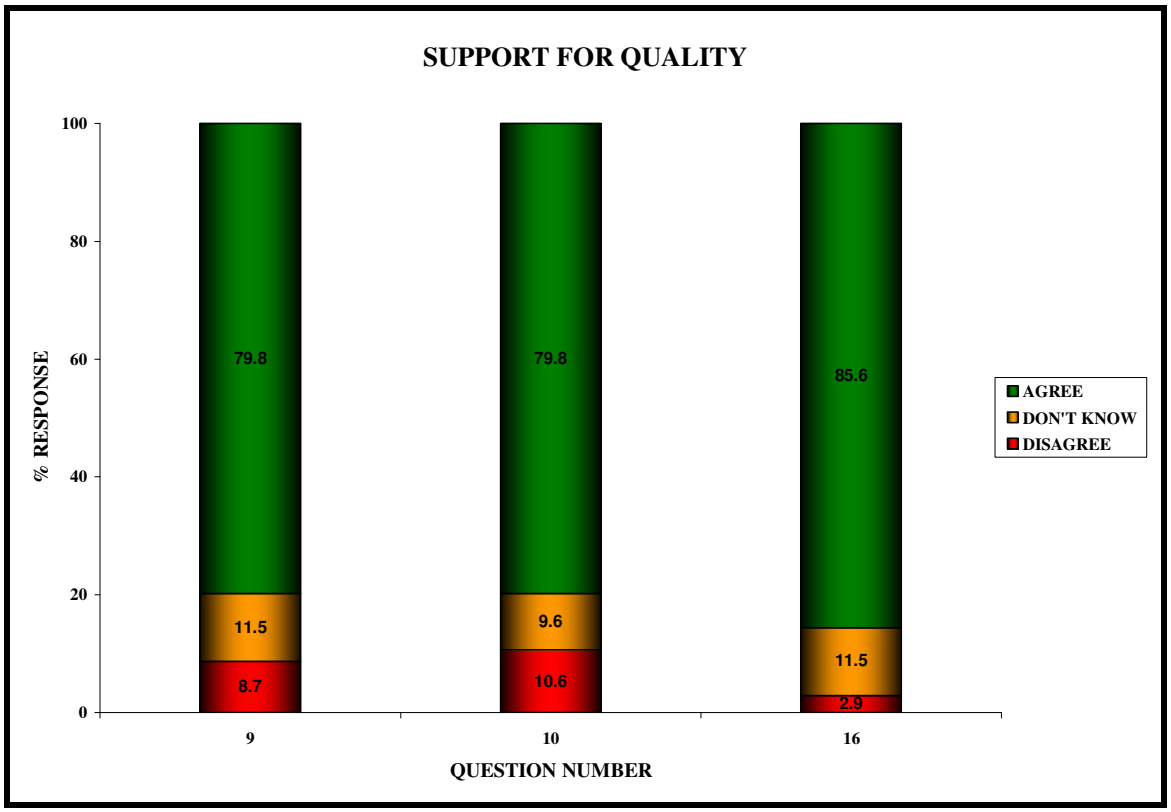
Gryna (2001:236) states "survey after survey indicates that employees primary concerns are lack of recognition …". However the majority of the respondents were of the opinion that they were held accountable for their quality outputs (question 21: 'agree' responses =84.6%). Besterfield, et al (2003:114) states that "recognition and reward go together to form a system for letting people know they

are value members of the organization". It is further explained by the authors that effective reward practices include non-monetary forms of recognition for acknowledgment of quality goals and profit sharing and quality based performance appraisals. This section will be reviewed further in Chapter 5.

4.3.2.5 Support for quality

Figure 4.5 is a graphical illustration of the employees support for quality initiatives within the work environment as per related questions.

Fig. 4.5 : Support for quality



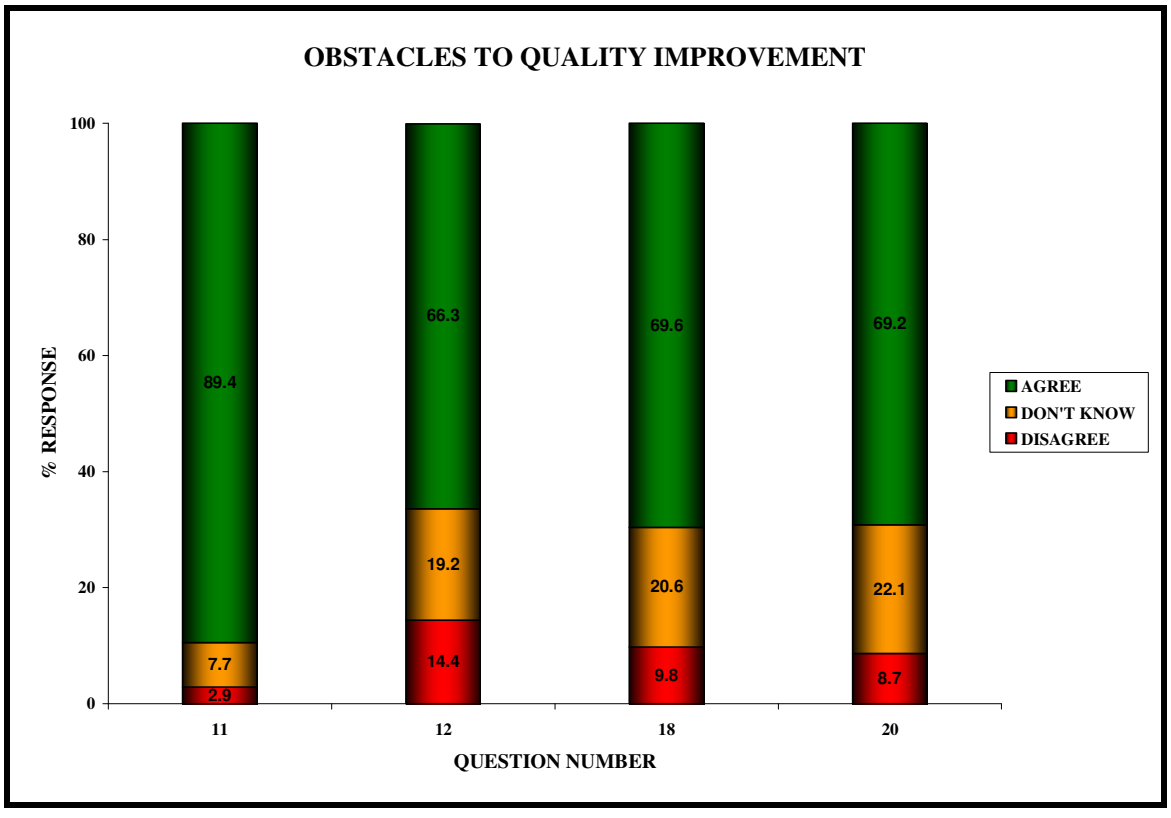
In reference to Figure 4.5, most respondents (greater than 79%) showed a majority response towards their support for quality. These results are statistically significant since the results of the chi-square tests (with df=2, $p<0.05$) for these questions (refer Appendix E) indicates a significant relationship between

proportion of responses between categories at the 95% level. Chi-square values for questions 9, 10 and 16 are 101.212, 101.096 and 128.904 respectively. "Employee involvement improves quality and increases productivity because employees are better able to take immediate corrective action and have an increased commitment to unit goals because they are involved" (Besterfield, et al.; 2003:121). Some respondents (10.6% for question 10) did indicate that safety and operational schedules took preference instead of quality. This could be due to a bias in these departments where these respondents function.

4.3.2.6 Obstacles to quality improvement

Figure 4.6 is a graphical representation of employees responses to survey questions that focussed on obstacles to quality improvement.

Figure 4.6: Obstacles to quality improvement



With reference to Figure 4.6, responses for question 11 indicated that most employees (89.4%) had the necessary work instructions and procedures to perform quality work. These results are statistically significant since the results of the chi-square tests (with df=2, $p<0.05$) for these questions (refer Appendix E) indicates a significant relationship between proportion of responses between categories at the 95% level. Chi-square values for questions 11, 12, 18 and 20 are 147.596, 51.365, 62.176 and 63.135 respectively.

A different pattern emerged for questions 12,18 and 20 which focussed on time,ease of use of the quality system and design compared to inspection respectively. There was a significant percentage of respondents (varied from 19.2% to 22.1%) who did not indicate a response and some respondents (ranging from 8.7% to 14.4%) who did not agree with the questions. This is important as largely positive responses to these three questions are pivotal to the success of any quality system or improvement programme. "Once an organization embarks on TQM, there will be obstacles to its successful implementation" (Besterfield, et al.; 2003:10). This aspect will be discussed further in Chapter 5.

4.3.3 Cross-tabulation by department and job grade

Cross-tabulation by department indicated, as per Appendix F, that the majority of the responses ('disagree' responses were less than 10% of the overall sample) that agreed with questions 1 to 4 ,5,9,11,13 to16,18 and 20 to 21 originated from the Research and Development, Engineering, Distribution and Production departments. These departments make up the majority of the department sample on the site and warrant a more focused intervention going forward to sustain the positive perceptions of quality.

Cross-tabulation by job grade using the same Appendix F, revealed that the majority of the positive responses ('disagree' responses were less than 10% of

the overall sample) were from job grades Operator (O) and Advanced Operator (AO) for all of the twenty one questions that were administered in this study. These two grades represent the majority of the sample and are therefore considered to be key stakeholders in supporting quality initiatives going forward.

Cross-tabulation by department, as per Appendix F, for questions 6 to8,10,12,17 and 19 showed significant differences ('disagree' responses greater than 10%) relative to responses for the remaining questions where the percentage of responses that disagreed with the questions was less than 10%. The departments affected were Research and Development, Engineering, Distribution and Production.

In particular questions 6 and 19 are linked to management commitment and questions 7 to 8 are linked to reward and recognition. Questions 10,12 and 17 are associated with employee support, obstacles that slow down quality initiatives and overall perceptions of quality respectively. Of importance are the responses from question 17 (quality is the responsibility of the quality department) where the percentage of responses that disagreed consisted of 49% of the sample respondents in comparison to 45.2% who agreed with the question. A marginally greater percentage of respondents (49%) were of the opinion that quality was not the responsibility of the quality department but at the same time 45.2% of the respondents believed quality was the quality department's responsibility.

This response has some alignment to the majority positive response from question 1 (quality is everyone's responsibility). However the 45.2% of respondents who agreed with the question have a perception that quality is the role of the functional quality department. These respondents are primarily from the Production and Distribution departments. It can be concluded that there exists different perceptions of quality amongst different departments. This is statistically validated in section 4.3.6 that is still to be presented.

4.3.4 Reliability Statistics

Table 4.5 lists the Cronbach alpha reliability statistic values for each of the survey questions.

Table 4.5 : Reliability statistics

Question	Cronbach's alpha	Question	Cronbach's alpha	Question	Cronbach's alpha
Q1	0.786	Q9	0.791	Q17	0.818
Q2	0.790	Q10	0.780	Q18	0.786
Q3	0.788	Q11	0.789	Q19	0.790
Q4	0.792	Q12	0.791	Q20	0.784
Q5	0.786	Q13	0.786	Q21	0.792
Q6	0.794	Q14	0.783	**OVERALL**	**0.797**
Q7	0.789	Q15	0.792		
Q8	0.772	Q16	0.795		

The computed Cronbach's alpha reliability value for all questions is shown in Table 4.5. These values estimate how consistently items within a dimension measure the same characteristic. As discussed in Chapter 3, Edwards, et al (1997:125) states that survey teams should try for dimensions that have internal consistency reliability values of 0.70 or more. Detailed reliability test statistics for questions 1 to 21 are attached as Appendices D and E respectively.

Each of the questions, as indicated in Table 4.3 has a Cronbach alpha value greater than 0.70 and the computed value for all twenty-one questions is 0.797, which is also greater than 0.70. These results subsequently indicate a high degree of internal consistency and stability amongst the responses.

4.3.5 Analysis of variance

Analysis of test statistics in Appendix G, which lists the Kruskal-Wallis ANOVA analysis, has indicated that for the overall perception of quality by department (Chi-square = 16.90, df=9, p less than 0.05), the Chi-square value lies within the acceptance range of 16.919 (Wegner, 1993:388). Hence the overall perception of quality is different between the different departments at the 95% level.

Similar analysis of test statistics in Appendix G, for ANOVA for overall perception of quality by job grade indicated a Chi-square=6.35, df=4 and p=0.176 greater than 0.05. The Chi-square acceptance value is greater than 7.779 (Wegner, 1993:388). It can be concluded that the overall perception of quality is not different between the different grades at the 95 % level.

4.4 **Conclusion**

The findings that were discussed indicate a generally positive perception of quality by the respondents for this study. This was validated by both descriptive and inferential statistical analysis. The analysis further indicated that the results were statistically significant and did not happen by chance. In addition there was a high level of reliability and stability for the responses. Of primary relevance was the different perceptions that existed between different departments (and no difference in perceptions between different job grades) at the 95% confidence level. The next chapter will present conclusions, recommendations and scope for further research.

CHAPTER 5 - CONCLUSIONS AND RECOMMENDATIONS

5.1 INTRODUCTION

In this chapter, the data analysis presented in Chapter 4 is discussed in relation to the research objectives. Conclusion of the research findings in relation to the main research objective and sub-objectives are presented. In addition, recommendations based on the research findings are proposed in order to improve the implementation and monitoring of quality improvement strategies by Dulux. Scope for future future research and a summary of the whole study are presented in conclusion.

5.2 CONCLUSION: RESEARCH FINDINGS

The main research objective, for this study, was to ascertain employee perceptions of quality at the Durban-based Dulux factory site. The sub-objectives, within the context of the relevant research questions, are presented with conclusions based on the findings discussed in Chapter 4 :

5.2.1 Sub-objective: To determine a quantitative measurement of employees' overall perceptions of quality

Responses received to assess overall perceptions of quality indicated a fairly consistent and positive view. However a difference was noted on perceptions as to whether quality is each employee's responsibility or whether quality is the quality department's responsibility.

The responses that affirm that quality is everyone's responsibility are strongly aligned to most total quality management principles that support the view that quality is the responsibility of everyone in the organisation. "All members of an organization need to work together on company-wide quality improvement"

(Oakland, 2000:17). Furthermore "TQM is an organization-wide challenge that is everyone's responsibility" (Besterfield, et al.; 2003:2).

5.2.2 Sub-objective: To determine employee perceptions in terms of awareness of the quality system and the company quality policy

Responses for employee awareness of the quality system and quality policy were primarily positive in nature and provided important insight that the respondents were unanimous in their awareness of quality. These findings represent a positive view for any quality initiative that seeks to bring improvements at the factory site. One of the roles of the workforce is to become knowledgeable about the needs of the internal and external customer (Gryna, 2001:197). Increased awareness of quality simply supports this notion, as an employee is now more aware of the quality expectation from their customers.

The aspect on awareness of quality policy yielded an important set of positive responses as any quality management system fundamentally depends on the quality policy to give direction and focus for quality improvements.
Pike & Barnes (1996:115-116) state that the quality policy is a formal commitment to quality by management who must used it as a "constant source of guidance" and it must be communicated to all affected stakeholders such as employees, customers, suppliers and shareholders. In this regard most respondents, who were employees, appeared to be aware of the quality policy.

5.2.3 Sub-objective: To examine employee perceptions of management commitment to quality

Some responses to assess employee perceptions of management commitment to quality indicated that there was a view that some managers were not committed to quality in terms of rolemodel behaviour and communication of

quality in the workplace. Besterfield, et al (2003:18) believes that "senior leaders should serve as role models through their ethical behaviour and their personal involvement in planning,communication … recognition". According to Gryna (2001:196), "the role of middle managers, supervisors and specialists include leading quality activities within their own area by demonstrating a personal commitment and encouraging their employees".

Responses that focused on how the company selects suppliers indicated that some employees were of the view that some suppliers were selected for price benefits and not quality. These responses could be due to the fact that most respondents in this study are not directly involved in supplier relationships and simply do not know the established business criteria for supplier selection.

5.2.4 Sub-objective: To assess employee perceptions of reward and recognition for support of quality

With reference to the sub-objective to assess employee perceptions of reward and recognition for support of quality, there were some employees who felt that they were not paid to provide a good quality product or service (11.5% of the respondents) and were not recognised for their suggestions that were implemented in the workplace to improve quality (13.5% of the respondents).
Gryna (2001:236) is of the opinion that "survey after survey indicates that employees primary concerns are lack of recognition …". However at least 70% of the respondents were satisfied with their reward and recognition for quality product and service and implementation of quality improvement ideas.

Furthermore the majority of the respondents were of the opinion that they were held accountable for their quality outputs. Besterfield, et al (2003:114) states that "recognition and reward go together to form a system for letting people know they are value members of the organization".

5.2.5 Sub-objective: To determine the perception of employees who are not part of management and their support towards quality initiatives

Most respondents who were not management showed a majority response towards their support for quality. "Employee involvement improves quality and increases productivity because employees are better able to take immediate corrective action and have an increased commitment to unit goals because they are involved" (Besterfield, et al.; 2003:121). Some respondents did indicate that safety and operational schedules took preference instead of quality. This could be due to a bias in these departments where these respondents function.

5.2.6 Sub-objective: To determine constraints that hinder the success of quality initiatives

Responses with respect to the sub-objective to determine constraints to successful quality indicated that most employees had adequate work instructions and procedures to perform quality work. A different pattern emerged for those responses that focused on time, ease of use of the quality system and design compared to inspection respectively. In this regard the majority of the responses were not positive. This is important as largely positive responses to these aspects are pivotal to the success of any quality system or improvement programme. "Once an organization embarks on TQM, there will be obstacles to its successful implementation" (Besterfield, et al.; 2003:10).

Cross-tabulation by job grade revealed that the majority of the positive responses were from job grades Operator (O) and Advanced Operator (AO). These two grades represent the majority of the sample and are therefore considered to be key stakeholders in supporting quality initiatives going forward at an operational employee level. This is of further relevance as the primary theme of work for these two job grades, as defined in the Dulux job grade system, is that of quality.

Cross-tabulation by department indicated that there existed different perceptions of quality amongst different departments. In particular, most respondents from the production and distribution departments were mutually in agreement in their view that quality is the responsibility of the quality department relative to responses from the other departments who were surveyed on the site who felt otherwise.

5.3 RECOMMENDATIONS

Based on the research findings, the following recommendations are proposed:

- A proactive awareness programme should be developed and implemented to educate all employees, particularly in the production and distribution areas that quality is their responsibility. Further awareness needs to be conducted to communicate to the workforce that the functional quality departments exist to provide specialist expertise to assist employees in making quality their responsibility,
- Management are requested to continue to keep employees aware of the quality management system and the quality policy in terms of it's contents and impact to their work environment,
- Senior management should review management commitment in terms of rolemodel behaviour and effective communication of quality initiatives and occurrences within the various departments on the site,
- The Quality Assurance and Procurement departments are requested to propose a form of communication to inform employees that suppliers are chosen on quality and price but never on price alone. Qualifying criteria for supplier selection and ongoing contract orders can be used to support this communication,
- The ongoing recognition and reward programmes within the company for quality performance by employees should continue. This will ensure that

employees remain motivated so as to sustain the quality improvement culture,

- The QMS needs to be reviewed by department and overall for simplicity of use. A planned programme to reduce the complexity of the ISO 9001:2000 QMS needs to initiated and implemented as relevant and appropriate to the individual, department and company needs,
- As most of the site employees who participated in this study belong to a trade union, the involvement of employee union representatives to promote quality on the shopfloor is seen as an important enabler to the success of future quality initiatives. The intention is to ensure that the employees understand the broader impact of good quality within their work areas and the overall impact on profitability and business reputation,
- The Quality Assurance function needs to review the ISO 9001:2000 QMS for effectiveness in supporting a proactive and preventative culture of quality improvement ie. the design of quality into a product or service rather than the inspection of quality of a product or service,
- Finally, two contemporary approaches to TQM, Six Sigma and Lean Manufacture need to be examined for additional complementary value add to the existing ISO 9001:2000 QMS for the company.

In conclusion, it is recommended that regular surveys of employee perceptions be conducted via the Quality Assurance department and feedback discussed at the scheduled quality management review forums. An effective quality improvement and communications strategy can then be determined for implementation in this regard for each business year of operation.

5.4 SCOPE FOR FUTURE RESEARCH

It is proposed that future research consider conducting another similar survey, but restricted to the management team (managers, supervisors, foremen, team leaders) at the Durban factory. It was noted that respondents for this study were

primarily operational employees with limited management participation. This survey will allow for insight into management perceptions of quality and findings could be compared and contrasted against the 2006 study.

In addition, future research can be further explored with a similar study conducted at the Dulux Alberton site. This site is the corporate headoffice and is primarily a service oriented site with various core and support business functions (finance, marketing and sales) and a distribution facility located therein. In this regard, perceptions of quality by employees at both the Durban and Alberton sites could result in useful insight into the overall internal perspective of the product and service offer by Dulux to the target market in South Africa.

Finally Dulux should consider the feasibility of conducting research with a selected group of key customers across the country to obtain feedback on their perception of the Dulux QMS (ISO 9001:2000) and its impact (positive, negative or none) on the Dulux product and service offer to them. Furthermore it is proposed that during market research that is conducted via focus group or other types of surveys by Dulux, respondents (who represent target market consumers) should be assessed on whether they perceive a tangible benefit to them with respect to the product and service offer they experience with Dulux.

5.5 SUMMARY

This study was conducted to determine employee perceptions of quality at the Dulux factory site. The information obtained from the research study would be used to provide insight into the current quality culture and also some direction towards the achievement of an improved, proactive and self-directed quality culture amongst the employees that was independent of the functional quality departments. The expected business benefits were a reduction in defects in products and services, improved and more competitive market offer, satisfied

customers and consumers and overall sustainable, profitable business growth and excellence.

The structure of the study focussed on a critical and comprehensive review of related literature on Quality and related behavioural concepts. The research methodology was discussed in detail including the use of a mail survey questionnaire. Statistical techniques were discussed and used to analyse the data and the research findings were subsequently interpreted in relation to the literature review and research objective and sub-objectives. Finally conclusions, recommendations and scope for future research were presented.

In summary, the main research objective to determine employee perceptions of quality was achieved together with six sub-objectives. The study indicated that the majority of the employees who participated in this research had favourable perceptions of overall quality. Employee perceptions towards their understanding of the company quality management system, quality policy and support for quality improvements were favourable. However employee perceptions were not favourable with respect to management commitment towards quality, reward and recognition of employees for their quality contributions and the ease of use of the quality system and its focus on inspection of quality with products and services rather the design of quality into the products and services.

In addition cross-tabulation by department indicated that there existed different perceptions of quality amongst different departments with a strong view from the factory work areas that quality is the function of the quality department and not the factory employee, whereas service and support departments were unanimous in their view that quality was their responsibility. Several recommendations have been proposed for Dulux management to consider in order to address the unfavourable perceptions of quality yet at the same time sustain the favourable perceptions of quality expressed by the employees.

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Appendix A : Dulux Quality Policy

DULUX (PTY) LIMITED

QUALITY POLICY

Our vision is that Dulux® will be the dominant decorative paint brand in Southern Africa. To realise this vision means that the Dulux® Brand has to be the first choice of customers and the first choice of consumers in our chosen market segments.

We recognise that customers and consumers have a choice. Quality is an extremely important factor influencing their choice and ultimately their decision to buy Dulux®. We accept therefore that our approach to quality within Dulux will significantly impact on the choice of our customers and consumers.

The essence of our quality policy is that:

- **we commit ourselves to developing sustainable partnerships with our customers**
- **we commit to researching, understanding and meeting the requirements of our customer and consumers**
- **we deliver our products and services reliably, consistently and on time**
- **we innovate and continuously improve all our products and services**
- **we eliminate defects in all our products and services, and**
- **we strive to do things right the first time.**

We do all of this with an ongoing commitment to operate in a way that is both environmentally and socially responsible.

Charles Betts

Charles Betts
Managing Director

Issue A. Sept. 2001

Appendix B - Survey questionnaire

Instructions: Please use the 1-3 point scale (show below) to respond to the questions. Do not tick or cross the blocks. Fill in the number which corresponds to your view.

Imiyalelo: Sebenzisa isikali sika 1-3 (ngezansi) ukuphendula lemibuzo. Ungabhali izimpawu ebhokisini, kodwa inombolo ehambisana nombono wakho.

1	2	3
Disagree	**Don't know**	**Agree**

1	Quality is the responsibility of all employees on the site Ukuqinisekiswa kwezinga eliphezulu (ikhwalithi) kuyisibopho sabo bonke abasebenzi endaweni yokusebenzela.		
2	I have an understanding of when I produce a quality product or service Ngiyazi uma ngiletha umkhiqizo noma umsebenzi osezingeni eliphezulu.		
3	I am aware of the contents of the company quality policy Ngiyazi ukuthi ikuphi nokuthi iyini inqubomgomo yokuqinisekisa izinga eliphezulu yenkampani.		
4	I understand the contents and requirements of the ISO9001 quality system with respect to my daily job Ngazi kahle ukuthi iyini nokuthi ziyini izidingo zohlelo lwe ISO9001 lokuqinisekisa izinga eliphezulu mayelana nomsebenzi wami wemihla ngemihla.		
5	My manager/supervisor/foreman leads by example in adhering to the quality standards established in my workplace Imenenja/umphathi/ induna yami iyisibonelo ngokugxila ekuqinisekiseni izinga eliphezulu emsebenzini.		
6	My manager/supervisor/foreman ensures that quality is discussed regularly at meetings within my section/department Imenenja/ umphathi/ induna yami iyaqikelela ukuthi kuyaxoxiswana njalo emihlanganweni ngokuqinisekiswa kwezinga eliphezulu esigcemeni noma emnyangweni engisebenza kuwo		
7	I am paid to provide a good quality product or service Ngiholelwa ukuze ngilethe umkhiqizo noma umsebenzi wezinga eliphakeme.		
8	I am recognised for my suggestions to improve quality when these are implemented in my workplace Ngamukelekile ukuveza imibono yami yokwenza ngcono izinga eliphezulu futhi uma le mibono isisetshenziswa emsebenzini wami		
9	I believe that quality is more important to me than daily work schedules Ngikholwa ukuthi ukuqinisekiswa kwezinga eliphezulu kubalulekile		

	kunemisebenzi ehleliwe ye mihla ngemihla.	
10	I give as much time to quality as I do with safety and transformation issues Ngizikhathaza ukuqinisekisisa izinga eliphakeme ngendlela efanayo nokuqikelela ukuphepha noshintsho.	
11	I have adequate work instructions and procedures to ensure I do my job correctly Nginikezwe imiyalelo nezinqubo ezanele ukuze ngikwazi ukwenza umsebenzi wami ngendlela efanele.	
12	I am given sufficient time to resolve quality problems Nginikwa isikhathi esanele ukuze ngikwazi ukuxazulula izinkinga eziphathelene nokuqinisekiswa kwezinga eliphakeme.	
13	I am aware of the customer requirements for product quality Ngiyazazi izidingo zamakhasimende mayelana nemikhiqizo yezinga eliphakeme	
14	I am aware of the company quality performance and strive to improve it Ngiyazi ukuthi inkampani isebenza kanjani mayelana nokuqinisekisa izinga eliphezulu futhi ngiyazikhandla ukuyenza ngcono.	
15	I am aware of the quality objectives for my work area Ngiyazi ukuthi ziyini izinjongo zokuqinisekisa izinga eliphezulu emsebenzini nezesigceme sami.	
16	I contribute towards a good quality product by ensuring that my equipment , methods and procedures are calibrated and updated Nginesandla emzamweni wokugcina umkhiqizo ezingeni eliphezulu ngokuqinisekisa ukuthi impahla yokusebenza, izindlela nezinqubo kwenziwa ngcono.	
17	I believe that quality is the responsibility of the quality department Ngiyakholwa ukuthi kungumsebenzi womnyango wokuqinisekisa izinga eliphezulu ukuqikelela ukuthi umsebenzi wenziwa ezingeni eliphezulu.	
18	The quality system is simple and practical to adhere to Uhlelo lokugcinwa kwezinga eliphezulu luyinto elula neyenzekayo	
19	The company awards business to suppliers based on quality and not price Inkampani inikeza umsebenzi ezinkampanini zangaphandle ngokubuka izinga lazo eliphezulu hhayi intengo.	
20	I believe quality is built into each design and process – it is not created by inspection Ngikholwa ukuthi izinga eliphezulu likhona kuzo zonke izakhiwo nakuyo yonke into eqhubekayo – akuyona into ekhandwa ngenkathi sekuhlolwa	
21	I am held accountable when my work is not 100% right first time Ngibophezelekile ukuthi ngiziphendulele uma umsebenzi wami ungenzekile ngendlela egculisayo kusukela ngiwuqala.	

THANK YOU FOR COMPLETING THIS SURVEY
NGIYABONGA NGOKUPHENDULA LE MIBUZO

KINDLY REMEMBER TO INDICATE YOUR GRADE & DEPARTMENT BELOW

UKHUMBULE UKUGCWALISA ISIKHUNDLA SAKHO NEGAMA LOMNYANGO NGEZANSI

DEPARTMENT/ UMNYANGO	TICK CORRECT DEPARTMENT/ KHOMBISA NGOPHAWU UMNYANGO OFANELE
(A)RESEARCH & DEVELOPMENT	
(B)SALES	
(C)FINANCE/ADMINISTRATION	
(D)HUMAN RESOURCES	
(E)RAW MATERIAL/PACKAGING STORE	
(F)ENGINEERING	
(G)COMPLIANCE (SHEQ)	
(H)DISTRIBUTION	
(I)PRODUCTION	
(J)PURCHASING/PLANNING	

GRADE/ISIKHUNDLA	TICK CORRECT GRADE/KHOMBISA NGOPHAWU ISIKHUNDLA ESIFANELE
O	
P	
AO	
SP	
MP	

Appendix C - Covering letter

Dear Team member

I am currently studying towards my Masters degree in Business Administration. For the purposes of my study, I intend to carry out research on employee perception of quality at the Dulux (Pty) Ltd.,Umbogintwini site. The investigation does require the completion of a questionnaire by the employees. Kindly note that by responding to the questionnaire, you would not only be making a valuable contribution to this research, but also provide valuable information that has a bearing on the success and effectiveness of the quality management system in the company.

It would therefore be appreciated if you would complete the attached questionnaire. Your individual responses are of importance to this research so therefore please do not consult with your other team members. The answering of questions in this questionnaire should not take more than 20 minutes.

You are assured on the confidentiality of your responses, as it would be done anonymously, in that your name is not required on the questionnaire. Your participation is voluntary and you may withdraw at any time without giving any reasons. Kindly deposit your completed questionnaire into the special box placed in each of the various departments by no later than 31 January 2006 .
Thank you for your co-operation and the time that you have set aside for this research.

Yours faithfully
Pradesh Naidu
Research Supervisor : Dr Jeeva Govender
Senior Lecturer : Department of Marketing
Faculty of Commerce : DIT
031- 308 5425 (T)

Covering Letter for the Employees: Zulu conversion

Mfowethu /Dadewethu esisebenza naye

Ngingumfundi owenza iziqu zeMasters kuBusiness Administration. Ukuze ngiqedele izifundo zami, ngifisa ukwenza ucwaningo kulesi sihloko: Indlela abasebenzi ababuka ngayo ukuqinisekiswa kwezinga eliphezulu lomkhiqizo eDulux (Pty) Ltd., Umbogintwini. Lolu cwaningo ludinga abasebenzi bagcwalise leli phepha elinemibuzo .

Qaphela lokhu, ukuthi ngokuphendula le mibuzo uzobe ungaphumelelisi kuphela lolu cwaningo, kodwa futhi uzobe unikeza ulwazi olubalulekile oluzoba nomphumela omuhle ekwenzeni uhlelo lokuphathwa kwenkampani yakho lube sezingeni eliphezulu .

Ngiyothokoza kakhulu uma ungangiphendulela le mibuzo. Izimpendulo zakho zibaluleke kakhulu kulolu cwaningo ngakho ungazikhathazi ngokubuza komunye enisebenza naye. Ukuphendula le mibuzo akufanele kweqe emizuzwini eyi-20 .

Ngiyakuqinisekisa ukuthi izimpendulo zakho ziyimfihlo njengoba ngikuphendulisa le mibuzo ngaphandle kokudinga igama lakho. Uma usuqedile ukuphendula imibuzo ngicela usebenzise imvilophi oyinikiwe ukufaka izimpendulo zakho bese uyivala uyifake ebhokisini eliyisipesheli elikhona kuleso naleso sigceme emsebenzini wakho engakedluli umhlaka 31 January 2006.

Ngiyabonga kakhulu ubambiswano olukhombisile nesikhathi osichithile usiza kulolu cwaningo.

Yimina Ozithobayo
uPradesh Naidu
Research Supervisor : Dr Jeeva Govender
Senior Lecturer : Department of Marketing
Faculty of Commerce : DIT
031- 308 5425 (T)

Appendix D - Reliability statistics

Reliability Statistics

Cronbach's Alpha	N of Items
.797	21

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Q1	53.65	28.829	.462	.786
Q2	53.66	29.446	.398	.790
Q3	53.75	28.668	.383	.788
Q4	53.66	29.626	.347	.792
Q5	53.87	27.873	.410	.786
Q6	53.94	28.196	.298	.794
Q7	53.87	27.933	.365	.789
Q8	53.99	26.050	.610	.772
Q9	53.86	28.401	.330	.791
Q10	53.85	27.248	.501	.780
Q11	53.70	29.031	.388	.789
Q12	54.06	27.816	.334	.791
Q13	53.66	28.726	.473	.786
Q14	53.68	28.379	.528	.783
Q15	53.67	29.662	.323	.792
Q16	53.74	29.573	.243	.795
Q17	54.60	29.142	.084	.818
Q18	53.97	27.689	.407	.786
Q19	54.33	27.402	.359	.790
Q20	53.97	27.589	.435	.784
Q21	53.77	28.958	.303	.792

Appendix E - Statistical analysis

Chisquare

Q1

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	4	3.8	3.8	3.8
	Dont know	1	1.0	1.0	4.8
	Agree	99	95.2	95.2	100.0
	Total	104	100.0	100.0	

Test Statistics

	Chi-Square[a]	df	p
Q1	179.212	2	.000

a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 34.7.

Q2

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	1	1.0	1.0	1.0
	Dont know	8	7.7	7.7	8.7
	Agree	95	91.3	91.3	100.0
	Total	104	100.0	100.0	

Test Statistics

	Chi-Square[a]	df	p
Q2	158.212	2	.000

a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 34.7.

Q3

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	5	4.8	4.9	4.9
	Dont know	9	8.7	8.7	13.6
	Agree	89	85.6	86.4	100.0
	Total	103	99.0	100.0	
Missing	System	1	1.0		
Total		104	100.0		

Test Statistics

	Chi-Square[a]	df	p
Q3	130.796	2	.000

a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 34.3.

Q4

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	1	1.0	1.0	1.0
	Dont know	8	7.7	7.7	8.7
	Agree	95	91.3	91.3	100.0
	Total	104	100.0	100.0	

Test Statistics

	Chi-Square[a]	df	p
Q4	158.212	2	.000

a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 34.7.

Q5

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	9	8.7	8.7	8.7
	Dont know	13	12.5	12.5	21.2
	Agree	82	78.8	78.8	100.0
	Total	104	100.0	100.0	

Test Statistics

	Chi-Square[a]	df	p
Q5	97.173	2	.000

a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 34.7.

Q6

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	14	13.5	13.5	13.5
	Dont know	11	10.6	10.6	24.0
	Agree	79	76.0	76.0	100.0
	Total	104	100.0	100.0	

Test Statistics

	Chi-Square[a]	df	p
Q6	85.173	2	.000

a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 34.7.

Q7

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	12	11.5	11.5	11.5
	Dont know	7	6.7	6.7	18.3
	Agree	85	81.7	81.7	100.0
	Total	104	100.0	100.0	

Test Statistics

	Chi-Square[a]	df	p
Q7	109.981	2	.000

a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 34.7.

Q8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	14	13.5	13.5	13.5
	Dont know	17	16.3	16.3	29.8
	Agree	73	70.2	70.2	100.0
	Total	104	100.0	100.0	

Test Statistics

	Chi-Square[a]	df	p
Q8	63.712	2	.000

a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 34.7.

Q9

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	9	8.7	8.7	8.7
	Dont know	12	11.5	11.5	20.2
	Agree	83	79.8	79.8	100.0
	Total	104	100.0	100.0	

Test Statistics

	Chi-Square[a]	df	p
Q9	101.212	2	.000

a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 34.7.

Q10

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	11	10.6	10.6	10.6
	Dont know	10	9.6	9.6	20.2
	Agree	83	79.8	79.8	100.0
	Total	104	100.0	100.0	

Test Statistics

	Chi-Square[a]	df	p
Q10	101.096	2	.000

a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 34.7.

Q11

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	3	2.9	2.9	2.9
	Dont know	8	7.7	7.7	10.6
	Agree	93	89.4	89.4	100.0
	Total	104	100.0	100.0	

Test Statistics

	Chi-Square[a]	df	p
Q11	147.596	2	.000

a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 34.7.

Q12

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	15	14.4	14.4	14.4
	Dont know	20	19.2	19.2	33.7
	Agree	69	66.3	66.3	100.0
	Total	104	100.0	100.0	

Test Statistics

	Chi-Square[a]	df	p
Q12	51.365	2	.000

a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 34.7.

Q13

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	4	3.8	3.8	3.8
	Dont know	3	2.9	2.9	6.7
	Agree	97	93.3	93.3	100.0
	Total	104	100.0	100.0	

Test Statistics

	Chi-Square[a]	df	p
Q13	168.135	2	.000

a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 34.7.

Q14

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	4	3.8	3.8	3.8
	Dont know	4	3.8	3.8	7.7
	Agree	96	92.3	92.3	100.0
	Total	104	100.0	100.0	

Test Statistics

	Chi-Square[a]	df	p
Q14	162.769	2	.000

a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 34.7.

Q15

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	1	1.0	1.0	1.0
	Dont know	10	9.6	9.6	10.6
	Agree	93	89.4	89.4	100.0
	Total	104	100.0	100.0	

Test Statistics

	Chi-Square[a]	df	p
Q15	148.404	2	.000

a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 34.7.

Q16

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	3	2.9	2.9	2.9
	Dont know	12	11.5	11.5	14.4
	Agree	89	85.6	85.6	100.0
	Total	104	100.0	100.0	

Test Statistics

	Chi-Square[a]	df	p
Q16	128.904	2	.000

a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 34.7.

Q17

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	51	49.0	49.0	49.0
	Dont know	6	5.8	5.8	54.8
	Agree	47	45.2	45.2	100.0
	Total	104	100.0	100.0	

Test Statistics

	Chi-Square[a]	df	p
Q17	35.788	2	.000

a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 34.7.

Q18

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	10	9.6	9.8	9.8
	Dont know	21	20.2	20.6	30.4
	Agree	71	68.3	69.6	100.0
	Total	102	98.1	100.0	
Missing	System	2	1.9		
Total		104	100.0		

Test Statistics

	Chi-Square[a]	df	p
Q18	62.176	2	.000

a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 34.0.

Q19

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	22	21.2	21.2	21.2
	Dont know	35	33.7	33.7	54.8
	Agree	47	45.2	45.2	100.0
	Total	104	100.0	100.0	

Test Statistics

	Chi-Square[a]	df	p
Q19	9.019	2	.011

a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 34.7.

Q20

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	9	8.7	8.7	8.7
	Dont know	23	22.1	22.1	30.8
	Agree	72	69.2	69.2	100.0
	Total	104	100.0	100.0	

Test Statistics

	Chi-Square[a]	df	p
Q20	63.135	2	.000

a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 34.7.

Q21

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	6	5.8	5.8	5.8
	Dont know	10	9.6	9.6	15.4
	Agree	88	84.6	84.6	100.0
	Total	104	100.0	100.0	

Test Statistics

	Chi-Square[a]	df	p
Q21	123.308	2	.000

a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 34.7.

Appendix F - Cross tabulation

Department * Q1 Crosstabulation

			Q1			
			Disagree	Dont know	Agree	Total
Department	Research & Development	Count	0	0	12	12
		% of Total	.0%	.0%	11.5%	11.5%
	Sales	Count	0	0	4	4
		% of Total	.0%	.0%	3.8%	3.8%
	Finance or Admin	Count	0	0	1	1
		% of Total	.0%	.0%	1.0%	1.0%
	Human resources	Count	0	0	3	3
		% of Total	.0%	.0%	2.9%	2.9%
	Raw material or Packaging store	Count	0	1	10	11
		% of Total	.0%	1.0%	9.6%	10.6%
	Engineering	Count	0	0	14	14
		% of Total	.0%	.0%	13.5%	13.5%
	Compliance (Sheq)	Count	0	0	6	6
		% of Total	.0%	.0%	5.8%	5.8%
	Distribution	Count	1	0	19	20
		% of Total	1.0%	.0%	18.3%	19.2%
	Production	Count	3	0	22	25
		% of Total	2.9%	.0%	21.2%	24.0%
	Purchasing or Planning	Count	0	0	8	8
		% of Total	.0%	.0%	7.7%	7.7%
Total		Count	4	1	99	104
		% of Total	3.8%	1.0%	95.2%	100.0%

Department * Q2 Crosstabulation

			Q2			
			Disagree	Dont know	Agree	Total
Department	Research & Development	Count	0	0	12	12
		% of Total	.0%	.0%	11.5%	11.5%
	Sales	Count	0	0	4	4
		% of Total	.0%	.0%	3.8%	3.8%
	Finance or Admin	Count	0	0	1	1
		% of Total	.0%	.0%	1.0%	1.0%
	Human resources	Count	0	0	3	3
		% of Total	.0%	.0%	2.9%	2.9%
	Raw material or Packaging store	Count	0	2	9	11
		% of Total	.0%	1.9%	8.7%	10.6%
	Engineering	Count	0	3	11	14
		% of Total	.0%	2.9%	10.6%	13.5%
	Compliance (Sheq)	Count	0	1	5	6
		% of Total	.0%	1.0%	4.8%	5.8%
	Distribution	Count	0	0	20	20
		% of Total	.0%	.0%	19.2%	19.2%
	Production	Count	1	2	22	25
		% of Total	1.0%	1.9%	21.2%	24.0%
	Purchasing or Planning	Count	0	0	8	8
		% of Total	.0%	.0%	7.7%	7.7%
Total		Count	1	8	95	104
		% of Total	1.0%	7.7%	91.3%	100.0%

Department * Q3 Crosstabulation

			Q3			
			Disagree	Dont know	Agree	Total
Department	Research & Development	Count	0	2	10	12
		% of Total	.0%	1.9%	9.7%	11.7%
	Sales	Count	0	0	4	4
		% of Total	.0%	.0%	3.9%	3.9%
	Finance or Admin	Count	0	1	0	1
		% of Total	.0%	1.0%	.0%	1.0%
	Human resources	Count	0	0	3	3
		% of Total	.0%	.0%	2.9%	2.9%
	Raw material or Packaging store	Count	1	0	10	11
		% of Total	1.0%	.0%	9.7%	10.7%
	Engineering	Count	0	3	11	14
		% of Total	.0%	2.9%	10.7%	13.6%
	Compliance (Sheq)	Count	0	0	6	6
		% of Total	.0%	.0%	5.8%	5.8%
	Distribution	Count	0	0	19	19
		% of Total	.0%	.0%	18.4%	18.4%
	Production	Count	4	3	18	25
		% of Total	3.9%	2.9%	17.5%	24.3%
	Purchasing or Planning	Count	0	0	8	8
		% of Total	.0%	.0%	7.8%	7.8%
Total		Count	5	9	89	103
		% of Total	4.9%	8.7%	86.4%	100.0%

Department * Q4 Crosstabulation

			Q4			
			Disagree	Dont know	Agree	Total
Department	Research & Development	Count	0	0	12	12
		% of Total	.0%	.0%	11.5%	11.5%
	Sales	Count	0	0	4	4
		% of Total	.0%	.0%	3.8%	3.8%
	Finance or Admin	Count	0	0	1	1
		% of Total	.0%	.0%	1.0%	1.0%
	Human resources	Count	0	0	3	3
		% of Total	.0%	.0%	2.9%	2.9%
	Raw material or Packaging store	Count	0	0	11	11
		% of Total	.0%	.0%	10.6%	10.6%
	Engineering	Count	0	4	10	14
		% of Total	.0%	3.8%	9.6%	13.5%
	Compliance (Sheq)	Count	0	1	5	6
		% of Total	.0%	1.0%	4.8%	5.8%
	Distribution	Count	0	0	20	20
		% of Total	.0%	.0%	19.2%	19.2%
	Production	Count	1	3	21	25
		% of Total	1.0%	2.9%	20.2%	24.0%
	Purchasing or Planning	Count	0	0	8	8
		% of Total	.0%	.0%	7.7%	7.7%
Total		Count	1	8	95	104
		% of Total	1.0%	7.7%	91.3%	100.0%

Department * Q5 Crosstabulation

			Q5			Total
			Disagree	Dont know	Agree	
Department	Research & Development	Count	0	2	10	12
		% of Total	.0%	1.9%	9.6%	11.5%
	Sales	Count	0	1	3	4
		% of Total	.0%	1.0%	2.9%	3.8%
	Finance or Admin	Count	0	0	1	1
		% of Total	.0%	.0%	1.0%	1.0%
	Human resources	Count	0	0	3	3
		% of Total	.0%	.0%	2.9%	2.9%
	Raw material or Packaging store	Count	3	0	8	11
		% of Total	2.9%	.0%	7.7%	10.6%
	Engineering	Count	0	2	12	14
		% of Total	.0%	1.9%	11.5%	13.5%
	Compliance (Sheq)	Count	0	0	6	6
		% of Total	.0%	.0%	5.8%	5.8%
	Distribution	Count	3	3	14	20
		% of Total	2.9%	2.9%	13.5%	19.2%
	Production	Count	3	5	17	25
		% of Total	2.9%	4.8%	16.3%	24.0%
	Purchasing or Planning	Count	0	0	8	8
		% of Total	.0%	.0%	7.7%	7.7%
Total		Count	9	13	82	104
		% of Total	8.7%	12.5%	78.8%	100.0%

Department * Q6 Crosstabulation

			Q6			Total
			Disagree	Dont know	Agree	
Department	Research & Development	Count	2	1	9	12
		% of Total	1.9%	1.0%	8.7%	11.5%
	Sales	Count	1	1	2	4
		% of Total	1.0%	1.0%	1.9%	3.8%
	Finance or Admin	Count	0	0	1	1
		% of Total	.0%	.0%	1.0%	1.0%
	Human resources	Count	0	0	3	3
		% of Total	.0%	.0%	2.9%	2.9%
	Raw material or Packaging store	Count	3	0	8	11
		% of Total	2.9%	.0%	7.7%	10.6%
	Engineering	Count	4	2	8	14
		% of Total	3.8%	1.9%	7.7%	13.5%
	Compliance (Sheq)	Count	0	0	6	6
		% of Total	.0%	.0%	5.8%	5.8%
	Distribution	Count	2	4	14	20
		% of Total	1.9%	3.8%	13.5%	19.2%
	Production	Count	1	3	21	25
		% of Total	1.0%	2.9%	20.2%	24.0%
	Purchasing or Planning	Count	1	0	7	8
		% of Total	1.0%	.0%	6.7%	7.7%
Total		Count	14	11	79	104
		% of Total	13.5%	10.6%	76.0%	100.0%

Department * Q7 Crosstabulation

			Q7			Total
			Disagree	Dont know	Agree	
Department	Research & Development	Count	1	0	11	12
		% of Total	1.0%	.0%	10.6%	11.5%
	Sales	Count	0	0	4	4
		% of Total	.0%	.0%	3.8%	3.8%
	Finance or Admin	Count	0	0	1	1
		% of Total	.0%	.0%	1.0%	1.0%
	Human resources	Count	0	0	3	3
		% of Total	.0%	.0%	2.9%	2.9%
	Raw material or Packaging store	Count	1	1	9	11
		% of Total	1.0%	1.0%	8.7%	10.6%
	Engineering	Count	2	2	10	14
		% of Total	1.9%	1.9%	9.6%	13.5%
	Compliance (Sheq)	Count	1	0	5	6
		% of Total	1.0%	.0%	4.8%	5.8%
	Distribution	Count	3	0	17	20
		% of Total	2.9%	.0%	16.3%	19.2%
	Production	Count	4	4	17	25
		% of Total	3.8%	3.8%	16.3%	24.0%
	Purchasing or Planning	Count	0	0	8	8
		% of Total	.0%	.0%	7.7%	7.7%
Total		Count	12	7	85	104
		% of Total	11.5%	6.7%	81.7%	100.0%

Department * Q8 Crosstabulation

			Q8			Total
			Disagree	Dont know	Agree	
Department	Research & Development	Count	1	1	10	12
		% of Total	1.0%	1.0%	9.6%	11.5%
	Sales	Count	0	1	3	4
		% of Total	.0%	1.0%	2.9%	3.8%
	Finance or Admin	Count	0	0	1	1
		% of Total	.0%	.0%	1.0%	1.0%
	Human resources	Count	0	0	3	3
		% of Total	.0%	.0%	2.9%	2.9%
	Raw material or Packaging store	Count	2	1	8	11
		% of Total	1.9%	1.0%	7.7%	10.6%
	Engineering	Count	1	3	10	14
		% of Total	1.0%	2.9%	9.6%	13.5%
	Compliance (Sheq)	Count	0	0	6	6
		% of Total	.0%	.0%	5.8%	5.8%
	Distribution	Count	3	3	14	20
		% of Total	2.9%	2.9%	13.5%	19.2%
	Production	Count	6	7	12	25
		% of Total	5.8%	6.7%	11.5%	24.0%
	Purchasing or Planning	Count	1	1	6	8
		% of Total	1.0%	1.0%	5.8%	7.7%
Total		Count	14	17	73	104
		% of Total	13.5%	16.3%	70.2%	100.0%

Department * Q9 Crosstabulation

			Q9			Total
			Disagree	Dont know	Agree	
Department	Research & Development	Count	2	0	10	12
		% of Total	1.9%	.0%	9.6%	11.5%
	Sales	Count	0	2	2	4
		% of Total	.0%	1.9%	1.9%	3.8%
	Finance or Admin	Count	0	0	1	1
		% of Total	.0%	.0%	1.0%	1.0%
	Human resources	Count	0	0	3	3
		% of Total	.0%	.0%	2.9%	2.9%
	Raw material or Packaging store	Count	1	2	8	11
		% of Total	1.0%	1.9%	7.7%	10.6%
	Engineering	Count	0	4	10	14
		% of Total	.0%	3.8%	9.6%	13.5%
	Compliance (Sheq)	Count	0	0	6	6
		% of Total	.0%	.0%	5.8%	5.8%
	Distribution	Count	1	1	18	20
		% of Total	1.0%	1.0%	17.3%	19.2%
	Production	Count	2	3	20	25
		% of Total	1.9%	2.9%	19.2%	24.0%
	Purchasing or Planning	Count	3	0	5	8
		% of Total	2.9%	.0%	4.8%	7.7%
Total		Count	9	12	83	104
		% of Total	8.7%	11.5%	79.8%	100.0%

Department * Q10 Crosstabulation

			Q10			Total
			Disagree	Dont know	Agree	
Department	Research & Development	Count	0	2	10	12
		% of Total	.0%	1.9%	9.6%	11.5%
	Sales	Count	0	1	3	4
		% of Total	.0%	1.0%	2.9%	3.8%
	Finance or Admin	Count	0	0	1	1
		% of Total	.0%	.0%	1.0%	1.0%
	Human resources	Count	0	0	3	3
		% of Total	.0%	.0%	2.9%	2.9%
	Raw material or Packaging store	Count	2	3	6	11
		% of Total	1.9%	2.9%	5.8%	10.6%
	Engineering	Count	1	1	12	14
		% of Total	1.0%	1.0%	11.5%	13.5%
	Compliance (Sheq)	Count	0	0	6	6
		% of Total	.0%	.0%	5.8%	5.8%
	Distribution	Count	1	1	18	20
		% of Total	1.0%	1.0%	17.3%	19.2%
	Production	Count	4	2	19	25
		% of Total	3.8%	1.9%	18.3%	24.0%
	Purchasing or Planning	Count	3	0	5	8
		% of Total	2.9%	.0%	4.8%	7.7%
Total		Count	11	10	83	104
		% of Total	10.6%	9.6%	79.8%	100.0%

Department * Q11 Crosstabulation

			Q11			Total
			Disagree	Dont know	Agree	
Department	Research & Development	Count	0	0	12	12
		% of Total	.0%	.0%	11.5%	11.5%
	Sales	Count	0	1	3	4
		% of Total	.0%	1.0%	2.9%	3.8%
	Finance or Admin	Count	0	0	1	1
		% of Total	.0%	.0%	1.0%	1.0%
	Human resources	Count	0	0	3	3
		% of Total	.0%	.0%	2.9%	2.9%
	Raw material or Packaging store	Count	0	3	8	11
		% of Total	.0%	2.9%	7.7%	10.6%
	Engineering	Count	1	1	12	14
		% of Total	1.0%	1.0%	11.5%	13.5%
	Compliance (Sheq)	Count	0	0	6	6
		% of Total	.0%	.0%	5.8%	5.8%
	Distribution	Count	1	0	19	20
		% of Total	1.0%	.0%	18.3%	19.2%
	Production	Count	1	3	21	25
		% of Total	1.0%	2.9%	20.2%	24.0%
	Purchasing or Planning	Count	0	0	8	8
		% of Total	.0%	.0%	7.7%	7.7%
Total		Count	3	8	93	104
		% of Total	2.9%	7.7%	89.4%	100.0%

Department * Q12 Crosstabulation

			Q12			
			Disagree	Dont know	Agree	Total
Department	Research & Development	Count	0	1	11	12
		% of Total	.0%	1.0%	10.6%	11.5%
	Sales	Count	0	1	3	4
		% of Total	.0%	1.0%	2.9%	3.8%
	Finance or Admin	Count	0	0	1	1
		% of Total	.0%	.0%	1.0%	1.0%
	Human resources	Count	0	0	3	3
		% of Total	.0%	.0%	2.9%	2.9%
	Raw material or Packaging store	Count	2	2	7	11
		% of Total	1.9%	1.9%	6.7%	10.6%
	Engineering	Count	1	4	9	14
		% of Total	1.0%	3.8%	8.7%	13.5%
	Compliance (Sheq)	Count	0	0	6	6
		% of Total	.0%	.0%	5.8%	5.8%
	Distribution	Count	4	3	13	20
		% of Total	3.8%	2.9%	12.5%	19.2%
	Production	Count	5	9	11	25
		% of Total	4.8%	8.7%	10.6%	24.0%
	Purchasing or Planning	Count	3	0	5	8
		% of Total	2.9%	.0%	4.8%	7.7%
Total		Count	15	20	69	104
		% of Total	14.4%	19.2%	66.3%	100.0%

Department * Q13 Crosstabulation

			Q13			Total
			Disagree	Dont know	Agree	
Department	Research & Development	Count	0	0	12	12
		% of Total	.0%	.0%	11.5%	11.5%
	Sales	Count	0	0	4	4
		% of Total	.0%	.0%	3.8%	3.8%
	Finance or Admin	Count	0	0	1	1
		% of Total	.0%	.0%	1.0%	1.0%
	Human resources	Count	0	0	3	3
		% of Total	.0%	.0%	2.9%	2.9%
	Raw material or Packaging store	Count	1	1	9	11
		% of Total	1.0%	1.0%	8.7%	10.6%
	Engineering	Count	1	0	13	14
		% of Total	1.0%	.0%	12.5%	13.5%
	Compliance (Sheq)	Count	0	0	6	6
		% of Total	.0%	.0%	5.8%	5.8%
	Distribution	Count	0	0	20	20
		% of Total	.0%	.0%	19.2%	19.2%
	Production	Count	2	2	21	25
		% of Total	1.9%	1.9%	20.2%	24.0%
	Purchasing or Planning	Count	0	0	8	8
		% of Total	.0%	.0%	7.7%	7.7%
Total		Count	4	3	97	104
		% of Total	3.8%	2.9%	93.3%	100.0%

Department * Q14 Crosstabulation

			Q14			Total
			Disagree	Dont know	Agree	
Department	Research & Development	Count	0	1	11	12
		% of Total	.0%	1.0%	10.6%	11.5%
	Sales	Count	0	0	4	4
		% of Total	.0%	.0%	3.8%	3.8%
	Finance or Admin	Count	0	0	1	1
		% of Total	.0%	.0%	1.0%	1.0%
	Human resources	Count	0	0	3	3
		% of Total	.0%	.0%	2.9%	2.9%
	Raw material or Packaging store	Count	2	0	9	11
		% of Total	1.9%	.0%	8.7%	10.6%
	Engineering	Count	0	1	13	14
		% of Total	.0%	1.0%	12.5%	13.5%
	Compliance (Sheq)	Count	0	0	6	6
		% of Total	.0%	.0%	5.8%	5.8%
	Distribution	Count	0	0	20	20
		% of Total	.0%	.0%	19.2%	19.2%
	Production	Count	2	2	21	25
		% of Total	1.9%	1.9%	20.2%	24.0%
	Purchasing or Planning	Count	0	0	8	8
		% of Total	.0%	.0%	7.7%	7.7%
Total		Count	4	4	96	104
		% of Total	3.8%	3.8%	92.3%	100.0%

Department * Q15 Crosstabulation

			Q15			Total
			Disagree	Dont know	Agree	
Department	Research & Development	Count	0	1	11	12
		% of Total	.0%	1.0%	10.6%	11.5%
	Sales	Count	0	0	4	4
		% of Total	.0%	.0%	3.8%	3.8%
	Finance or Admin	Count	0	0	1	1
		% of Total	.0%	.0%	1.0%	1.0%
	Human resources	Count	0	0	3	3
		% of Total	.0%	.0%	2.9%	2.9%
	Raw material or Packaging store	Count	1	4	6	11
		% of Total	1.0%	3.8%	5.8%	10.6%
	Engineering	Count	0	0	14	14
		% of Total	.0%	.0%	13.5%	13.5%
	Compliance (Sheq)	Count	0	0	6	6
		% of Total	.0%	.0%	5.8%	5.8%
	Distribution	Count	0	0	20	20
		% of Total	.0%	.0%	19.2%	19.2%
	Production	Count	0	5	20	25
		% of Total	.0%	4.8%	19.2%	24.0%
	Purchasing or Planning	Count	0	0	8	8
		% of Total	.0%	.0%	7.7%	7.7%
Total		Count	1	10	93	104
		% of Total	1.0%	9.6%	89.4%	100.0%

Department * Q16 Crosstabulation

			Q16			
			Disagree	Dont know	Agree	Total
Department	Research & Development	Count	0	0	12	12
		% of Total	.0%	.0%	11.5%	11.5%
	Sales	Count	0	1	3	4
		% of Total	.0%	1.0%	2.9%	3.8%
	Finance or Admin	Count	0	0	1	1
		% of Total	.0%	.0%	1.0%	1.0%
	Human resources	Count	0	0	3	3
		% of Total	.0%	.0%	2.9%	2.9%
	Raw material or Packaging store	Count	1	1	9	11
		% of Total	1.0%	1.0%	8.7%	10.6%
	Engineering	Count	0	2	12	14
		% of Total	.0%	1.9%	11.5%	13.5%
	Compliance (Sheq)	Count	0	0	6	6
		% of Total	.0%	.0%	5.8%	5.8%
	Distribution	Count	0	2	18	20
		% of Total	.0%	1.9%	17.3%	19.2%
	Production	Count	2	4	19	25
		% of Total	1.9%	3.8%	18.3%	24.0%
	Purchasing or Planning	Count	0	2	6	8
		% of Total	.0%	1.9%	5.8%	7.7%
Total		Count	3	12	89	104
		% of Total	2.9%	11.5%	85.6%	100.0%

Department * Q17 Crosstabulation

			Q17			
			Disagree	Dont know	Agree	Total
Department	Research & Development	Count	8	0	4	12
		% of Total	7.7%	.0%	3.8%	11.5%
	Sales	Count	3	0	1	4
		% of Total	2.9%	.0%	1.0%	3.8%
	Finance or Admin	Count	0	0	1	1
		% of Total	.0%	.0%	1.0%	1.0%
	Human resources	Count	3	0	0	3
		% of Total	2.9%	.0%	.0%	2.9%
	Raw material or Packaging store	Count	2	2	7	11
		% of Total	1.9%	1.9%	6.7%	10.6%
	Engineering	Count	6	0	8	14
		% of Total	5.8%	.0%	7.7%	13.5%
	Compliance (Sheq)	Count	6	0	0	6
		% of Total	5.8%	.0%	.0%	5.8%
	Distribution	Count	5	2	13	20
		% of Total	4.8%	1.9%	12.5%	19.2%
	Production	Count	11	1	13	25
		% of Total	10.6%	1.0%	12.5%	24.0%
	Purchasing or Planning	Count	7	1	0	8
		% of Total	6.7%	1.0%	.0%	7.7%
Total		Count	51	6	47	104
		% of Total	49.0%	5.8%	45.2%	100.0%

Department * Q18 Crosstabulation

			Q18			Total
			Disagree	Dont know	Agree	
Department	Research & Development	Count	1	3	8	12
		% of Total	1.0%	2.9%	7.8%	11.8%
	Sales	Count	0	1	3	4
		% of Total	.0%	1.0%	2.9%	3.9%
	Finance or Admin	Count	0	0	1	1
		% of Total	.0%	.0%	1.0%	1.0%
	Human resources	Count	1	0	2	3
		% of Total	1.0%	.0%	2.0%	2.9%
	Raw material or Packaging store	Count	1	3	6	10
		% of Total	1.0%	2.9%	5.9%	9.8%
	Engineering	Count	2	3	9	14
		% of Total	2.0%	2.9%	8.8%	13.7%
	Compliance (Sheq)	Count	0	1	5	6
		% of Total	.0%	1.0%	4.9%	5.9%
	Distribution	Count	2	3	14	19
		% of Total	2.0%	2.9%	13.7%	18.6%
	Production	Count	3	7	15	25
		% of Total	2.9%	6.9%	14.7%	24.5%
	Purchasing or Planning	Count	0	0	8	8
		% of Total	.0%	.0%	7.8%	7.8%
Total		Count	10	21	71	102
		% of Total	9.8%	20.6%	69.6%	100.0%

Department * Q19 Crosstabulation

			Q19			
			Disagree	Dont know	Agree	Total
Department	Research & Development	Count	1	3	8	12
		% of Total	1.0%	2.9%	7.7%	11.5%
	Sales	Count	0	2	2	4
		% of Total	.0%	1.9%	1.9%	3.8%
	Finance or Admin	Count	0	0	1	1
		% of Total	.0%	.0%	1.0%	1.0%
	Human resources	Count	0	1	2	3
		% of Total	.0%	1.0%	1.9%	2.9%
	Raw material or Packaging store	Count	1	7	3	11
		% of Total	1.0%	6.7%	2.9%	10.6%
	Engineering	Count	3	1	10	14
		% of Total	2.9%	1.0%	9.6%	13.5%
	Compliance (Sheq)	Count	4	0	2	6
		% of Total	3.8%	.0%	1.9%	5.8%
	Distribution	Count	1	6	13	20
		% of Total	1.0%	5.8%	12.5%	19.2%
	Production	Count	6	14	5	25
		% of Total	5.8%	13.5%	4.8%	24.0%
	Purchasing or Planning	Count	6	1	1	8
		% of Total	5.8%	1.0%	1.0%	7.7%
Total		Count	22	35	47	104
		% of Total	21.2%	33.7%	45.2%	100.0%

Department * Q20 Crosstabulation

			Q20			
			Disagree	Dont know	Agree	Total
Department	Research & Development	Count	0	1	11	12
		% of Total	.0%	1.0%	10.6%	11.5%
	Sales	Count	0	0	4	4
		% of Total	.0%	.0%	3.8%	3.8%
	Finance or Admin	Count	0	0	1	1
		% of Total	.0%	.0%	1.0%	1.0%
	Human resources	Count	0	0	3	3
		% of Total	.0%	.0%	2.9%	2.9%
	Raw material or Packaging store	Count	1	2	8	11
		% of Total	1.0%	1.9%	7.7%	10.6%
	Engineering	Count	0	1	13	14
		% of Total	.0%	1.0%	12.5%	13.5%
	Compliance (Sheq)	Count	0	0	6	6
		% of Total	.0%	.0%	5.8%	5.8%
	Distribution	Count	1	9	10	20
		% of Total	1.0%	8.7%	9.6%	19.2%
	Production	Count	5	9	11	25
		% of Total	4.8%	8.7%	10.6%	24.0%
	Purchasing or Planning	Count	2	1	5	8
		% of Total	1.9%	1.0%	4.8%	7.7%
Total		Count	9	23	72	104
		% of Total	8.7%	22.1%	69.2%	100.0%

Department * Q21 Crosstabulation

			Q21			
			Disagree	Dont know	Agree	Total
Department	Research & Development	Count	0	0	12	12
		% of Total	.0%	.0%	11.5%	11.5%
	Sales	Count	0	0	4	4
		% of Total	.0%	.0%	3.8%	3.8%
	Finance or Admin	Count	0	0	1	1
		% of Total	.0%	.0%	1.0%	1.0%
	Human resources	Count	0	0	3	3
		% of Total	.0%	.0%	2.9%	2.9%
	Raw material or Packaging store	Count	0	2	9	11
		% of Total	.0%	1.9%	8.7%	10.6%
	Engineering	Count	2	2	10	14
		% of Total	1.9%	1.9%	9.6%	13.5%
	Compliance (Sheq)	Count	0	0	6	6
		% of Total	.0%	.0%	5.8%	5.8%
	Distribution	Count	0	4	16	20
		% of Total	.0%	3.8%	15.4%	19.2%
	Production	Count	3	2	20	25
		% of Total	2.9%	1.9%	19.2%	24.0%
	Purchasing or Planning	Count	1	0	7	8
		% of Total	1.0%	.0%	6.7%	7.7%
Total		Count	6	10	88	104
		% of Total	5.8%	9.6%	84.6%	100.0%

Grade * Q1 Crosstabulation

			Q1			
			Disagree	Dont know	Agree	Total
Grade	O	Count	2	1	29	32
		% of Total	1.9%	1.0%	27.9%	30.8%
	P	Count	1	0	5	6
		% of Total	1.0%	.0%	4.8%	5.8%
	AO	Count	1	0	46	47
		% of Total	1.0%	.0%	44.2%	45.2%
	SP	Count	0	0	10	10
		% of Total	.0%	.0%	9.6%	9.6%
	MP	Count	0	0	9	9
		% of Total	.0%	.0%	8.7%	8.7%
Total		Count	4	1	99	104
		% of Total	3.8%	1.0%	95.2%	100.0%

Grade * Q2 Crosstabulation

			Q2			
			Disagree	Dont know	Agree	Total
Grade	O	Count	1	2	29	32
		% of Total	1.0%	1.9%	27.9%	30.8%
	P	Count	0	3	3	6
		% of Total	.0%	2.9%	2.9%	5.8%
	AO	Count	0	2	45	47
		% of Total	.0%	1.9%	43.3%	45.2%
	SP	Count	0	1	9	10
		% of Total	.0%	1.0%	8.7%	9.6%
	MP	Count	0	0	9	9
		% of Total	.0%	.0%	8.7%	8.7%
Total		Count	1	8	95	104
		% of Total	1.0%	7.7%	91.3%	100.0%

Grade * Q3 Crosstabulation

			Q3			
			Disagree	Dont know	Agree	Total
Grade	O	Count	2	3	26	31
		% of Total	1.9%	2.9%	25.2%	30.1%
	P	Count	2	0	4	6
		% of Total	1.9%	.0%	3.9%	5.8%
	AO	Count	1	3	43	47
		% of Total	1.0%	2.9%	41.7%	45.6%
	SP	Count	0	2	8	10
		% of Total	.0%	1.9%	7.8%	9.7%
	MP	Count	0	1	8	9
		% of Total	.0%	1.0%	7.8%	8.7%
Total		Count	5	9	89	103
		% of Total	4.9%	8.7%	86.4%	100.0%

Grade * Q4 Crosstabulation

			Q4			
			Disagree	Dont know	Agree	Total
Grade	O	Count	1	1	30	32
		% of Total	1.0%	1.0%	28.8%	30.8%
	P	Count	0	3	3	6
		% of Total	.0%	2.9%	2.9%	5.8%
	AO	Count	0	4	43	47
		% of Total	.0%	3.8%	41.3%	45.2%
	SP	Count	0	0	10	10
		% of Total	.0%	.0%	9.6%	9.6%
	MP	Count	0	0	9	9
		% of Total	.0%	.0%	8.7%	8.7%
Total		Count	1	8	95	104
		% of Total	1.0%	7.7%	91.3%	100.0%

Grade * Q5 Crosstabulation

			Q5			
			Disagree	Dont know	Agree	Total
Grade	O	Count	6	4	22	32
		% of Total	5.8%	3.8%	21.2%	30.8%
	P	Count	0	2	4	6
		% of Total	.0%	1.9%	3.8%	5.8%
	AO	Count	2	6	39	47
		% of Total	1.9%	5.8%	37.5%	45.2%
	SP	Count	1	0	9	10
		% of Total	1.0%	.0%	8.7%	9.6%
	MP	Count	0	1	8	9
		% of Total	.0%	1.0%	7.7%	8.7%
Total		Count	9	13	82	104
		% of Total	8.7%	12.5%	78.8%	100.0%

Grade * Q6 Crosstabulation

			Q6			
			Disagree	Dont know	Agree	Total
Grade	O	Count	3	3	26	32
		% of Total	2.9%	2.9%	25.0%	30.8%
	P	Count	1	0	5	6
		% of Total	1.0%	.0%	4.8%	5.8%
	AO	Count	6	6	35	47
		% of Total	5.8%	5.8%	33.7%	45.2%
	SP	Count	4	1	5	10
		% of Total	3.8%	1.0%	4.8%	9.6%
	MP	Count	0	1	8	9
		% of Total	.0%	1.0%	7.7%	8.7%
Total		Count	14	11	79	104
		% of Total	13.5%	10.6%	76.0%	100.0%

Grade * Q7 Crosstabulation

			Q7			
			Disagree	Dont know	Agree	Total
Grade	O	Count	6	4	22	32
		% of Total	5.8%	3.8%	21.2%	30.8%
	P	Count	0	1	5	6
		% of Total	.0%	1.0%	4.8%	5.8%
	AO	Count	5	2	40	47
		% of Total	4.8%	1.9%	38.5%	45.2%
	SP	Count	1	0	9	10
		% of Total	1.0%	.0%	8.7%	9.6%
	MP	Count	0	0	9	9
		% of Total	.0%	.0%	8.7%	8.7%
Total		Count	12	7	85	104
		% of Total	11.5%	6.7%	81.7%	100.0%

Grade * Q8 Crosstabulation

			Q8			
			Disagree	Dont know	Agree	Total
Grade	O	Count	7	6	19	32
		% of Total	6.7%	5.8%	18.3%	30.8%
	P	Count	2	2	2	6
		% of Total	1.9%	1.9%	1.9%	5.8%
	AO	Count	4	5	38	47
		% of Total	3.8%	4.8%	36.5%	45.2%
	SP	Count	0	2	8	10
		% of Total	.0%	1.9%	7.7%	9.6%
	MP	Count	1	2	6	9
		% of Total	1.0%	1.9%	5.8%	8.7%
Total		Count	14	17	73	104
		% of Total	13.5%	16.3%	70.2%	100.0%

Grade * Q9 Crosstabulation

			Q9			
			Disagree	Dont know	Agree	Total
Grade	O	Count	2	4	26	32
		% of Total	1.9%	3.8%	25.0%	30.8%
	P	Count	0	2	4	6
		% of Total	.0%	1.9%	3.8%	5.8%
	AO	Count	4	6	37	47
		% of Total	3.8%	5.8%	35.6%	45.2%
	SP	Count	0	0	10	10
		% of Total	.0%	.0%	9.6%	9.6%
	MP	Count	3	0	6	9
		% of Total	2.9%	.0%	5.8%	8.7%
Total		Count	9	12	83	104
		% of Total	8.7%	11.5%	79.8%	100.0%

Grade * Q10 Crosstabulation

			Q10			
			Disagree	Dont know	Agree	Total
Grade	O	Count	4	3	25	32
		% of Total	3.8%	2.9%	24.0%	30.8%
	P	Count	1	1	4	6
		% of Total	1.0%	1.0%	3.8%	5.8%
	AO	Count	5	3	39	47
		% of Total	4.8%	2.9%	37.5%	45.2%
	SP	Count	1	1	8	10
		% of Total	1.0%	1.0%	7.7%	9.6%
	MP	Count	0	2	7	9
		% of Total	.0%	1.9%	6.7%	8.7%
Total		Count	11	10	83	104
		% of Total	10.6%	9.6%	79.8%	100.0%

Grade * Q11 Crosstabulation

			Q11			
			Disagree	Dont know	Agree	Total
Grade	O	Count	2	4	26	32
		% of Total	1.9%	3.8%	25.0%	30.8%
	P	Count	0	0	6	6
		% of Total	.0%	.0%	5.8%	5.8%
	AO	Count	0	3	44	47
		% of Total	.0%	2.9%	42.3%	45.2%
	SP	Count	0	1	9	10
		% of Total	.0%	1.0%	8.7%	9.6%
	MP	Count	1	0	8	9
		% of Total	1.0%	.0%	7.7%	8.7%
Total		Count	3	8	93	104
		% of Total	2.9%	7.7%	89.4%	100.0%

Grade * Q12 Crosstabulation

			Q12			
			Disagree	Dont know	Agree	Total
Grade	O	Count	5	9	18	32
		% of Total	4.8%	8.7%	17.3%	30.8%
	P	Count	2	2	2	6
		% of Total	1.9%	1.9%	1.9%	5.8%
	AO	Count	7	7	33	47
		% of Total	6.7%	6.7%	31.7%	45.2%
	SP	Count	0	1	9	10
		% of Total	.0%	1.0%	8.7%	9.6%
	MP	Count	1	1	7	9
		% of Total	1.0%	1.0%	6.7%	8.7%
Total		Count	15	20	69	104
		% of Total	14.4%	19.2%	66.3%	100.0%

Grade * Q13 Crosstabulation

			Q13			
			Disagree	Dont know	Agree	Total
Grade	O	Count	3	1	28	32
		% of Total	2.9%	1.0%	26.9%	30.8%
	P	Count	0	2	4	6
		% of Total	.0%	1.9%	3.8%	5.8%
	AO	Count	1	0	46	47
		% of Total	1.0%	.0%	44.2%	45.2%
	SP	Count	0	0	10	10
		% of Total	.0%	.0%	9.6%	9.6%
	MP	Count	0	0	9	9
		% of Total	.0%	.0%	8.7%	8.7%
Total		Count	4	3	97	104
		% of Total	3.8%	2.9%	93.3%	100.0%

Grade * Q14 Crosstabulation

			Q14			
			Disagree	Dont know	Agree	Total
Grade	O	Count	3	1	28	32
		% of Total	2.9%	1.0%	26.9%	30.8%
	P	Count	0	1	5	6
		% of Total	.0%	1.0%	4.8%	5.8%
	AO	Count	1	1	45	47
		% of Total	1.0%	1.0%	43.3%	45.2%
	SP	Count	0	1	9	10
		% of Total	.0%	1.0%	8.7%	9.6%
	MP	Count	0	0	9	9
		% of Total	.0%	.0%	8.7%	8.7%
Total		Count	4	4	96	104
		% of Total	3.8%	3.8%	92.3%	100.0%

Grade * Q15 Crosstabulation

			Q15			
			Disagree	Dont know	Agree	Total
Grade	O	Count	0	7	25	32
		% of Total	.0%	6.7%	24.0%	30.8%
	P	Count	0	1	5	6
		% of Total	.0%	1.0%	4.8%	5.8%
	AO	Count	1	1	45	47
		% of Total	1.0%	1.0%	43.3%	45.2%
	SP	Count	0	1	9	10
		% of Total	.0%	1.0%	8.7%	9.6%
	MP	Count	0	0	9	9
		% of Total	.0%	.0%	8.7%	8.7%
Total		Count	1	10	93	104
		% of Total	1.0%	9.6%	89.4%	100.0%

Grade * Q16 Crosstabulation

			Q16			
			Disagree	Dont know	Agree	Total
Grade	O	Count	1	4	27	32
		% of Total	1.0%	3.8%	26.0%	30.8%
	P	Count	0	0	6	6
		% of Total	.0%	.0%	5.8%	5.8%
	AO	Count	1	6	40	47
		% of Total	1.0%	5.8%	38.5%	45.2%
	SP	Count	1	1	8	10
		% of Total	1.0%	1.0%	7.7%	9.6%
	MP	Count	0	1	8	9
		% of Total	.0%	1.0%	7.7%	8.7%
Total		Count	3	12	89	104
		% of Total	2.9%	11.5%	85.6%	100.0%

Grade * Q17 Crosstabulation

			Q17			
			Disagree	Dont know	Agree	Total
Grade	O	Count	11	2	19	32
		% of Total	10.6%	1.9%	18.3%	30.8%
	P	Count	2	1	3	6
		% of Total	1.9%	1.0%	2.9%	5.8%
	AO	Count	24	3	20	47
		% of Total	23.1%	2.9%	19.2%	45.2%
	SP	Count	7	0	3	10
		% of Total	6.7%	.0%	2.9%	9.6%
	MP	Count	7	0	2	9
		% of Total	6.7%	.0%	1.9%	8.7%
Total		Count	51	6	47	104
		% of Total	49.0%	5.8%	45.2%	100.0%

Grade * Q18 Crosstabulation

			Q18			
			Disagree	Dont know	Agree	Total
Grade	O	Count	5	8	17	30
		% of Total	4.9%	7.8%	16.7%	29.4%
	P	Count	1	1	4	6
		% of Total	1.0%	1.0%	3.9%	5.9%
	AO	Count	0	10	37	47
		% of Total	.0%	9.8%	36.3%	46.1%
	SP	Count	2	0	8	10
		% of Total	2.0%	.0%	7.8%	9.8%
	MP	Count	2	2	5	9
		% of Total	2.0%	2.0%	4.9%	8.8%
Total		Count	10	21	71	102
		% of Total	9.8%	20.6%	69.6%	100.0%

Grade * Q19 Crosstabulation

			Q19			
			Disagree	Dont know	Agree	Total
Grade	O	Count	3	20	9	32
		% of Total	2.9%	19.2%	8.7%	30.8%
	P	Count	1	2	3	6
		% of Total	1.0%	1.9%	2.9%	5.8%
	AO	Count	14	10	23	47
		% of Total	13.5%	9.6%	22.1%	45.2%
	SP	Count	2	1	7	10
		% of Total	1.9%	1.0%	6.7%	9.6%
	MP	Count	2	2	5	9
		% of Total	1.9%	1.9%	4.8%	8.7%
Total		Count	22	35	47	104
		% of Total	21.2%	33.7%	45.2%	100.0%

Grade * Q20 Crosstabulation

			Q20			
			Disagree	Dont know	Agree	Total
Grade	O	Count	5	12	15	32
		% of Total	4.8%	11.5%	14.4%	30.8%
	P	Count	1	2	3	6
		% of Total	1.0%	1.9%	2.9%	5.8%
	AO	Count	3	6	38	47
		% of Total	2.9%	5.8%	36.5%	45.2%
	SP	Count	0	0	10	10
		% of Total	.0%	.0%	9.6%	9.6%
	MP	Count	0	3	6	9
		% of Total	.0%	2.9%	5.8%	8.7%
Total		Count	9	23	72	104
		% of Total	8.7%	22.1%	69.2%	100.0%

Grade * Q21 Crosstabulation

			Q21			
			Disagree	Dont know	Agree	Total
Grade	O	Count	1	4	27	32
		% of Total	1.0%	3.8%	26.0%	30.8%
	P	Count	2	1	3	6
		% of Total	1.9%	1.0%	2.9%	5.8%
	AO	Count	1	4	42	47
		% of Total	1.0%	3.8%	40.4%	45.2%
	SP	Count	1	0	9	10
		% of Total	1.0%	.0%	8.7%	9.6%
	MP	Count	1	1	7	9
		% of Total	1.0%	1.0%	6.7%	8.7%
Total		Count	6	10	88	104
		% of Total	5.8%	9.6%	84.6%	100.0%

Appendix G - Analysis of variance

Descriptives

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Overall Perception of Quality	101	1.29	3.00	2.6935	.26508
Valid N (listwise)	101				

Analysis of variance - Kruskal-Wallis Test

Descriptives

Overall Perception of Quality

	N	Mean	Std. Deviation
Research & Development	12	2.8016	.20084
Sales	4	2.7619	.06734
Finance or Admin	1	2.9524	.
Human resources	3	2.8571	.04762
Raw material or Packaging store	10	2.6095	.41319
Engineering	14	2.7041	.22349
Compliance (Sheq)	6	2.8016	.07629
Distribution	18	2.7672	.19249
Production	25	2.5657	.32394
Purchasing or Planning	8	2.6429	.17998
Total	101	2.6935	.26508

Test Statistics[a,b]

	Chi-Square	df	p
Overall Perception of Quality	16.908	9	.050

a. Kruskal Wallis Test

b. Grouping Variable: Department

Analysis of variance - Kruskal-Wallis Test

Descriptives

Overall Perception of Quality

	N	Mean	Std. Deviation
O	29	2.6141	.35552
P	6	2.5317	.30330
AO	47	2.7467	.18338
SP	10	2.7476	.22898
MP	9	2.7196	.25022
Total	101	2.6935	.26508

Test Statistics[a,b]

	Chi-Square	df	p
Overall Perception of Quality	6.325	4	.176

a. Kruskal Wallis Test

b. Grouping Variable: Grade